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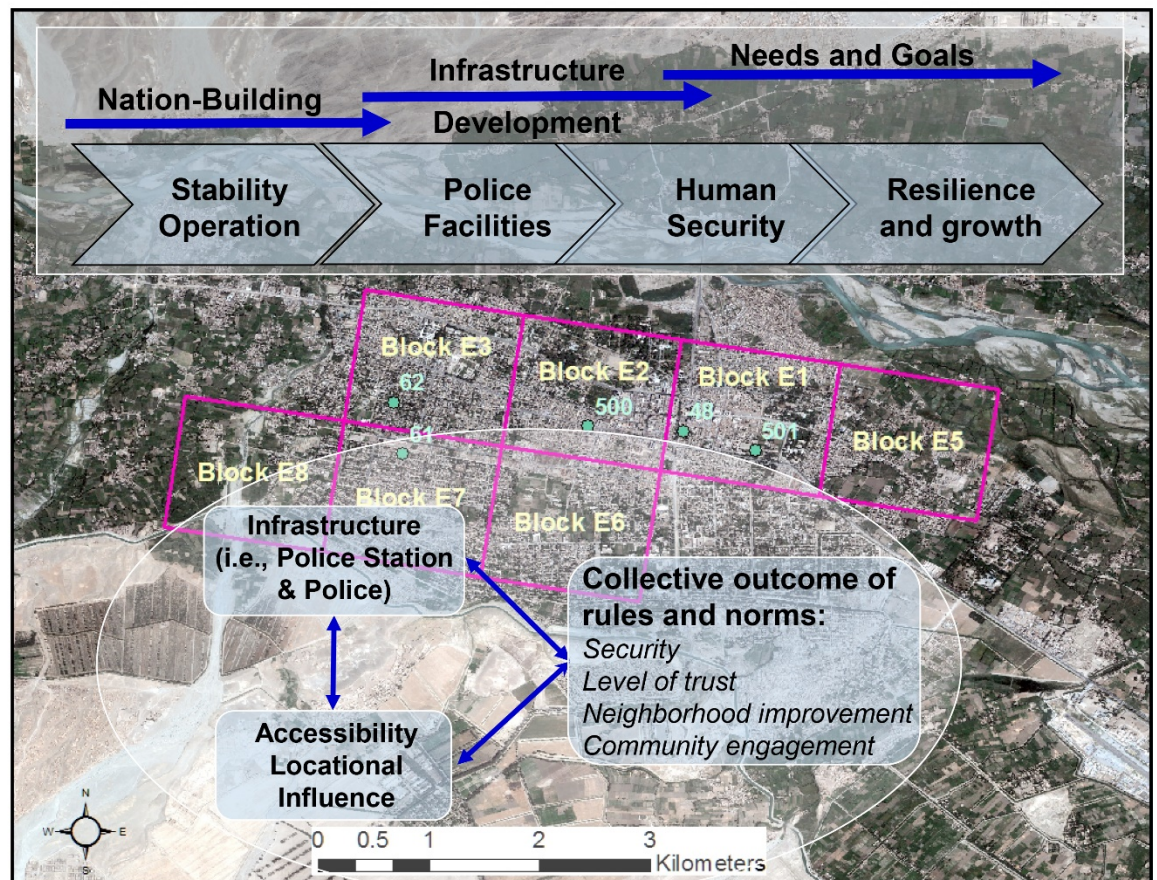# Infrastructure Impact for Human Safety and Resilience

A Case Study

Rosa T. Affleck   July 2018

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Infrastructure Impact for Human Safety and Resilience

A Case Study

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Final Report

Abstract

Constructing the Afghan National Police (ANP) facilities was among the U.S. Government's (USG) infrastructure development efforts for the stability operation mission in Afghanistan. Therefore, this study selected two communities in the northern and eastern parts of Afghanistan to assess how the introduction of these police stations has influenced the perception of neighborhood safety and local growth. This study used complementary datasets and methods, including multilevel models, to relate qualitative and quantitative information.

This study revealed contrasting outcomes: (a) people's feeling of safety attributed to the ANP facilities is higher in the less safe area, and (b) people's perception of the overall neighborhood safety in the two study areas is unrelated to each other. These feelings of safety are associated with perceived trust and confidence in the police; and most importantly, the ANP facilities contributed to a level of perceived institutional influence in promoting patriotism and national identity in the community. Overall, the addition of police infrastructure and institutions in these two study areas has supported security, resilience, and growth in the community. These measures provide novel insights that are practical for assessing impacts on infrastructure development in conflict-ridden environments and can facilitate better-informed decisions for future infrastructure development supporting USG missions.

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Acronyms and Abbreviations

ANP	Afghan National Police
CRREL	Cold Regions Research and Engineering Laboratory
CSO	Central Statistics Organization
DOD	U.S. Department of Defense
ERDC	U.S. Army Engineer Research and Development Center
GCP	Ground Control Points
GIS	Geospatial Information System
HGLM	Hierarchical Generalized Linear Model
ICC	Intraclass Correlation Coefficient
LIDAR	Light Detection and Ranging
MOI	Ministry of Interior
MPICE	Measuring Progress in Conflict Environments
NASA	National Aeronautics and Space Administration
NATO	North Atlantic Treaty Organization
NDS	National Directorate of Security
NDVI	Normalized Difference Vegetation Index
NGA	National Geospatial-Intelligence Agency
NRESS	Natural Resources and Earth System Science
PP	Probability Predictors
RMSE	Root-Mean-Square Error
SIGAR	Special Inspector General for Afghanistan Reconstruction
SP	Sampling-Point Unit

UN	United Nations
UNODC	United Nations Office on Drugs and Crime
UNDP	United Nations Development Program
UNH	University of New Hampshire
U.S.	United States
USACE	U.S. Army Corps of Engineers
USG	U.S. Government
WV-2	WorldView-2

1 Introduction

1.1 Background

The United States (U.S.) invested enormous amounts of funds and military resources for reconstruction (i.e., restoration of war-torn societies) and infrastructure development (i.e., creation of new institutions) in Afghanistan since 2002 (Cordesman 2015; SIGAR 2017). Part of the commitment for stability operations investment was to construct police stations and to establish the Afghan National Police (ANP), a designated law enforcement institution throughout Afghanistan. The question remained, how have these facilities after years of use influenced their neighborhood's safety and local growth? The USG and other international partners who supported the reconstruction and infrastructure development in Afghanistan anticipated positive outcomes due to the presence of the ANP.* Likewise, the aftereffect expected was that the Afghan police would demonstrate their functional capacity and capabilities to run their newly restored security infrastructure so that they are able to maintain or reestablish a safe and secure environment for the population. This case study explores the effects of having police infrastructure and institutions in the community to provide security, resilience, and growth for reforming a stable community (Figure 1-1). More specifically, this case study examines whether basic human safety needs and growth have improved in two locations in Afghanistan.

Figure 1-1. This study assess the impact of police facilities built for stability efforts to support human security and to promote resilience of safety and local growth in selected neighborhoods.
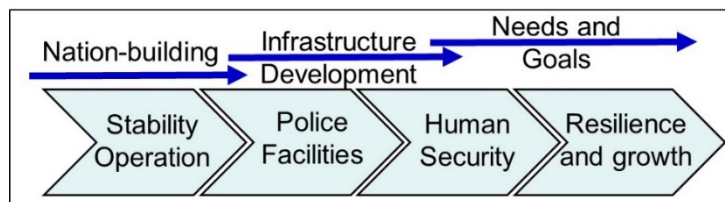
An example of a catalyst that enables the recovery and stability of public safety is the benefit of hard infrastructure (such as having a police facility) along with soft infrastructure (through anticipated collective action from

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* ANP and Afghan police are often used interchangeably in this report; however, "Afghan police" is specifically the body of persons empowered by ANP to provide police services, such as enforce the law, protect the Afghan people and their property, and prevent crime.

the police forces and their interaction with the community). The embedded resources in a social structure can be characterized in many ways, such as physical infrastructure and people; within a social structure, individuals with a collective mission or purpose may be described as occupying positions that can influence or benefit the social environment (Figure 1-2, adapted from Lin's 2001 social capital concept). These social relations promote control and cohesion in the community. For community development, the capacity to leverage resources from formal institutions is a key function of linking social capital and growth (Woolcock 2001). Having embedded resources accessible or in strategic locations (such as a police station) occupied by individuals with a collective mission (such as the police) would conceivably exert influence through interactions and networking and provide opportunities otherwise not available. Based on the interconnected theory for pursuing basic protection goals, the effects would or could generate improvements or unintended obstacles (Mandel 1996). In the context of a police facility, the more accessible the police station is to individuals, the better the individuals' well-being in terms of safety; and the more accessible a police station is to the community, the better the police can mobilize to serve the community.

Figure 1-2. Conceptual causality of police infrastructure for promoting community safety and resilience, adapted from Lin's social capital concept (2001).
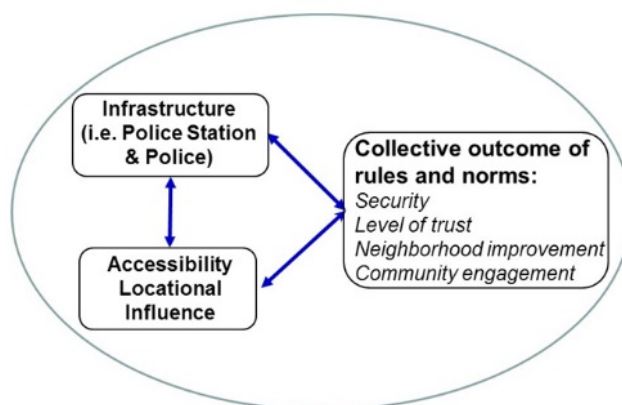
This project presents very complex and broad concepts but interrelated fields of human security or safety, stability, and resilience. For infrastructure development, these concepts are related in stabilizing a region, reestablishing a safe and secure environment, and promoting resilience or growth for the community. This study narrows these concepts down to assess people's perception of security and growth due to the impact of police facilities.

1.1.1 Human safety

Human security is about human survival (Buzan et al. 1998, 21) and is a multidimensional topic rooted from historical views to modern humanitarian perspectives and political objectives in the last decades. Security has implications across spectra (individuals, humankind, local, regional, state, or global) and theoretically has impacts in various sectors (Buzan et al. 1998; MacLean et al. 2006; Møller 2012; Liotta et al. 2008; Peoples and Vaughan-Williams 2014). Møller (2012) conceptualized security in these principles: whose security is impacted, what security is at risk, what is the source, and what is the form of threat. The human security implications include, but are not limited to, sociopsychological, socioeconomic, and political sectors, which are interrelated (Figure 1-3). Sociopsychological objects of security are typically associated with traditional views for protecting people that focus on well-being needs (i.e., Maslow 1943). Socioeconomic purpose relates to preserving peace and providing people the opportunities for progress and growth (Max-Neef 1992). Political-level objectives address the new global security concerns requiring international relations, such as peacebuilding, stability, or fixing a failed nation to yield a new state with a more secure order.

Figure 1-3. Relationship of existential threats affecting various sectors of human security.

1.1.1.1 Sociopsychological and socioeconomic view

Security has historically not been about just survival but also physical safety of people. Maslow (1943) provided a historical perspective on human safety needs, describing them as a prescribed "hierarchy of needs" within individuals' basic existence and representing "goals" to be achieved.

Each goal is achieved through individuals' motivation by having the capacity or resources to pursue and meet their needs. Prioritized from first to last, these basic needs fall in the categories of physiological, safety, love, self-esteem, and self-actualization (Figure 1-4). The motivational level for safety needs in Maslow's Hierarchy of Needs describes a person seeking security through law and order and through civil protection. Maslow wrote that

> we may find that the dominating goal is a strong determinant not only of his current world outlook and philosophy but also of his philosophy of the future. Practically everything looks less important than safety (even sometimes the physiological needs, which being satisfied are underestimated). A man in this state, if it is extreme enough and chronic enough, may be characterized as living almost for safety alone. (Maslow 1943, 172).

He continued,

> broader aspects of the attempt to seek safety and stability in the world are seen in the very common preference for familiar rather than unfamiliar things, or for the known rather than unknown. . . . Otherwise the need for safety is seen as an active and dominant mobilizer of the organism's resources only in emergencies, i.e., war, disease, natural catastrophes, crime waves, societal disorganization . . . (Maslow 1943, 174).

Figure 1-4. Importance of safety in Maslow's hierarchy of needs (after Maslow 1943).
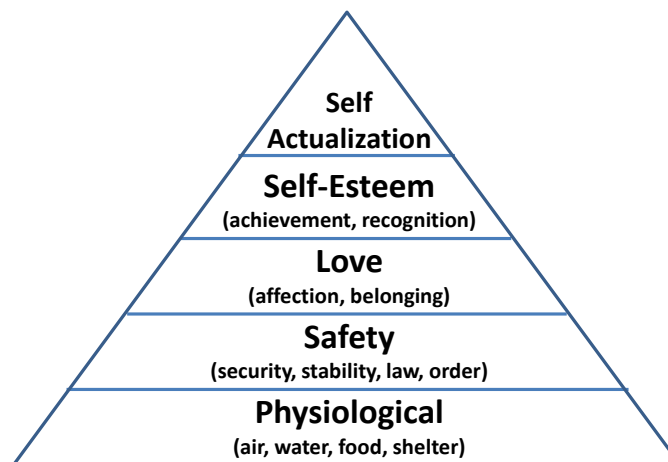
Safety needs encompass health and well-being, personal security, financial security, and social order. A sense of safety allows people to move, interact, and transact freely and without fear, which would broaden both human and social security (Ghani and Lockhart 2008).

Another concept of human needs is distinctly derived from the conservative notion of conventional economic "wants" that are infinite and insatiable (Max-Neef 1992) to create the socioeconomic environment of opportunities for groups or individuals to actualize their needs. According to Max-Neef (1992), each economic, social, and political system adopts different methods to satisfy the same fundamental human needs. Thus, each need can be satisfied at different levels and with different intensities. Furthermore, needs are satisfied within three contexts: (1) with regard to oneself, (2) within the social group, and (3) with regard to the environment. In this framework, the quality and intensity of satisfaction will depend on time, place, and circumstances. The human-needs taxonomy in the Max-Neef (1992) model is considered constant through all human cultures and across historical time periods—it is the same for everyone, anywhere, and at any point in time—and is broken down into two categorical orders: the axiological needs and the existential capacities as instruments to achieve the needs. The axiological needs include subsistence, protection, affection, understanding, participation, leisure, creation, identity, and freedom; and to achieve each will require corresponding existential-based capacities. These existential needs are defined in a matrix in Table 1-1 of (1) individuals' or people's driving qualities (such as personal or collective [i.e., community] attributes), (2) having resources or infrastructure (i.e., institutions, norms, mechanisms, laws, etc.), and (3) performing individual or collective efforts and interacting (locations, milieu [as in time and space]). For example, within the context of oneself, an axiological need of subsistence would drive the existential need for having a sustainable food system or civil institutions. These same axiological and existential needs also exist, albeit on a larger scale, within the context of society. Within this needs framework, Max-Neef (1992) characterized the "satisfiers" for the safety needs as exogenous or related to civil society as they are usually imposed, induced, ritualized, or institutionalized within the physical or social setting in which people live. In this sense, factors for satisfying the protection or safety needs are traditionally generated internally and externally, including infrastructure, and advocated by the institution or government for the people.

Table 1-1. Matrix of human needs and drivers for human protection
(after Max-Neef 1992).

Existential categories	Axiological categories or drivers
Being	Care, adaptability, autonomy, equilibrium, solidarity
Having	Infrastructure and systems (i.e., social security, civil institutions and law enforcements, health systems, etc.)
Doing	Cooperate, prevent, plan, help, etc.
Interacting	Living space, social environment

1.1.1.2 *Political perspectives and U.S. military concepts*

The Nobel Prize–winning economist Amartya Sen acknowledges the range of factors that encompass human security that are deeply interrelated in helping states develop (Sen 2000, 11):

> Political freedoms (in the form of free speech and elections) help to promote economic security. Social opportunities help facilitate economic participation. Economic facilities (in the form of opportunities for participation in trade and production) can help to generate personal abundance as well as public resources for social facilities.

Human security efforts provided by the United Nations Development Program (UNDP) address emerging threats to economic, political, food, health, environmental, personal, and community security (UNDP 1994). The United Nations (UN) ideology of human security covers a range of broad to narrow versions (Thérien 2012; McDonald 2008), including a narrow definition of human security as protection of civilians during armed conflict and peace building. Peace building is also designed to establish "integrated strategies for post-conflict peacebuilding and recovery." On the other hand, broad human security seeks to consider the economic progress to enhance long-term development for vulnerable populations of the region.

The U.S. military defines security in defensive contexts as "Measures taken by a military unit, activity, or installation to protect itself against all acts designed to, or which may, impair its effectiveness" (Department of Defense [DOD] 2010a, 2010b). This type of security is about addressing the variety of risks and dangers experienced where complex operations are conducted to establish safe zones (Kaldor 2011). These measures are based on various actions for corresponding level threats (DOD 2010b). Tactical

measures deploy military personnel, units, or large tactical force operations to enforce security. Simultaneously, U.S. security cooperation policy involves all DOD interactions with other nations to build defense relationships that promote specific U.S. security interests, develop (U.S.-friend or allied) nations' capabilities for self-defense along with other objectives (DOD 2017; The White House, Office of the Press Secretary 2013). These activities and objectives are referring to the DOD efforts with nation(s) by helping shape their policies and actions in the security sector; building and sustaining the capacity and effectiveness of legitimate institutions to provide security, safety, and justice for their people; and enabling collaborative efforts that address common security challenges (DOD 2017). Measures such as reconstructing political authority, security sector reform, etc., are critical principles for human security (Kaldor 2011). These measures and activities can be extreme, complex, and resource intensive, particularly in unstable and conflict-ridden areas as in the stability operations conducted by the U.S. military and allies that strove to transform Afghanistan from conflict to peace and to maintain the restored order in the country (DOD 2005, 2017).

In the midst of the Afghanistan effort from 2002 to 2014, scholars from a wide range of disciplines, including active-duty military personnel and governmental and nongovernmental staff, outlined ways to improve security while creating alliances and gathering support from local people (Gompert et al. 2009; Lawson et al. 2010) and defined the principles of state building that enhance "winning the peace" while stabilizing chaotic regions (Kaufmann 2008). These scholars acknowledged that the tenet of peace is the preservation of life, liberty, and property. Any definition of "security" that does not explicitly transcend mere suppression of violence seems doomed to fail, perhaps immediately (Gildrie 2008). The state of peace is dynamic, featuring a capacity for self-correction and adaptation to incipient problems or potential opportunities. The security of persons in their daily liberties and property through rule of law involves predictability and a sense of fairness that follows the spirit of peace and encourages social trust (Gildrie 2008).

1.1.2 Measuring human safety

Examples of previous studies on concepts described in Section 1.1.1 have applied to sustainable protection and provision of local, state, and military governance (James 2014) and to poverty levels as the threshold of human

well-being (King and Murray 2001). Other studies on human security described the countrywide conditions of people's existence on basic needs necessary for physical survival and provided an overview of the relationships between global governance, development, and human security (Thomas 2001).

Although both academic and policy communities have widely adopted the narrative of human security as a complex issue, experts in human security have indicated that erroneous or inappropriate outcomes could potentially arise from provision of human security instead of its true objectives inherent in security (Christie 2010; Mandel 1996). Objectives-based approaches such as infrastructure or economic development and provision of food can have tangible outcomes for promoting security. While the recent concepts of security may have value to address particular issues (i.e., to stabilize a country) and may enable short-term gains (Christie 2010), the most important objective is for a substantive improvement in human safety.

1.1.3 Stability operations

The USG has been involved in stability operations throughout the world since the Cold War. The term *stability operations* is sometimes defined by the Department of State as "reconstruction, stabilization, and conflict transformation" and by the U.S. Department of Defense (DOD) as "stabilization, security, transition, and reconstruction." The scope of the definition encompasses "The military and civilian activities conducted across the entire spectrum of operations" to establish and maintain order in States and regions (DOD 2005).

Stability operations (also referred to as contingency operations) is an overarching term that encompasses various military missions, tasks, and activities conducted by the DOD in foreign countries to maintain or reestablish a secure environment and to provide essential governmental services and emergency infrastructure reconstruction for nation building and humanitarian relief efforts (Department of Army 2008; DOD 2009, 2011). Fundamental requisites for nation-building efforts include supplying the provision of basic services and establishing functional systems such as security, governance, and economic and infrastructure systems in a region (Barfield 2010; Fuyuyama 2006; Kaufmann 2008). For each of these sectors to function properly, it is critical to pay attention to restoring, rebuilding, and reforming the public sectors in postconflict societies. These

are essential to achieving a functional government as the end-state condition (Department of Army 2008; DOD 2009, 2011).

Recent stability operations to restore or build domestic order for failed or conflict-ridden states emphasized a comprehensive approach (Azarbaijani-Moghaddam et al. 2008) and constructive effects for drawing cooperation from allies and partners (Marquis et al. 2010) to provide economic stabilization and infrastructure development by helping the supported nation to develop both its capability and capacity (Shin 2009). Stabilizing a conflict-ridden state is an incredibly costly and complex effort (Ghani and Lockhart 2008, 25). For example, according to the office of the Special Inspector General for Afghanistan Reconstruction (SIGAR), the USG appropriated hundreds of billions of dollars since 2002 in reconstruction and infrastructure development in Afghanistan (Cordesman 2015; SIGAR 2017). Part of the expenditure in stability operations was the construction of facilities in Afghanistan: military contingency bases, police barracks, and other critical infrastructure. The host nation's need for a particular development program determined the construction of such facilities along with the support from the USG and coalition partners. These infrastructure development efforts were implemented and constructed by a number of actors; the U.S. military and the U.S. Army Corps of Engineers (USACE) administered the contracts while civilian contractors constructed the facilities.

As outcomes of these enormous commitments, the USG expected the Afghans to demonstrate their functional capacity and capabilities to run their newly restored governmental infrastructure and to have a stable society with a safe environment for community growth. SIGAR (2012, 2011a, 2011b) reviews and audits of these programs highlighted the lack of a standard definition of and methodology for assessing employment gains and progress of USG efforts to determine whether the programs had a significant impact on the local population in restoring or rebuilding, such as creating job opportunities, improving security, or meeting basic human needs. Recent SIGAR quarterly reports (2017) continued to echo that the security and civil aspects of reconstruction progress have yielded mixed results. Others highlighted that facilities built in conflict areas have gaps limiting positive community impacts and growth by not using local resources (Malan 2010) and because of inefficient buildings (Curtin 2008). However, infrastructure or institutions built for communities should support human basic needs (i.e., safety and protection in a community), promote a level of equilibrium, stimulate autonomy, and promote social security.

1.1.4 Capacity for resilience

While the USG uses term the *stability*, academics use the term *resilience*; despite the different nomenclature, the concepts are related. The Webster New World Dictionary (Neufeldt and Guralnik 1996) defined stability as "the capacity of an object to return to equilibrium or its original position after having been displaced." Across various sciences, scholars working in this emerging field recognize that resilience is the ability of communities to collectively recover from or adapt to various perturbations: security threats, disasters, adversity, or environmental stress (Aldrich 2012; Norris et al. 2008; Davoudi 2012, Armitage et al. 2012; Stokols et al. 2013; Carpenter et al. 2001; Pisano 2012). Other studies of resilience associate the term *stability* with outcomes remaining stable when disturbed by some transient external force (Galster et al. 2007). Carpenter et al. (2001) and Pisano (2012) describe *resilience* with three critical characteristics: "(1) the amount of disturbance a system can absorb and still remain within the same state or domain of attraction; (2) the degree to which the system is capable of self-organization; and (3) the ability to build and increase the capacity for learning and adaptation." Resilience is the capacity to cope with disturbance and generate stability such that a new stable state may emerge after a disturbance.

There has been increasing awareness of the importance of infrastructure planning and development for creating stable and resilient communities (Davoudi 2012; Armitage et al. 2012; Stokols et al. 2013). Physical infrastructure is increasingly recognized as playing a role in international movements to create *sustainable cities* (United Nations 2012), r*esilient cities* (Rodin 2013), and *resilient communities* (Tumlin 2012; Stokols 2012; Armitage et al. 2012). McCreight (2010, 4–5; also cited in Aldrich 2012, 7) defined resilience as having five dimensions for a holistic approach to recovery after disaster:

1. Personal and familial sociopsychological well-being
2. Organizational and institutional restoration
3. Economic and commercial resumption of services and productivity
4. Restoration of infrastructural systems' integrity
5. Operational regularity of public safety and government

In this community context, resilience is a collective (i.e., system, neighborhood, community, city, and nation) capacity to ultimately engage in effective and efficient recovery through mobilization of collective actions and cooperative efforts and/or resources (Aldrich 2012).

Resilience addresses a dynamic recovery response: adjusting to a new condition and transforming to create some stability or equilibrium condition of a system (Carpenter et al. 2001; Folke et al 2010; Pisano 2012). Adaptive and transformative capacities allow the recovery to adjust and evolve by inserting transformational drivers and by modifying external or internal processes of the system; these capacities can generate recovery and stability from disturbances to a new state, or at least a reorganization trajectory. Reorganization is enhanced by having structures, coordinated mechanisms (i.e., having robust and functional institutions), and the presence of social networks that adapt and shape the recovery or stability. These coordinated mechanisms are related to the structures and processes for which societies have shared purpose or ownership (Lebel et al. 2006), thereby producing influence for their collective action (Folke et al 2010). Social relation attributes, such as cohesion, participation, representation, deliberation, accountability, control or empowerment, social justice, rules, norms, and promotion of trust, are catalysts for resilience (Hatfield-Dodds et al. 2007; Lebel et al. 2006; Pisano 2012; Ledogar and Fleming 2008; Aldrich 2012) or growth and accommodate a range of social outcomes (Woolcock 2001; Lin 1999, 2001).

1.2 Objective

The main objective of this case study is to examine the infrastructure effectiveness of the police facilities constructed by the USG for stability program in war-torn or conflict zones by using various methods and complementary datasets for triangulations of qualitative and quantitative information. In particular, this study will (1) assess whether the police facilities have improved people's perception of basic human safety within the community (i.e., village or town) because of proximity and accessibility and (2) examine the effects of having the buildings (e.g., hard infrastructure) in the community on the perception of safety and other social benefits and growth as indicators of resilience.

1.3 Approach

To study these relationships, two sets of (primary) survey data were collected as an exploratory case study on a small section of two neighborhoods near where the USG built Afghan police facilities in Afghanistan. The primary survey data along with existing survey data were used to examine the impact of the facilities on human safety and on other resilience adaptation capacities contributing to the neighborhoods' well-being. In addition, the study used remote sensing and other geospatial data to triangulate the neighborhood probable improvements with our survey outcome. The metrics used for the study are grouped in categories of variables, methods, and data to derive the classification and indicators (Table 1-2). The probability and specifically the association of change on neighborhood safety and improvements are narrowly focused and bounded within the time frame of this study. This is because potential confounding factors unique to the region, such as security disruption by militants, have created incidents of security interruption and have disrupted people's feeling of safety as the Afghan police have strived for security progress in the community.

Table 1-2. Metrics from various data and methods used for the study.

Variables	Methods (data sources)	Classification and indicators
Neighborhood type	Geospatial data (UN-Habitat 2015a, 2015b and aerial photos)	Categorical estimates: urban, new urban, suburban
Residential dwelling and population density groupings	Geospatial data (UN-Habitat 2015a, 2015b)	Numerical and categorical estimates (populated vs. unpopulated)
Quantitative and perceived Growth	Geospatial data (remote-sensing data) and primary survey	Numerical (%) and categorical estimates
Police facilities accessibility: Distance Perceived accessibility	Geospatial Primary survey data (community and police)	Numerical estimates Categorical input
Perceived level of safety	Existing data (the Asia Foundation and Measuring Progress in Conflict Environments [MPICE]) Primary survey data (community and police)	Categorical input
Perceived police–community relations: trust, confidence, and other relational interactions	Primary survey data (community and police)	Categorical input
Perceived neighborhood improvements: people moving, new businesses, other benefits	Primary survey data (community and police)	Categorical input
Perceived role of the police station as an institutional symbol: reestablishing the police system, patriotism, and national identity	Primary survey data (community and police)	Categorical input

1.4 Research hypothesis

The new police infrastructure is composed of hard and soft infrastructure and has an institutional mission and services to produce social benefits by being accessible and by creating sociorelational influence in the community, enabling recovery and stability for public safety. This study hypothesizes that in safer urban/suburban areas, people's feeling of safety and the perception that their community is safe would likely show greater neighborhood improvements, growth, police–community relations, and institutional influence with the addition of police stations than they would in less safe urban areas.

This case study focuses on the neighborhood scale where police facilities built for ANP exist and assumes that the impact of the police facilities to influence the perceived neighborhood safety and resiliency are tied to the characteristics or type of neighborhoods and density of the local population. To select a "safer" and a "less safe" area to study, an initial characterization is conducted using existing survey data (described in section 3), then the study areas are narrowed down in the communities where the police facilities are located (section 2).

1.5 Report outline

This research assesses the influence of the facilities built to house the ANP and the role these facilities have in providing security and growth to the community. The research aims to provide a broader understanding of how the placement of police stations in two areas has impacted the safety of the surrounding community and fostered interaction between the community and police personnel.

Section 2 explores the use of geospatial data for variety of objectives: (1) to assess the neighborhood characteristics and population density patterns, (2) to quantify the local growth, and (3) to measure the physical location of the police facilities in spatial relation to the community—specifically the distance from the neighborhoods to the police stations as a measure of public accessibility. Results from the geospatial analyses will be incorporated with perception data (discussed in sections 3 and 5) to assess the impact of the new police infrastructure on neighborhood security and resiliency

Section 3 provides contextual information on the rebuilding of the Afghan police force and the characteristics of the Afghan people's sense of unity that persisted and brought them together to promote resiliency. Section 3 also covers the background of the existing regional security and people's perceptions of their local police based on existing empirical information, which will be incorporated into this study's statistical modeling in section 5 to relate the association of the people's perception of security to police performance and demographics variables.

Section 4 presents the sampling strategy collection plan for the police and community surveys and the characterization of independent variables measured from the survey data.

Section 5 describes the multilevel models to assess the probability at two levels: (1) a level-1 submodel that describes the effects of response variables and (2) a level-2 submodel that describes the random or varying effects of response variables across the neighborhoods. The first four response variables in the multilevel models included people's feeling of safety, perceived security, income and jobs, and community improvements to the area by having the police facilities. Multilevel models using the existing survey data provide the previous outlook of safety to compare 2012 data between the two study regions and to evaluate the association of perceived police performance and demographics data, such as educational level, ethnicity, marital status, and income, with people's general perception of safety.

Finally, section 6 provides a summary of the study's findings from various datasets presented in sections 2, 3, and 4 and from the triangulations of qualitative and quantitative information into multilevel models described in section 5.

2   Neighborhood Characterization for the Case Study

Various social disciplines commonly use case studies to provide exploratory, descriptive, and explanatory information (George and Bennett 2005; Yin 2009). This case study compares people's perception of security conditions in these two unique study areas. People's perception of safety can vary depending on the characteristics or type of neighborhood and density of the local population and growth. Distance to services and facilities can make a considerable difference to the community. For example, people may feel that they are safe because they are in close proximity and have access to the police station.

Geospatial data, including feature data (e.g., land-use and dwelling information), and remote-sensing data are used to describe the neighborhood characteristics, estimate population density patterns, quantify the local growth, and measure the distance from the neighborhood to the police stations as a measure of public accessibility. The new land-use and dwelling data generated by the UN (UN-Habitat 2015a, 2015b) are the first and most accurate data for the municipalities in Afghanistan. This case study is the first attempt to assess neighborhood growth in Afghanistan using remote-sensing data for triangulation with other data.

2.1   Background

Geospatial analysis is commonly used for feature and object-based extraction from data that has geographical or geospatial attributes. This type of analysis typically uses various geospatial information system (GIS) software (including Esri's ArcMap) and tools, which are capable of mapping, processing, and applying analytical methods to classify and quantify feature data. GIS and its tools have been rapidly changing and are progressively becoming more sophisticated. Over the last 50 years, there have been orders-of-magnitude-scale improvements in increasing the complexity and versatility of usage, including the availability and accessibility of higher-resolution geospatial datasets. These included data for extraction attributes, existing maps, and remotely sensed data.

2.1.1 Spatial variables

Geospatial information is associated with spatial or thematic variables that represent characteristics of given geographic locations on the map. Thematic maps, for example, assess the suitability of infrastructure projects related to community-safety planning. Several studies have used such information for crime assessment, in particular the socioeconomic causes of crime (Pain et. al. 2006; Gilling 1997; Koskela and Pain 2000; Ratcliffe 2004). These include quantitative metrics of the geographic region, such as population and demographics information. Studies have used statistical analyses using GIS-based techniques to relate qualitative properties; examples include collecting descriptive information about specific types of crime occurring in the region or calculating crime rates and measuring the population at risk (Andresen 2005). Others assessed important community benefits provided by ecosystems and specifically by cultural landscapes (Plieninger et al. 2013; Chan et al. 2012). Likewise, other researchers have examined and incorporated the landscape properties into a forecast model for urban growth and development (Herold et al. 2003). Incorporating spatial metrics with the model calibration process is powerful for providing a detailed description of the accuracy of the models and for triangulation with other datasets. This can enhance the interpretation of results and produce a new direction for the improved understanding, representation, and modeling of the spatiotemporal forms due to the process of urbanization or community development.

2.1.2 Ground-based change

Ground-based change due to human activities, such as construction of buildings, is of particular importance to those involved in sustainable development (Teo and Shih 2013). Ground-based change (also referred as change detection) approaches are traditionally based on image-to-image and pixel-by-pixel comparison, which consists of comparing two images acquired at two different dates to produce an image that corresponds to the changes between these two dates (Bouziani et al. 2010; Teo and Shih 2013; Singh 1989; Coppin and Bauer 1996). The most well-known change detection techniques include algebraic operations, image transformation and techniques based on classification results (Singh 1989; Coppin and Bauer 1996; Lunetta and Elvidge 1999). These techniques determine simultaneously the land-based growth and surface disturbance.

Experts in the field of remote sensing have expressed the unique advantages and limitations to using the imagery and ground surface datasets for detection (e.g., two- versus three-dimensional information about the change). For multitemporal image data, change detection from spectral information usually provides only two-dimensional information about change and allows the identification of regional change (Im et al. 2008; Li et al. 2010; Stamm and Briggs 1999). In addition, quality data is critical to accurately identifying such regions or landscape change, especially when shadows and occlusions affect the results (Chen et al. 2012; Gärtner et al. 2014). Over this past decade, multitemporal image processing such as object-based classification has improved for urban-scale and land cover change detection (Doxani et al. 2012; Hussain et al. 2013). Spectral analysis of multitemporal high-resolution imagery has been used for detection of buildings (Bouziani et al. 2010; Vu and Ban 2010) by comparing class similarities between two periods by using the spectral information from the image data. Multitemporal images exhibit large radiometric differences that can be distinguished easily, showing the difference between vegetation and nonvegetation. However, in some cases, pixel variation is not adequately informative to differentiate types of change in areas with similar spectral signatures. For example, in some regions, roads and buildings have similar spectral values, and attempting to differentiate the types of change may create ambiguities in the results.

Others have used ground surface datasets such as LIDAR (Light Detection and Ranging) for distinguishing changes in ground surfaces, buildings, and vegetation (Butkiewicz et al. 2008; Knudsen and Olsen 2003; Teo and Shih 2013; Vosselman et al. 2004). The shape and height differences can be determined from multitemporal ground surface data (Vögtle and Steinle 2004). Such surface information can shed light on the change types for buildings (Teo and Shih 2013).

Several studies have integrated ground surface datasets with image data and existing maps for change detection (Matikainen et al. 2004; Trinder and Salah 2012; Vu et al. 2004; Walter 2005). For example, Matikainen et al. (2004) compared the detected buildings with building locations from existing maps and applied the change information to update the maps. Bouziani et al. (2010) performed change detection in an urban area from extremely high-resolution satellite images and existing maps. Using map-guided change detection and prior knowledge from maps enhanced the capability of image interpretation. A much improved detection accuracy is

reached (approximately 90%) with the fusion of high-resolution ground surface datasets, existing imagery, and existing maps.

Though several researchers have used image and surface data for change detection in urban areas, relatively few studies have considered identifying the amount and type of change, particularly in war-stricken urban areas. This study applies multitemporal high-resolution ground surface datasets and multispectral imagery to object-based change detection and uses digital image to verify the classification. This study carefully planned and applied the existing processes for determining object-based changes and relating changes to growth in unique areas in Afghanistan. The change-type determination is based on some predefined rules of object properties. This will not only increase the knowledge of growth for this investigation but also will provide a bigger picture of growth behavior in war-stricken urban areas.

2.2   Study area selection

The areas selected for the case study includes two communities, one in northern Afghanistan (Figure 2-1) and one in eastern Afghanistan (Figure 2-2). In two study areas, the existing ANP facilities constructed by the USG are adjacently located, and others are within approximately 5 km of each other. These two locations are selected based on (1) assumptions that the facilities located in the communities are currently used by ANP as police stations, (2) existing perceptions from previous survey data of local people's perception of safety (described in section 3), and (3) logistical and feasibility reasons for acquiring the primary survey data. Because of political sensitivity and to protect local populations, the police facilities are not shown on the map and to describe the study regions generically as Study Area 1, located on the outskirts of an urban area in northern Afghanistan, and Study Area 2, located in an urban setting in the eastern part of the country.

Because the last census in Afghanistan was in 1979, various sources provided population projections for the country and its provinces (Table 2-1). The World Bank estimated that the population density of Afghanistan in 2015 was approximately 49.8 people per km^2 of land area (World Bank 2017), but these values vary from one area to another. The World Bank's estimate of Afghanistan's population in 2015 was 32.5 million with approximately 53.4% of people living in urban areas; other sources estimated Afghanistan's population at 27.6 million (Brinkhoff 2016) and 29.1 million

(GeoNames.org 2017) in 2016. The northern city is estimated to be a more populated urban area than the eastern area, according to the Central Statistics Organization (CSO 2017) data and all other estimates. Both areas are considered among the largest cities in Afghanistan (GeoNames.org 2017). They are both regional hubs and have regional trade routes with neighboring countries (UN-Habitat 2015a, 2015b).

The study areas are divided into rectangular-grid patterns and split them into subneighborhoods. The subneighborhoods are designed to represent the neighborhood blocks spatial attributes and characteristics. Likewise, the neighborhood blocks are used to define and represent the sampling grid for survey data.

Figure 2-1. Study Area 1 (northern urban area) multispectral imagery taken on July 15, 2013, depicting the defined neighborhood blocks representing the sampling grid (SB_id) within approximately 5 km of the police facilities. *Green points* to the north are existing surveys on neighborhood safety from the MPICE project.
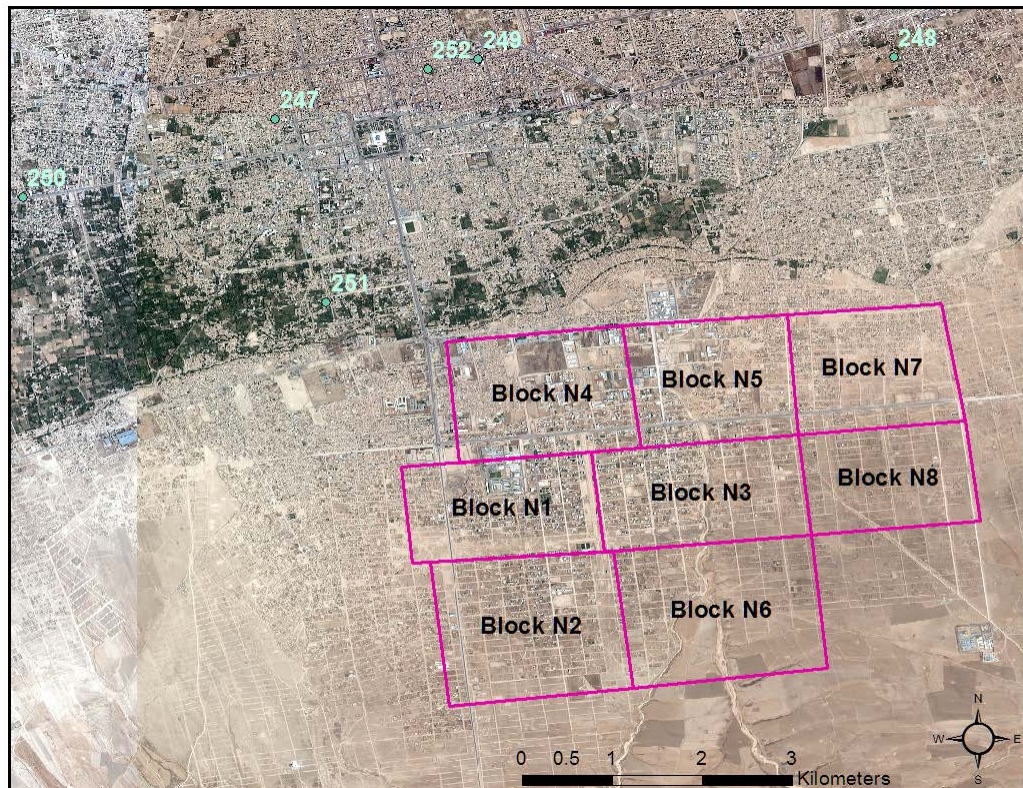
Figure 2-2. Study Area 2 (eastern urban area) multispectral imagery taken on May 22, 2015, depicting the defined neighborhood blocks representing the sampling grid (SB_id) approximately within 5 km of the police facilities. *Green points* scattered around the vicinity of study area are existing survey on neighborhood safety from the MPICE project.
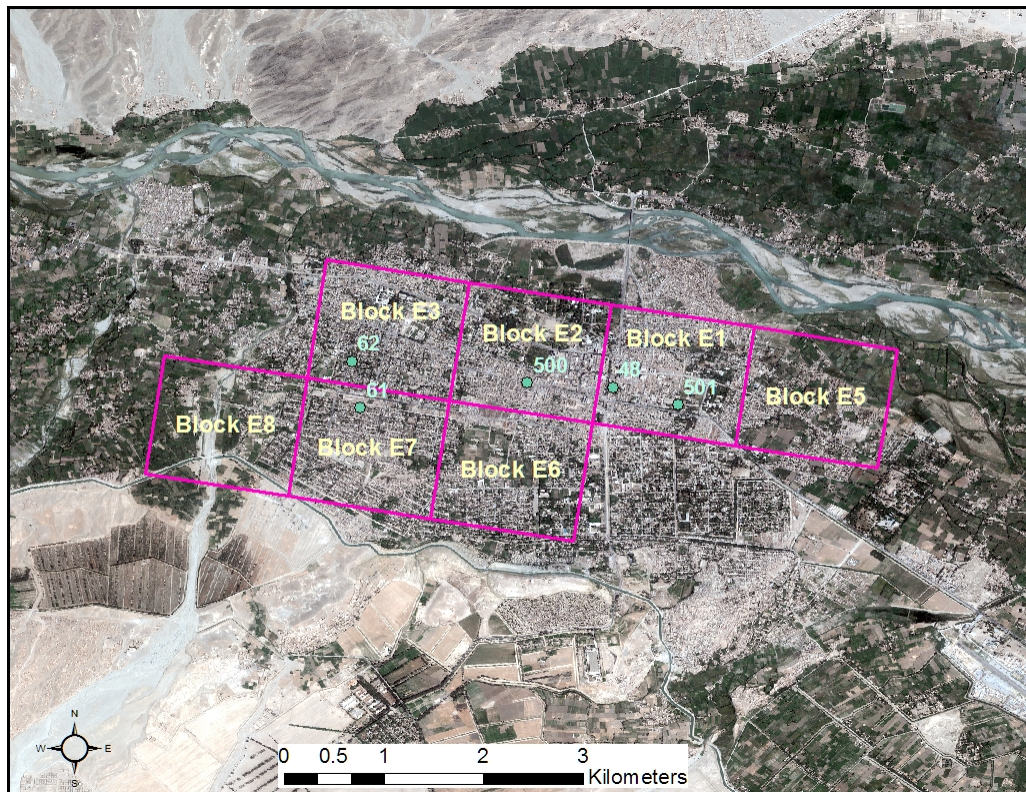
Table 2-1. Comparison of the urban population from various sources for the study areas.

City	1979 Census*	CSO 2014/15	2016* Projection	Recent† Estimation	Total Municipal Revenues‡ (2011–13), %
Northern	103,372	390,900	415,100	303,282	7
Eastern	52,915	219,300	232,900	200,331	5

* Brinkhoff (2016) population in provinces, cities, and town in Afghanistan

† GeoNames (2017) populations for provinces and cities in Afghanistan

‡ UN-Habitat (2015a, 2015b)

Study Area 1 is located on the southern outskirts or edge of the city and has relatively open, barren land to the south (Figure 2-1). The entire Study Area 1 is approximately 5 km in the east–west direction and 4 km in the north–south direction. Study Area 1 is divided into eight neighborhood blocks, following the directions of the majority of the roads. The size of the neighborhood blocks range from 1.7 to 2.6 km². Three police facilities are

located in the vicinity: one is situated inside one of the western neighborhood blocks, and two police facilities are outside the neighborhood blocks to the southwest. They are approximately 4.5 km from each other.

Study Area 2 is located on the eastern edge of the city and has a large river to the north along which agricultural areas abound. The entire Study Area 2 is within a strip approximately 6 km in the east–west direction and 2.4 km in the north–south direction (Figure 2-2). Study Area 2 is divided into seven neighborhood blocks, which are divided equally such that each neighborhood block is 1.44 km². Four police facilities are present in the vicinity: two police stations are within two of the neighborhood blocks, and two other police facilities used for border patrol are located outside the neighborhood blocks on the southeast side.

2.3 Geospatial data

2.3.1 WorldView-2

Commercially available high-resolution imagery collected by earth observation satellites are well suited for urban development assessments, planning applications, mapping of land surfaces, coastal and geological mapping, oil and gas mapping, and many others applications (Navulur 2006). These high-resolution imagery data include WorldView-2 (WV-2) and Geo-Eye-1, both DigitalGlobe products, which the National Geospatial-Intelligence Agency (NGA) archives. WV-2 is available in panchromatic imagery of 0.46 m (at nadir) resolution and in eight-band multispectral imagery with a 1.84 m (at nadir) ground sampling resolution. At nadir means that the sensor is looking straight down while sampling the ground. For the multispectral imagery, each resolution cell or pixel size represents 1.84 m × 1.84 m sampling area of the ground. If the feature is smaller than the designated sampling size, it be not be detectable. However, smaller features are sometimes detectable if their reflectance dominates within a particular resolution cell.

This study selected WV-2 imagery with cloud cover of less than 5% and temporal and spatial coverage that covered or centered on the study areas. WV-2 satellite imagery datasets are used for this study for a variety of information, including (1) neighborhood-level mapping of land-use and dwelling data, (2) visualization applications for mapping perception data, and (3) extraction of vegetation data for assessing the building growth in study areas.

2.3.2 UN land-use and dwelling data

The UN has recently published the first comprehensive and reliable assessment of Afghanistan's cities and urban areas for guiding better economic- and social-development planning (UN-Habitat 2015a, 2015b). The UN generated the land-use and dwelling maps from the most recent high-resolution satellite imagery with a spatial resolution of less than or equal to 0.61 m and verified through local workshops for input from local residents about their cities and by field surveys to improve the accuracy of the data. The dwelling maps include the counts for house compounds and apartment blocks per area. The UN report highlighted that the dwelling data is not intended as a population census but rather aimed to map the urban housing distribution (density and housing types) to support municipal governance and management. However, the dwelling counts enable population estimates based on the average household size: 7.5 persons per household (UN-Habitat 2015a, 2015b). The UN land-use interpretation included agricultural areas and water bodies, building uses (residential [house compounds and apartment blocks], commercial, industrial [long sheds and tanks], or institutional [schools, hospitals, clinics]), roadways, and vacant lots. These images used by the UN have a spatial resolution of less than or equal to 0.61 m and land-use and dwelling-density classification maps produced by the UN were within a 10% margin of error based on square meter area (UN-Habitat 2015a, 2015b). For example, the UN-Habitat (2015a, 2015b) level of resolution for image analysis for land-use was between 1500 and 2000 m^2; therefore, small shops in a residential were grouped with residential land-use.

2.3.3 BuckEye terrain data

Recently, terrain data such as LIDAR data have been used for change detection (Bouziani et al. 2010) and urban mapping for military intelligence, surveillance, and reconnaissance operations (Hardaway 2011; U.S. Army Geospatial Center 2017). LIDAR takes highly accurate measurements of the ground surface or terrain (in x, y, and z coordinates) by using an active remote-sensing technique. The technique uses light in the form of a pulsed laser beam and interacts with a target/surface while moving through specific survey routes and mapping the surface of the earth. The wavelength of light is near infrared (1064 nm), and the laser pulses emitted from a LIDAR system reflect from objects both on and above the ground surface: vegetation, buildings, bridges, etc. As the beam is emitted from the sensor, the beam diverges (or its footprint gets larger); and thus, one emitted laser

pulse can have one or many returns on various reflective surfaces. The first returned laser pulse is associated with the highest feature in the landscape, such as the top of a building or vegetation canopy (treetop). The last return is associated with the ground return or a branch in thick, forested areas. The data point is post-processed into digital surface models (DSMs). DSMs are the terrain surface model with objects (buildings or vegetation included). Digital terrain models (DTMs) are a product where the DSM is filtered to remove features above ground and can be referred to as a bare-earth digital elevation models. For this research, building footprints are of interest; thus, DSMs are used in the analysis.

The BuckEye system was developed for U.S. Army operations to provide high-resolution urban terrain imagery for tactical missions in Iraq and Afghanistan (Hardaway 2011). For post-processed BuckEye LIDAR data (1 m resolution), A1 is the DSM designation for the first return, and A2 corresponds to the last return DSM. (Note: The 1 m resolution DSMs have accuracy of approximately 0.5 m and 0.3 m horizontal and vertical, respectively). The archived BuckEye LIDAR data for Afghanistan is already processed by the U.S. Army Geospatial Center (2017) into DSMs (Figure 2-3a and b). This study uses the LIDAR data to assess development as a sign of improvement due to security and growth (Table 2-2). The most recent LIDAR data was collected at the end of 2013 in some parts or in 2014 for other locations in Afghanistan. For each LIDAR collection, orthorectified color imagery was also collected and available (Figure 2-3c and d).

Table 2-2. BuckEye LIDAR data used to quantify change.

Location	Period t_1	Period t_2
Study Area 1	August 19, 2010	January 1, 2014
Study Area 2	February 18, 2009	October 16 and December 17, 2013

Figure 2-3. Example of BuckEye LIDAR data for a section of Block E1 in Study Area 2: (*a*) A2 DSM for Period *t₁* taken on February 18, 2009; (*b*) A2 DSM for Period *t₂* taken in October/December 2013; (*c*) February 18, 2009, aerial photo for Period *t₁*; (*d*) October/December 2013 aerial photo for Period *t₂*.

(a)

(b)

(c)

(d)
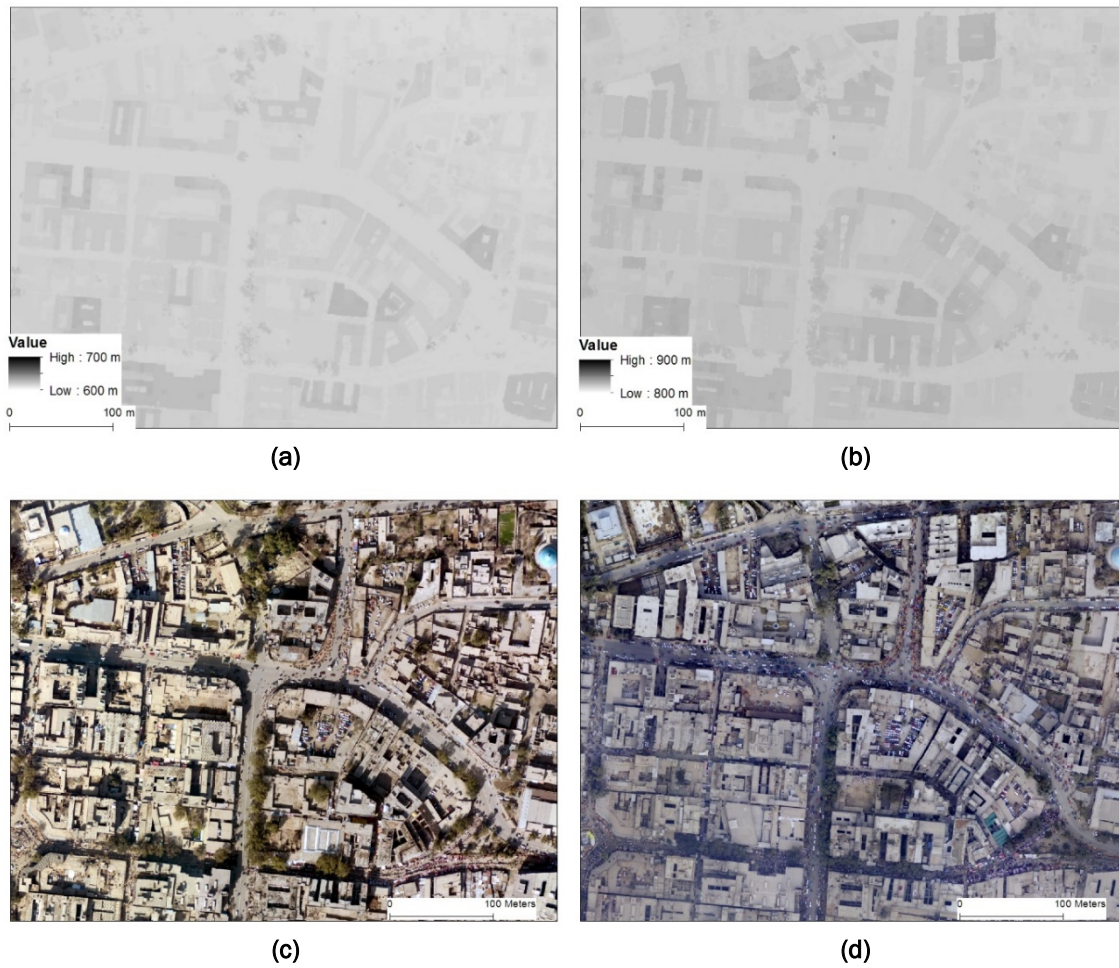
2.4 Geospatial data processing and analysis

The processes listed in the next three subsections use Esri ArcGIS, ArcMap 10.4.1 for Desktop software (Esri 2017), for processing geospatial data, to provide background information of the neighborhood characteristics, and to map the study areas.

2.4.1 Distance

In geospatial analysis, distance is a useful measure of the proximity of an object relative to another feature of the area. Two sets of distance measurements are determined in the analysis: (1) The shortest (straight-line) distance is calculated from the centroid of each neighborhood block to the

closest police facility (with designated variable name "a1: Distance centroid-police" in Tables 5-1 and 5-2). (2) The proximity is determined from the closest police facility to the representative respondents' locations (in section 4 for more detail and designated as "a2: Proximity" variable in Tables 5-1 and 5-2); the representative respondents' locations is the midpoint between the centroid and the starting point where the surveyor sampled by foot for each neighborhood block.

2.4.2 Land-use and dwelling

The actual UN land-use and dwelling geospatial data are not publicly available for use in this study; instead, pdf versions of the maps are saved as image files (*.tif format). The steps used to derive an estimate of land-use and dwelling information for study areas include the following:

1. *Georegistration of the pdf maps*—To georeference these files in ArcMap, a reference file is used with the same high-resolution imagery that the UN used for their maps. The WV-2 imagery with spatial resolution of 0.6 m taken on June 12, 2014, is used for Study Area 1; and both WV-2 and Geo-Eye-1 imagery (both with 0.5 m spatial resolution) taken on different dates (e.g., October 1 and December 3, 2013, and February 2014) are used for Study Area 2. Once these high-resolution imagery are acquired, orthocorrection is performed using 1 m spatial resolution BuckEye LIDAR and matched the orthocorrected imagery with the 0.1 m resolution BuckEye aerial photos. To georeference the land-use and dwelling files, 12 ground control points (GCPs) are selected, matched with the orthocorrected WV-2 image, and distributed across the images to reduce the residual errors and to minimize the total root-mean-square error (RMSE). After the 12 GCPs are selected, the rectify tool in ArcMap is used to produce the georeferenced land-use and dwelling files. The rectify process allowed resampling of the cell size with a specific projection (maintaining the Universal Transverse Mercator projection of the WV-2 data) and applying a nearest neighbor resampling methodology. Once the georeferencing and resampling processes are completed, the georegistered images are compared and examined with the WV-2 imagery for alignment. Note: ArcMap assigned the appropriate cell size for the georeferenced the land-use and dwelling files, which are different resolution than the actual UN land-use and dwelling geospatial data (Table 2-4).

2. *Classification or assignment of attributes*—The georegistered images are then reclassified (using the classification tool) for assigning the attributes

of the land-use and dwelling feature values. The area for the attributes is calculated in each neighborhood for both study areas. The land-use attributes are summarized in percent by function: agricultural, commercial, industrial, institutional, residential, roads, vacant land, and water. Using the distribution of the land use and imagery, neighborhood type is categorized into urban core, new urban, and suburban. Urban core is identified as having a downtown area with various types of buildings (i.e., commercial, industrial, residential etc.) that are big and closely spaced, while new urban is described as a newly urbanized extension of downtown areas. Suburban is defined as the outskirt of the urban area with mostly residential, agricultural, or vacant space. The values for dwelling density are added together for each neighborhood to derive the estimated average residential dwellings per square kilometer. This information is important to know whether less populated neighborhoods are safer than more populated neighborhood. The population category for relatively populated neighborhoods is derived if the estimated average residential dwellings per squared kilometer value is greater than 400, and unpopulated neighborhoods have values of less than 400 residential dwellings per squared kilometer.

2.4.3 Growth

The proposed method is represented in Figure 2-4 and comprises five parts, including preprocessing, segmentation, objects classification, vegetation extraction, validation, and summary building detection. In the preprocessing, the multiple adjacent (raster) LIDAR DSMs are merged (i.e., using the mosaic tool in ArcGIS) for each timeline to create one dataset, and a subset is clipped within the study area.

Figure 2-4. Proposed methodology to detect building changes.

Step 1. Calculate the difference between two ground surface models

Step 2. Classify positive values – all ground features

Step 3. Examine imagery for vegetation and extract vegetation, if exist

Step 4. Eliminate isolated single raster or discrepant cells, and verify remaining features

Step 5. Categorize features and, summarize according to height differences for new buildings

In the first step, the segmentation to extract the aboveground object and the height difference of objects follow the same approach as Teo and Shih (2013). This study assumed that the differences in height are mainly caused by changes in the aboveground objects or man-made development. The segmentation method in Step 1 is performed using the DSM based on a simple subtraction operation (i.e., Period t_2 minus Period t_1) to determine the difference with positive delta between the two time periods.

$$dDSM = DSM(t_2) - DSM(t_1) \qquad (2\text{-}1)$$

where $DSM(t_2)$ is the DSM at time t_2, $DSM(t_1)$ is the DSM at time t_1, and $dDSM$ is the difference of objects between two periods.

The segments are classified into distinct features with positive values "ground" and "building/wall or tree" as the surface change between time periods (Figure 2-6c). Because this study is only interested in positive values, depressions for negative difference are excluded. In this case, cells with values of less than 0.01 are excluded in Step 2 of the classification process, which can be considered as noise in the data (Teo and Shih 2013).

The post-processed BuckEye A1 and A2 DSMs for Study Area 1 have identical values. The homogeneity in values between A1 and A2 DSMs resulted from the area's being in a desert environment and therefore devoid of vegetation or forested areas (Figure 2-5a). In contrast, Study Area 2 has agricultural fields and parks with some trees (Figure 2-5b).

Figure 2-5. Example aerial photos taken during Period t_2 for sections of (*a*) Study Area 1, Block N1, showing negligible vegetation, and (*b*) Study Area 2, Block E3, with patches of vegetation.

(a)   (b)

In this case, the Normalized Difference Vegetation Index (NDVI) in Step 3 is generated from WV-2 multispectral imagery to filter the vegetation for Study Area 2. NDVI is a method to determine from satellite data the density of the photosynthetically active green on a patch of land, which corresponds to healthy vegetation. The patch of vegetation reflects more near-infrared light than other visible wavelengths (National Aeronautics and Space Administration 2017). In a multi-spectral image, calculations of NDVI for a given pixel results in a number that ranges from minus one (−1) to plus one (+1).

$$NDVI = \frac{NIR-R}{NIR+R} \tag{2-2}$$

where *NIR* is the satellite band representing near-infrared radiation and *R* is satellite band for the visible radiation of red light. A zero means no vegetation (or no healthy vegetation), and close to +1 (0.8−0.9) indicates the highest possible density of photosynthetically active leaves. WV-2 imagery taken on May 27, 2015 is used for NDVI analysis, which is during the growing season in the area. In this process, this WV-2 high-resolution imagery is also orthocorrected using 1 m BuckEye LIDAR and is matched to the orthocorrected imagery with the aerial photos from BuckEye. For this study, NDVI output greater than 0.25 is used to represent vegetative areas, and a raster file is created with assigned values of 1 for NDVI output greater than 0.25 and 0 for NDVI output less than 0.25 (Figure 2-6d). NDVI output greater than 0.25 appeared to be the appropriate threshold value for this particular WV-2 imagery to extract the maximum extent of the vegetative areas. Areas with vegetation are extracted from the classified "ground" and "building/wall or tree" segments by using a simple conditional method of eliminating trees and shrubs and generating a new "ground" and "building/wall" output raster.

The new "ground" and "building/wall" output raster is converted into a feature file for further improvements of attributes for Step 4. Eliminating all isolated single raster (4 and 8 m² in area) and discrepant cells adjoining linearly that are located along roads or busy streets further improves the classification result. Visual comparisons are conducted using the BuckEye aerial images (e.g., Figure 2-3c and d) taken during the two time periods to verify whether the "building/wall" segments match with the objects on the imagery. In addition, subsets of the LIDAR point cloud data are used to confirm that the "building/wall" segments exist; this was another way to ensure that the post-processed LIDAR DSMs were correctly processed.

(Point cloud data is a collection of data points of the earth surface defined by a given coordinates system, in x, y, and z coordinates).

Categorical or height groupings are performed (using the reclassify tool) to simplify the information in the changes between the two time periods (Table 2-3), Step 5. The height differences are applied to detect and describe the change types for new buildings (one story or tall buildings).

Table 2-3. Groupings of values based on the height differences for ground surface change with general description of the new buildings.

Ranges, m	Assigned Value, m	Description
<−0.01	No data*	
−0.01–0.5	0	Ground
0.5–1.5	1	Walls, piles of materials or soils, build-up pads, and roads
1.5–3.0	2	Walls, pads, 1-story buildings
3.0–7.0	5	1- to 2-story buildings
7.0–9.2	8	3- to 4-story buildings
9.2–11.4	10	
11.4–14.0	12	Tall buildings
14.0–16.6	15	
16.6–19.9	18	
19.9–24.3	20	Study Area 2: Buildings above 20–36 m are classified as tall buildings while those above 36 m are identified as towers on tall buildings)
24.3–29.4	28	
29.4–42.3	36	
42.3–61.4	50	Study Area 1: Steeples, silos, lookout towers, and communication towers

*No data values are assigned for negative difference between the two time periods.

After the improvement and verification of the classification, a new raster file is generated with mainly "buildings/walls" greater than 1.5 m high (Figure 2-6e). The final step in the process is generating a summary of attributes for the total area of new buildings built and the types of buildings that changed for Period t_1 and Period t_2 per neighborhood block.

Figure 2-6. Illustration of data filtering, segmentation, and classification: (*a*) A2 DSM for Period *t₁* taken on February 18, 2009; (*b*) A2 DSM for Period *t₂* taken in October/December 2013; (*c*) map of all types of positive height difference; (*d*) extraction of vegetation; and (*e*) map of the final segmentation of buildings built between two periods.
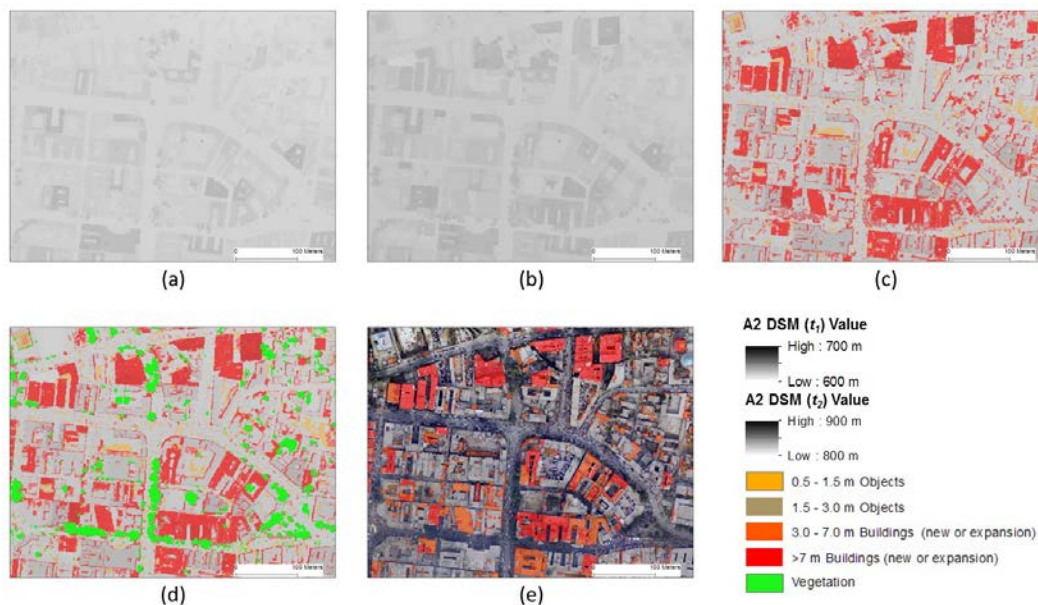
2.4.4 Accuracy

Two types of accuracy are quantified to describe the error in the processes and data used in the study: positional and thematic accuracy. Positional accuracy is related to the horizontal discrepancies between a map or image feature's coordinates and its actual/true location on the earth surface as well as its vertical accuracy. The thematic (classification) accuracy corresponds to the measures of whether the mapped features are classified differently from the true feature label (Congalton and Green 2008). Root-mean-square error (RMSE) is estimated from samples of map and reference points. The accuracy of the data and analysis is summarized in Table 2-4.

The land-use and dwelling-density classification maps produced by the UN-Habitat were within a 10% margin of error based on m² area due to classification accuracy (UN-Habitat 2015a, 2015b). The georegistration of the land-use and dwelling data described in Section 2.4.2 using the orthocorrected WV-2 image produced an RMSE of 16.4% for Study Area 1 and 18.2% for Study Area 2; these errors are caused by geopositional accuracy. These RMSE values for the land-use and dwelling files appeared to be high because these maps are generated from pdf files with much lower resolution than the actual UN land-use and dwelling geospatial data.

Table 2-4. Accuracy of data and analysis.

Accuracy	Land-use and Dwelling UN-Habitat	Growth BuckEye LIDAR
Spatial resolution	0.6 m horizontal WV-2 imagery 0.5 m horizontal GeoEye-1 imagery	1 m horizontal (0.3 m vertical) DSMs 0.1 m horizontal color images
Thematic (UN-Habitat image analysis)	10% margin of error, area m^2	N/A
Positional and thematic (data processing and analysis for this study), RMSE	16.4% (Study Area 1) 18.2% (Study Area 2)	7.1% (Study Area 1) 8.8 % (Study Area 2)

The 1 m resolution BuckEye LIDAR has an accuracy of approximately 0.3 m vertical. A systematic sampling scheme is used to quantify the thematic accuracy for growth from BuckEye DSMs, where mostly large buildings are selected throughout the study areas. The error distribution is quantified based on the difference between the area of a classified building and the actual building footprint. The absolute value of the difference is divided by the actual building for normalized error. The RMSE is then calculated from the normalized error distribution. The RMSE results for growth classification are 7.1% and 8.8% for Study Area 1 and 2, respectively; these values are caused by geopositional and thematic errors. Part of the error accounts for irregularities in the final segmentation of buildings where pixels extend outside the actual building or void areas with missing pixels (Figure 2-7). Thus, the missing pixels and the falsely detected offsets are erroneously interpreted as changes when compared to the map, producing an RMSE of 7.1% and 8.8% for Study Area 1 and Study Area 2, respectively. Considering that irregularities are found in the final segmentation of buildings and in comparison to previous studies with classification correctness or accuracy of 80% (Teo and Shih 2013), the correctness for detection of new buildings for this study using high-resolution ground surface datasets with the combination of WV-2 for vegetation and Buckeye imagery verification was higher than 90%.

Figure 2-7. Illustration of discrepancies between actual (*left* images) and segmentation/classification (*right* images with *red*) of buildings.
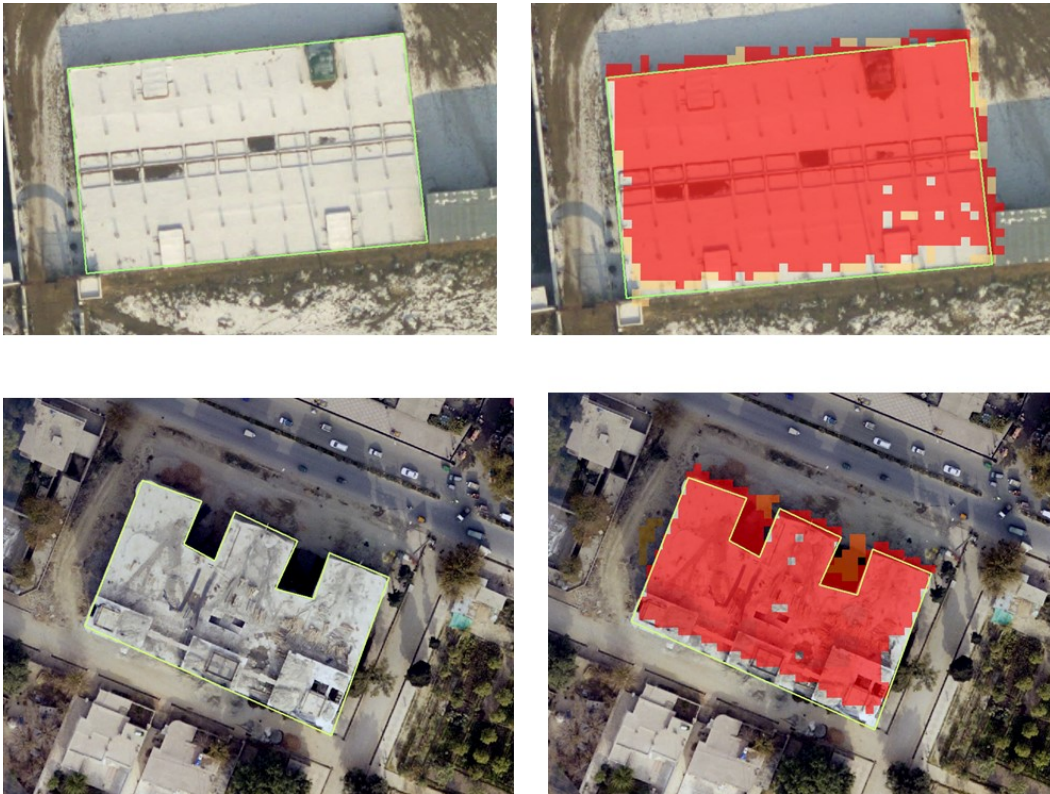
2.5   Results

Residential communities in less dense areas typically consist of clustered indigenous buildings made with mud-walls, mud covered roofs, and wooden frames for support. Houses are formed in individual compounds, surrounded with high walls, and typically in a grid pattern with rows in varying sizes and shapes (UN-Habitat 2015a, 2015b; Emadi 2005). In the more densely populated urban areas, residential housing consists of three- and four-story boxy apartments packed together (Emadi 2005). Public and commercial buildings are typically along the main street for people's access.

The residential neighborhoods in Study Area 1 are distinguishable by a gridded pattern of roads in sparsely to moderately populated neighborhoods (fewer than 15 dwelling units per hectare) with large areas of vacant spaces to the south. A small portion of the study area is occupied by institutional facilities (such as schools, hospitals, government and military facilities, etc.) with very tiny sections of industrial and commercial areas. The distribution of land-use characteristics and dwelling density are esti-

mated from UN data (UN-Habitat 2015a, 2015b; Table 2-5). All neighbor-hoods are identified with diverse land use although the neighborhoods are all fairly unpopulated with an estimated average number of residential dwellings of less than 140 per km^2 in area. Three police facilities were built in the vicinity, two of which are in close proximity to each other. The two police facilities that are colocated are situated outside the neighborhood blocks to the southwest and are approximately 4.5 km from the third po-lice station. The third police station is sited inside one of the western neighborhood blocks. The center of each neighborhood is 0.4 to 3.3 km from the closest police station.

Table 2-5. Study Area 1 estimate of neighborhood land-use distribution, number of dwellings (UN-Habitat 2015a, 2015b), and neighborhood characteristics.

Neighborhood Characteristics	Neighborhood Block (SB_id)							
	N1	N2	N3	N4	N5	N6	N7	N8
Agriculture, %	0.3	0.1	0.2	0.1	0.1	0	0	0
Commercial, %	0	0	0	2.5	0.2	0	0	0
Industrial, %	0	0	0	8.7	2.0	0	0	0
Institutional, %	12.4	4.1	4.2	27.7	16.0	2.8	0.3	0.4
Residential, %	33.7	29.1	37.8	21.8	32.5	12.0	41.1	5.9
Roads, %	19.7	25.9	7.4	17.5	8.0	4.1	5.6	0.6
Vacant Land, %	33.9	40.7	47.3	20.0	39.7	77.0	53.0	93.1
Water, %	0	0	3	2	2	4	0	0
Area, km^2	1.9	2.6	2.1	2.2	1.9	1.8	1.9	1.7
Neighborhood type (Coded category)	New urban (2)	New urban (2)	New urban (2)	Urban core (1)	Urban core (1)	Suburban (3)	Suburban (3)	Suburban (3)
Estimated average dwellings per km^2	140	75	105	117	78	24	82	12
Population density grouping (1= relatively populated, 0 = fairly unpopulated)	0	0	0	0	0	0	0	0
Distance from starting point for each neighborhood block where a survey sample was collected to the closest police facility, km	0.6	1.1	2.3	1.5	2.0	1.6	2.6	2.6
a1: Closest distance from the center of the neighborhood block to police station, km	0.44	1.67	1.53	0.91	1.93	2.25	3.20	2.05
a2: Proximity from the closest police facility to the representative respondents' locations, km	0.4	1.4	1.6	1.1	1.9	1.7	2.9	2.3

The residential neighborhoods of Study Area 2 are in densely populated residential zones ranging from 18 to 15 dwelling units per hectare in the middle and slightly less dense in the rest of the area (UN-Habitat 2015a, 2015b). The distribution of land-use characteristics and dwelling density estimated from UN data (UN-Habitat 2015a, 2015b; Table 2-6) identified

very urbanized neighborhoods with abundant institutional facilities and commercial establishments dotted along the main roads. Some neighborhoods have recently expanded and are more populated than others with estimated average number of residential dwellings ranging between 286 and 939 per km² in area. The center of the neighborhoods are 0.6 to 3 km from the closest police station.

Table 2-6. Study Area 2 estimate of neighborhood land-use distribution, number of dwellings (UN-Habitat 2015a, 2015b), and neighborhood characteristics.

Neighborhood Characteristics	Neighborhood Block (SB_id)						
	E1	E2	E3	E5	E6	E7	E8
Agriculture %	0.1	0.9	0.3	11.0	1.4	0.7	36.9
Commercial %	14.5	8.1	0	0.2	2.7	3.0	0
Industrial %	3.1	4.1	1.6	0.9	6.8	2.9	0
Institutional %	26.1	26.5	18.3	8.7	15.4	12.7	0.6
Residential %	24.7	30.1	39.9	46.6	38.5	44.2	35.3
Roads %	29.2	27.3	35.1	29.2	31.4	34.7	14.6
Vacant Land %	2.4	3.1	1.7	3.3	3.8	1.6	8.8
Water %	0	0	3.0	0	0	0.1	3.8
Neighborhood type (Coded category)	Urban core (1)	Urban core (1)	Urban core (1)	New urban (2)	Urban core (1)	Urban core (1)	Suburban (3)
Estimated average dwellings per km²	286	376	773	762	744	939	378
Population density grouping (1= relatively populated, 0 = fairly unpopulated)	0	0	1	1	1	1	0
Distance from starting point for each neighborhood block where a survey sample was collected to the closest police facility, km	0.3, 0.7	0.8	2.0, 1.7	1.2	1.1	1.5	0.6, 1.6
a1: Closest distance from the center of the neighborhood block, km	0.62	0.62	1.81	1.74	1.04	2.03	1.12
a2: Proximity from the closest police facility to the representative respondents' locations, km	0.5, 0.6	0.7	1.9, 1.8	1.5	1.2	1.8	0.9, 1.5

Note: Each block has a uniform area of 1.44 km².

Growth, expressed as a percent of buildings built during the two time periods, is estimated based on the total area of the buildings divided by the total area of the neighborhood block. The growth distribution is calculated based on the heights of these buildings. These buildings are described as either newly construction on vacant lots or expansions of existing buildings, which were built in most neighborhoods in Study Areas 1 and 2 between the two periods (Figure 2-8). Table 2-7 is the summary of neighborhood growth and percent distribution of the general building categories based on building heights. The growth in neighborhoods in Study Area 2

ranged from 7% to 12.1% while the growth in Study Area 1 neighborhoods varied from 0.2% to 5.5%. The majority of the buildings built from August 2010 to January 2014 in Study Area 1 neighborhoods are characterized as one- to two-story buildings with some tall buildings (i.e., Blocks N3 and N4). Most of the growth in Blocks N1, N4, and N5 is typical of residential and institutional buildings while building growth in Blocks N6, N7, and N8 are described as new residential dwellings. Conversely, the buildings built in Study Area 2 from February 2009 to October or December 2013 are characterized as mostly two- to four-story buildings with a significant number of tall buildings in Blocks E1 and E2. Growths in Blocks E5 and E8 in Study Area 2 are distinguished as an urban expansion where farm lands have been converted into residential communities while most of the growths in Blocks E1, E2, and E3 are situated in densely populated area of expansion for residential, commercial, and industrial buildings.

Table 2-7. Neighborhood growth and percent distribution of buildings (based on height) between Periods t1 and Period t2.

Study Area	Neighborhood Block (SB_id)	Total Building Area, km^2	Growth, %	Pads and 1-story Buildings, %	1- to 3-story Buildings, %	3- to 4-story Buildings, %	Tall Buildings, %
Study Area 1	N1	0.08	4.4	45.7	39.5	11.9	2.9
	N2	0.07	2.7	57.4	34.8	7.4	0.4
	N3	0.08	3.9	36.2	35.9	17.6	10.2
	N4	0.10	4.5	39.5	41.8	14.0	4.7
	N5	0.11	5.5	31.9	44.2	21.0	3.0
	N6	0.01	0.4	64.0	29.1	4.6	2.5
	N7	0.04	2.3	70.0	28.7	1.0	0.4
	N8	0.00	0.2	54.1	32.9	5.2	7.7
Study Area 2	E1	0.14	9.7	14.8	52.0	16.7	16.6
	E2	0.11	7.3	15.0	57.8	14.9	12.4
	E3	0.10	7.0	9.3	55.9	25.6	9.2
	E5	0.17	12.1	12.5	59.2	21.3	7.1
	E6	0.15	10.1	13.9	69.4	15.0	1.7
	E7	0.16	11.2	17.5	62.2	16.5	3.7
	E8	0.10	7.2	11.5	72.7	14.1	1.7

Figure 2-8. Aerial photos taken during Period t_1 (*left* images), during Period t_2 (*middle* images) and new buildings (in shade of *orange* and *red*, *right* images) built during the two periods for selected portion of (*a*) Block E5, (*b*) Block E8, (*c*) Block N3, and (*d*) Block N7.

(a)

(b)

(c)
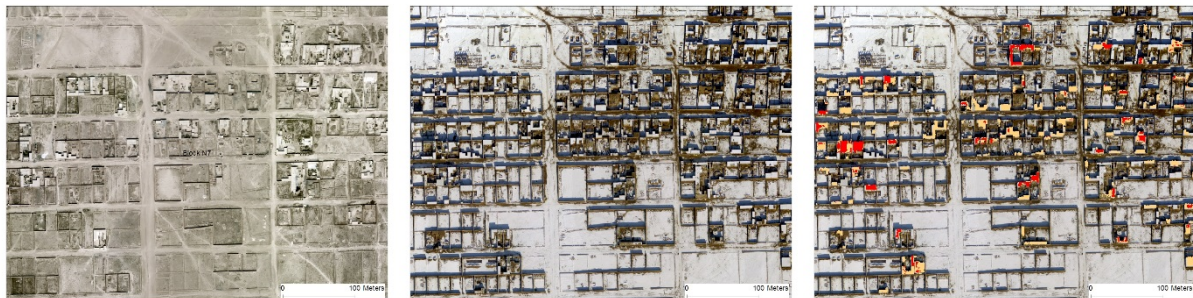
(d)

2.6   Summary and discussion

The neighborhoods in Study Area 2 are uniformly divided into 1.44 km² in size while the neighborhoods in Study Area 1 have varying sizes from 1.7 to 2.6 km² in area. These neighborhoods have distinct characteristics and set identification to represent the sampling location for the survey. Proximity from the centroid of each neighborhood to closest police facilities and distance from the closest police facility to the starting point where the surveyor sampled for each neighborhood block are used as measures of public accessibility. Some neighborhoods are closer to the police facilities than others for police services.

Quantitative information for the study areas is derived from geospatial data. The geospatial data included land use, dwelling density, LIDAR, and WV-2. Geospatial analyses are performed to assess the various neighborhood characteristics and population density patterns, to quantify the local growth, and to measure the distance from the neighborhood to the police stations (as measures of public accessibility). The land-use attributes are summarized as percentages and were separated into various land-use functionalities and categorical information of the neighborhood (urban core, new urban, and suburban). The number of residential dwellings and derived a population category are approximated based on the estimated average residential dwellings per square kilometer value. The neighborhoods in Study Area 1 are all relatively unpopulated with an estimated average number of residential dwellings of fewer than 140 per km² in area. Four out of seven neighborhoods in Study Area 2 are relatively populated with an estimated average number of between 744 and 939 residential dwellings per km² in area. The errors are considerable for the neighborhoods' land-use and dwelling information, including a thematic analysis error of 10% by the UN mapping (UN-Habitat 2015a, 2015b) and geopositional errors between 16.4% and 18.2% from the analyses. However, the results from the analyses provide approximation for the neighborhood type, estimation of population density patterns, and residential dwelling categories for the study areas, which are hard data to acquire for the municipalities in Afghanistan.

Using the BuckEye terrain imagery collected for tactical missions in Afghanistan is beneficial for the analysis of actual growth in study areas. The overall accuracy based on positional and thematic classification is between 91.2 and 92.9% for determining the new buildings. This change detection approach provided a measure of growth for the neighborhoods. Growth

(using the change detection method) is quantified between two time periods (August 2010 and January 2014 for Study Area 1 and February 2009 and two adjacent datasets taken on October and December 2013 for Study Area 2). The growth in the neighborhoods between the time periods are expressed as the percent of buildings built, and the growth distributions are calculated based on the heights of these buildings. The growth in neighborhoods in Study Area 1 varied from 0.2% to 5.5% while the growth in Study Area 2 ranged from 7% to 12.1%. Even after police facilities were constructed, Study Area 1 continued to have vacant spaces and spread-out residential dwellings in suburban areas. Significant growth has occurred in Study Area 2, expanding existing urban areas and creating new urban areas. This growth can have implications on security (i.e., lack of jobs). According to UN-Habitat (2015a, 2015b), Afghan cities and urban areas have expanded rapidly over the past decade; and this growth has resulted in sprawl and has caused an increase in sociospatial disparity.

The summary of key findings includes Study Area 1 as much more different from Study Area 2. The distinct differences are described as follows:

- Five of the neighborhoods in Study Area 1 are classified as urban (Blocks N1, N2, N3, N4, and N5), and three are suburban (N6, N7 and N8). All neighborhoods in Study Area 2 (Blocks E1, E2, E3, E5, E6, and E7) but one (E8) are characterized as urban. Urban neighborhoods are abundant with institutional facilities and industrial and commercial establishments along with residential buildings while suburban neighborhoods are mostly residential communities.

- The neighborhoods in Study Area 1 are much less populated Study Area 2 based on residential dwelling estimates.

- Growth based on change detection of buildings is higher in Study Area 2 than in Study Area 1.

- The variations in neighborhood types and growth are indicative of their community settings, Study Area 1 being on the outskirts of an urban area in northern Afghanistan while Study Area 2 is situated in an urban setting in the eastern part of the country.

The geospatial analyses of neighborhood attributes, such as the characterization of the neighborhood type, estimation of population density patterns, assessment of actual local growth, and neighborhood proximity to the police stations as measures of public accessibility, are used to triangulate with the survey data described in sections 4 and 5. These neighborhood attributes are potential confounders that could influence the signs of growth or resilience and to the relationships of perceived security in the neighborhoods.

3   Existing View of Regional Security

The security reform that required rebuilding the ANP was a complex process and is beyond the scope of this study. The main intention of this section is to provide a brief background on how the rebuilding of the ANP evolved, without diving into its complexity. Security-reform experts have recognized peace building, having both the institutions and perception of security, to be a long-term process, especially in Afghanistan where the population has been traumatized by more than two decades of war and where the state struggled to establish its authority and legitimacy (Murray 2007; Sedra 2006; Wilder 2007). Afghan communities differ from each other in their values, social structures, and attitudes toward governmental authority. Despite their social stratification, living through decades of war, having a collapsed central authority, and the uprising of ethnic militias during their civil war, most Afghans have a sense of unity that persists and brings them together. Unity seems to be more important to most Afghans than their ethnic differences (Barfield 2010, 2012), which makes for a resilient people. A culture of honor-based value systems where male Afghans are proud in their role of protecting his own family, clan, or tribe can affect progress that facilitates good governance, development, and social stability (L'Etoile 2011). Regardless of these inherent challenges in rebuilding the ANP, reports have shown that police are winning the confidence of ordinary people (Stavridis 2011), and polling data from 2007 to 2016 continued to show robust public support for a strong central government, including positive perceptions of the ANP for providing local security and stability (Asia Foundation 2016).

This section also covers background on the current regional security and people's perception of their local police based on existing Afghan survey data. This information will be incorporated into this study's statistical modeling in section 5 to relate the association of the people's perception of security to police performance and demographics variables.

3.1   Background

3.1.1   Afghans' social resilience characteristics

Ethnicity, tribalism, and regionalism have created social stratification and divisions among the Afghan polity (Emadi 2005). Dominant ethnic groups, with the major ones being the Pashtuns, Tajiks, Hazaras, Uzbeks,

and Turkmen (Barfield 2010), use their power to suppress the efforts of other ethnic and tribal communities to express views and to establish social roles in the decision-making processes, particularly in the political arena. In Afghanistan's multitiered society, the educated elites regard themselves at the top of the social status. Typically, these elites serve in top positions as public officials or bureaucrats, work as educated clergy or within the merchant community, and have influence in the private sectors (Emadi 2005; Barfield 2010, 2012). Relationships between the urban-based elite and uneducated rural elite (i.e., tribal chiefs) are on the basis of mutual benefit and cooperation. For example, the rural elites have longstanding and grassroots connections with their local communities, and their influence can rally local support from constituents to promote or suppress any political or social reforms or initiatives the central government seeks to impose (Emadi 2005).

As generalized by Barfield (2010, 2012), the urban and rural communities have values, social structures, and attitudes toward each other and governmental authority that are distinctly different.

The resilience and social values of Afghans in rural communities are their ability to

- work together or resist outside authorities following the simplicity of their subsistence economies and the solidarity of their social organizations;
- sustain and preserve local autonomy, particularly through group allegiance, strong group solidarity, and kinship; and
- contribute positive actions for the group benefits, not individual interests.

The social characteristics of the upper class Afghans, particularly in urban communities, have these general descriptive values:

- Perform deeds for personal gain or power, which can have advantages for generating of economic redistribution of wealth, taxation, control of trade market, etc.
- Have access to and embrace centers of learning, high culture, and markets
- Are involved in complex economies and some produce substantial agricultural surpluses (in fertile valleys) manufactured goods for local

trade and international commerce, which can provide regional social impact

These social values between the urban and rural communities are complementary for their subsistence, which potentially allow a balance of having local autonomy and provide opportunities for other communities in remote villages and within urban areas (Barfield 2010, 2012).

Unity seems to be more important to the Afghans than their perceptions of ethnic differences instead of regionally dividing the country (Barfield 2010, 2012). Barfield highlighted some explanations for this. Afghans never link ethnicity with nationalism as they see themselves sharing a common history; each ethnic group feels secure enough in its own regions with others as partners at the national level and sees working together as more practical than having a new conflict. The negative consequences of disunion outweigh internal friction because that can break economic ties with regional border countries. Even if Afghan factions' interests diverge, they relate to each other with mutual understanding, just like an arranged or business-like relationship (and not an emotional-based one) because they understand that the international communities will recognize them as one country for internal support or development efforts (Barfield 2010, 2012).

3.1.2 Rebuilding the ANP

The national civilian police force in Afghanistan was relatively progressive in the 1960s and 1970s, having been based on the European policing model and training from both West and East Germany (Murray 2007). During the Soviet invasion period (1979–1989), the Ministry of Interior was responsible for the police; this created a power struggle between the Ministry police and major faction groups (i.e., the ruling People's Democratic Party of Afghanistan). The faction group severed the Ministry intelligence department and temporarily gained control with its own army division. At the same time, the Ministry grew in size with its own infantry force and engaged armed clashes with the ruling factions. This created a chain of events that resulted in the deaths of almost one million Afghan civilians. The police institution disintegrated and deteriorated as a result (Murray 2007). A security vacuum descended with military commanders or warlords carving out mini-fiefdoms throughout the country (Sedra 2006; United States Institute of Peace 2004). After the Soviet invasion 1989, a new police force was formed in Kabul but ended shortly after during the Afghan civil war. The security situation continued to be volatile for

many years, and there was no organized civilian police force operating from the end of the Soviet invasion and during the civil war until 2002 (Murray 2007; Sedra 2006).

The USG committed millions of dollars to rebuilding the ANP through personnel reforms, equipment, construction of police facilities, rehabilitation of vital infrastructure, and training (SIGAR 2011). Experts in security reform have claimed that, from the start, the rebuilding of the ANP was marred by setbacks that greatly limited its impact in creating effective, democratically accountable, and rights-respecting police forces (Murray 2011; Sedra 2006; Wilder 2007; U.S. Institute of Peace 2004). At the beginning of the reconstruction period in 2002, there were 50,000–70,000 recruited police. The police forces consisted of some professional police trained before the civil war and a vast number of these recruits were untrained former militants, conscripted into the armed services most of whom were illiterate (Ewans 2002; U.S. Institute of Peace 2004) as literacy rates for males had fallen to 18% by 2001 (Sitigh and Haqmal 2010). The police forces lacked discipline, formal policies and procedures, facilities, equipment, uniforms, and public trust. There was also an ethnic imbalance as most of the senior police posts were held by one particular ethic group. Provincial and local police commanders owed allegiances to local military commanders, and central control was virtually nonexistent.

By September 2005, close to 50,000 police had received some form of training (Sedra 2006). While training was progressing, fielding the trained police was problematic due to a lack of communications and transportation equipment, crumbling infrastructure, and poor police pay. According to Sedra (2006), for the security reform process to succeed, it must include resources and attention dedicated to what can be understood as the "soft" and "hard" security dimensions. "Soft" security dimensions involve having well-trained police forces while "hard" dimensions include infrastructure and equipment that the police forces need (Sedra 2006). The USG continued to support personnel reforms, supply police equipment, rehabilitate vital infrastructure, and underwrite continued training for creating security forces that are both efficient and effective for meeting the security needs of a population.

3.2 Existing safety conditions and perceptions of police presence

This study used existing polling datasets to provide background information related to regional public safety conditions. We developed our hypothesis for this study based on these datasets.

3.2.1 Provincial outlook: 2007–2016

The Asia Foundation is a nonprofit and nongovernmental organization whose focus is a commitment to the development of a peaceful, prosperous, just, and open Asia-Pacific region. Since 2004, the Asia Foundation has conducted annual surveys on Afghan public opinion related to capacity building, state building, political progress, and human security in Afghanistan. One of many countrywide assessments they conducted was on Afghan police performance and social perceptions of security, such as fear for safety, citizen's satisfaction, crime victimization, and level of confidence. According to its 2008 survey, nearly two-thirds of the security forces killed by insurgent attacks between January 2007 and July 2008 were Afghan police, which hampered Afghan security forces progress.

The 2016 annual public opinion survey, *Afghanistan in 2016: A Survey of the Afghan People*, had 12,658 Afghan respondents with 52.5% male and 47.4% female participants (Asia Foundation 2016). Security-related questions were specific to people's personal safety, experience and reporting of crime and violence, perceptions of the security forces, reconciliation practices (i.e., confidence in the peace processes), fear of encountering armed forces, and knowledge and perceptions of outside threats. Security in Afghanistan has declined in the last decade, with 69.8% of Afghans reported as "sometimes, often, or always" feeling fear for their personal safety and a continued erosion of public confidence in the Afghan National Army and ANP. However, more Afghans have expressed positive views of the ANP and the Afghan National Army than those that criticized them. The perceived insecurity was regionally salient; respondents living in rural areas have reported with more optimism than those in urban areas (Asia Foundation 2016).

From the subset of the Asia Foundation annual survey dataset (Table 3-1, designated as a, b, c and d), we selected the key questions that are pertinent to this study for providing the contextual understanding of the regional security conditions for our study regions:

a. *I would like to ask you about today's conditions in the village/neighborhood where you live. Would you rate the security situation as very good, quite good, quite bad, or very bad in your area?*

b. *I would like to ask you about today's conditions in your village/neighborhood. Would you rate your freedom of movement and the ability to move safely in your area or district as very good, quite good, quite bad, or very bad in your area?*

c. *Please tell me if you strongly agree, somewhat agree, somewhat disagree or strongly disagree in this statement. ANP helps improve the security.*

d. *Please tell me if you strongly agree, somewhat agree, somewhat disagree or strongly disagree in this statement. ANP is honest and fair with the Afghan people.*

This list of selected questions from the Asia Foundation's annual survey dataset is renumbered (and relabeled in section 5.2.2 as TAF-a, TAF-b, TAF-c and TAF-d). Questions a and b were not included in the survey after 2012. The dataset also included the demographics information of the respondents, including age, neighborhood type (village, town, cities), geographic setting (urban, rural), gender, educational level, ethnicity, marital status, and income. Our Study Area 1 corresponds to their northern provincial area, and our Study Area 2 corresponds to their eastern provincial area.

Table 3-1. Data distribution summary for the Asia Foundation data for selected the key questions with designation of *a, b, c* and *d*. Survey questions *a* and *b* were only available from 2007 to 2012.

Year		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Survey Questions		a, b, c, d						c, d			
Provincial Area	Distribution										
Northern	Sample Size, N	289	304	304	303	303	297	204	407	410	1029
	Weighted Sample, %*	1.1	1.1	1.0	1.0	1.0	1.3	2.2	1.3	2.3	1.3
Eastern	Sample Size, N	347	360	357	243	348	336	412	199	215	419
	Weighted Sample, %*	1.0	1.0	1.0	1.0	1.0	1.3	1.3	1.3	1.2	0.6

*Samples were randomly selected by the equal probability of selection method, weighting was estimated based on provincial population data released by the Afghan Central Statistics Organization (CSO), and base weight distribution was calculated from the inverse of the probability of selection for each respondent.

From 2007 to 2012, the Asia Foundation annual surveys for the residents in the northern provincial area showed that the security situation in neigh-

borhoods was relatively good with fewer than 20% of respondents express-ing the perception that their neighborhood conditions were bad (Figure 3-1a). In 2012, 36% of people in the northern province indicated that the security situation where they lived was very good while 11% considered the security situation to be very bad. On the other hand, the residents in the eastern province expressed mix feelings of security and insecurity, with temporal variations from year to year. For example, in 2011, 50% of the residents felt that their neighborhoods were not safe in the eastern prov-ince. Although, they felt that their safety condition seemed to get better in 2012 (Figure 3-1a).

Another indication of security progress in the region is the ability of the Af-ghans to move in their area safely (Figure 3-1b). From 2007 to 2012, most people in the northern province were able to roam around their neighbor-hoods freely and safely. However, the safety conditions declined in the east-ern province from 2007 to 2011, causing some people to feel uncomfortable and to fear traveling within their district. For example, in 2011, 40% of re-spondents in the eastern province felt that their ability to move safely in their area was bad, and people felt unsafe moving in that region.

Figure 3-1. The security conditions and people's ability to move freely in the village/neighborhood where they live, showing the percent of respondents who indicated very good and quite good responses. (Data from the Asia Foundation.)
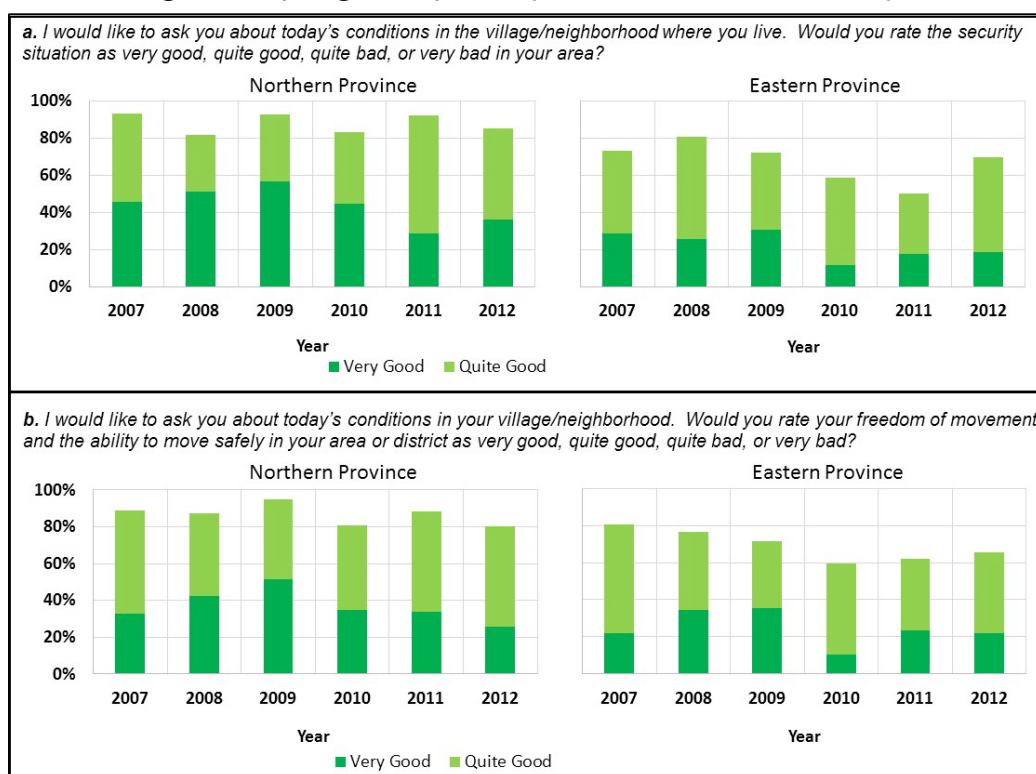
Overall, existing perceptions of the ANP have been positive, and respond-
ents indicated that the ANP is the group most responsible for providing se-
curity in the regions (Figure 3-2). Most respondents in both regions
acknowledged that the ANP helped improve the security in their area. In
other places in Afghanistan, the perceptions appeared to have mixed views
because people in insecure areas have been exposed to continuous crime
and violence (Asia Foundation 2016).

Figure 3-2. Public perception of performance of the police force in providing security in the
regions, showing the percent of respondents who indicated strongly agree and somewhat
agree responses. (Data from the Asia Foundation.)
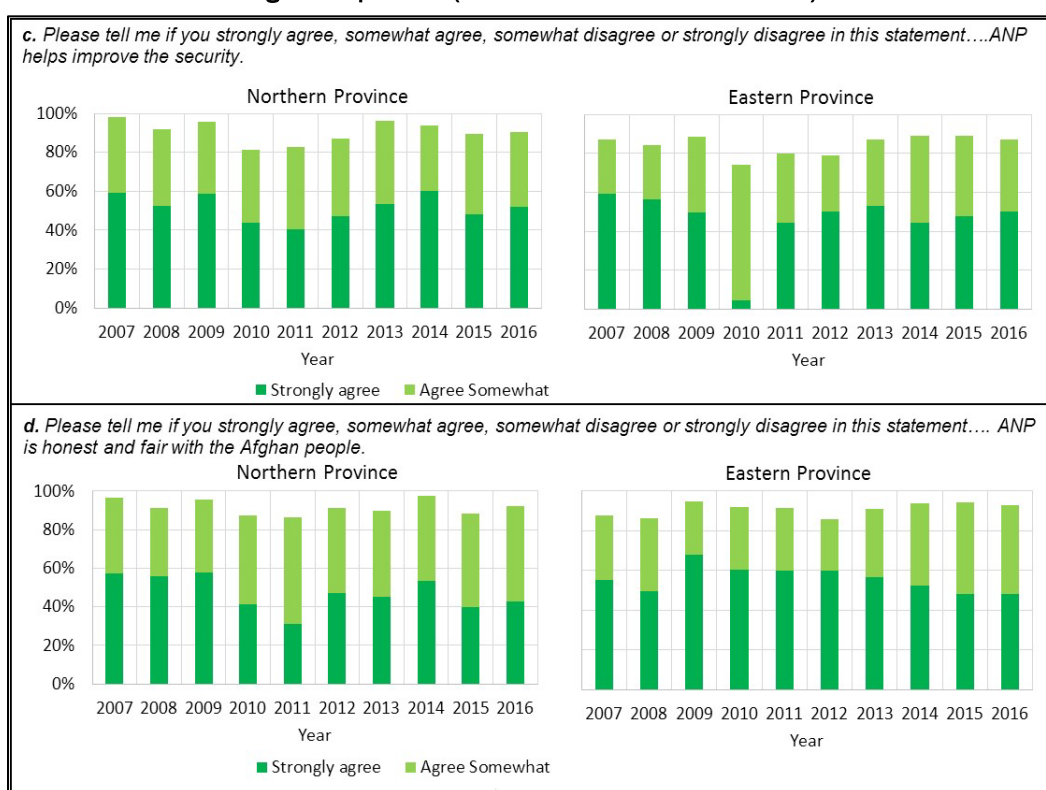
The ANP was plagued with institutional challenges in the beginning, and
training for literacy and policing reforms were started in 2005; the police
force performance showed significant improvements in 2007 (Figure 3-2).
A high percentage of residents in these two regions expressed positive
views (strongly agree and agree somewhat) that the ANP is honest and fair
with the Afghan people (Figure 3-2d). The public perceptions of their po-
lice performance as honest and fair is reflected in their police capacity and
overall confidence in their service in areas that are comparatively safe
(Asia Foundation 2016).

3.2.2 Neighborhood conditions: 2012

The USG has recognized the lack of interagency capability to measure outcomes, effectiveness, and progress for efforts or investments during stabilization and reconstruction in places prone to or emerging from conflict (Agoglia et al. 2010; United States Institute of Peace 2010). Traditionally, USG agencies measure outputs, such as the number of schools built, miles of roads paved, or numbers of police trained; these outputs measure mainly quantity and not the social effects. Thus, the current way of quantifying the output does not provide an indication of success or failure of major programs and strategies to attain goals that reinforce stability and self-sustaining peace. After recognizing this need, an interagency effort lead by the U.S. Army Corps of Engineers (USACE) developed a methodology called Measuring Progress in Conflict Environments (MPICE) for policy makers or government decision makers to measure social-sector impacts. The MPICE tool was broadly designed with measures or indicators in five sectors: a safe and secure environment, political moderation and stable governance, rule of law, sustainable economy, and social well-being (Agoglia et al. 2010; United States Institute of Peace 2010).

The USG used the MPICE tool by conducting qualitative interviews to measure the local perceptions of progress of the stability efforts in Afghanistan. These interviews were collected in 2012 throughout Afghanistan. Coordinates were recorded for some of the polling data, relating the safety and security outlook in specific neighborhoods by location numbers (Table 3-2). Sampling datasets near our study areas were obtained for northern and eastern city limits (Figures 2-1 and 2-2; locations are shown with the green points scattered around the vicinity of study areas). MPICE measures relevant to this study are listed below:

i. *How would you rate today's conditions in the village/neighborhood where you live or the security conditions in your area, would you say: excellent, good, fair, poor, or bad?*

ii. *Compared to six months ago, do you think the level of security in your area has gotten much better, gotten somewhat better, stayed about the same, gotten somewhat worse, or gotten much worse?*

iii. *How safe or unsafe you feel when you are at home? Do you feel very safe, somewhat safe, somewhat unsafe, or not at all safe?*

iv. *I would like to ask you about today's conditions in the village/neighborhood where you live. Your freedom of movement—the ability to go where you wish safely.*

     a. *How safe or unsafe you feel when you are travelling within your village?*

     b. *How safe or unsafe you feel when you are travelling within your district?*

     c. *How safe or unsafe you feel when you are travelling within your province?*

v. *How much does the Afghan National Police presence have influence in the area where you live—fairly weak, very weak presence, or no presence at all?*

vi. *How much confidence do you have in the police's ability to maintain security in your area? Is it a lot of confidence, some confidence, not much confidence, or no confidence at all?*

vii. *How do you rate the overall performance of the Afghan National Police in your area? Would you say it is excellent, good, fair, or poor?*

This list of selected questions from the MPICE survey dataset is renumbered (and relabeled in section 5.2.2 as M-i, M-ii, M-iii, M-iva, M-ivb, M-ivc, M-vi, and M-vii). The demographics information of the respondents were part of the survey dataset, including age, neighborhood type (village, cities), gender, educational level, ethnicity, and marital status. Some of survey data from the MPICE study that had coordinates near or in the vicinity of the study areas were used to describe the general neighborhood security and police presence perspectives.

Analysis of the 2012 polling data from MPICE from selected sampling datasets near the study areas showed that security conditions varied from one neighborhood to another—respondents expressed mixed views, even between male and female (Figure 3-3i). The security conditions of the neighborhoods were either excellent, good, or fair, but not bad. In addition, the level of security in both areas had improved at that time or stayed the same compared to six months prior (Figure 3-3ii).

Table 3-2. Data distribution summary for selected 2012 MPICE data.

Area	Location number or SB_id	Respondent Gender	N	Sample Base Weight
Northern	247	Male	8	4.9
	248	Female	8	
	249	Male	8	
	250	Female	8	
	251	Male	4	
	252	Female	4	
Eastern	48	Female	8	5.6
	61	Male	8	
	62	Female	8	
	500	Male	8	
	501	Female	7	

Figure 3-3. Security conditions from the selected survey neighborhoods/locations near or within the study areas indicated by location numbers and respondents' gender: in percent, (*i*) the security level today and (*ii*) the security level compared to six months ago.
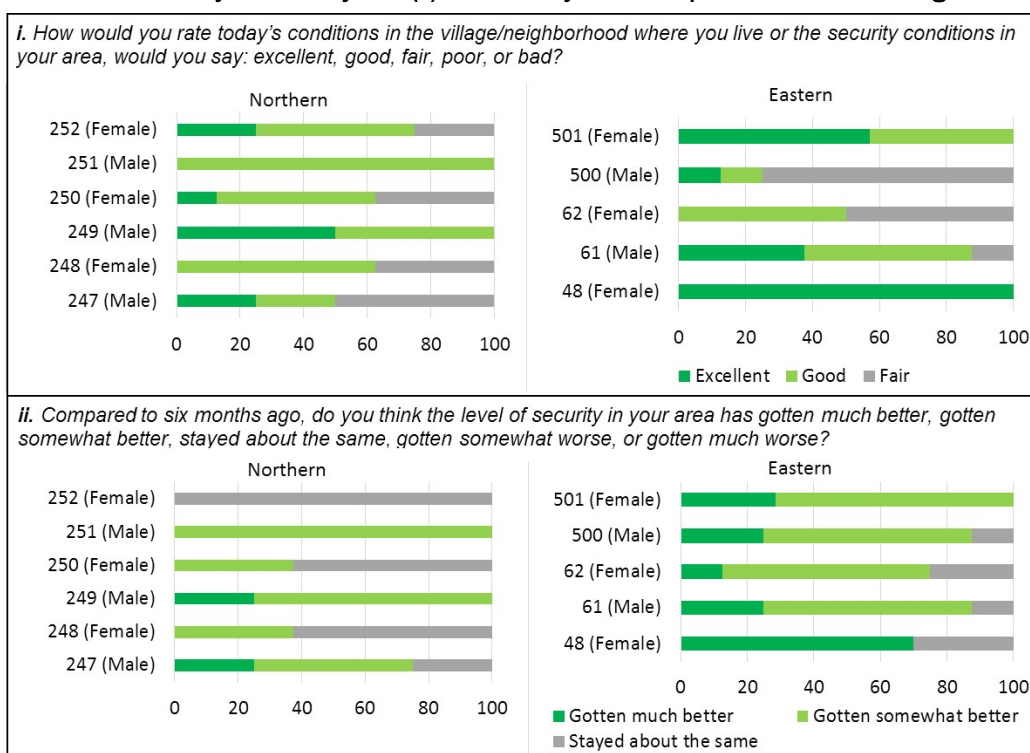
Safety in terms of travelling within their village and in their district seemed not to be a significant concern; residents felt "very safe" or "somewhat safe" traveling freely as long as they are in their region. These feelings of safety appeared to steadily deteriorate the further respondents

traveled from their village (Figure 3-4). According to the MPICE study, Afghans were most concerned with roadside bombs and encountering criminals where there is a high exposure of being casualty victims (U.S. Institute of Peace 2010), particularly on routes used by the U.S. military and coalition in the area.

Figure 3-4. People's sense of safety when travelling in their village/neighborhood, outside their district, and within their province, showing the percent who indicated that they are very safe and somewhat safe traveling within (*iva*) village, (*ivb*) District, and (*ivc*) Province. MPICE data represented by location numbers and respondents' gender.
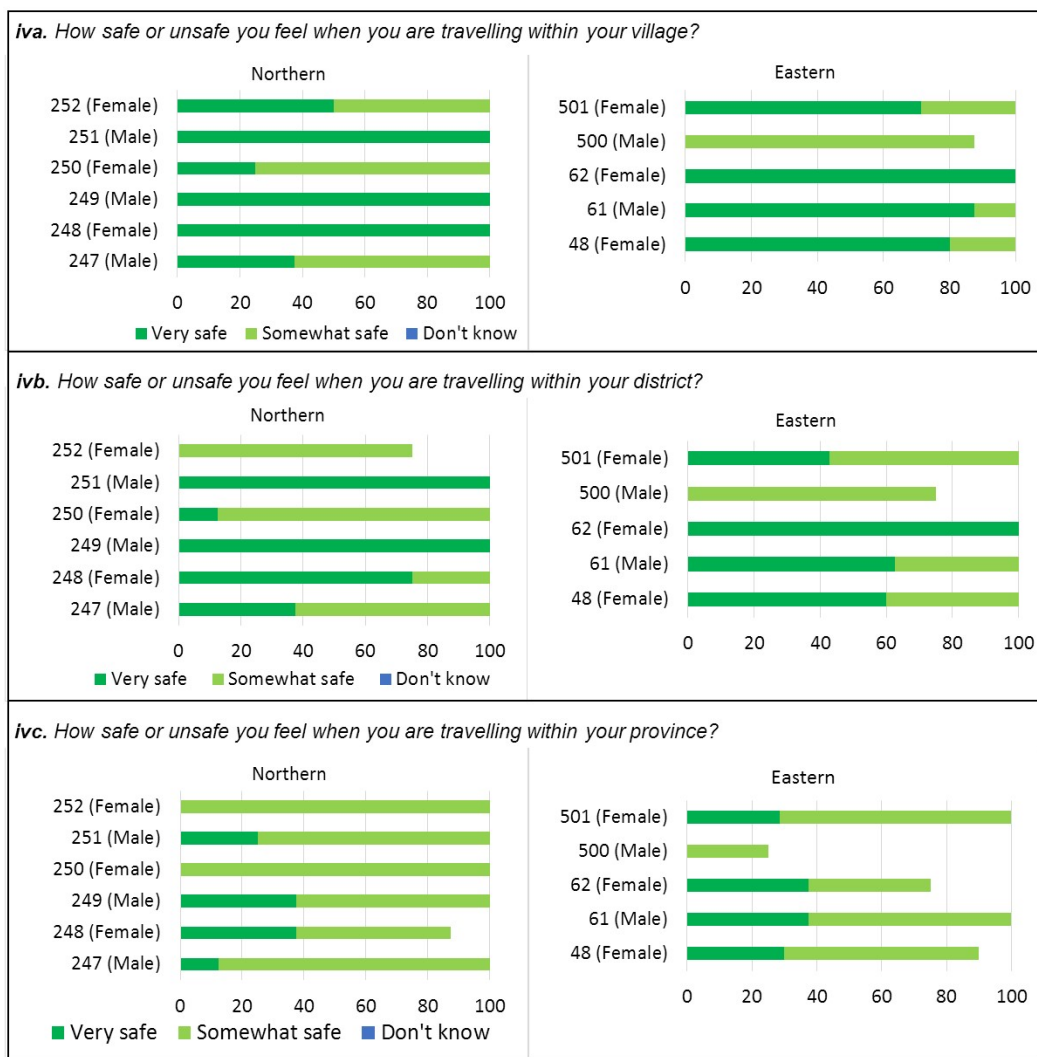
ANP presence showed sporadic influence in places (Figure 3-5v). Those who indicated more confidence in the police (Figure 3-5vi) rated the police with higher overall performance (Figure 3-5vii). The ANP presence is possibly limited in places, but people have confidence in the police's ability to

maintain security and to carry out their duties, reflecting residents' perception of the police's overall performance. This optimism resonated in the respondents' feeling of safety and perception that the police are trying to maintain security.

Figure 3-5. Residents' (*v*) perception of ANP influence, (*vi*) confidence in police, and (*vii*) rating of overall performance of the ANP. MPICE data indicated by location numbers and respondents' gender.
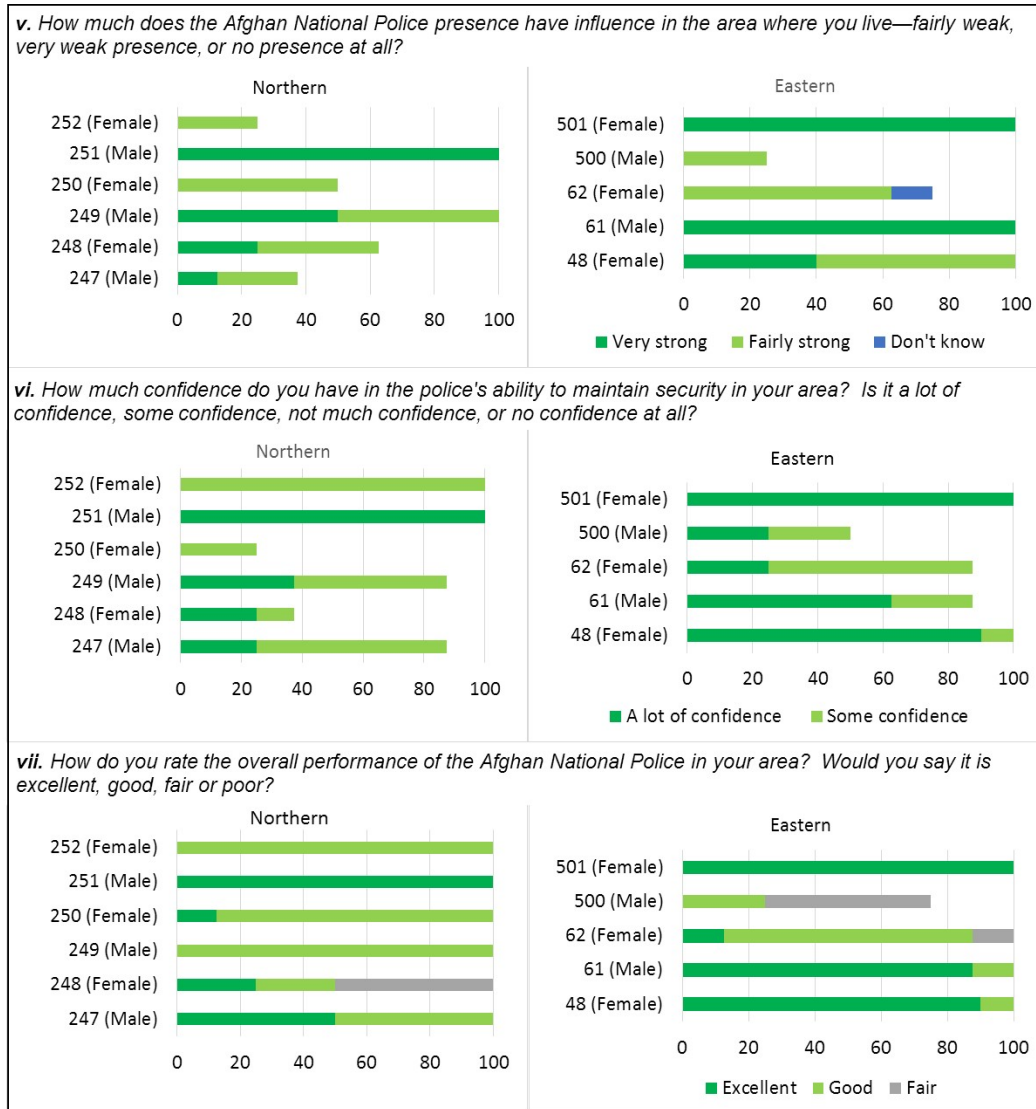
3.3   Summary and discussion

The hypothesis of varying community security conditions from these two contrasting regions was established from the existing Afghan survey datasets. The comparison (based on simple distribution of responses) of the perceptions of safety indicated that the northern area was safer than the

eastern area from 2007 to 2012. Public opinion data collected by the Asia Foundation data provided a regional view of Afghan police performance and social perceptions of security for this comparison. The annual provincial security conditions in the northern area from the 2007 to 2012 survey by the Asia Foundation showed a steady state with over 80% of respondents reporting that the security situation in their neighborhood was good. The annual security trend from 2007 to 2012 for the residents in the eastern province fluctuated, declined in 2011, and improved in 2012. One indication of security progress in the region is the ability of Afghans to move in their area safely. Most people in the northern area were able to move in their neighborhoods freely and safely. As the safety conditions declined in the eastern province from 2007 to 2011, some people felt uncomfortable traveling within their district.

Survey data collected for the MPICE project in 2012 provided a closer look at public views on safety and security in specific neighborhoods near the study areas. Overall, the security conditions varied from one neighborhood to another; and respondents expressed mixed views, regardless of gender. These varying views on neighborhood security could be due to other factors that are beyond the scope of this investigation. However, the level of security in both areas had improved at that time and, in some case, stayed the same compared to six months prior. Safety in terms of travelling within the village and district appeared not to be a significant concern, while travelling outside their regions was perceived to be less safe. As the militants continue to disrupt the security progress made by the ANP, the security situation, particularly when traveling outside their regions on routes used by the U.S. military and law enforcement, which are the same roads used by local people, will remain a major concern for people.

The relevant key findings include the following:

• Considering that in the beginning of the formation of the ANP was marred by setbacks, recent public opinion survey showed some progress on police performance. Most respondents in both regions acknowledged that the ANP helped improve the security in their area and that the police were honest and fair. Being fair and honest can build trust. People have confidence in the police's ability to maintain security, which is reflected in residents' perception of the police's overall performance.

- The regional distribution of the annual perception of safety showed temporal variation trends from 2007 to 2012 survey by the Asia Foundation. The temporal variations are likely expected taking into consideration the insurgency activities in the regions.

- Assessment of public views on safety and security in specific neighborhoods near the study areas varied from one neighborhood to another and were mixed between genders.

- Overall, however, the regional distribution trend of the annual perception of safety was higher in the northern province than in the eastern province. From the trend of the annual perception of safety, the community-level study is narrowed down to two areas. Study Area 1 in the northern area is designated as a "safer" area, and Study Area 2 in the eastern area is comparatively viewed a "less safe" area.

More importantly, Afghans form relationships on basis of mutual benefit and cooperation creating group allegiance or solidarity. Even if Afghan factions' interests diverge, they unite to each other in a compromising way forming a business-like relationship. Trust and confidence are social attributes that are catalysts for forming relationship. As the ANP becomes more efficient and effective at meeting the security needs of a population, these types of social connections are the basis for forming community resilience and generating stability.

4   Primary Survey

The surveys that this case study deployed act as the main survey data with which to assess the impact of the new police infrastructure on neighborhood security and resiliency. The surveys are of both the community and police. In section 3, two cases were drawn by comparing the existing perception of safety from two areas for exploring the hypothesis of varying community security conditions. (Study Area 1 in the northern area is considered a "safer" area, and Study Area 2 in the eastern area is inferred to be a "less safe" area). Studying these two cases creates an opportunity to examine whether the presence of physical police buildings and law enforcement create a perception of safety in the area and whether the growth, perceived growth, and perceived police relations are relevant across different degrees of safety.

The use of survey methods has been widely used in various fields of research (Groves et al. 2004; Fowler 2009), including applied social science research for case studies (Yin 2009) at statewide, regional, and local scales. Quantitative survey methodologies have been applied in research to examine the built environment. In recent examples, these studies included research on social capital (Leyden 2003; Rogers et al. 2010), socioeconomic growth (Cutter et al. 2003), health determinants (Kuiper et al. 2012), physical activities (Kirtland et al. 2003), and physical attributes (Carlson et al. 2012; Owen et al. 2007) of a built environment or community.

A few recent studies using survey research data examined police-related influence on the quality of life and neighborhood characteristics (Reisig and Parks 2000), the resulting shaping of public support regarding the police and policing activities (Sunshine and Tyler 2003), and crime-related public safety opinions in rural areas (Benedict et al. 2000). These studies focused on western society and modern or developed-rural communities. Reisig and Parks (2000) found that residents of neighborhoods characterized by concentrated disadvantage expressed significantly less satisfaction with the police, and satisfaction with police varied between racial groups. Sunshine and Tyler (2003) emphasized that legitimacy had a strong influence on the public's reactions to the police; the key antecedent of legitimacy included the fairness of the procedures used by the police. Benedict and his colleagues' (2000) survey data indicated that citizens in certain rural areas were generally concerned with their personal safety, drugs in the

neighborhoods, and the safety of their property. In their study, the majority of respondents indicated that the police were responsive to the needs of the community but that they would like to see a more friendly interaction between officers and citizens.

In Afghanistan, surveys were collected annually by nongovernmental organizations (i.e., the Asia Foundation annual surveys) and for programmatic purposes by governmental agencies (i.e., MPICE). These organizations used these datasets to assess the social, political, and economic progress of the country and regional perspectives, trends, and variations. Although these surveys were extensive, they did not assess the social impact of specific infrastructure developments nor were analyses conducted at a local or neighborhood level.

4.1   Questionnaire design

Our set of survey questions was designed specifically for this study and was developed using guidelines, standards (Groves et al. 2004; Fowler 2009), and reputable online support (Trochim 2015; ScienceBuddies.org 2015), including the social audit of local governance by the World Bank (2006).

Two sets of questionnaires (in Appendix A) were created: one for the law enforcement staff (police officers survey) and the other designed for the local population around the neighborhood near the police facilities (community survey). The intent of the survey was to gain a broader understanding of how the placement of police stations in the area has affected the safety of the surrounding community and fostered interaction between the community and police personnel. The questionnaires were designed with mostly closed-type questions using dichotomous (i.e., yes/no) and polytomous (i.e., Likert-type, or a rating scale with more than two categories) responses to quantify the variables needed to test the hypothesis outlined above. Simultaneously, some questions have an "other" option so the responders can describe an answer more fully. The community survey consisted of 27 substantive questions (designated as P1, P2, etc., in the questionnaire and also referred to in the variables) while the Police Survey consisted of 39 substantive questions (designated with letter Q1, Q2, etc., in the questionnaire) (see Appendix A). The questionnaires were pretested by local law enforcement officers in Enfield, NH, and Bath, ME, to evaluate the content, clarity, and validity. Three of the officers who reviewed and pretested the questionnaires are with the Vermont Army National Guard and worked with the Afghan police while they served in Afghanistan.

4.2 Data collection challenges

Since 2003, the UN, USG, and other international institutions and non-governmental organization have conducted surveys in Afghanistan. As a result, Afghans are familiar with polls, especially pertaining to political and social progress since the USG and NATO's (North Atlantic Treaty Organization) supported stability operations. Still, data collection is very challenging in war-torn countries and in post-conflict environments. Collecting, analyzing, publishing, and sharing data and information are more problematic in Afghanistan than in other countries (UN-Habitat 2015a, 2015b). The latest UN reports (UN-Habitat 2015a, 2015b) identified the causes of these challenges as lack of coordination among government agencies, donors, and stakeholders and residents' lack of trust of survey personnel, residents' fear of discovery due to lack of anonymity, and other issues associated with sociopolitical sensitivities around the data. Likewise, previous data collections in Afghanistan were primarily for specific purposes, and data sharing has been limited among organizations.

Deploying and disseminating the survey for this study took nearly two years because of instability, language, and attempts at cultural appropriateness, which makes it especially hard for a foreign researcher to collect data; thus, a reliable data collection agency with in-country affiliations familiar with the area and the local language and culture was ultimately hired. D3 Systems, Inc., of McLean, Virginia, was contracted to collect the survey data. D3 Systems, Inc., through their associated company ACSOR Surveys in Afghanistan, has been collecting social survey data in Afghanistan since 2003 for various government groups and continues to collect survey data several times a year. The D3 Systems, Inc., and ACSOR staff survey collection effort included

- finalizing the English questionnaires to make sure the format and questions were appropriate for the local culture;
- developing the sampling plan for the community survey by having the local staff verify that each neighborhood existed in the location of interest and record initial GPS coordinates to have a better coverage of the area;
- translating the questionnaires to the local languages (Dari and Pashto); and
- training, fieldwork, and survey implementation.

The survey was conducted in the local languages (i.e., Dari for Study Area 1 and Pashto for Study Area 2).

4.3 Community sampling plan

The locations of police facilities were mapped on the most recent imagery for survey sampling purposes only. For the community, the surveys were collected within neighborhood blocks (Figures 2-1 and 2-2). This sampling method was used to isolate and capture the subpopulation according to the following steps:

1. Prior to the sampling, ACSOR staff went to the neighborhood and collected GPS coordinates at several locations in the area that could be used as potential random-walk starting points for the survey. GPS coordinates were collected only in residential areas that contained a resident population. These coordinates were mapped over the neighborhood or sampling blocks (SB), with a designated sampling block identification (SB_id for short).

2. From all of the GPS coordinates that were collected within a given SB_id, one point was randomly selected to serve as the random-walk starting point for the survey sample where the surveyor sampled by foot for each neighborhood block.

3. For each SB, a representative sampling-point unit (SP for short), was randomly assigned in the sample plan as either a male sampling point or a female sampling point, meaning that only respondents of the assigned gender would be interviewed within each of the blocks. This was done to allow for gender-matched interviewing, where the interviewer and the respondent were of the same gender. This is necessary due to cultural constraints in Afghan society that restrict interactions between men and women not in the same family.

4. The interviewer performed a random-walk pattern with a fixed sampling interval from the starting point. (Random walk in this case is a random sampling path and direction.) From the random-walk starting point, interviewers were instructed to sample every fifth house on the right and to continue the sampling towards the center of their assigned block. After selecting a household, interviewers used a Kish grid for randomizing the target respondent within the household. The interviewer inquired the number of members in the household and listed members according to their age in descending order, and then the respondent was randomly selected according to the rules of the Kish grid. In designated male sampling units,

only male household members are listed; in female sampling blocks, only female household members are listed.

5. A prescribed number of survey samples was assigned per SP primarily due to logistics and a set cost of the survey numbers and following similar set-up D3 Systems, Inc. used for other previous datasets (e.g. MPICE) collected in Afghan neighborhoods. The coordinates associated with each individual household sample were not collected to protect the respondents' confidentiality, privacy, and safety.

6. For Study Area 1, 10 samples were collected, representing 10 households per SP (Table 4-1), for a total of 80 community surveys.

Table 4-1. Community and police survey distribution for both study areas.

Location	Neighborhood Block (SB_id)	Sampling Unit (SP)	Number of Samples, N	Gender	Mean Age	Estimated Sample Weight
Study Area 1	N1	1	10	Female	33.3	0.04*
	N2	2	10	Male	38.0	0.05*
	N3	3	10	Female	29.5	0.05*
	N4	4	10	Male	37.1	0.04*
	N5	5	10	Female	34.2	0.07*
	N6	6	10	Male	50.0	0.23*
	N7	7	10	Female	26.5	0.06*
	N8	8	10	Male	36.4	0.50*
	Facility A		10	Male	44.1	0.50†
	Facility B1		5	Male	39.8	0.20†
	Facility B2		5	Male	38.0	0.20†
Study Area 2	E1	1	10	Male	32.3	0.05*
		2	10	Female	23.4	
	E2	3	10	Male	31.9	0.02*
	E3	5	10	Male	28.3	0.01*
		6	10	Female	28.1	
	E5	7	10	Male	39.0	0.01*
	E6	4	10	Female	26.8	0.02*
	E7	8	10	Female	31.3	0.01*
	E8	9	10	Male	29.8	0.04*
		10	10	Female	29.1	
	Facility A1		10	Male	35.3	0.20†
	Facility A2		10	Male	34.2	0.20†

* Calculated mean sample weight for each sampling block is based on the ratio of number of surveys and total number of households per neighborhood.

† Calculated mean sample weight for each police facility is based on the ratio of police respondents' estimation of number of workforce staff in the facility to the number of police respondents.

7. For Study Area 2, we had planned to collect two SPs for each neighbor-
    hood block to have both male and female surveys. However, interviewers
    missed the starting points for some of the sampling units. Therefore, we
    only have three neighborhood blocks represented with both male and fe-
    male responses (Table 4-1), for a total of 100 community surveys.

8. Sampling collection for Study Area 1 was conducted in September 2016
    and in March 2017 for Study Area 2.

4.4   Police sampling plan

Police officers at the facilities were also surveyed in the study areas. Be-
cause of the security sensitivity of the police force, the actual coordinates
of the police facilities were not recorded, but survey crew verified that the
facilities existed within the general vicinity.

The police survey for Study Area 1 was collected in three police facilities in
the neighborhood and were renamed as Facility A, Facility B1, and Facility
B2. According to the USACE database, construction of Facility A started in
December 2006 and was completed in May 2009. The other two facilities,
Facilities B1 and B2, are located in the southwest portion of the neighbor-
hood; construction on both facilities began in September 2008 and was
completed in October 2011. A total of 20 interviews were collected from
police officers: ten surveys at the Facility A and ten surveys from officers
who work at Facilities B1 and B2 (Table 4-1). Preference was given for of-
ficers of middle- or higher-level ranks. Law enforcement officers were con-
tacted via personal connections, professional networks, and references
from other previously identified police officers and asked to participate in
the survey.

The police survey in Study Area 2 was collected in two police districts des-
ignated as A1 and A2 (Table 4-1). Construction of Facilities A2 and A1 was
completed in January 2007 and 2011, respectively. Also, there are two
other ANP facilities constructed outside the southwest periphery of Study
Area 2; although these facilities are designated as border patrol facilities,
having them within in the vicinity may have some influence on security,
particularly in the nearby neighborhood.

4.5 Bias

4.5.1 Gender bias

In Afghan culture where men dominate the household, female responses may have some bias because male family members may have been around when the survey was conducted and/or the female respondents may feel at risk to provide input because they are not allowed to respond in a certain way or to give responses that disagree with the head of the family. The primary reason for gender matching (female interviewer interviews only female respondents) was an attempt to mitigate this type of bias. In addition, the interviewers were instructed to do what they could to secure privacy when conducting the interview to minimize the influence of other family members on the respondent's answers. However, this is not always possible. The interviewer recorded the following variables in the questionnaire:

- The total number of people who were present for the interview—Having an interviewee alone with the interviewer (not counting if another ACSOR staff member was present) during the interview would likely have minimal bias.
- The respondent's level of comprehension of the survey questions
- The respondent's perceived level of ease or discomfort with the survey questions

The primary purpose of this information was to evaluate if an outside person's influence had an impact on the responses given by the respondent (Table 4-2). This bias may not be fully prevented, but these questions allow the bias to be taken into account to some degree. Considering that Afghanistan has a relatively high rate of illiteracy, the respondent's level of comprehension of the survey questions is also important, regardless of the gender bias. Overall, most of the respondents seemed to have understood most of the questions and responded comfortably with only a handful of respondents requiring some help. In both study areas, and particularly in Study Area 1, few respondents were alone. Additionally, in Study Area 2, a few respondents who were accompanied by others during the interview were uncomfortable answering some of the questions.

Table 4-2. Distribution of the comprehension and ease of respondents in Study Area 1 (N = 80) and Study Area 2 (N = 100).

Respondents' Comprehension	Location					
	Study Area 1			Study Area 2		
	Number of people present with the interviewee (distribution within study area, %)					
	Alone* (33)	1 (38)	≥2 (29)	Alone* (18)	1 (65)	≥2 (17)
Respondents who understood all the questions and were comfortable with entire questionnaire, %	27	39	26	44	29	47
Respondents who understood all the questions and were comfortable with most of the questions, %		10	30		2	6
Respondents who understood most of the questions and comfortable with entire questionnaire, %		23	17	6	14	6
Respondents who understood most of the questions and comfortable with most of the questions, %	62	23	22	17	15	12
Respondents who understood most of the questions but with some help and comfortable answering most of the questions, %	11		4	33	38	18
Respondents who understood some of the questions but needed help and were uncomfortable answering some of the questions, %					2	12

* The interviewee is alone with the interviewer.

4.5.2 Local events

During the collection periods, ACSOR staff noted any political, social, or other newsworthy events that may have affected the survey or would bias the survey outcome. In Study Area 1, nothing of particular to note happened during the survey collection period. However, in Study Area 2, several events occurred during and prior to survey collection. The reports from the field (ACSOR, pers. comm., March 2017) are listed below by date and location of the events:

> Mar 17, 2017: Police have arrested a gang of robbers who were also accused of several murders in eastern Nangrahar province, an official said on Friday. Besides the gang, police have detained another 23 individuals in connection with various crimes during the past week, Nangrahar police chief Brig. Gen. Abdul Rahman Rahimi told reporters in Jalalabad,

the provincial capital. He said the robbery gang was arrested as a result of prior information, searches and an exclusively devised plan in the limits of Jalalabad city. He said the gang, accused of several murders, was arrested after an armed clash. The police chief invited prey of the gang to visit the police headquarters and register their complaints. Rahimi also said 72 militants including Taliban and Daesh were killed in joint and special forces' operations backed by air support in Nangarhar last week. He said another 10 militants were wounded and seven suspects were detained during the operations. Drugs weighing 240 kilograms were seized by police during search operations last week, the police chief said.

Mar 21, 2017 (Tuesday): Islamic State (Daesh) and other fighters would be defeated in eastern Nangarhar province during the new solar year, the spymaster said on Tuesday. Masoom Stanikzai expressed the resolve at a ceremony in city, where the new intelligence director for Nangarhar, Gen. Sabir Khan, was introduced to local officials. The governor's spokesman Attaullah Khogyani told Pajhwok Afghan News that Monday's ceremony was attended by top military commanders, police and civilian officials Governor Gulab Mangal said the new National Directorate of Security (NDS) director had a good opportunity to deal with the challenges at hand. There was complete harmony among the people and good governance, he asserted. Brig. Gen. Mohammad Zaman Waziri, commander of the 201st Selab Military Corps, said coordination among security forces in Nangarhar had increased under the leadership of the governor. Speaking on the occasion, Gen. Sabir Khan promised living up to the confidence the president and the NDS chief had reposed in him. He pledged working in close coordination with the governor's office to enforce security and pave the ground for people's prosperity. Stanikzai hoped the security environment in the province would see a marked improvement with the appointment of the new NDS and police heads for Nangarhar. Daesh and other militants would be routed this solar year, he concluded.

Mar 25, 2017: At least 22 Daesh militants, including two commanders, have been killed in a drone strike in eastern Nangarhar province, an official said on Saturday. The Nangarhar governor's spokesperson, Attaullah Khogyani, told Pajhwok Afghan News the unmanned NATO drone hit a Daesh hideout in the Mailo locality of Nazyan district late on Friday. Two commanders, Zabihullah aka Shino and Zargul, were among at least 22 Daesh affiliates killed in the strike. A majority of the slain fighters were foreigners, Khogyani said, adding civilians stayed unharmed in the strike.

4.6   Data control and code sorting

4.6.1   Quality Control

During the survey, interviewers worked under supervisors who monitored their work through a combination of direct observation and back-check verifications after fieldwork was complete. In the community survey for Study Area 1, 15% of interviews were controlled via in-person back-checks. Controlled meant that (1) an ACSOR supervisor was present during the interview and that (2) if the supervisor was not present, a back-check was conducted, and the supervisor returned to the interviewed household after the interview had been completed to verify that the interview took place and to verify the responses to a few of the survey questions. In the police survey for Study Area 1, 15% of interviews were controlled via direct observation. In the community survey for Study Area 2, 16% of interviews were controlled via direct observation with 63% in-person back-checks. In the ANP Staff survey for Study Area 2, 15% of interviews were controlled via direct observation with 100% back-checked.

When the questionnaires returned to the ACSOR central office in Kabul, they were sorted; open-end questions were coded by a team of coders familiar with international standards for creating typologies for codes. Data entry was done on-site to protect and closely control the quality of the data. The entry process used logic checks and verified any errors inadvertently committed by interviewers. In addition, 10% of each sample was double-punched to ensure accurate punching; the error rate for each sample was 0%.

4.6.2   Combining

Survey responses were collected in September 2016 for Study Area 1 and in March 2017 for Study Area 2. Combining the police survey (with Q designations in Appendix A) with the community survey (with P designations in Appendix A) required sorting and matching the identical questions; this is because the police questionnaire was numbered differently and there were additional questions specific to the police that were not listed on the community survey. In each study area, the combined community and police surveys were labeled as variables by inheriting the community question numbers (i.e., P3, P4, etc.) followed with a shortened description.

4.6.3 Key codes

Although the community and police surveys had unique codes (i.e., 1 as yes, 2 for no on dichotomous questions; Likert scale for polytomous questions), the responses were reset to change the variables with yes and no input to 1 for yes and 0 for no for binary set-up; the questions included P3, P4, P5, P17, P18a, and P20a (Appendix A). The other questions with Likert rating were checked for consistency so that the rating of 1 would always be the highest/most-positive (i.e., strongly agree, much safer, great deal of confidence, etc.), the rating of 2 would be the tier down (i.e., agree, slightly safer, etc.), 3 rating would be neutral or no change, and so forth. To be consistent, the ratings for these questions were reset to reverse the order listed in the questionnaire; and these changes included the following:

- P10 question on trust with rating of 1 for "more trust" instead of 3 in the questionnaire, 2 for "same level of trust," and 3 for "less trust" instead of 1 in the questionnaire

- P11 and P15 questions on rate of present level of safety from 1 to 5 with 1 being "much safer," 2 as "slightly safer," 3 being "no change," 4 as "somewhat less safe," and 5 being "much less safe"

- P12 question on the change of the community population with a rating of 1 as "increased," 2 "stayed the same," and 3 "decreased"

- P16 on police confidence from 1 to 5 with 1 being "a great deal of confidence," 2 as "some confidence," 3 being "slight confidence," 4 as "not very much confidence," and 5 being "no confidence at all"

In addition, any rating in the variable with fewer than six counts were lumped to the closest scale providing regularity in the responses; these were mostly "strongly disagree" and recoded to "disagree" rating. This is a method that conventionally accepted for merging/reducing categories in categorical or nominal data to simplify the ranges by combining the very low counts with the closely related rating, minimizing the skewness in the distribution or create a variable that is more evenly distributed yet still represents a meaningful distinction between groups. This included the following:

- Three counts of "strongly disagree" and recoded to "disagree" for P7a

- One count of "don't know" and six counts of "strongly disagree" and re-coded to "neutral" and "disagree" for P7c question, respectively

- Six counts of "strongly disagree" and recoded to "disagree" for P7e

- Two counts of "much less safe" and recoded to "somewhat less safe" for P11

- Three counts of "disagree" and recoded to "neither agree nor disagree" for P13a

- One count of "strongly disagree" and recoded to "disagree" for P13b

- One count of "don't know" and recoded to "neither agree nor disagree" for P13c

- Three counts of "strongly disagree" and recoded to "disagree" for P13d

- Two counts of "strongly disagree" and recoded to "disagree" for P13e

- One count of "strongly disagree" and recoded to "disagree" for P13f

- Two counts of "strongly disagree" and recoded to "disagree" for P13g

- Two counts of "much less safe" and recoded to "slightly less safe" for P15

- Two counts of "no confidence at all" and recoded to "not very much confidence" for P16

These changes were made for the analyses.

4.7 Perceived variable measures

The survey questions are grouped into categories of how respondents perceived accessibility, level of safety, police–community relations (trust, confidence, and relational interactions), neighborhood improvements, symbolism of having a police institution, and facility capacity.

4.7.1 Perceived police station accessibility

Having embedded resources in accessible or otherwise strategic locations, such as a centrally and suitably located police station occupied by law enforcement with the collective mission of safety and security, could conceivably exert influence through interactions and networking in providing collective safety for the community. A suitable location relates to the proximity and accessibility considering the condition of the neighborhood. Both the proximity and accessibility of the police station impact not only the ability of police to effectively distribute the services but also the population having access to those services. Even though services and facilities can make a considerable difference to the community, distance to services or facilities can contribute to their underuse or the estimation of their importance (Apparicio and Séguin 2006). Each police station normally has an area of responsibility known as a police precinct to provide security services. Because of limited political boundary information available in the study areas, the actual police precinct boundary was not available. Given that neighborhoods of each study area are within 5 km of the police facilities, it is assumed that these neighborhoods are within their jurisdiction and that the population can optimally access the services that the police provide.

The methodology for determining the accessibility of services and facilities includes two measures:

1. Two sets of distance measurements were calculated in GIS (discussed in section 2)—the shortest (straight line) distance from the center of each neighborhood block (SB_id) to the closest police facility (designated as a1 in the tables in section 5) and the distance from the random-walk starting point for the survey sample location to the closest police facility (designated as a2 in the tables in section 5).

2. The perceived accessibility from the survey data (community questions are designated with "P," and police questions are labeled with "Q", Appendix A) consist of slight differences of context—

> *P4: Do you think the ANP facility's location is conveniently accessible for you and your neighbors, or not? Yes, No.*

> *P6: If you were to report a crime or incident to the police, how would you do that? Q12. How do most people in your community*

report a crime or incident to the police? By calling the police station, By walking to the police station, By using a vehicle to get the police station, Other.

P7a, Q13a: Having the ANP facilities at their present locations, to what extent do you agree or disagree with the following statements? The ANP facility is in a suitable location for providing police services to the community. Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Refused, Don't know.

P7b, Q13c: Having the ANP facilities at their present locations, to what extent do you agree or disagree with the following statements? The police facility is accessibly located for local citizens. Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Refused, Don't know.

P7c, Q13d: Having the ANP facilities at their present locations, to what extent do you agree or disagree with the following statements? People in the community have been going to the police facility to report incidents and crimes. Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Refused, Don't know.

P8, Q14a: (If codes 3–5 in P7a for community or Q13a for police) Why do you feel the ANP facility is located in a suitable location for providing police services to the community? (This is an open-ended question with no answer options.)

P9, Q14b: (If codes 1–3 in P7a for community or Q13a for police) Why do you feel the ANP facility is NOT located in a suitable location for providing police services to the community? (This is an open-ended question with no answer options.)

4.7.2 Perceived level of safety

A sense of safety provides people the ability to move, interact, and transact freely and without fear, which would broaden both perceived human and social security (Ghani and Lockhart 2008). In times of emergency or periods of social disorganization and in the absence of physical safety or civil protection—due to war, natural disaster, violence, etc.—citizens are deeply

anxious about their personal safety and protection. If national security is disrupted, civil protection is compromised or neglected, or otherwise subsistence and freedom are impaired, they do not feel safe.

The research methodology for perceived level of safety from the survey data (community questions are designated with "P," and police questions are labeled with "Q") includes the following:

> *P7e: Having the ANP facilities at their present locations, to what extent do you agree or disagree with the following statements? You are now feeling safer living in your community. Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Refused, Don't know. Q13e: Having the ANP facilities at their present locations, to what extent do you agree or disagree with the following statements? People are now feeling safer living in your community. Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Refused, Don't know.*

> *P11, Q17: Since the ANP facilities came into existence, how would you rate your present level of safety relative to the past? Much safer, Slightly safer, No change, Somewhat less safe, Much less safe, Refused, Don't know.*

> *P13a, Q15a: Having the ANP facilities in your community, to what extent do you agree or disagree with the following statements on these important factors the facility contributed to the community? This facility has provided security to the community. Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Refused, Don't know.*

> *P17, Q26: Do you think that the security operations in the area are sufficient to keep crime in the area at an acceptable level? Yes, No, Refused, Don't know.*

4.7.3 Perceived police–community relations

From a sociological standpoint of relational interactions, trust is an individual trait or cultural resource that people use in interpersonal actions (Sztompka 1991). Sztompka (1991) defined society's cultural resource of trust as having core components: (1) Trust is a key dimension of civil cul-

ture with a sense of trust forming political competence and mutual confidence in the community. (2) Trust provides a union or polarization in civil society, such as for formation of a cohesive community of citizens or in some cases divergence of individuals with fragmented trust toward public institutions. (3) Trust creates social capital, enabling society members to act together more effectively to pursue shared objectives, merging mutually dependent parties and forming of associations; the theory of social capital suggests that "the more we connect with other people, the more we trust them, and vice versa." (Putnam 1995, 665). (4) The presence of generalized trust increases the quality of life and social well-being, resulting in societal solidarity and interpersonal harmony. (5) Trust is essential for social competence and a prerequisite for political participation.

The function of the police consists of multidimensional interpersonal relations for civil engagement, building community trust, and confidence in an assurance of service and safety. A police force that is known to be fair and responsive is more effective than one that is not (Bayley 1994, 2002); fairness and responsiveness promote a positive identity of trustworthiness and effectiveness (Bradford et al. 2014).

Another dimension to forming the associations in social relations is the ties with local people who were involved in building the police stations. People, in general, have a tendency to promote the importance of their involvement, particularly if the efforts of their involvement have significant meaning or value to them. People who were involved in the construction of the police facilities may have a more positive perception of police relations and performance.

The perceived impact on police–community relations from the survey data (community questions are designated with "P" and police questions are labeled with "Q") include the following responses:

> *P10: Since the ANP facilities came into existence, how has your level of trust in the local police force to protect your personal safety changed? Do you now have less trust, the same level of trust, or more trust? More trust, Same level of trust, Less trust, Refused, Don't know. Q19: Since this ANP facility came into existence, please indicate the level of trust you believe people in your village or community have towards the police today? Do people now have*

a lower level of trust, the same level of trust, or a higher level of trust?

P15: How would you rate your present level of safety as a result of police interaction in your community in enforcing the law and maintaining public order? Q22: How do you think the people in your community feel about their safety as a result of your personal interactions in your community in enforcing the law and maintaining public order? Much less safe, Slightly less safe, No change or the same level of safety, Slightly safer, Much safer.

P16: How much confidence do you have in the police as a result of police interaction in your community in enforcing the law and maintaining public order? Q23: How much confidence do you think people have in your efforts as a result of your interactions in your community in enforcing the law and maintaining public order? No confidence at all, Not very much confidence, Slight confidence, Some confidence, A great deal of confidence.

P18a, Q6a: Were any Afghan people involved in building your local ANP facilities? Yes, No.

P20a, Q27a: Since the ANP facility was built, has the ANP staff participated in community events or activities? Yes, No.

P20b, Q27b: (If P20a or Q20a is Yes) What sort of community events did the ANP staff participate in? Social gathering, Community development, National solidarity programs, Eid prayers (special prayer offered to commemorate two Islamic festivals) in mosques, Funeral ceremonies, Wedding, New Year celebration, Other.

4.7.4 Perceived neighborhood improvements

In this study, it is presumed that the community would perceive higher improvements if people live in a safer area than in a less safe area. As such, it is necessary to assess progress and to determine whether the police facilities have provided a significant impact on the local population through creating job opportunities, improving security, or better fulfilling basic human needs.

The hope is that the country will progress toward stability and security, which influences social stability and resiliency. Moreover, part of recovery is having the police facilities as institutional symbols for the community that residents can rely on for local security.

The perceived improvements from having the police facilities are represented in the survey data by the following questions (community questions are designated with "P" and police questions are labeled with "Q"):

> *P12, Q18: Since the ANP facilities came into existence, how do you think the population in your community has changed? Do you think the population has decreased, stayed the same, or increased?*

> *P13b, Q15b: Having the ANP facilities in your community, to what extent do you agree or disagree with the following statements on important factors the facility contributed to the community? This facility has provided income to the community (jobs, for example). Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Refused, Don't know.*

> *P13c, Q15f: Having the ANP facilities in your community, to what extent do you agree or disagree with the following statements on important factors the facility contributed to the community? New businesses have been created since this facility was established. Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Refused, Don't know.*

> *P13d, Q15g: Having the ANP facilities in your community, to what extent do you agree or disagree with the following statements on important factors the facility contributed to the community? The ANP facility has provided community improvement to the area. Or, this facility has helped to improve the community. Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Refused, Don't know.*

> *P14, Q16: In what ways, if any, has the ANP facility helped to improve the community? (List up to three responses).*

> *P13e, Q15c: Having the ANP facilities in your community, to what extent do you agree or disagree with the following statements on*

important factors the facility contributed to the community? The ANP facility has reestablished the police in the community. Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Refused, Don't know.

P13f, Q15d: Having the ANP facilities in your community, to what extent do you agree or disagree with the following statements on important factors the facility contributed to the community? The ANP facility has promoted patriotism in the community.

P13g, Q15e: Having the ANP facilities in your community, to what extent do you agree or disagree with the following statements on important factors the facility contributed to the community? The ANP facility has promoted local and national identity and pride. Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Refused, Don't know.

P13h, Q15f: Having the ANP facilities in your community, to what extent do you agree or disagree with the following statements on important factors the facility contributed to the community? By promoting community safety, this facility has helped people to reach their potential (for example, by learning skills, gaining employment, education, and/or participating in community life). Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Refused, Don't know.

4.8 Preliminary survey data analysis and results

This portion of the analysis examined the distribution and the bivariate correlation estimation using Spearman's coefficient *rho* to show the general differences for survey data collected from the police and neighborhoods at each study area. Spearman's coefficient *rho* is used as the index of bivariate correlation on measurements, especially on data that are not normally distributed, are nonlinear, and have a small sample size with potential lack of linearity in the relationship. The values range from −1 to +1, for determining a conventional strength relationship between two variables. For example, a Spearman's correlation coefficient of 1 is when the two variables being compared are monotonically and perfectly related with a positive trend and an increasing direction in X and Y responses, while a coefficient of negative value corresponds to a perfectly decreasing monotonic trend between X and Y responses. *Rho* values of −0.3 or +0.3 are

considered "weak," and values of −0.5 or +0.5 are interpreted to have "moderate" correlation. Spearman's correlation coefficient analyses was conducted in SAS 9.4 software. The Spearman's coefficients *rho* showed slight differences in the relationships of variables for survey data collected at each study area (Appendix B, Tables B-1, B-2, B-3, and B-4). The results indicated that the strength of an association between variables was slightly different between Study Area 1 and Study Area 2.

Overall, the measures of perceived accessibility variables (P4, P7a, P7b, and P7c) of the police facilities are independent of the respondents' gender and age (Appendix B) in both study areas. The majority of the neighborhoods in the Study Area 1 indicated that the location of the police facilities is conveniently accessible, except for respondents in Block N7 (Figure 4-1). Consistently, 80% of the respondents in Block N1 and most respondents in Blocks N3, N4, N5, N6, and N8 indicated that police facilities are conveniently accessible to them and their neighbors (P4 and P7b) and are placed in suitable locations (P7a). Although a few neighborhoods are relatively far from the closest police station (i.e., Blocks N6 and N7, Table 2-5), most respondents were aware that people in their community have been going to the police station to report crimes (P7c).

Similarly, most respondents in Study Area 2 indicated that the location of the police facilities is conveniently accessible, except for respondents in Blocks E1 and E5, although Block E1 is closer to the closest police station than Block E5 (0.6 km versus 1.7 km in Table 2-6). Some of the respondents in Blocks E1, E2, and E3 expressed contradictory responses indicating that the police location is not conveniently accessible (P4) but that having the police station at the present location is accessibly located for local citizens (P7b). Concurrently, these respondents conveyed that the police facilities are placed in suitable locations (P7a) and that people in the community have been going to the police facility to report incidents and crimes (P7c). The measures of perceived accessibility variables (P4, P7a, P7b, and P7c) of the police facilities have positive indexes of correlation significance in Study Area 2 with perceived rate of safety relative to the past (P11), population change (P12), police interaction in the community (P15), trust (P10), and confidence (P16) in the police (Tables B-3 and B-4, Appendix B).

Figure 4-1. Measures of perceived accessibility for Study Area 1 (*top*) and Study Area 2 (*bottom*). Blocks with shades of *blue*, *pink*, and *yellow* are male, female, and both male and female respondents, respectively.

P4: Do you think the ANP facility's location is conveniently accessible for you and your neighbors, or not? % Yes.

P7a: Having the ANP facilities at their present locations, to what extent do you agree or disagree with the following statements? The ANP facility is in a suitable location for providing police services to the community. % Net Agree (Strongly agree and Agree).

P7b: Having the ANP facilities at their present locations, to what extent do you agree or disagree with the following statements? The police facility is accessibly located for local citizens. % Net Agree (Strongly agree and Agree).

P7c: Having the ANP facilities at their present locations, to what extent do you agree or disagree with the following statements? People in the community have been going to the police facility to report incidents and crimes. % Net Agree (Strongly agree and Agree).

Table 4-3. Percent of respondents for various accessibility methods for reporting a crime or incident.

P6: If you were to report a crime or incident to the police, how would you do that? Q12: How do most people in your community report a crime or incident to the police?

Location	Neighborhood	Sampling Unit or SP (Gender)	a1*	a2**	By calling the police station, % (N)	By walking to the police station, % (N)	By using a vehicle to get to the police station, % (N)	Don't know, % (N)	I will not report to anyone, % (N)
Study Area 1	N1	1 (Female)	0.44	0.4	50 (10)	35 (7)	15 (3)		
	N2	2 (Male)	1.67	1.4	13 (2)	44 (7)	44 (7)		
	N3	3 (Female)	1.53	1.6	27 (3)	73 (8)	0		
	N4	4 (Male)	0.91	1.1	27 (4)	47 (7)	27 (4)		
	N5	5 (Female)	1.93	1.9	31 (5)	31 (5)	38 (6)		
	N6	6 (Male)	2.25	1.7	30 (3)	50 (5)	20 (2)		
	N7	7 (Female)	3.20	2.9	30 (3)	30 (3)	10 (1)		30 (3)
	N8	8 (Male)	2.05	2.3	40 (4)	30 (3)	30 (3)		
	Facility A		N/a	N/a	40 (4)	50 (5)	0	10 (1)	
	Facility B1		N/a	N/a	100 (5)	0	0		
	Facility B2		N/a	N/a	80 (4)	20 (1)	0		
Study Area 2	E1	1 (Male)	0.62	0.5	10 (1)	80 (8)	10 (1)		
		2 (Female)		0.6	30 (3)	30 (3)	40 (4)		
	E2	3 (Male)	0.62	0.7	40 (4)	60 (6)	0		
	E3	5 (Male)	1.81	1.9	90 (9)	10 (1)	0		
		6 (Female)		1.8	20 (2)	40 (4)	40 (4)		
	E5	7 (Male)	1.74	1.5	50 (5)	20 (2)	30 (3)		
	E6	4 (Female)	1.04	1.2	30 (3)	30 (3)	40 (4)		
	E7	8 (Female)	2.03	1.8	40 (4)	20 (2)	40 (4)		
	E8	9 (Male)	1.12	0.9	20 (2)	70 (7)	10 (1)		
		10 (Female)		1.5	60 (6)	30 (3)	10 (1)		
	Facility A1		N/a	N/a	0	60 (6)	40 (4)		
	Facility A2		N/a	N/a	10 (1)	50 (5)	40 (4)		

*a1: Closest distance from the center of the neighborhood block, km

**a2: Proximity from the closest police facility to the representative respondents' locations, km

In both study areas, the majority of the people report a crime by walking to the police station while others have access to a phone to call the police station or have to use a vehicle to get to the station (Table 4-3). However, three female respondents in Block N7 indicated that they will not report the crime to anyone and provided no indication of their reasons or if they would rather send a male family member. Interestingly, the police survey in Study Area 1 indicated that most people call the police station to report a crime or incident while the police in Study Area 2 indicated that more

people walk to the police station than using the vehicle to report a crime and that very few people call. Of the respondents that strongly and neutrally agreed that the ANP facility is located in a suitable location (P7a), the top three reasons included that it is accessible for all people because it is located in the center of the area, people are able to resolve their problem quickly, and it maintains local security (Table 4-4).

Table 4-4. Reasons why respondents feel that police facilities are suitably located in their neighborhoods.

P8: Why do you feel the ANP facility is located in a suitable location for providing police services to the community?	Study Area 1 N = 65, %	Study Area 2 N = 80, %
Police facility is accessible for all people because it is located in the center of the area.	45	27.5
Police maintain security.	28	22.5
People can solve their problems fast.	2	25
The police station is located in a suitable place.	5	15
There is security in our area.	5	3.75
They have prevented corruption.	8	
They have prevented addiction.	3	
The level of crimes has completely decreased in the area.		2.5
Hospitals are more secure.	2	
Schools are open.	2	
They prevent suicide attacks.		1.25
Economical projects have increased in the area.		1.25
The population of people has increased in the area.		1.25
Don't know	3	

The measures of perceived safety vary within the study areas and neighborhoods, and they also vary with the respondents' gender and age (Figure 4-2). For example, neighborhoods with female respondents, such as Blocks N1, E6, and E7, indicated that they now are feeling safer living in their community (P7e) and agreed that the present level is "safer" relative to the past (P11). In terms of the neighborhoods' distance to closest police station, Block N1 in Study Area 1 is located closer to their local police station than Blocks E6 and E7 in Study Area 2. Other female respondents in Blocks N5 and N7 felt that their safety in their neighborhood has not changed. In Block E3, 60% of respondents indicated that they are now feeling safer living in their community (P7e) but that the present level is only 40% "much safer" and "slightly safer" relative to the past; 20% felt no change, and 40% indicated "much less" and "somewhat less safe."

Perception of safety from the male survey revealed that males felt that their neighborhood is "safer" with a moderate change of safety relative to the past. In Block N2, 70% of respondents indicated that they are now feeling safer living in their neighborhood (P7e) but that the present level is only 60% "much safer" and "slightly safer" relative to the past, and the rest felt no change. In Block N4, 80% of male respondents indicated that they now feel safer living in their community (P7e) and that the present level is also 80% "much safer" and "slightly safer" relative to the past. In Block N6, 80% of male respondents indicated they now feel safer living in their community (P7e) with present levels at 60% "much safer" and "slightly safer" relative to the past. In Block 8, 90% of male respondents indicated that they are now feeling safer living in their community (P7e) and that the present level is at 60% "much safer" and "slightly safer" relative to the past. On the other hand, more than 50% of male respondents in Blocks E2 and E5 (Study Area 2) disagreed that they now feel safer living in their community (P7e) and disagreed that present level of safety has improved relative to the past.

In general, the perception of being safe (P7e) in both Study Areas 1 and 2 neighborhoods using Spearman's coefficient *rho* is unrelated to actual distance and negatively related to perceived accessibility to the police station. The perception of being safe (P7e) is marginally related to their perceived trust (P10) and confidence (P16) in the local police and their perception of present level of safety relative to the past (P11), population change (P12), and level of safety as a result of police interaction (P15) in the neighborhoods.

The majority of neighborhood surveys from both males and females perceived the community as safer by having the police facilities (P13a). Simultaneously, respondents in Study Area 2 highlighted mixed reactions on the sufficiency of their police security operations (P17). For example, 40% of respondents in neighborhood Blocks E5 and E7 indicated that the security operations in their area are not sufficient to keep crime at an acceptable level. With slight differences between Study Areas 1 and 2, the perception of community safety due to the police facilities (P13a) by using Spearman's coefficient *rho* is moderately and positively related to perceived trust (P10) and confidence (P16) in their local police and their perception of the present level of safety relative to the past (P11), the population change (P12), and level of safety as a result of police interaction (P15) in the neighborhoods.

Figure 4-2. Measures of perceived safety for Study Area 1 (*top*) and Study Area 2 (*bottom*). Blocks with shades of *blue*, *pink*, and *yellow* are male, female, and both male and female respondents, respectively.

Most respondents recognized the activities their local police provide in the neighborhoods (Figure 4-3). These activities in supporting the community vary between the two study areas. Community respondents in Study Area 1

indicated that the police are able to improve the neighborhood, highlighting the top five police efforts as security and protection strategies, arresting criminals, removing narcotics, providing city order, and preventing corruption. In Study Area 2, people recognized police activities in their neighborhood through supporting development and reconstruction, security and protection efforts, and many other public services. However, other people in Study Area 2 also claimed that having the facility has not helped improve the community.

Figure 4-3. List of responses from P14 in the community survey of police activities contributing to security improvements in Study Area 1 (*top*) and Study Area 2 (*bottom*).
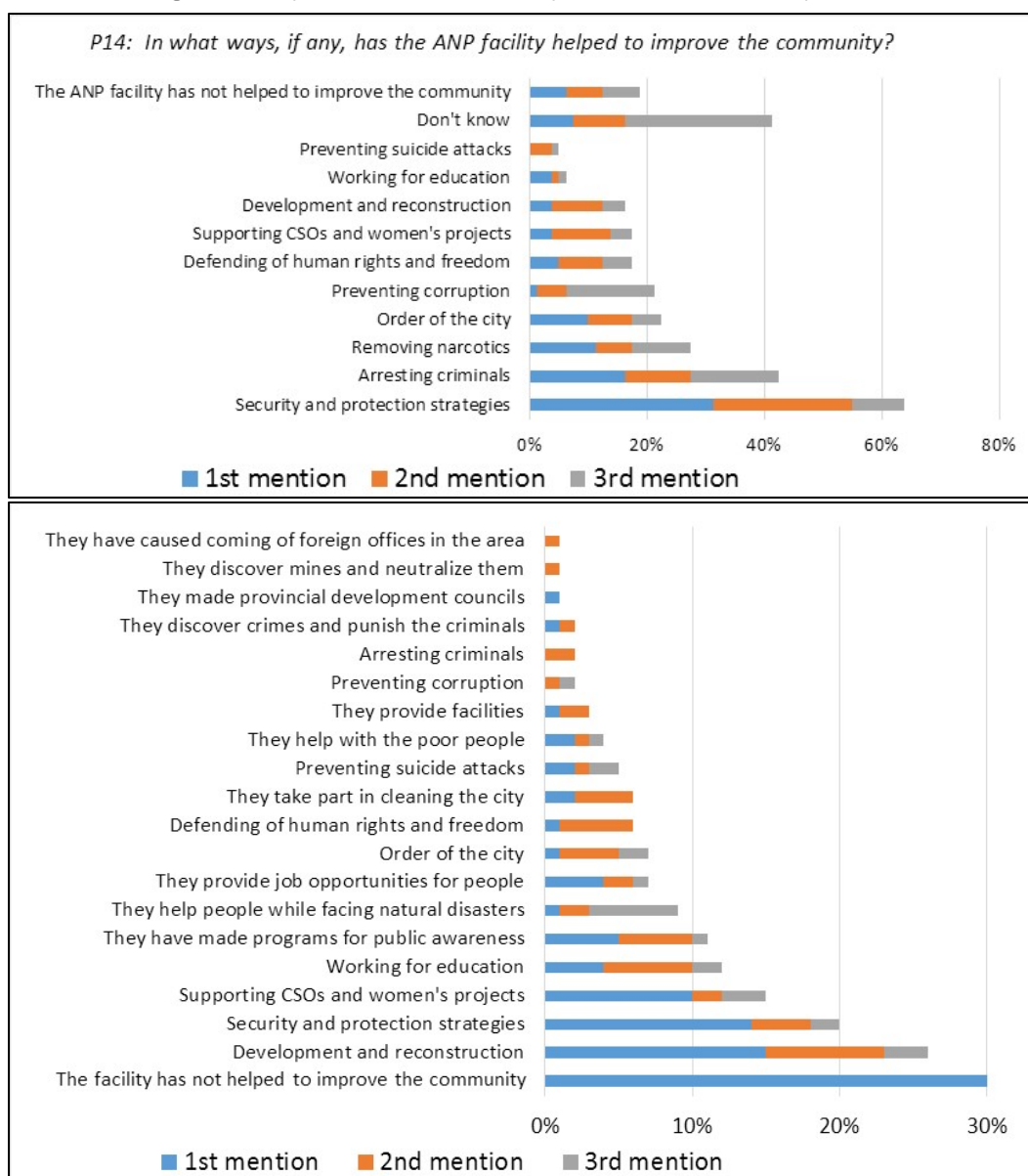
Other issues have caused a feeling of insecurity for the community in a few people (Table 4-5). The top five issues include officers traveling around the city causes insecurity, suicide attacks have increased, movement of police cars has increased, traffic has increased, and a previous political agenda on nationalism has increased. Overall, having the police facilities provided positive impact to the community and at the same time created unintended consequences unique to local issues as highlighted by people's feeling of insecurity.

Table 4-5. Perceived negative impacts of having the police facilities.

P19b: In what ways has your life been negatively impacted since the ANP facility was built?	Study Area 1 N = 80, %	Study Area 2 N = 100, %
Suicide attacks have increased.	11.25	20
There are more traffic jams and people are in a rush.	7.5	10
Police officers' commutes in the city cause insecurity.	16.25	7
The commute of police cars has increased.	8.75	1
Corruption has increased.	7.5	6
Nationalism has increased.	8.75	
Narcotics have increased.	5	
Livestock theft has increased.	3.75	
People are afraid in public.		3
Education has become weak.	2.5	
The oppositions want to influence.	1.25	
Kidnapping has increased.	1.25	
They have caused insecurity in the area.		1
Crimes have increased.		1
Refused	6.25	
Don't know	20	

The police highlighted their local activities (Figure 4-4). Given that the mission of the police is to maintain security in the area, the human safety to some degree has been improved and restored, peace and security have been maintained, police have prevented thefts, children can go to school with comfort, police have prevented suicide attacks and reduced drug trafficking, among other things.

Figure 4-4. List of responses from police on their activities contributing to security improvements in Study Area 1 (*top*) and Study Area 2 (*bottom*).
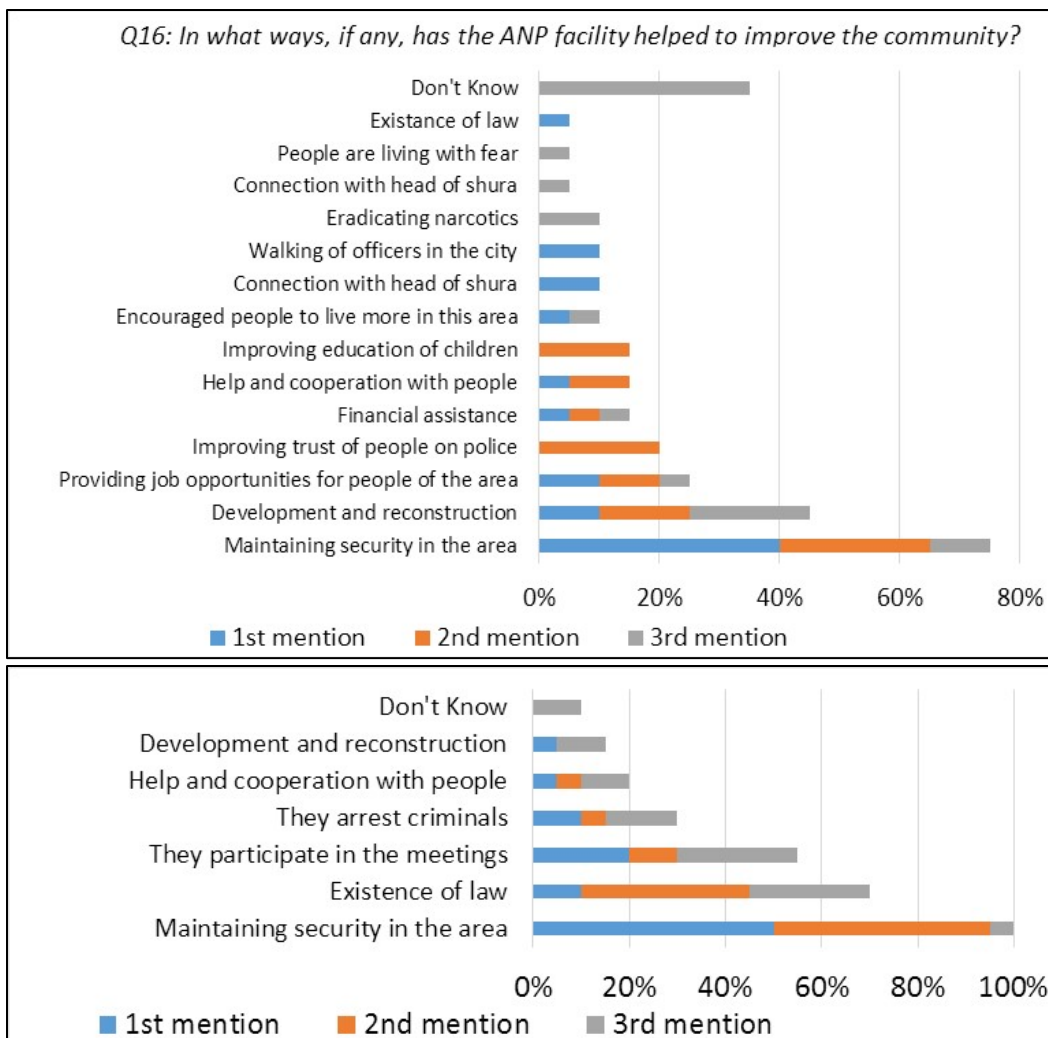
Since the creation of ANP facilities in the neighborhood, the responses for "the same level of trust" in the local police force to protect respondents' personal safety are overall higher than "more trust" among the distribution. The respondents' rating for "more trust" in the local police force to protect the personal safety of the community is marginally low (P10, Figure 4-5) between male and female respondents. For example, only 25% of the respondents in Blocks N5 and N6 in Study Area 1 and 20% in E1 in Study Area 2 with both male and female respondents strongly trust in the police. This suggests that although there is a steady development of trust, building a solid trust in the police may take time based on their performance and safety progression in the community.

Figure 4-5. Measures of police–community relations for Study Area 1 (*top*) and Study Area 2 (*bottom*). Blocks with shades of *blue*, *pink*, and *yellow* are male, female, and both male and female respondents, respectively.

P10: Since the ANP facilities came into existence, how has your level of trust in the local police force to protect your personal safety changed? Do you now have less trust, the same level of trust, or more trust? % More Trust.

P15: How would you rate your present level of safety as a result of police interaction in your community in enforcing the law and maintaining public order? % Net Safer (Much safer and Slightly safer).

P16: How much confidence do you have in the police as a result of police interaction in your community in enforcing the law and maintaining public order? % Net Confidence (A great deal of confidence, Some Confidence and Slight confidence).

P20a, Q27a: Since the ANP facility was built, has the ANP staff participated in community events or activities? % Yes.
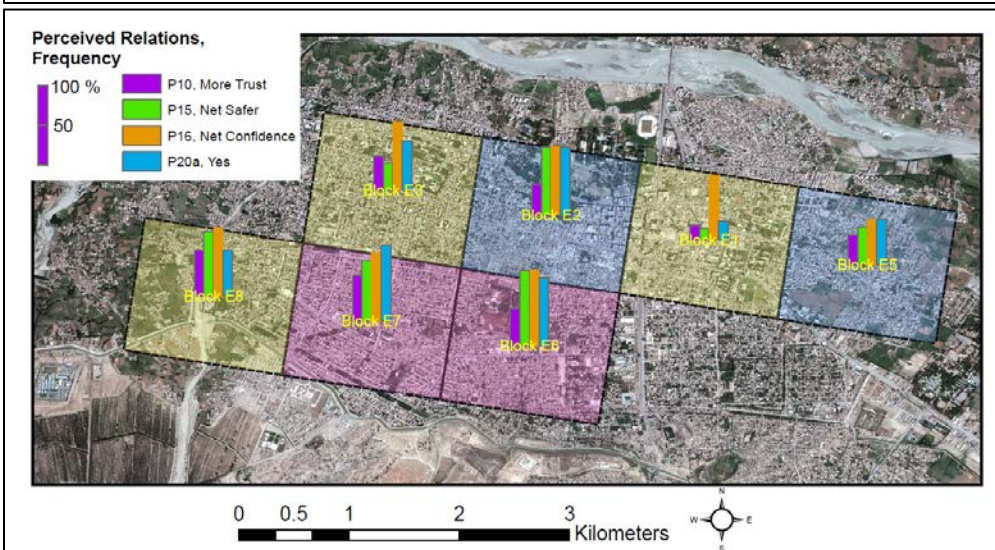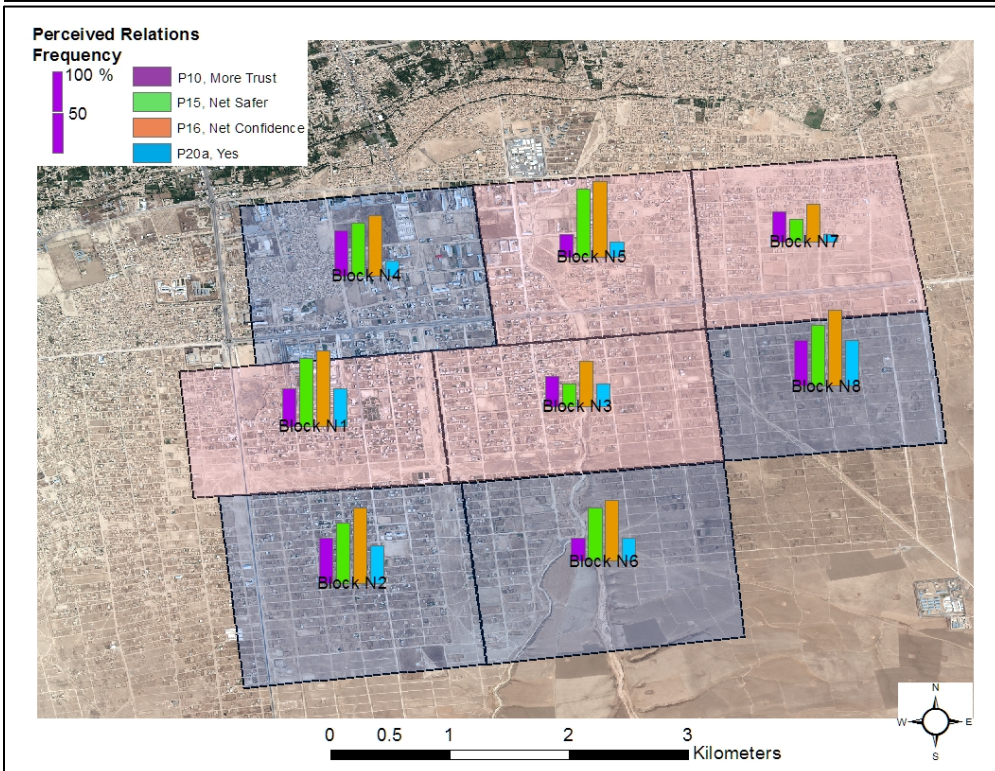
Although this is not always the case in all neighborhoods, the reflection on the respondents' level of safety (P15) is significant in neighborhood blocks with greater than 40% "more trust" responses in the local police force (i.e., Blocks N2, N4, N8, E7, and E8). When residents trust the police more, they have a higher feeling of safety (P7e, Tables B-1 and B-3, Appendix B). The other instrumental attribute is how much confidence people have in their police. Except in Blocks N3 and N7, most of the respondents responded with positive confidence ratings (a great deal of confidence, some confidence, and slight confidence) in the police in both study areas (P16, Figure 4-5). This boost in confidence in the police, as a result of police interaction in the community in enforcing the law and maintaining public order, is instrumental for having a functional institution. People in Study Area 2 acknowledged that their local police participated in community events or activities while police in Study Area 1 appeared not to be so heavily involved in local events (P20a). The degree to which the police participate in community events or activities impacts the neighborhoods' responses on their level of trust in the local police force.

In both locations, most responses indicated that the population has stayed the same; a few responses suggested than the population has increased (Figure 4-6). The police responses indicated that the population in their area has increased, as people from villages are moving in. Seemingly, the neighborhood growth—new buildings were built in the past few years—found in change detection analysis (section 2) could be the reason for the population increase perception. This reflected the same sentiments from the UN studies indicating that Afghans from rural areas are moving to urban areas for better job opportunities (UN-Habitat 2015a, 2015b).

Community and police respondents Study Area 1 generally felt that the facilities have provided security to the community as they were intended (Figure 4-7). Except for Block N1 in Study Area 1, most respondents in the neighborhood blocks perceived that their local facility provided income or jobs to the community (P13b), that new businesses have been created since the police facility was established (P13c), or that the facility has helped to improve their community (P13d) and has created work skills/opportunities (P13h).

Interestingly, the respondents in the southern neighborhood blocks in Study Area 2 (Blocks E6, E7, and E8) perceived that the facility has contributed income or jobs to the community (P13b), new businesses (P13c),

or created work skills/opportunities (P13h). Although a few of the neigh-
borhood responses showed uniformity, these measures for perceived
neighborhood improvements from having the police facilities varied in
more diverse neighborhoods (particularly the northern residential neigh-
borhoods with industrial and commercial sectors) than in mostly residen-
tial neighborhoods in Study Area 2. Based on coefficient *rho*, the perceived
community improvement due to having the police facility (P13d) in Study
Areas 1 and 2 is moderately and positively related to respondents' percep-
tion of present levels of safety relative to the past (P11) and level of safety
as a result of police interaction in the neighborhoods (Tables B-2 and B-4,
Appendix B).

Figure 4-6. Neighborhood and police responses of whether the population in their community
has increased, stayed the same, or decreased in Study Area 1 (*top*) and Study Area 2
(*bottom*).

*P12, Q18: Since the ANP facilities came into existence, how do you think the population in
your community has changed? Do you think the population has decreased, stayed the same,
or increased?*
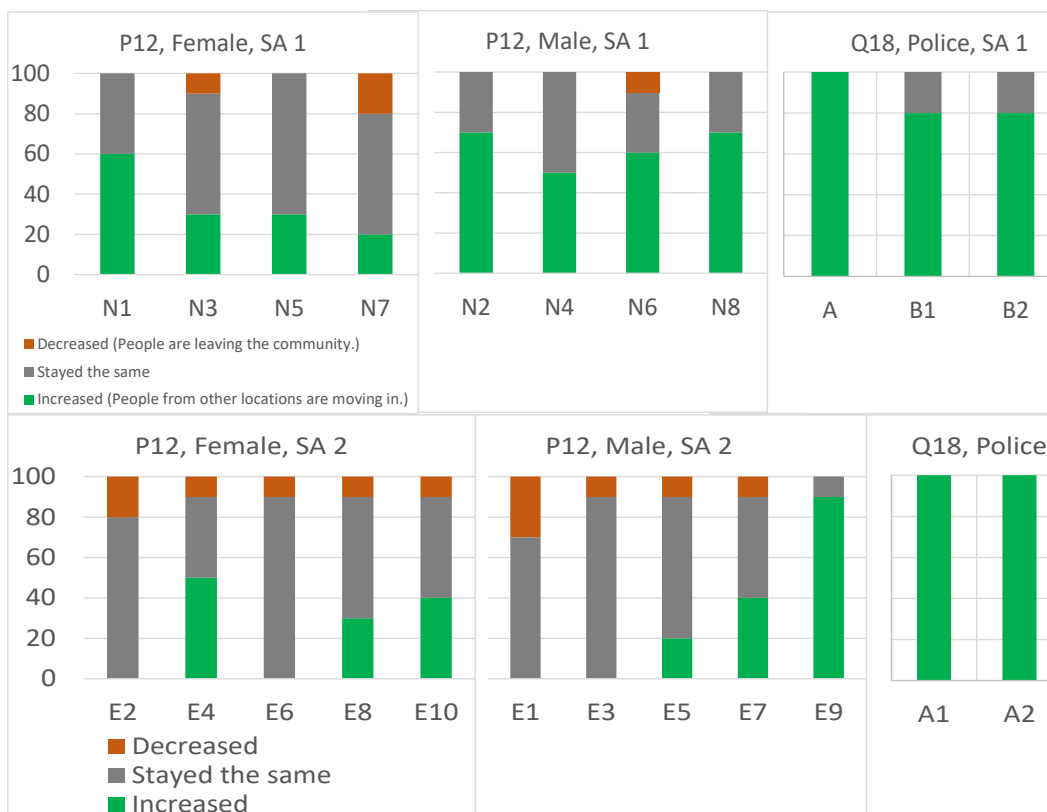
Figure 4-7. Measures of perceived neighborhood improvements for Study Area 1 (*top*) and Study Area 2 (*bottom*). Blocks with shades of *blue*, *pink*, and *yellow* are male, female, and both male and female respondents, respectively.

4.9   Summary and discussion

Data collection and inquiry come with challenges, particularly in Afghanistan because of instability, language, and cultural differences. A reliable data collection agency collected survey data from the community and police for this study because data collection in Afghanistan required in-country affiliations and familiarity with the area, local language, and culture. The community survey was randomly assigned in the sample plan and required gender matching. This meant that the interviewer and the respondent were of the same gender to respect the local culture. A random-walk method with a fixed sampling interval was performed from the starting point in each neighborhood block; once a household was selected, the Kish grid was used for randomizing the target respondent within the household. Ten samples or surveys were collected, representing 10 households per sampling-point unit (SP) with a total of 80 community surveys for Study Area 1. A total of 100 community surveys were collected in Study Area 2 with two sets of SP collected in three neighborhood blocks, representing 10 male and 10 female responses. In each study areas, 20 surveys were collected from police officers.

The surveys were controlled for quality and accuracy and were combined and grouped into categories of perceived accessibility, perceived level of safety, perceived police–community relations (trust, confidence, and relational interactions), perceived neighborhood improvements, perceived symbolism of having a police institution, and perceived facility capacity.

The perceived accessibility measures included specific questions related to having the police facilities accessibly and suitably located for local citizens and knowing that locals are able to report any incidents to the police. Although police blotter inquiry is not part of this study, the police survey on number of crimes showed that most police officers indicated that they personally recorded fewer than 20, and a few made and recorded between 21 and 50 incidents or arrests in the last 12 months.

During the absence of physical safety or civil protection, as there was no organized police force operating until 2002, citizens were deeply in a vacuum about their personal safety and protection. Their security was compromised or neglected. The construction of police facilities and creation of the ANP were part of human security restoration for Afghan communities. The measures of the perceived level of safety included distinct questions

related to people's feelings of whether they are safer living in their community, of their level of safety relative to the past, of the facility providing security to their community, and of the sufficiency of security operations to keep crime at an acceptable level in the area.

The most relevant key findings in this preliminary analysis include the following:

• The majority of the neighborhoods in both study areas indicated that the police facilities are conveniently accessible and are in suitable locations and that locals have been going to the police station to report crimes. Regardless of proximity to the police facilities, Afghans in the neighborhoods (near or far from the closest police station) have at least three means (by calling the police station, walking to the police station, or using a vehicle to get to the station) for reporting a crime or incident. The top three community reasons for their indication that the ANP facility is suitably located in the neighborhoods included being accessible for all people because it is located in the center of the area, resolving people's problem quickly, and maintaining local security.

• Overall, the measures of perceived level of safety varied between neighborhoods in both study areas. Regardless of whether the neighborhood is close to the police station, people's perception of being secure (P7e) in both Study Areas 1 and 2 is marginally related in a positive trend with their perceived level of safety relative to the past, and perceived level of safety as a result of police interaction.

• Most respondents recognized the activities that their local police provide in the neighborhoods. These community activities vary between the two study areas, including security and protection strategies or arresting criminals and removing narcotics and supporting development and reconstruction efforts.

• Although most Afghans felt that having the police facilities provided positive impact to the community, others felt insecure because officers traveling around the city create insecurity, causes suicide attacks to increase, creates traffic to increase, etc. These unintended consequences have created local issues and challenges for security progress generating the cyclical or temporal sense of people's safety.

- The level of trust in the local police force to protect the personal safety of the community showed low or marginal correlation and varied between neighborhoods and gender. Although this is not always the case in all neighborhoods, respondents' levels of trust in the local police force correlated with their level of safety. It could be that the more people trust the police, the safer they feel. People's confidence in the police showed encouraging assurance of progress due to police interaction in the community in enforcing the law and maintaining public order.

- Questions that captured the perceived neighborhood improvements from having the police facilities asked about changes in population (i.e., whether the population in the area has increased or decreased) and whether the facilities created jobs/income opportunities, generated new businesses, delivered community improvement to the area, promoted patriotism, and encouraged local or national identity. The perceived improvements from having the police facilities showed uniformity in some of the neighborhoods; these neighborhoods are mostly in the outskirts or the southern portion of the study areas. Moreover, indication of perceived improvements from having the police facilities seemed to be less in more diverse neighborhoods (i.e., neighborhoods with industrial and commercial sectors).

This analysis provided a preliminary look at the neighborhood distribution of various perceived measures of whether the police facilities constructed in conflict-stricken areas have contributed to an improved level of development for basic human safety needs within the community. When dealing with clustered data and nonlinear outcomes, such as these survey datasets, the model needs to incorporate appropriate error distributions for the response variables (section 5).

5 Multilevel Models

This case study used a multilevel model approach to test the hypothesis that people would likely perceive greater neighborhood improvements, growth, police–community relations, and institutional influence by the addition of police stations in safer neighborhoods than they would in less safe neighborhoods. Potential confounders that could influence people's perception of safety and growth include the spatial relationships, characteristics or type of neighborhood, and the density of the local population of the neighborhoods.

A multilevel model approach improves upon the limitations of traditional regression techniques, allowing an analysis with nested or multilevel data (Ene et al. 2015; Heck and Thomas 2000; Hox 2002; Klein and Kozlowski 2000; Raudenbush and Bryk 2002; Snijders and Bosker 1999). Also, the multilevel model incorporates the randomness and nonlinearity of outcomes in the analysis of the nested data, particularly when using perception or survey data. The primary survey data collected from the police and community in the two study areas (discussed in detail in section 4) are combined along with the quantitative assessments of growth from remote-sensing data and the characteristics (type, population density indicator, and dwelling estimates) of the neighborhoods (described in detailed in section 2). The multilevel models are developed to compare the two study areas and to analyze the relationships between dependent and independent variables for the various responses. In addition, multilevel models using the existing survey data from the Asia Foundation 2012 annual survey and MPICE (described in section 3) are used to (1) provide the previous outlook of safety and compare 2012 data between the two study regions and (2) to evaluate and confirm the association of perceived police performance and demographics data, such as educational level, ethnicity, marital status, and income with people's general perception of safety.

5.1 Hierarchical generalized linear model (HGLM)

Data for understanding complex systems that are highly influenced by many common variants can have hierarchical or clustered structures. Analyzing data with complex patterns of variability, such as multilevel or nested sources of variability, requires a stratification and nesting approach. For example, criminology data involving race-specific rates are clustered within specific social areas, such as neighborhoods or precincts.

Allowing precinct-level or neighborhood-level effects is consistent with theories of policing that emphasize local strategies (Wilson and Kelling 1982; Skogan 1990). Hierarchical models are statistical models that can be used to analyze nested sources of variability in hierarchical data, taking account of the variability associated with each level of the hierarchy (Ene et al. 2015; Garson 2012; Heck and Thomas 2000; Hox 2002; Klein and Kozlowski 2000; Raudenbush and Bryk 2002; Snijders and Bosker 1999). These models have also been referred to as multilevel models, mixed models, random coefficient models, and covariance component models (Snijders and Bosker 1999; Hox 2002).

HGLM or multilevel models have been used to understand that crimes differ in neighborhoods with different ethnic compositions (Gelman et al. 2007), the relationship between quality of life and racial satisfaction with the police (Reisig and Parks 2000), violence associations in concentrated disadvantage and residential instable neighborhoods (Sampson et al 1997), and country-level relationships between homicide rate and confidence in the police (Jang et al. 2010)

This study examined the impact of having police facilities in the neighborhood, including respondents' sense of safety, police facility accessibility, police–community relations (through trust and confidence), perceived security, community improvement, and economic growth for our two case study areas. The research objectives of this study required a multilevel analysis, which improved the limitations of traditional regression techniques, allowing an analysis with nested, multilevel data (Ene et al. 2015; Garson 2012; Heck and Thomas 2000; Hox 2002; Klein and Kozlowski 2000; Raudenbush and Bryk 2002; Snijders and Bosker 1999). In particular, this study used HGLMs for modeling the interaction of nested responses and nonnormal categorical polytomous outcomes (e.g., strongly agree, agree, neutral, disagree, and strongly disagree). This study used a multinomial distribution and cumulative logit link functions to compute the likelihood estimation of a response in terms of log odds or logarithm of the odds.

5.2 Data

5.2.1 Primary survey data

The survey data collected for this study is hierarchically organized (described in section 4) with various measures in which different individuals

are sampled in each neighborhood block (variable called SB_id, Figures 2-1 and 2-2) for each study area. Thus, the data can be considered to have a hierarchical or multilevel structure with individual responses (level-1 units) nested within neighborhoods (level-2 unit). That data consist of measures used as dependent and independent variables with categorical responses. The categorical responses include both dichotomous input (e.g., yes/no) and polytomous scale. The polytomous variables are coded in reverse order (e.g., strongly agree, agree, neutral, disagree, and strongly disagree) with the rating of 1 being the highest or always the most-positive response (i.e., strongly agree, much safer, great deal of confidence, etc.). As highlighted in Section 4.6.3, any rating in the responses with fewer than six counts were grouped to the closest scale; these were mostly "strongly disagree" and recoded to "disagree" ratings. The datasets for Study Area 1 and Study Area 2 were combined for HGLMs analysis (Table 5-1 and Table 5-2), and the variable "Region" was used to designate Study Area 1 (coded as 1) and Study Area 2 (coded as 0).

Table 5-1. Descriptive statistics for dependent measures of police facility contribution to the community.

Dependent Variables	N	%	Mean	SD	Min	Max
P7e: People are now feeling safer (as the dependent variable for Model A)						
1 = strongly agree	66	30.1	2.1	0.9	1	4
2 = agree	86	39.3				
3 = neutral	49	22.4				
4 = disagree	18	8.2				
P13a: Security to the community (as the dependent variable for Model B)						
1 = strongly agree	101	46.1	1.7	0.7	1	3
2 = agree	92	42.0				
3 = neutral	26	11.9				
4 = disagree	0	0.0				
P13b: Income (i.e., jobs) to the community (as the dependent variable for Model C)						
1 = strongly agree	68	31.1	2.2	1.0	1	4
2 = agree	61	27.9				
3 = neutral	73	33.3				
4 = disagree	17	7.8				
P13d: Community improvement to the area (as the dependent variable for Model D)						
1 = strongly agree	72	32.9	2.0	0.8	1	4
2 = agree	92	42.0				
3 = neutral	46	21.0				
4 = disagree	9	4.1				

Table 5-2. Descriptive statistics for independent variables.

Independent Variables	N	Mean	SD	Min	Max
Age	220	33.5	11.7	18	80
Gender	220				
1 = Male (59%)	130				
2 = Female (41%)	90				
Region: 1 = Study Area 1, safer and 0 = Study Area 2, less safe	2				
Neighborhood type*: 1 = urban core, 2 = new urban, 3 = suburban	220				
Population density grouping: 1 = populated, 0 = unpopulated	220				
Estimated number of residential dwellings	220	504	385.5	20	1356
a1: Distance centroid-police (km)	16	1.2	0.9	0.4	3.2
a2: Proximity (km)**	18	1.4	0.7	0.4	2.9
P7b: Police facility is accessibly located for local citizens (1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree)	220	2.1	0.9	1	4
P7a: Police facility is in a suitable location for providing police (1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree)	220	2.1	1.0	1	4
P7c: People have been report crime (1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree)	220	2.1	1.0	1	4
P10: Level of trust in the local police force to protect people's personal safety (1 = more trust, 2 = same level of trust, 3 = less trust)	220	1.5	0.6	1	3
P16: People's confidence in the police (1 = great deal of confidence, 2 = some confidence, 3 = slight confidence, 4 = not very much confidence)	220	2.1	1.1	1	4
P18a: Afghan people involvement in building the police facilities (0 = no, 1 = yes)	220	0.5	0.5	0	1
P11: Rate of present level of safety relative to the past (1 = much safer, 2 = slightly safer, 3 = no change, 4 = somewhat less safe)	220	2.1	1.1	1	4
P17: Security operations are sufficient to keep crime in the area at an acceptable level (0 = no, 1 = yes)	220	0.7	0.5	0	1
A4: Growth, %	220	6.4	3.3	0.2	12.1
A5: Growth indicator: (1 = Growth >10%, 2 = growth of 2%–10%, 3 = growth < 2%)	220	2.0	0.5	1	3
P12: Population in the community has changed (1 = increased, 2 = stayed the same, 3 = decreased)	220	1.6	0.6	1	3
P13c: New businesses have been created since this facility was established (1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree)	220	2.1	1.0	1	4
P13h: Helped people gain skills, employment, etc. (1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree)	220	2.0	0.8	1	4
P13e: Reestablished the police in the community (1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree)	220	2.0	0.8	1	4
P13f: Promoted patriotism in the community (1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree)	220	2.0	0.8	1	4
P13g: Promoted local and national identity and pride (1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree)	220	1.9	0.8	1	4

* Two neighborhood type variables were used: One neighborhood type variable has three categories (1 = urban core, 2 = new urban, 3 = suburban). The other neighborhood type variable has two categories (1 = urban core and new urban, 0 = suburban).

** Both the proximity measurements were used: distance from the closest police facility to the representative respondents' locations, and the distance from starting point for each neighborhood block where a survey sample was collected to the closest police facility

5.2.2 Existing survey data: The Asia Foundation and MPICE

The existing Asia Foundation survey datasets were organized such that the surveys for each neighborhood (with sampling identification as SP) were collected (mostly six surveys per SP), grouped in neighborhoods (coded as villages, towns, or cities), and region (i.e., northern for Study Area 1 and eastern for Study Area 2). The key questions pertinent to this study were selected to provide the contextual understanding of the general or regional view of security and ANP performance perceptions for the study regions (Section 3.2; Table 3-1). The existing Asia Foundation survey datasets were coded such that the categorical value of 1 would always be the lowest/most-negative response (i.e., very bad or strongly disagree), and the rating of 4 would be the highest/most-positive response (i.e., very good or strongly agree). The associated demographics information of the respondents from the Asia Foundation annual survey dataset includes age, gender, educational level, ethnicity, marital status, and income. The 2012 survey data of security and ANP performance perceptions is used in the multilevel model (Table 5-3) to evaluate whether the other demographics data such as educational level, ethnicity, marital status, and income are associated with people's perception of safety.

The MPICE dataset was organized similar to the Asia Foundation datasets (described in section 4) with group surveys collected within an SP in a neighborhood type (coded as villages, towns, or cities) and region. Several MPICE measures of perceived security and ANP performance were selected for the study regions (Section 3.2). The ratings for the security-related questions were organized such that the categorical value of 1 would always be the lowest/most-negative response (i.e., poor, gotten worse, or not at all safe), and the rating of 4 would be the highest/most-positive response (i.e., excellent, gotten much better, or very safe). Likewise, the demographics information of the respondents was included in the survey dataset and is used in the multilevel model (Table 5-4).

Table 5-3. Descriptive statistics for variables from the Asia Foundation
2012 data used for this study.

Dependent Variables	N*	%	Mean	SD	Min	Max
TAF-a: security situation in the village/neighborhood (as the dependent variable for Model E)						
1 = very bad	25	4.0	3.0	0.7	1	4
2 = quite bad	110	17.7				
3 = quite good	316	50.8				
4 = very good	171	27.5				
Independent Variables	N	%	Mean	SD	Min	Max
Demographics and neighborhood characteristics						
Age	663		33.8	11.6	18	80
Gender	663					
1 = Male	351	55.5				
2 = Female	282	44.5				
Region: 1 = Study Area 1 and 0 = Study Area 2	2					
Neighborhood type: 1 = village, 2 = towns, 3 = city	663		1.5	0.8	1	3
Education level: 4 = university education, high school, 3 = secondary school, 2 = primary school, 1 = no formal school	663		1.8	1.3	1	5
Ethnicity	11					
Marital status: 101 = single, 102 = married, 103 = widower/widow	633		101	0.4	101	103
Perception						
TAF-b: freedom of movement—travelling within the village or district (1 = very bad, 2 = quite bad, 3 = quite good, 4 = very good)	663		2.9	0.9	1	4
TAF-c: ANP helps improve the security (1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree)	631		3.3	0.7	1	4
TAF-d: ANP is honest and fair with the Afghan people (1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree)	663		3.4	0.7	1	4

*Weighing factor based on estimated size of population for the survey in Region 0 is 1.33 and 1.30 in Region 1.

Table 5-4. Descriptive statistics for variables from MPICE 2012 data used for this study.

Dependent Variables	N*	%	Mean	SD	Min	Max
M-i. security condition in the village/neighborhood (as the dependent variable for Model F)						
1 = poor	9	2.9	2.9	0.7	1	4
2 = fair	77	24.5				
3 = good	163	51.9				
4 = excellent	65	20.7				
Independent Variables	N	%	Mean	SD	Min	Max
Demographics and neighborhood characteristics						
Age	314		31.3	10.8	18	85
Gender	314					
1 = Male	159	50.6				
2 = Female	155	49.4				
Region: 1 = Study Area 1 and 0 = Study Area 2	2					
Neighborhood type: 1=city, 0=village	314		0.2	0.4	1	2
Education level: 6 = vocational, 5 = 11–12 years, 4 = 9–10 years, 3 = 6–8 years, 2 = up to 5 years, 1 = no formal school	314		2.0	1.5	1	6
Ethnicity: 7 kinds of ethnic groups	314					
Marital status: 1 = married, 2 = widowed, 3 = divorced, 4 = single	314		1.5	1.1	1	4
Perception						
M-ii. level of security in area compared to six month ago (1 = gotten somewhat worse, 2 = stayed about the same, 3 = gotten somewhat better, 4 = gotten much better)	314		2.9	0.8	1	4
M-iii. safe or unsafe you feel when you are at home (1 = somewhat unsafe or not at all safe, 2 = somewhat safe, 3 = very safe)	314		2.8	0.4	1	3
M-iva. freedom of movement—travelling within the village (1 = not at all safe, 2 = somewhat unsafe, 3 = somewhat safe, 4 = very safe)	312		3.2	0.8	1	4
M-ivb. freedom of movement—travelling within the district (1 = not at all safe, 2 = somewhat unsafe, 3 = somewhat safe, 4 = very safe)	314		3.0	0.8	1	4
M-ivc. freedom of movement—travelling within the province (1 = not at all safe, 2 = somewhat unsafe, 3 = somewhat safe, 4 = very safe)	313		2.9	0.8	1	4
M-vi. confidence do you have in the police's ability to maintain security in the area (1 = not much confidence, or no confidence at all, 2 = some confidence, 3 = a lot of confidence)	314		2.7	0.7	1	3
M-vii. the overall performance of the ANP in the area (1 = poor, 2 = fair, 3 = good, 4 = excellent)	313		3.1	0.8	1	4

*Post-stratification weighing for the survey in Region 0 is between 1.1 and 1.2, and between 2.0 and 2.2 in Region 1.

5.3   Model building

The approach described by Smiley and colleagues (Ene et al. 2015; Smiley et al. 2015) suggests that a model for probability should include components at two levels: (1) a level-1 submodel that describes the effects of individual response variables and (2) a level-2 submodel that describes the random or varying effects of response variables across neighborhoods. Taken together, these two components form a multilevel analysis in HGLMs. HGLMs with a multinomial distribution and a cumulative logit link functions were assigned to compute the likelihood a response (on sense of safety and important factors the facility contributed to the community) with polytomous outcomes.

The SAS PROC GLIMMIX (version 9.4) macro (SAS Institute 2017) was used to estimate the pattern of change for categorical, nonnormally distributed response variables, including proportions, count, and ordinal data (Ene et al. 2015; Smiley et al. 2015; Schabenberger 2005). This takes into account the clustering between levels of information by incorporating an appropriate error distribution and nonlinear function. The responses are nested within the neighborhood block (a variable designated as SB_id) in two study areas (region 0 and region 1). The relationship of the categorical polytomous outcomes (defined as dependent variable here—e.g., "perception of being safe in one's neighborhood" with categories of "strongly agree," "agree," "neutral," and "disagree/strongly disagree") are examined with respect to having police facilities in the neighborhood, police facility accessibility, police–community relations (through trust and confidence), perceived security, community improvement, and economic growth. Additionally, the relationship of the categorical polytomous outcomes of perception of safety from existing survey datasets are analyzed in association with the perceived police performance and demographics data (gender and age). For existing survey datasets, other demographics data include educational level, ethnicity, marital status, and income. The various models to assess the relationships are described in the following.

1. Model A examined the relationship between present feeling of safety because of having police facilities at their present locations and perceived neighborhood improvements within in their area, while accounting for clustering at the neighborhood block level.

2. Model B examined the relationship between people's perception that their neighborhood is safe because of having the police facilities and the perceived neighborhood improvements because of having the police facilities in their area, while accounting for clustering at the neighborhood block level.

3. Model C quantified the relationship between perceived contributions to local income and jobs and other effects from the police facilities providing security in their area, while accounting for clustering at the neighborhood block level.

4. Model D quantified the probability and predictors for the measure that the police facilities have provided improvements in their area by considering effects at the neighborhood block level.

5. Model E evaluated the association of perceived police performance and demographics data, such as educational level, ethnicity, marital status, and income, with people's general perception of safety using the selected Asia Foundation 2012 survey.

6. Model F evaluated the correlation of people's general perception of safety with perceived police performance and demographics data, such as educational level, ethnicity, marital status, and income, using the selected MPICE survey.

The model-building processes are listed in Table 5-5, which describes what effects are included in each of the models and the information about what output the various models provide. Each of these six models modeled the outcome of each dependent variable in two parts:

1. The first part of the model is a simple model to estimate the random effect of the intercept between neighborhood blocks. In this case, the model building began with an unconditional model and without any predictors or independent variables. From the model estimation of the random effect of the intercept, the probability and variability of the level-1 predictors and the level-2 outcome (in this case, the neighborhood blocks) are quantified in terms of probability predictors (PP) and an intraclass correlation coefficient (ICC).

2. The second part of the model consisted of predictors in level-1 to determine the relationships between level-1 predictors and the level-2 effects (in this case, the neighborhood blocks). The model-building process for the second part of each model began by listing all the independent variables in the PROC GLIMMIX (version 9.4) macro to examine which independent variables had a significant relationship with the response or dependent variable. Independent variables with no probability significance (p > 0.1) were removed one at a time until a parsimonious model was achieved. Likewise, improvement in the model fit was examined using the Akaike's Information Criterion and Bayesian Information Criterion to determine the best-fitting model outcome. Smaller values represent better-fitting models for both of these criteria (Ene et al. 2015; Smiley et al. 2015).

Table 5-5. Summary of the six models in the study.

Outcome	Model Number	Variables entered into the model
P7e: People are now feeling safer	Model A1	Unconditional: no predictor, just random effects for the intercept†
	Model A2	Model A1 + predictors*
P13a: Security to the community	Model B1	Unconditional: no predictor, just random effects for the intercept†
	Model B2	Model B1 + predictors*
P13b: Income (i.e., jobs) to the community	Model C1	Unconditional: no predictor, just random effects for the intercept†
	Model C2	Model C1 + predictors*
P13d: Community improvement to the area	Model D1	Unconditional: no predictor, just random effects for the intercept†
	Model D2	Model D1 + predictors*
M-i. Security condition in the village (MPICE 2012 data)	Model E1	Unconditional: no predictor, just random effects for the intercept†
	Model E2	Model E1 + predictors*
TAF-a. Security condition in the village (the Asia Foundation 2012 data)	Model F1	Unconditional: no predictor, just random effects for the intercept†
	Model F2	Model F1 + predictors*

* Results indicate the relationships between level-1 predictors and the outcome. Model output with the best-fit response and effect with *p* > 0.1 and the smallest values for Akaike's Information Criterion and Bayesian Information Criterion.

† Output was used to calculate *ICC*

Because the dependent variables in the models are polytomous data with more than two categories, multiple logits distribution and cumulative logit link function were assigned in the multilevel analysis to estimate at least three logits and their corresponding intercepts. The primary survey dataset (Table 5-1) is arranged as 1 = strongly agree, 2 = agree, 3 = neutral,

and 4 = disagree for Models A–D; thus, a "descending" option in the response is assigned to reverse the order of the polytomous data in Models A–D for perceived dependent variables. Each of the dependent variable's intercepts is an incremental change in category, which means each intercept indicates a one-unit change of probability in the "disagree," "neutral," or "agree" category. For example, P7e: *Having the ANP facilities at their present locations, to what extent do you agree or disagree with the following statements? You are now feeling safer living in your community. Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Refused, Don't know.* Thus, the model generates the corresponding response intercept from "disagree" to "strongly agree" incrementally with a positive slope. For Models E–F, an "event-last" option in the response is used so that the results follow the order of the datasets categorical arrangements (1 = very bad or poor, 2 = fair, 3 = good, and 4 = very good). The outcomes for dependent variable intercepts are consistent in all the models (Models A–F); more-positive responses always have a higher value.

To facilitate a meaningful description of the model, a parsimonious model relationship generated for Model A2 to describe the level-1 submodel for the observation i in neighborhood block j is shown below:

$$Y_{1ij} = \beta_{0j} + \beta_{1j}(\text{Region})_{ij} + \beta_{2j}(\text{Neigborhood type})_{ij}$$

$$+\beta_{3j}(\text{P7a suitable location})_{ij} + \beta_{4j}(\text{P7b accesible location})_{ij}$$

$$+\beta_{5j}(\text{P7c People report crime})_{ij} + \beta_{6j}(\text{P11 Rate of safety})_{ij}$$

$$+\beta_{7j}(\text{P10 Trust})_{ij} + \beta_{8j}(\text{P16 Confidence})_{ij}$$

$$+\beta_{9j}(\text{P13e Restablish Police})_{ij} + \beta_{10j}(\text{P13g National identity})_{ij}$$

$$+\beta_{11j}(\text{P13f Promoted patriotism})_{ij} + \beta_{12j}(\text{a2 Proximity})_{ij}$$

$$Y_{2ij} = \beta_{0j} + \beta_{1j}(\text{Region})_{ij} + \beta_{2j}(\text{Neigborhood type})_{ij}$$

$$+\beta_{3j}(\text{P7a suitable location})_{ij} + \beta_{4j}(\text{P7b accesible location})_{ij}$$

$$+\beta_{5j}(\text{P7c People report crime})_{ij} + \beta_{6j}(\text{P11 Rate of safety})_{ij}$$

$$+\beta_{7j}(\text{P10 Trust})_{ij} + \beta_{8j}(\text{P16 Confidence})_{ij}$$

$$+\beta_{9j}(\text{P13e Restablish Police})_{ij} + \beta_{10j}(\text{P13g National identity})_{ij}$$

$$+\beta_{11j}(\text{P13f Promoted patriotism})_{ij} + \beta_{12j}(\text{a2 Proximity})_{ij} \quad (5\text{-}1)$$

In equation (5-1),

Y_{1ij} = the log odds of the response variable with "disagree" input for respondents' sense or level of safety i in neighborhood j,

β_{0j} = the intercept or the average log odds of sense of safety in neighborhood j,

$\beta_{1j}...\beta_{9j}$ = the individual slope for each corresponding predictions (X_{ij}) showing the relationship between this category and the log odds of the predictor of safety, and

Y_{2ij} = the log odds of the response variable "agree" level (i.e., basic) for respondents' sense or level of safety i in neighborhood j with an extra term, δ_j, representing the difference between this category and the preceding one.

Notice that there is only one slope β_{1j} associated with the level of safety (X_{ij}) that remains constant across logits.

$$\beta_{0j} = \gamma_{00} + \gamma_{01}W_j + u_{0j}$$

$$\beta_{1j} = \gamma_{10}, \ \ldots\ldots$$

$$\delta_j = \delta. \quad (5\text{-}2)$$

In the level-2 submodel with neighborhood block predictor (equation 5-2),

γ_{00} = the log odds of the level of safety response within the neighborhood block,

W_j = a neighborhood block predictor for neighborhood j,

γ_{01} = the slope associated with this predictor,

u_{0j} = the level-2 error term representing a unique effect associated within the neighborhood block, and

γ_{10} = the average effect of the level of safety response.

While the effect of the level of safety response is modeled as fixed or constant across neighborhood blocks, this equation (5-2) represents a random intercept-only model. In addition, while this model allows the common intercept (β_{0j}) to vary across neighborhood blocks, the difference between the logits (δ) remains fixed across neighborhood blocks. The random intercept model appropriately accounts for clustering (lack of independence) between individuals living within the same block and ensures that the standard errors are not underestimated.

Combining levels 1 and 2 yields a combined incremental model of response as follows:

$$Y_{1ij} = \gamma_{00} + \gamma_{10}(\text{Region})_{ij} + \gamma_{20}(\text{Neigborhood})_{ij}$$

$$+ \gamma_{30}(\text{P7a suitable location})_{ij} + \gamma_{40}(\text{P7b accesible location})_{ij}$$

$$+ \gamma_{50}(\text{P7c People report crime})_{ij} + \gamma_{60}(\text{P11 Rate of safety})_{ij}$$

$$+ \gamma_{70}(\text{P10 Trust})_{ij} + \gamma_{80}(\text{P16 Confidence})_{ij}$$

$$+ \gamma_{90}(\text{P13e Restablish Police})_{ij} + \gamma_{100}(\text{P13g National identity})_{ij}$$

$$+ \gamma_{110}(\text{P13f Promoted patriotism})_{ij} + \gamma_{120}(\text{a2 Proximity})_{ij}$$

$$+ \gamma_{01}W_j + u_{0j}.$$

$$Y_{2ij} = \gamma_{02} + \gamma_{10}(\text{Region})_{ij} + \gamma_{20}(\text{Neigborhood})_{ij}$$

$$+ \gamma_{30}(\text{P7a suitable location})_{ij} + \gamma_{40}(\text{P7b accessible location})_{ij}$$

$$+ \gamma_{50}(\text{P7c People report crime})_{ij} + \gamma_{60}(\text{P11 Rate of safety})_{ij}$$

$$+ \gamma_{70}(\text{P10 Trust})_{ij} + \gamma_{80}(\text{P16 Confidence})_{ij}$$

$$+ \gamma_{90}(\text{P13e Restablish Police})_{ij} + \gamma_{100}(\text{P13g National identity})_{ij}$$

$$+ \gamma_{110}(\text{P13f Promoted patriotism})_{ij} + \gamma_{120}(\text{a2 Proximity})_{ij}$$

$$+ \gamma_{01}W_j + u_{0j} + \delta. \tag{5-3}$$

Other equations to examine the other dependent variables are not all described here; however, the approach is similar to equations (5-1), (5-2), and (5-3). The equations for the other models differ based on the best-fitting outcome of predictors estimating the probability of the dependent variables.

As mentioned previously, the log-odds of the predictor are used to calculate the probability predictors (*PP*). The probability of the categorical response (e.g., disagree, neutral, and agree) for a dependent variable (i.e., "P7e: People are now feeling safer" in Model A1) is calculated as follows:

$$PP_{response1} = \phi_{ij} = \frac{e^{Y_{1ij}}}{1+e^{Y_{1ij}}} \tag{5-4}$$

where Y_{1ij} represents the log odds of the response variable with "disagree" input. The intraclass correlation coefficient (*ICC*) is used to estimate how much variation in the outcome exists for level-2 (in this case the neighborhood blocks). Using the covariance parameter estimates as τ_{SB}, *ICC* is estimated as follows:

$$ICC_{SB} = \frac{\tau_{SB}}{3.29+\tau_{SB}} \tag{5-5}$$

where a variance of 3.29 is assumed (O'Connell et al. 2008; Ene et al. 2015; Smiley et al. 2015; Snijders and Bosker 1999).

5.4 Results

5.4.1 Perception of safety by having the police facilities

Table 5-6 shows the parameter estimates from models A1, A2, B1, and B2 for each outcome for residents' likelihood of feeling safe and for the perceived security between neighborhood blocks. The random intercept allows each neighborhood block to have its own intercept, and the neighborhood blocks have the same consistent slope (as indicated by the beta coefficients, *B*, for the fixed effects). For model A1, the output indicates that there is a statistical significance in the likelihood (i.e., log odds) of (P7e) people that are now feeling safer living in their community in the surveys across the neighborhood blocks (τ_{SB} = 1.47). The random effects of the respondents feeling safer have significance across the neighborhood blocks; the likelihood (*ICC*$_{SB\_id}$ of 0.31, Table 5-6) of the outcome of respondents' feeling safe in the neighborhood block is approximately 31% in both study

areas, and the rest (69%) is attributed to other factors. A probability ($PP_{agree \& strongly\ agree}$) of 0.74 corresponds to respondents agreeing that they feel safe within the neighborhood blocks (Model A1, Table 5-6). It is important to note that the incremental intercepts for disagree, neutral, and agree of people are feeling safer are increasing in the negative y-axis. Neighborhood as a random factor has a between neighborhood variance of 1.47, producing 4.33 odds that people are feeling safer between neighborhoods. In addition, the average odd ratio is 2.57 of respondents agreeing that they are safer within the neighborhood.

Model A2 in Table 5-6 is the best-fit model of peoples' feeling that they are safer living their community. (The best-fit model was attained by removing one independent variable with no probability significance [$p > 0.1$] at a time, leaving only the independent variables with significance and with the statistical fit [e.g. BIC lower value].) The log odds results show the response variable incrementally increasing from disagree to agree of respondents' feeling of safety (i.e., people are now feeling safer living in their community). The effects of the intercepts are negative values but positively increasing with positive incremental change of responses from disagree to agree. People's present feeling of safety (P7e) is positively related to the proximity from the closest police facility to the representative respondents' locations ($p < 0.001$, $B = 0.66$), perceived accessibility of having the police facilities accessibly located ($p < 0.0001$, $B = 0.93$) and knowing that people have been reporting crimes ($p = 0.04$, $B = 0.41$). The proximity measurements—the distance between the closest police station and respondents' representative location using the midpoint between the centroid and starting point for each neighborhood and the distance from starting point for each neighborhood block where a survey sample was collected to the closest police facility—are both statistically significant in the model. In addition, people's feeling that they are safer positively correlates to their existing trust ($p = 0.004$, $B = 0.85$) and confidence in the police ($p = 0.07$, $B = 0.29$). Moreover, people's present feeling of safety (P7e) is positively associated with the facilities promoting patriotism ($p = 0.08$, $B = 0.41$) and national identity ($p = 0.008$, $B = 0.58$) for their community. A one-unit change of having the police facility accessibly located for local citizens corresponds to 2.53 times greater odds of people's feeling safer; likewise, a one-unit change in having trust in the police is associated with twice greater odds that people perceive that they are safe. Also, people's present feeling of safety is negatively associated with the region and unrelated neighborhood types (urban versus suburban); people's present sense of

safety is less in Study Area 1 than Study Area 2. The change in their present level of safety relative to the past is negatively related to their present feeling of safety, which means that people care about present level of safety regardless of what happened in the past.

For Model B1, a statistical significance of likelihood is found in the log odds of (P13a) perceived neighborhood security by having the ANP facility for providing security to the community (τ_{SB} = 1.71). Neighborhood as a random variable has an odd ratio of 5.33 odds on perceived neighborhood security by having the ANP facilities between neighborhoods. Similarly, the random effects of the respondents' perception of security in their neighborhood by having the ANP facility for providing security to the community have significance across the neighborhood blocks. This denotes that the likelihood (*ICCSB_id* of 0.34, Table 5-6) for the outcome of feeling that their neighborhood is secure with the presence of the ANP facility correspond to 34% (Model B1, Table 5-6), leaving 66% for other factors.

The log odds results show the response variable incrementally increasing from neutral to agree for perceived neighborhood security by having the ANP facility. The effects of the intercepts of the outcome have negative values but positively increase with positive incremental change of responses. While respondents' ages are positively associated with statistical significance, the two study areas (regions), neighborhood types (urban versus suburban), population density, and respondents' gender are unrelated to perceived neighborhood security (Model B2, Table 5-6). The positive likelihood of people perceiving that the ANP facility provides security to the community (P13a, Model B2, Table 5-6) is associated with the proximity from the closest police facility to the representative respondents' locations, being in a suitable location (P7a) and with having the facilities for promoting patriotism (P13f) and national identity (P13g) for their community. While the addition of the facilities, which are used by the police for providing security, are also significantly associated with perceived improvement (P13d) and income/jobs (P13b) in the neighborhood, growth, such as new houses and buildings, has no statistical significance in the model. A one-unit change in perceived contribution by generating income or jobs to the community (P13b) corresponds to 2.47 times greater odds that people perceive security in their neighborhood.

Table 5-6. Intercept as outcome models on neighborhood safety and police facilities' contributions to providing security.

Fixed Effects	Model A1 (unconditional)			Model A2 (random intercept with predictors‡)			Model B1 (unconditional)			Model B2 (random intercept with predictors‡)		
	Dependent Variables											
	P7e: People are now feeling safer						P13a: Security to the community					
	B	Odd ratio (e^B)	SE	B	Odd ratio	SE	B	Odd ratio	SE	B	Odd ratio	SE
γ_{00} = Intercept, Disagree	−3.10	0.04	0.40*	−9.12	0	0.84*						
γ_{02} = Intercept, Neutral	−1.25	0.29	0.33*	−6.84	0	0.74*	−2.70	0.07	0.40*	−9.84	0	1.44*
γ_{03} = Intercept, Agree	0.95	2.57	0.32*	−4.05	0.02	0.61*	−0.09	0.91	0.34	−5.89	0	1.28*
P2: Age										0.03	1.03	0.02†
Region				−0.67	0.44	0.33*						
a2: Proximity+				0.66	1.93	0.20*				0.64	1.90	0.39†
P7a: Suitable location										0.41	1.51	0.19*
P7b: Accessible location				0.93	2.53	0.21*						
P7c: People report crime				0.41	1.50	0.19*						
P11: Safety compare to past				−0.40	0.67	0.19*						
P10: Trust				0.85	2.34	0.29*						
P16: Confidence				0.29	1.34	0.16†						
P13e: Reestablish police				−0.42	0.66	0.21*						
P13g: National identity				0.58	1.79	0.22*						
P13f: Promoted patriotism				0.41	1.51	0.24†				0.73	2.06	0.25*
P13d: Provided growth										0.72	2.05	0.26*
P13b: Provided income										0.90	2.47	0.23*
P17: Adequate security										−1.26	0.28	0.40*
P18a: Local involved										−0.76	0.38	0.38*
Covariance Parameter Estimates												
τ_{SB} = Intercept, SB_id	1.47	4.33	0.63*	0.04	1.04	0.16	1.71	5.53	0.83*	1.15	3.17	0.65*
Model Fit Statistics												
2 Log Likelihood	516.59			413.37			393.26			278.61		
BIC	528.57			455.31			402.25			311.56		
Probability Variations												
ICC$_{SB\_id}$	0.31						0.34					
PP$_{disagree}$	0.04						0.06					
PP$_{neutral}$	0.22						0.48					
PP$_{agree\ \&\ strongly\ agree}$	0.74						0.46					

* $p < .05$; † $p < .10$; SE = standard error

‡ Independent variables with no significance ($p > 0.1$) were removed one at a time until a parsimonious or best-fit model was achieved.

+ Both the proximity measurements-distance from the closest police facility to the representative respondents' locations and the distance from starting point for each neighborhood block where a survey sample was collected to the closest police facility-have statistically significance.

5.4.2 Perceived improvements by having the police facilities

Table 5-7 displays parameter estimates and statistical significance for un-conditional models (Models C1 and D1) and for models showing the relationships between level-1 predictors and the outcome (Models C2 and D2) of the police facilities' contribution to local improvement for the community residents. Model C evaluates the significance of having the ANP facilities in the community, particularly for providing income and, jobs. Model D estimates the significance of having the ANP facilities to provide community improvement to the area or of the facility helping to improve the community. For Model C1 and D1, the outputs exhibit statistical significance for the ANP facilities providing income, such as jobs (P13b), and of the ANP facilities in providing community improvement (P13d) to the area. Similar to the other models in Table 5-6, the log odds of the response variable results show negative values; but these intercepts are increasing with positive increment of respondents' responses from disagree to agree. The random effects of the respondents' perception that the presence of the ANP facilities provides income or jobs (P13b) and community improvement (P13d) to the area have significance across the neighborhood blocks, which correspond to the likelihood of 30% (4.22 odds) and 36% (6.32 odds), respectively. The probability of the respondents agreeing that having the ANP facilities provided income, such as jobs, and the overall community improvement to the area account for 70% and 66% ($PP_{agree\ \&\ strongly\ agree}$ of 0.70 and 0.66, Table 5-7), with statistical significance in the effects.

Model C2 in Table 5-7 is the best-fit outcome of (P13b) perceived police facility contributions to the community by providing income, such as jobs. Similarly, the effects of the outcome have negative intercept values but positively increase with positive incremental change of responses from disagree to agree. The perceived contribution of the facilities in providing income and jobs (P13b) is positively associated with having the facilities as an institution for providing safety (P13a, $p = 0.0009$), encouraging new businesses (P13c, $p < 0.0001$), promoting local or national identity (P13g, $p = 0.0024$), and other potential benefits. With the presence of police facilities in the neighborhood, a one-unit change of perceived contribution in encouraging new businesses and promoting local or national identity corresponds to 2.04 and 1.88 times greater odds in generating jobs. The perceived contribution of the facilities in providing income and jobs is un-related to the growth (such as new houses and buildings) and to police interaction in enforcing the law or maintaining public order and participating in community events or activities.

Table 5-7. Intercept as outcome models on police facilities contribution to local improvement for the community residents.

Fixed Effects	Model C1 (unconditional)			Model C2 (random intercept with predictors)			Model D1 (unconditional)			Model D2 (random intercept with predictors)		
	Dependent Variable											
	P13b: Income (i.e., jobs) to the community						P13d: Community improvement to the area					
	B	Odd ratio	SE	B	Odd ratio	SE	B	Odd ratio	SE	B	Odd ratio	SE
γ_{00} = Intercept, Disagree	−3.10	0.05	0.40*	−8.64	0	0.84*	−3.90	0.02	0.48*	−12.70	0	1.22*
γ_{02} = Intercept, Neutral	−0.68	0.51	0.32*	−5.45	0	0.67*	−1.70	0.18	0.37*	−9.39	0	1.00*
γ_{03} = Intercept, Agree	0.84	2.32	0.32*	−3.50	0.03	0.62*	0.68	1.98	0.35†	−5.73	0	0.77*
P7e: People feeling safer										0.49	1.62	0.21*
P13a: Provided security				0.89	2.43	0.26*				0.75	2.12	0.27*
P13c: New businesses				0.71	2.04	0.18*				0.74	2.10	0.20*
P13g: National identity				0.63	1.88	0.21*				0.52	1.69	0.24*
P13h: Other benefits				0.56	1.75	0.25*				0.62	1.85	0.26*
P7c: People report crime				0.37	1.44	0.17*						
P7b: Accessible location										0.51	1.67	0.21*
P13e: Reestablish police										0.80	2.23	0.24*
P13f: Promoted patriotism										−0.47	0.62	0.26†
P20a: Police participation				−0.58	0.56	0.33†				−1.05	0.35	0.32*
P15: Level safety police				−0.43	0.65	0.18*						
Covariance Parameter Estimates												
τ_{SB} = Intercept, SB_id	1.42	4.22	0.67*	0.05	1.05	0.20	1.84	6.32	0.85*	0.05	1.05	0.16
Model Fit Statistics												
2 Log Likelihood	527.73			423.07			481.33			323.78		
BIC	539.72			456.02			493.31			362.73		
Probability Variations												
ICC$_{SB\_id}$	0.30						0.36					
PP$_{disagree}$	0.04						0.02					
PP$_{neutral}$	0.34						0.16					
PP$_{agree\ \&\ strongly\ agree}$	0.70						0.66					

* $p < .05$; † $p < .10$; SE = standard error

‡ Independent variables with no significance ($p > 0.1$) were removed one at a time until a parsimonious or best-fit model was achieved.

The best-fit model for Model D2 in Table 5-7 for the police facilities' perceived contribution to local improvement (P13d) for the community residents include other predictors. Similarly, the effects of the outcome have negative intercept values but positively increase with positive incremental change of responses from disagree to agree. The perception that the ANP facilities provide community improvement (P13d) is positively associated with having perceived security (P7e, $p < 0.02$, $B = 0.49$ and; P13a, $p <$

0.006, B = 0.75), being accessible (P7b, p < 0.02, B = 0.51). The perception that the ANP facilities provide community improvement (P13d) is positively related with enhancing new businesses (P13c, p < 0.0002, B = 0.74), reestablishing the police (P13e, p < 0.001, B = 0.80), and promoting local and national identity (P13g, p < 0.03, B = 0.52) as institution. A one-unit change of people's feeling of safety (P7e) corresponds to 1.62 times greater odds of their perception that the police facilities have contributed to local improvement (P13d). Likewise, a one-unit change of perceived contribution to income and jobs by having the police facilities corresponds to double the odds of people's perception that the ANP facility has provided security to the community or that ANP facility has supported other social benefits, such as learning skills, employment, education, and/or participation in community life.

5.4.3 Previous perception of security

Table 5-8 shows the parameter estimates from Models D1, D2, F1, and F2 for the outcomes of the security conditions in their area in 2012 from the Asia Foundation and MPICE datasets. People's view of the security conditions in their neighborhood in 2012 from the Asia Foundation data is positively associated with the respondents' education level and negatively associated with region, neighborhood type, perception of security conditions in the districts, and perception that the ANP is helping to improve security. The model also indicates that people's present sense of safety is higher in Study Area 2 than Study Area 1 and that the respondents in urban areas felt less safe than in villages. People's perception of the security conditions in their neighborhood in 2012 from MPICE data is positively associated with the respondents' marital status and perception of freedom to travel within their village. Overall, from these two datasets, people's perception of the security of their neighborhoods is not associated with age, ethnicity, education, and gender. In this case, this could mean that regardless of the social background, security is important to all Afghans or to everyone.

Table 5-8. Intercept as outcome models on the perceived security situation in neighborhoods in 2012.

Fixed Effects	Model E1 (unconditional)			Model E2 (random intercept with predictors)			Model E1 (unconditional)			Model E2 (random intercept with predictors)		
	Dependent Variable											
	TAF-a: security situation in the village/neighborhood						M-i. security condition in the village/neighborhood					
	B	Odd ratio	SE	B	Odd ratio	SE	B	Odd ratio	SE	B	Odd ratio	SE
γ_{00} = Intercept, poor	−3.62	0.03	0.33*	1.19	3.29	0.65†	−4.21	0.01	0.42*	−1.44	0.24	1.22
γ_{02} = Intercept, fair	−1.41	0.24	0.28*	3.80	44.88	0.65*	−1.28	0.28	0.25*	−1.70	5.46	1.20
γ_{03} = Intercept, good	2.18	8.82	0.29*	7.47	1752.50	0.71*	1.73	5.62	0.26	4.88	131.66	1.22*
Region				−0.69	0.50	0.32*						
Neighborhood type				−0.65	0.52	0.20*						
Education level				0.14	1.15	0.08†						
Marital status										0.17	1.18	0.11*
M-ii. level of security in area compared to six month ago										−0.80	0.45	0.18*
M-iii. safe or unsafe you feel when you are at home										−1.19	0.31	0.39*
TAF-b, M-iva. freedom of movement—travelling within village/district				−1.09	0.34	0.15*				0.73	2.07	0.22*
TAF-c: ANP helps improve security				−0.52	0.60	0.15*						
Covariance Parameter Estimates												
τ_{SB} = Intercept, SB_id	5.27	194.55	1.05*	1.65	5.23	0.40*	1.61	5.01	0.53*	1.18	3.25	0.44*
Model Fit Statistics												
2 Log Likelihood	1293.69			1133.84			652.90			605.52		
BIC	1311.37			1175.90			668.04			635.79		
Probability Variations												
ICC$_{SB\_id}$	0.62						0.33					
PP$_{poor}$	0.03						0.01					
PP$_{fair}$	0.20						0.22					
PP$_{good}$	0.90						0.80					

* $p < .05$; † $p < .10$; SE = standard error

‡ Independent variables with no significance ($p > 0.1$) were removed one at a time until a parsimonious or best-fit model was achieved.

5.5 Summary and discussion

This case study uses polytomous datasets. These datasets are hierarchically organized with a multilevel structure in which different individuals are sampled but are also nested within neighborhoods, which have their own characteristics. The relationships of various measures and other vari-

ables are examined using a multilevel model approach to capture the randomness and nonlinearity of the data. These measures include respondents' sense of safety, perceived security in the community, police facility accessibility, police–community relations (through trust and confidence), perceived community improvement, and growth for our two geographic case study areas. The models analyze six selected dependent variables. Each of the models consist of two settings: (1) an unconditional setting of a dependent variable (e.g., no predictor containing only random effects for the intercept) and (2) an unconditional setting of a dependent variable plus predictors with the best-fit responses and effects. The first two models include perception of safety: (1) people's present feeling of safety because of having police facilities at their present locations (P7e) and (2) people's perception that their neighborhood is safe because of having the police facilities (P13a). The models' perceived growth includes particular contributions of the police facilities: (1) providing income or jobs (P13b) and (2) helping to improve the community (P13c). In addition, the relationships between people's perception of safety and perceived police performance and sociodemographics data are assessed using existing survey data from the Asia Foundation 2012 annual survey and MPICE to confirm the connections among the respondents' educational level, ethnicity, marital status, or income with the previous general perception of safety.

5.5.1 Determination of safer or less safe neighborhoods

This case study initially hypothesizes that, overall, Study Area 1 was safer than Study Area 2, based on simple frequency comparison of the existing people's perception of safety between the northern area and eastern area of Afghanistan (section 3). The multilevel model results actually indicate the opposite because of the randomness and nonlinearity of the nested data. This study uses four subjective measures of people's indication of safety responses: (1) present feeling of safety because of having police facilities at their present locations (P7e, Model A2), (2) perception that their neighborhood is safe because of having the police facilities (P13a, Model B2), and (3 and 4) two measures of perceived security conditions in their neighborhoods from TAF-a and M-i data collected in 2012 (Models E2 and F2). Based on the HGLM approach, the outcomes from the four subjective measures of people's indication of safety responses resulted in disagreement for determining which study area is safer or less safe.

People's present feeling of safety because of the locations of the police facilities (P7e) is negatively associated with the two study areas, and perception of security conditions relative to the past. This indicated that people's feeling of safety is higher in Study Area 2 than Study Area 1 and in suburban or urban areas, regardless of age and gender. Similarly, people's perception that the security situation in their neighborhood is progressing (the Asia Foundation 2012 data with responses of poor, fair, good) is also negatively associated with the two study areas and neighborhood type, irrespective of age, gender, ethnicity, and marital status. Based on the HGLM approach of these two measures of safety, the overall security situation in Study Area 2 is consequently better than in Study Area 1.

Conversely, people's perception that the security situation in their neighborhood is progressing (2012 MPICE data with responses of poor, fair, good) is unrelated between the two study areas, regardless of age, gender, ethnicity, and educational status. Likewise, people's perception that their neighborhood is safe specifically because (P13a) of having police facilities is not associated at all with the two study areas and is unrelated to the gender and neighborhood type and to their past perception of the security conditions. From these other two measures of safety, people's responses that their neighborhoods are safer or less safe are not dominated one way or another between Study Area 1 and 2.

In summary, the model outcomes from the measures of safety indicate the following:

- People feel safer in the neighborhoods within the Study Area 2 than in the neighborhoods within Study Area 1 in 2016 because of the locations of the police facilities. This outcome is contrary to the initial designation of Study Area 1 in the northern area as a "safer" area and Study Area 2 in the eastern area as a "less safe" area. The addition of police facilities has effectively contributed to the safety progress in Study Area 2. Thus, the police facilities are more important to safety in less safe areas.

- People perceive that the eastern region (outside the Study Area 2) is safer than the region outside the Study Area 1 in 2012. By accounting for the randomness and nonlinearity of the nested data, this model outcome deviates from the annual security trends and indicates the opposite notion: the northern area (Study Area 1) is safer than the eastern

area (Study Area 2). Interestingly, Afghans in villages are safer that in urban areas.

- The model outcomes from people's perception of whether their neighborhood is safe because of having the police facilities (P13a collected in September 2016 for Study Area 1 and in March 2017 for Study Area 2) indicate that respondents in both Study Areas 1 and 2 have identical safety perceptions that their neighborhoods are safer or less safe due to having the police facilities.

- The perceived security conditions in the neighborhoods (2012 MPICE data collected) indicate that people in both areas have similar safety perceptions that their neighborhoods are safer or less safe, in general.

The triangulation of these four measures of safety provide various contexts of security conditions (a self-assessment of safety versus a community evaluation and a regional perception of security). Therefore, people's perception of security differ in time and space, particularly in these Afghan communities.

5.5.2 Sociodemographics and perceived safety

Sociodemographics variables provide a cross-sectional understanding on the relevance of perceived safety. The model outcomes indicate the importance of perceived safety as follows:

- Gender, ethnicity, and population density are unrelated to all the measures of people's perception of safety modeled in this study. This means that security matters to both male and female respondents in less or populated neighborhoods and that safety is essential for the well-being of all social groups.

- Age correlates significantly with people's perception that their neighborhood is safe because of having the police facilities; older respondents perceived that their neighborhood is safer than younger ones did. This implies that older Afghans have higher tolerances of insecurity, which may be because they have experienced security disruptions or violence for many decades compared to younger Afghans.

- People with more education perceived themselves to be safer than people with less education, according the regional perception of safety

(The Asia Foundation 2012 data). This suggests that educated Afghans may have other ways or personal connections to make themselves safe while less educated Afghans feel vulnerable and defenseless.

- On the other hand, widowers and widows perceived their neighborhood as more secure than single and married people (2012 MPICE data). It is hard to determine the reason why.

These results suggest that social support appears to play a significant role in infrastructure needs for safety, particularly the younger generations and vulnerable populations. Although there should be a more consistent distribution of police protection across all sociodemographic groups in the community, the secured younger Afghans will likely have a positive effect for long-term or enduring stability, security, and growth in the country.

5.5.3 Perceived safety and accessibility

Conceivably, having the police stations placed in accessible locations enable residents to obtain the services and allows police to allocate their civil services or to exert influence through interactions in providing collective safety for the community. Distance to services and facilities can make a considerable difference to the community. The farther the services or facilities from the recipients, the greater the likelihood of their underuse or the less estimation of their importance (Apparicio and Séquin 2006) and they will potentially provide less of an impact to the community.

The model provides distinct outcomes on the influence of the police facilities' location on perceived measures of safety:

- The proximity measurements of the respondents to the closest police station is related to perceived measures of safety (P7e and P13a) but in a counter-intuitive way. The analysis is robust to specification in terms of how the proximity measurements to the police station are determined. The results indicate that the farther the respondents' houses from the police station, the safer they feel and the safer they perceived their neighborhood is. ANP facilities are vulnerable as potential targets for insurgency attacks (A. Booth, pers. comm., 23–25 April 2015; R. Holland, pers. comm., 2015), which impacts the security of the nearby neighborhood. Thus, distance (being far) from the facilities is a considerable factor for neighborhood safety and wellbeing, within the limits

of this study design (in this case, all neighborhoods are within 5 km of the police facilities).

- People's present feeling of safety because of having police facilities (P7e) is positively related to the perceived accessibility of the police facilities location and knowing that people have been reporting crimes. Having the police facility accessibly located for local citizens more than doubles the odds of people's feeling safer. This context of accessibility is not relevant to distance between people and the facilities but rather having the police services in the community. This is because Afghans in these neighborhoods have a variety of means (by calling the police station, walking to the police station, or using a vehicle to get to the station) to report a crime or incident.

- People's perception that the ANP facility provides security to the community (P13a) is associated with being in a suitable location and unrelated to the perceived accessibility of the police facilities. Respondents emphasize having the facilities suitably located in the community mean that police stations are centrally located, including being accessible for all people and maintaining local security.

Considering that ANP facilities are vulnerable as potential targets for insurgency attacks (A. Booth, pers. comm., 23–25 April 2015; R. Holland, pers. comm., 2015), both the safety of the police and the neighborhoods near police stations are compromised; any safety progress will be dampened or disrupted because of these types of incidents. The model results reinforce the fact that being at a reasonable or a peripheral distance to the police station is possibly safer than being closer to the police station. Distant residents can still objectively access and acquire the police services for safety needs without the possible external disruptions.

5.5.4 Relationship between perceived safety and growth

Objective and subjective measures of growth are determined to relate whether these perceived improvements or indications of progress are affected by the addition of police facilities in the community. The relationships between the measures of perceived safety and measures for growth in the models indicate the following:

- The objective growth for the neighborhoods based on change detection techniques with remote-sensing data shows that the growth between

two time periods (August 2010 and January 2014 for Study Area 1 [3.3 years] and February 2009 and October and December 2013 for Study Area 2 [nearly 4 years]) is higher in neighborhoods in Study Area 2 (with growth ranging from 7% to 12.1%) than in neighborhoods in Study Area 1 (0.2% to 5.5%). The growth and development, such as new houses and buildings, are unrelated to both measures of perceived safety, which means that other social resources or economic factors are contributing to the actual growth.

• People's perception that their neighborhood is safe due to police facilities (P13a in Model B2) has a positive significance on the perceived improvement and provision of income or jobs in the neighborhoods. The indication of perceived growth in terms of improvement and provision of income or jobs in the neighborhoods doubles the odds of people's perceived security in their neighborhood.

• Outcomes for models (Models B2, C2, and D2) are unable to confirm this study's hypothesis that the safer region would likely perceive greater neighborhood improvements, growth, police–community relations, and institutional influence by the addition of police stations than would less safe urban areas. This is because none of the models showed statistical significance indicating which study area is safer (Model B2) and which study area has higher perceived growth (Models C2 and D2)—income (i.e., jobs) to the community and community improvement to the area because of having the police facilities. The results imply that the influence of the addition of police facilities in the community are equally perceived for promoting growth in both communities. In both areas, the perceived growth in terms of ANP contributions in providing income and jobs (P13b) corresponds positively with having the facilities as an institution for providing safety, encouraging new businesses, promoting local or national identity, and other potential benefits. The measure for perceived community improvement to the area (P13d) has several positive benefits, contributing not only to security but also to reestablishing the police, encouraging new businesses, promoting local or national identity, and other potential benefits as a result of having accessible police facilities. These perceived outcomes and predictors indicate that the Afghans in both study areas are equally concerned with safety and developing positive growth for their well-being as a result of having police infrastructure and institutions in the community for supporting security, resilience, and growth.

The model results emphasize the significance on Afghans' perception that the police facilities are improving security, promoting improvements, creating job opportunities, or slowly fulfilling basic human needs. The indication of progress provides optimism and influences social stability and resiliency for the Afghan communities and their country.

5.5.5 Relationship between perceived safety and trust

The functions of the police include multidimensional interpersonal relations for civil engagement, building community trust and confidence for assured expectation of service and safety. The feeling of community connectedness and of trust counteracts the negative effects of crime or promotes crime prevention. For example, places in western and safer communities (or low crime neighborhoods) often report higher levels of confidence in the police (Jang et al. 2010; Hurst and Frank, 2000; Payne and Gainey 2007; Reisig and Parks 2000). A police force that is known to be fair and responsive is more effective than one that is not (Bayley 1994, 2002); fairness and responsiveness promote positive identity of trustworthiness and effectiveness (Bradford et al. 2014).

However, in challenging environments where safety progress is constantly interfered by insurgency attacks or other external civil protection interference, trustworthiness and effectiveness in the police are impeded by the dynamic security conditions in Afghan communities. Interaction between ANP and community affect peoples' perceived safety based on the police performance and the presence of trust and confidence in the police. These are reflected in the model outcomes between the measures of perceived safety and police-community relations as follows:

- The regional perception of the neighborhood security conditions in the two study regions (TAF-a collected in 2012, Model E2) indicates negative and no correspondence with ANP performance measures—ANP helps to improve the security and ANP is honest and fair with the Afghan people. Generally, however, positive perceptions of the ANP performance have been slowly improving for providing local security and stability (Asia Foundation 2016), given the challenges and set-backs in creating effective, democratically accountable, and rights-respecting police forces (Murray 2007; Sedra 2006; Wilder 2007).

- People's present feelings of safety because of having police facilities at their present locations (P7e) have considerable association with perceived trust and confidence in the police through their interaction in enforcing the law and maintaining public order. People's trust in the police doubles the odds of their feeling that they are safe. Likewise, people's confidence in the police as a result of police interaction gives 1.4 times greater odds of people's feeling safer.

- Both the people's feeling of safety and the perception that their community is safe have no correlation to whether they were involved in building the police stations. Therefore, whether or not they were involved in building the police stations, one would expect that people's perception of relations are influenced based on police performance or reputation.

Although the ANP performance or effectiveness is uncertain, the Afghans' code of conduct for maintaining honor and reputation (Barfield 2010) is echoed in their perceived trust and confidence in their local police. These reflect the notion that the presence of generalized trust increases social well-being, resulting in societal solidarity and interpersonal harmony and forming mutual confidence and institutional competence in the community (Sztompka 1991). Likewise, those who trust generally also trust specific institutions at a higher rate than those who do not have generalized trust, but the reverse does not necessarily hold. That is, those who trust a specific institution may not abstract that trust more generally.

5.5.6 Facilities' institutional role

Both measures of safety by the addition of police stations—present feeling of safety because of having police facilities at their present locations (P7e) and perception that their neighborhood is safe because of having the police facilities (P13a)—have statistical significance with perceived institutional objectivity in promoting patriotism in the community. A level of perceived institutional influence in promoting patriotism and national identity gives 1.5 times greater odds of people's feeling safer. Likewise, the significance of the perception that the ANP facilities promote patriotism double the odds of neighborhood safety. These hard and soft infrastructure relations have been recognized to exert influence, reflect social credentials, and reinforce identity and recognition (Lin 1999, 2001; Coleman 1988; Woolcock 2001). The model results suggest the valuation importance of the ANP fa-

cilities' role as institutional symbols and anchor institutions for the community that residents can rely on for local security and for progress or recovery toward social stability and security, which play a big role in social autonomy and resiliency.

6 Conclusions and Study Significance

6.1 Findings

This case study is an example of interdisciplinary research using mixed methods (survey and geospatial analyses). The main objective was to examine the effectiveness of police facilities constructed by the USG for stability in war-torn or conflict zones. The embedded resources in a social structure were characterized in many ways, such as physical/hard infrastructure and people; within a social structure, individuals with a collective mission (soft infrastructure) were described to influence or provide benefit in the community. This study hypothesized that in safer urban/suburban areas, people's feeling of safety and the perception that their community is safe would likely show greater neighborhood improvements, growth, police–community relations, and institutional influence with the addition of police stations than they would in less safe urban areas.

This study described multiple outcomes and reached the following conclusions:

1. The use of mixed-methods and triangulation of various datasets provided a robust methodology for assessing infrastructure effectiveness and providing various relationships or associations of predictors that were distinctive for the study areas. For example, the use of existing survey datasets was advantageous in framing the regional security perspectives and linking other sociodemographic data. The method used for proximity measurements analysis was defensible in terms of how distances were measured. GIS analyses provided approximation for the neighborhood type, estimation of population density patterns, and residential dwelling categories for the study areas from information that was not publicly available for use.

2. The regional security conditions according to the Asia Foundation surveys showed cyclical progression of improvements in safety and security of the neighborhoods (section 3). The annual provincial security conditions in the northern area from the 2007 to 2012 surveys by the Asia Foundation showed a rather steady state with above 80% of respondents feeling that the security situation in their neighborhoods was good. The annual security trend from 2007 to 2012 represented a moderate amount of temporal

variations for the residents in the eastern province with some improvements. Although security remains one of the greatest challenges facing Afghanistan (UN-Habitat 2015a, 2015b), optimism has resonated in the respondents' feeling of safety and perception that the police are continually striving to maintain security despite the inherent challenges of insurgents. The police and community as a whole are continually facing the safety and security challenges, which affect security progress.

3. Quantitative growth (as described in section 2), based on change detection technique using high resolution LIDAR data, was quantified between August 2010 and January 2014 (3.3 years) for Study Area 1 and February 2009 and October and December 2013 (nearly four years) for Study Area 2. However, the quantitative growth and perceived neighborhood safety because of having the police facilities were not associated based on HGLM analysis. The growth in Study Area 1 represented mostly one- to three-story residential and institutional buildings, while majority of the expansions in the neighborhoods in Study Area 2 were one- to three-story residential and institutional buildings and urban sprawl. Urban sprawl has created local growth; however, in Study Area 2, farmlands were converted into residential use, and the population in the area may have lost their local agricultural capacity. Presumably, the growth is a good sign of progress for both areas, except that the current expansion of buildings or development in urban areas is possibly unmanaged or unregulated, resulting in haphazard growth (UN-Habitat 2015a, 2015b).

4. Because of instability condition, language and cultural appropriateness, logistical and feasibility constraints, collecting and disseminating the primary survey for this study required a private agency with in-country affiliations familiar with the area. These constraints limited this study with a prescribed number of survey samples and a set cost of the survey numbers. Given these challenges, two sets of surveys were collected in two study areas: a survey for the police and another set of surveys for the community. The survey data provided neighborhood-scale insights from police and Afghans perspectives on the effectiveness of having the ANP facilities.

5. A hierarchical model approach was used to analyze nested sources of variability in hierarchical data. The datasets used in this study for HGLM included a geospatial data summary for quantitative growth; neighborhood type and population density; demographics (age and gender); and percep-

tion data, including perceived level of safety, perceived accessibility, perceived police–community relations (trust, confidence, and relational interactions), perceived neighborhood improvements, and perceived symbolism of having a police institution. The model results found the following:

- People's feeling of safety because of the presence of police facilities is higher in Study Area 2 than Study Area 1, regardless of age and gender. In contrast, people's perception that their neighborhood is safe because of having police facilities showed no statistical distinction at all within the two study areas and is unrelated with the gender and neighborhood type. Thus, the respondents in both study areas viewed their importance of safety equally.

- The model outcomes indicated that this study is unable to fully confirm the safer versus less safe Afghan community. An Afghan's personal sense of safety versus the community level of safety and a regional perception of security differ in time and space. Because Afghans' perception of security is dynamically impacted by insurgencies and other external disruptions, the perceived measurement of safety in a community is likely not comparable in other communities.

- Gender, ethnicity, and population density groups are found to be unrelated to all the measures on people's indication of safety modeled in this study. This means that security matters to both male and female respondents and that safety is essential for the well-being of all social groups.

- People's present feeling of safety due to having police facilities at their present locations is related to the perceived accessibility irrespective of distance; accessibility denotes having the police services in the community. Being at a reasonable or a peripheral distance to the police station appears to be perceived as safer than being closer to the police station, perhaps because ANP facilities are targets for insurgency attacks. Neighborhoods situated far from the police station can still objectively access and acquire the police services using various options available to them to seek out safety needs. Thus, distance from the facilities is a considerable factor for neighborhood safety and well-being.

- People's present feeling of safety because of having police facilities at their present locations are associated with perceived trust and confidence in the police through their interaction in enforcing the law and maintaining public order.

- Most importantly, the ANP facilities contributed to a level of perceived institutional influence in promoting patriotism and national identity as an anchor institution in the community.

Overall, Afghans in both study areas are equally concerned with safety and with developing meaningful growth for their well-being. The addition of police infrastructure and institutions in the community have supported security, resilience, and growth. Resilience or a new stability related to human security for the Afghans has emerged since the UGS stability efforts in Afghanistan, including infrastructure development for police (section 1). By and large, the mission objectives for constructing the police infrastructure by the USG and coalition partners in these two study areas have shown some effectiveness and are instrumental for progressively fulfilling public safety needs, for generating growing levels of self-reliance (Max-Neef 1992) and social well-being (Maslow 1943), and for having sovereignty or governing authority for the society. Moreover, the Chief Executive of Afghanistan, Dr. Abdullah (2017), in his recent interview has optimistically indicated that "Afghans on the ground are making their best effort" to find their way out of war and have security.

6.2   Study limitations

This study found disagreement in the outcome of the models relating the four perceived measures of safety in determining which study area is safer or less safe. It is not uncommon for people's perception of safety to differ from various perception measures of that indicate safety and other measures of safety, including objective safety variables. For example, people will sometimes perceive the (objectively) safer place as less safe (Lin and Moudon 2010); and in some cases, objectively measured neighborhood safety has little to no correlation with perceived aspects of neighborhood safety (Soltero et al. 2017). Western studies related to social health have shown that there is some discrepancy between perceived safety and actual (objective) safety that impact physical activities (Booth et al. 2000; Soltero et al. 2017). This study, however, did not include objective measures of insecurity, such as the impact of insurgence violence or security disruptions created by Afghan or coalition forces.

Data of insurgent violence Afghanistan (i.e., significant activity data from the U.S. military's Combined Information Data Network Exchange database) can be used as objective measures of safety. It is important to note, however, that these data are records primarily of insurgent-initiated events and that any events initiated by coalition or Afghan forces are excluded. The true extent of insecurity and the types of violence experienced by the population can be undercounted and misrepresented (Chou 2012). The inclusion of objective measures in future studies would have the advantage of using concrete and absolute measurements of the safety of the environment, which could have a direct link between research on safety and infrastructure outcomes in the community.

Although the measures of subjective growth are associated with people's perception that their neighborhood is safe because of having police facilities, it is important to highlight that elicit (or drug) economy is potentially part of the quantitative growth or perceived growth in the study areas. Opium poppy cultivation in Afghanistan had increased in 2016 in certain areas in the regions (Felbab-Brown 2015; Greenfield et al. 2017; UNODC 2017). Although most areas where poppy cultivation is high are in the south and west, other areas with low to moderate cultivation of opium poppy included the eastern region (Study Area 2 region) and sparse cultivation in the northern region (Study Area 1). Threats that the opium poppy economy generates are intensification of local criminality and conflicts among criminal groups and tribal elites (UNODC 2017; Felbab-Brown 2015). This is a complex topic that has political, economic, and security implications for Afghan people. The growth implication due to the elicit or informal economy is beyond the scope of this project.

Force protection systems are installed around the facilities, as ANP facilities are potential targets for insurgent attacks (A. Booth, pers. comm., 23–25 April 2015; R. Holland, pers. comm., 2015). Regardless, both the safety of the police and the neighborhoods near police stations are vulnerable; and any safety progress would be hampered or disrupted because of these types of incidents. Although studies have highlighted that the farther the services or facilities are from the recipients, the more likelihood of their underuse or a lower estimation of their importance (Apparicio and Séquin 2006). This study recognized that distance to police services could make a considerable difference in providing security to the community by having a good access to ANP facilities. However, Afghans have to consider the external impediments due to insurgencies that disrupt their neighborhood

safety. In this case, the ANP facilities' being accessibly located can have advantages or disadvantages to people's safety because police stations or the police are often targets for attacks.

In this study, the relationships were successfully determined between the dependent variables and the predictors using the HGLM approach. Multiplicative interactions between fixed effects for the survey data from police and community were not modeled or analyzed. The primary reason is that the survey data has low power due to insufficient number of samples (N = 220) to run the model. Typically, multiplicative scale interactions are performed on samples with a large number of covariates. Part of the reason for the smaller sample are the limitations (e.g., logistics and timing) of data collection in conflict and remote environments. Modeling the multiplicative interactions can be done to further enhance this study.

In this investigation, the variables measured used a 2-point and 5-point scale for several pressures in the measurement setting (e.g., time pressure, sensitive respondents, other dynamics that require forcing people to select a particular response, etc.). Researchers often have to perform such trade-offs, in light of the situation for data collection, between reliability, validity, discriminating power, and respondent preferences. Here, some caution is noted in the overall interpretation of results in this study due to intercultural limitations and logistical sampling constraints. In general, the empirical research process is complicated and has a set of inherent limitations to develop the perfect culturally unbiased measure of any aspect of subjective experience. Research in other cultures faces additional challenges, which considerably increase the risk of inferential errors. One study alone cannot verify that the main methodological issue of standardization and translation was successful.

This research does not aim to generalize the police facilities' impact on security improvements, as there have been a numerous facilities built throughout Afghanistan. There are complexities and challenges influencing the security progress that are beyond the scope of this investigation. Likewise, this study does not purport to research the effects of the institutional functions and processes used by the Afghan police.

6.3 Research significance and overarching importance for the military

Most of the studies on infrastructure development outcome are big picture and broad or programmatic assessments for political or governmental and international development audiences (i.e., Agoglia et al. 2010; Chou 2012; SIGAR 2011). The impact of specific investments or quantitative analyses on the returns of infrastructure as well as growth at the local level remain underresearched in these areas emerging from conflict. There is a wide gap between what is known or what practitioners need to know and what research can currently show with reasonable confidence (Collier 2011) for delivering basic services in state-building capacity. Most resilience papers are concept based, and recent studies on resilience are limited to natural disaster recovery (Aldrich 2012, 2011; Tatsuki 2008; Weil 2010) and the framework for public safety resilience due to human-induced disasters (i.e., terrorist attacks, see Miller et al. 2017). Other resilience papers relate to political and country/region level interventions for counterinsurgency campaign programs to rebuild public security to stabilize war-stricken communities (Hochmüller and Müller 2017; Müller and Hochmüller 2017; Moe and Müller 2017).

More importantly, DOD plays a major role in nation rebuilding, international humanitarian assistance, and disaster response missions due to its unique military capabilities, manpower, and forward-deployment resources. These types of missions require a full cycle of activities with decisions that should significantly enhance their impact during preparation, operational engagement, recovery from disasters, and postdisaster adaptation. Mechanisms for coordination and engagement are essential for stability and development progress (Azarbaijani-Moghaddam et al. 2008); yet, coordinating efforts provides mixed outcomes of success (Affleck et. al. 2011; Kremers et al. 2010). The creation of opportunities for local Afghans and using local resources were at times missing during the early stage of the stability efforts in Afghanistan (Malan 2010). Thus, practitioners of security cooperation programs realize that existing tools require improvements. As a result, a recent DOD requirement pertaining to cooperation plans obliges planners to apply ways and means of implementing investments or projects with positive and achievable impacts for all mission-objective efforts. The efforts and investments in DOD's cooperation or activity plans require the enumeration of intermediate outcomes and long-term impacts that are beneficial to the partner/host nation conditions. Most importantly, these outcomes include building new capacities and

sustaining and improving existing capabilities for the partner nation. Yet, planners and assessors for military programs continue to grapple with the issue of how to best measure the outcomes of mission-objective efforts.

Considering the full set of results, the relevance or "so what?" implications of the study are threefold. One, this study provides an in-depth assessment with multiple outcomes of the impact of new police buildings on neighborhoods and the changes (if any) in providing safety and resiliency within the communities in our study areas. It is important to be able to quantify using various measures how the neighborhoods are benefiting from the infrastructure (i.e., having police facilities). These measures may yield both unique insights and the opportunity for convergent or discriminant findings that are useful for future infrastructure development efforts by USG. Two, understanding the relationships within and between the neighborhoods close to police facilities is a significant step towards understanding the resilience capacity in improving security. The approaches used in this study provide potential tools for modeling societal security and well-being. More importantly, mixed-methods (survey, geospatial, and multilevel model analyses) thus provide novel insights that are practical for assessing impacts on infrastructure development in conflict-ridden environments.

6.4   Recommendation

Given the resources and enormity of the efforts for nation building, DOD planners and assessment teams should incorporate social impacts in the planning process and examine the permanency or sustainability of infrastructure development in the community. From this study, results suggest the following:

- There are social impacts of infrastructure development that are derivatives of the supported institutional functions and are rooted in the relational interactions that people use for building trust and creating identity. In this case, the police facilities were built for the ANP as an anchor institution to reinforce law and order and to promote security and stability in the community. In addition to obvious social benefits such as security and growth, the ANP facilities are an institutional symbol for promoting patriotism and creating a national identity for the community. Thus, infrastructure development can play an important role in the ability of a community to develop social capital, provide a public sense of belonging or sense of community, drive resilience, and generate stability.

- The role of triangulating various datasets and using mixed-methods for assessing infrastructure effectiveness provides multiple logical outcomes that are distinctive for the regions. A singular, standardized assessment will likely be unable to capture important socially beneficial elements. DOD planners and assessment teams have access to various types of data (i.e., LIDAR or other remote-sensing data and survey and other operational datasets) that when used accordingly will provide a holistic evaluation. Therefore, assessment of infrastructure effectiveness should be conducted to help make informed decisions in optimizing mission-objective efforts and investments that are beneficial and effective for social improvement.

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Appendix A: Questionnaires

Impacts of Afghan National Police (ANP) Facilities on the Community Survey—ANP Staff Survey

Survey Management Information

M-1. **Respondent Identification Number** ___ ___ ___ ___

M-2. **Wave Number 1**

M-3. Region

1. Central/Kabul	4. South Western	7. Central/Hazarajat
2. Eastern	5. Western	
3. South Central	6. Northern	

M-4. **Sampling Point/District Where the Interview Was Completed:** ___ ___ ___

M-5. **Geographic Code**

1. Villages   2. Towns   3. City 4. Metro (Kabul)

M-6. **Province**

1. Kabul (KAB)	10. Nangarhar(NAN)	19. Samangan (SAM)	28. Kandahar(KAN)
2. Kapisa (KAP)	11. Laghman (LAG)	20. Jowzjan (JOW)	29. Zabul (ZAB)
3. Parwan (PAR)	12. Kunar (KNR)	21. Sari Pul(SAR)	30. Uruzgan(ORU)
4. Wardak (WAR)	13. Nuristan(NUR)	22. Faryab (FYB)	31. Ghor(GHO)
5. Logar (LOW)	14. Badakhshan (BDS)	23. Badghis (BDG)	32. amyan(BAM)
6. Ghazni (GHA)	15. Takhar(TAK)	24. Herat (HER)	33. Panjsher(PAN)
7. Paktya (PIA)	16. Baghlan (BGL)	25. Farah (FRA)	34. Day Kundi(DAY)
8. Paktika (PKA)	17. Kunduz(KDZ)	26. Nimroz (NIM)	
9. Khost (KHO)	18. Balkh (BAL)	27. Helmand (HEL)	

M-7. **Year of Interview: 2016**

M-8. **Month of Interview**

1. January	4. April	7. July	10. October
2. February	5. May	8. August	11. November
3. March	6. June	9. September	12. December

M-9. Date of Interview: __ __

Page 1

M-10. Day of Week of Interview

1. Friday   3. Sunday   5. Tuesday   7. Thursday
2. Saturday   4. Monday   6. Wednesday

M-11. Interviewer Code: __ __ __ __ __ __

M-12. Interview Completed on the …

1. First Contact
2. Second Contact
3. Third Contact

M-13. Supervisor Code: ____ ____

M-14. Record Time (using 24 hour clock) Interview Began: __ __: __ __
(Record Time Began Starting With Q-1)

M-15. Record Time (using 24 hour clock) Interview Ended: __ __:__ __
(Fill in all four data positions)

M-16. Record Length of Interview in Minutes: ___ ___

M-17. Date Formatted Field: SEP2016

M-18. Keypuncher Code __ __

M-19. Language of Interview:

1. Pashto   2. Dari   3. Other

M-20. Coder Code __ __

M-21. Language of Questionnaire:

1. Pashto   2. Dari

<u>**RECORD THE TIME THE ACTUAL INTERVIEW BEGUN (M-14)**</u>
<u>**AND USE A 24 HOUR CLOCK (14:24, for 2:24 pm)**</u>

Dear ANP Participant,

This survey gives you a chance to tell us what you think about the facilities built to house the Afghan National Police and the role these facilities have in providing security and growth to the community. This study is a research project conducted by the Department of Civil and Environmental Engineering at the University of New Hampshire (UNH), in the United States. The UNH Institutional Review Board for the Protection of Human Subjects in Research has approved this survey.

We request your participation in our survey for the following reasons: We want to know the effectiveness of the ANP buildings in providing safety and protection needs within a community and in promoting social security. Also, we want to know how convenient it is for both the community and employees to access the facility.

The actual survey, including the name and locations of the facilities, will be kept confidential. Your participation is purely voluntary, and you are free to withdraw your consent and discontinue participation at any time. You must be ANP staff and over 18 years old to participate in the survey. This survey will take you approximately 30 minutes to complete. You are among a small group of participants that we have asked to help us. We truly appreciate your time completing the survey.

Should you have any questions about this inquiry, please contact **Rosa Affleck**, by phone at 603-646-4662 or by email at rosatambasacan@gmail.com or raffleck@unh.edu.

Thank you for your help with this study.

Sincerely,

Rosa Affleck

QUESTIONS FOR THE EMPLOYEES:

Q1. What is the name of the police facility where you work?

1. Afghan Border police 6th North Headquarters
2. Civil Order 6th Brigade Headquarters
3. 707Th Pamir Zone
4. Other: _____

1.

Q2. Respondent Gender (DO NOT ASK):

1. Male
2. Female

Q3. How old were you on your last birthday? (Record actual age; if respondent refuses, please estimate)

_____

Q4. To the best of your knowledge, how long has the ANP force used or occupied this building?
   (1)   Less than 1.5 year
   (2)   1.5 to less than2 years
   (3)   2 to less than 5 years
   (4)   5 to less than 10 years
   (5)   10 or more years

   _____
   98. Refused (vol)
   99. Don't Know (vol)

Q5. How long have you worked in this ANP building?
   (1)   Less than a year
   (2)   1 to less than 2 years
   (3)   2 to less than 4 years
   (4)   4 to less than 6 years
   (5)   6 or more years

   _____
   98. Refused (vol)
   99. Don't Know (vol)

Q6a. Were any Afghan people involved in building this ANP facility?
   (1)   Yes(Continue to Q6b)
   (2)   No (Skip to Q7)

_____

98. Refused (vol) (Skip to Q7)

99. Don't Know (vol) (Skip to Q7)

Q6b. (If 1 Yes in Q6a) In what way were they involved? (Select all that apply)

1. Construction work
2. Facility planning
3. Management or supervision of the project
4. Other services: _____

_____
97. Not Asked
98. Refused (vol)
99. Don't Know (vol)

Q7. (Ask All) Based on your estimation, how many people work in this ANP building?
(1)   Fewer than 25 people
(2)   25 to 50 people
(3)   51 to 100 people
(4)   101 to 200 people
(5)   More than 200 people

_____
98. Refused (vol)
99. Don't Know (vol)

Q8. How far do you live from this ANP facility?
(1)   Less than 2 kilometers
(2)   2 to less than 5kilometers
(3)   5 to less than 10 kilometers
(4)   10 to less than 20 kilometers
(5)   20 to less than 50 kilometers
(6)   50 kilometers or more

_____
98. Refused (vol)
99. Don't Know (vol)

Q9. Do you think that this ANP facility supports the needs of the police force, or not?
    (1)   Yes
    (2)   No

_____
98. Refused (vol)
99. Don't Know (vol)

Q10. How appropriate is the size of the facility for the number of people who are working in this facility?
    (1)   It is too small.
    (2)   It is an appropriate size.
    (3)   It is too big.

_____
98. Refused (vol)
99. Don't Know (vol)

Q11a. Do you feel this facility provides an adequate level of force protection in the event of an insurgent attack?
    (1)   Yes
    (2)   No

_____
98. Refused (vol)
99. Don't Know (vol)

Q11b. Does your facility have the following force protection systems?

	Yes	No	Refused	Don't Know
a. Blast Walls	1	2	98	99
b. Barriers	1	2	98	99
c. Buffer zone	1	2	98	99
d. Safety gates	1	2	98	99
e. Other (Specify: _____)	1	2	98	99
f. Other (Specify: _____)	1	2	98	99

Q12. How do most people in your community report a crime or incident to the police?
    (1)   By calling the police station
    (2)   By walking to the police station
    (3)   By using a vehicle to get to the police station

(4)   Other(Please describe.)_____

_____
98. Refused (vol)
99. Don't Know (vol)

Q13. Having this ANP facility at its present location, to what extent do you agree or disagree with the following statements?

		Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Refused	Don't know
a.	The ANP facility is in a suitable location for providing police services to the community.	(1)	(2)	(3)	(4)	(5)	98	99
b.	The police facility is accessibly located for employee commutes.	(1)	(2)	(3)	(4)	(5)	98	99
c.	The police facility is accessibly located for local citizens.	(1)	(2)	(3)	(4)	(5)	98	99
d.	People in the community have been coming to the police facility to report incidents and crimes.	(1)	(2)	(3)	(4)	(5)	98	99
e.	People are now feeling safer living in your community.	(1)	(2)	(3)	(4)	(5)	98	99
f.	New businesses have been created since this facility was established.	(1)	(2)	(3)	(4)	(5)	98	99

Q14a. (If codes 1-3 in Q13a) Why do you feel the ANP facility is located in a suitable location for providing police services to the community? (Single response)

_____

_____
97. Not Asked
98. Refused (vol)
99. Don't Know (vol)

Q14b. (If code 3-5 in Q13a) Why do you feel the ANP facility is not located in a suitable location for providing police services to the community? (Single response)

_____

_____
97. Not Asked
98. Refused (vol)
99. Don't Know (vol)

Q15. (Ask All)Having the ANP facilities in your community, to what extent do you agree or disagree with the following statements on these important factors the facility contributed to the community?

		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree	Refused	Don't know
a.	This facility has provided security to the community.	(1)	(2)	(3)	(4)	(5)	98	99
b.	This facility has provided income to the community (jobs, for example).	(1)	(2)	(3)	(4)	(5)	98	99
c.	This facility has reestablished the police in the community.	(1)	(2)	(3)	(4)	(5)	98	99
d.	This facility has promoted patriotism in the community.	(1)	(2)	(3)	(4)	(5)	98	99
e.	This facility has promoted local and national identity and pride.	(1)	(2)	(3)	(4)	(5)	98	99
f.	By promoting community safety, this facility has helped people to reach their potential (for example, by learning skills, gaining employment, education, and/or participating in community life).	(1)	(2)	(3)	(4)	(5)	98	99
g.	This facility has helped to improve the community.	(1)	(2)	(3)	(4)	(5)	98	99

Q16. In what ways, if any, has the ANP facility helped to improve the community? (List up to three responses).

      a. _____
      b. _____
      c. _____

_____
95. The ANP facility has not helped to improve the community.
98. Refused (vol)
99. Don't Know (vol)

Q17. Since this ANP facility came into existence, how would you rate the present level of safety for the people in your community relative to the past?
    (1)   People feel much less safe.
    (2)   People feel slightly less safe.
    (3)   No change or people feel the same level of safety.
    (4)   People feel slightly safer.
    (5)   People feel much safer.

_____
98. Refused (vol)
99. Don't Know (vol)

Q18. Since this ANP facility came into existence, how do you think the population in your community has changed? Do you think the population has decreased, stayed the same or increased?

    (1)   Decreased (People are leaving the community.)
    (2)   Stayed the same (People are stayingin the community.)
    (3)   Increased (People from other locations are moving in.)

_____
98. Refused (vol)
99. Don't Know (vol)

Q19. Since this ANP facility came into existence, please indicate the level of trust you believe people in your village or community have towards the police today? Do people now have a lower level of trust, the same level of trust, or a higher level of trust?
    (1)   Lower level of trust
    (2)   Same level of trust
    (3)   Higher level of trust

_____
98. Refused (vol)
99. Don't Know (vol)

Q20. To what extent do you agree or disagree with the following statements on the operation and maintenance of the ANP facility?

		Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Refused	Don't know
a.	This facility building is structurally-sound or has very minor issues.	(1)	(2)	(3)	(4)	(5)	98	99
b.	Operation and maintenance of this facility are difficult or too big to manage.	(1)	(2)	(3)	(4)	(5)	98	99
c.	Afghans are involved in the operation and maintenance of the facility.	(1)	(2)	(3)	(4)	(5)	98	99

Q21a. Please tell me if this ANP facility currently has problems with the following building systems. Is this a major problem, a moderate problem, a minor problem, or are there not currently problems with [name of system]?

		Major problem	Moderate problem	Minor problem	Not a problem	Refused	Don't know
a.	Structural	(1)	(2)	(3)	(4)	98	99
b.	Mechanical	(1)	(2)	(3)	(4)	98	99
c.	Electrical	(1)	(2)	(3)	(4)	98	99
d.	Water	(1)	(2)	(3)	(4)	98	99
e.	Wastewater (plumbing and sewer)	(1)	(2)	(3)	(4)	98	99
f.	Other (Specify:_____)	(1)	(2)	(3)	(4)	98	99

Q21b. (Ask if code 1-3 for corresponding item in Q21a) What sort of impact has [system problem] had on your job? Does it have a major impact, a moderate impact, a minor impact, or no impact at all?

		Major impact	Moderate impact	Minor impact	No impact	Not Asked	Refused	Don't know
a.	Structural	(1)	(2)	(3)	(4)	97	98	99
b.	Mechanical	(1)	(2)	(3)	(4)	97	98	99
c.	Electrical	(1)	(2)	(3)	(4)	97	98	99
d.	Water	(1)	(2)	(3)	(4)	97	98	99

e.	Wastewater (plumbing and sewer)	(1)	(2)	(3)	(4)	97	98	99
f.	Other (Specify:_____)	(1)	(2)	(3)	(4)	97	98	99

Q22. (Ask All)In comparison to the past, how do you think the people in your community feel about their safety as a result of your **personal interactions** in your community in enforcing the law and maintaining public order?

     (1)   People feel much less safe.
     (2)   People feel somewhat less safe
     (3)   No change or people feel the same level of safety.
     (4)   People feel somewhat safer.
     (5)   People feel much safer.

_____

98. Refused (vol)
99. Don't Know (vol)

Q23. How much confidence do you think people have in your efforts as a result of your interactions in your community in enforcing the law and maintaining public order?

     (1)   No confidence at all
     (2)   Not very much confidence
     (3)   Slight confidence
     (4)   Some confidence
     (5)   A great deal of confidence

_____

98. Refused (vol)
99. Don't Know (vol)

Q24. For the size of the community that you are providing security for, do you think you have fewer police or security officers than you need, just the right amount, or more police or security officers than you need?

     (1)   Fewer than we need
     (2)   Just the right amount
     (3)   More than we need

_____

98. Refused (vol)
99. Don't Know (vol)

Q25. How many crime reports, including incidents and arrests, have you personally made in the last 12 months?

     (1)   20 or fewer

(2)   21 to 50
(3)   51 to 75
(4)   76 to 100
(5)   101 to 150
(6)   151 to 200
(7)   201 to 300
(8)   301 to 400
(9)   401 to 500
(10) 501 to 1000
(11) More than 1000
_____
98. Refused (vol)
99. Don't Know (vol)

Q26. Do you think that the security operations in the area are sufficient to keep crime in the area at an acceptable level?
(1)   Yes
(2)   No

_____
98. Refused (vol)
99. Don't Know (vol)

Q27a. Since the ANP facility was built, has the ANP staff participated in community events or activities?
(1) Yes(Continue to Q27b)
(2)   No (Go to M22)
_____
98. Refused (vol) (Go to M22)
99. Don't Know (vol) (Go to M22)

Q27b. (If Q27a is 1 'Yes') What sort of community events did the ANP staff participate in?

1.   Social gatherings (Local/Tribal/Village Shuras, etc)
2.   Community Development Councils' sessions
3.   National Solidarity Programs' sessions
4.   Eid prayers in mosques
5.   Funeral ceremonies
6.   Wedding parties
7.   New Year ceremony
8.   Other (Specify):_____

97. Not Asked
98. Refused (vol)
99. Don't Know (vol)

RECORD THE TIME (USING 24 HOUR CLOCK) INTERVIEW WAS COMPLETED AND THE LENGTH OF THE INTERVIEW (M-14 AND M-15)

M22. **(Interviewer: Code, do NOT ask)** How many people were present for the interview, including yourself and the respondent?

___ __

ReadClosing Statement to the Respondent:

"Thank you for participating in our survey. Do you have any questions? In the next few days my supervisor may contact you to evaluate the quality of my work and answer any other questions you may have. To help him do that, could I have your telephone number, if you have any?"

Respondent Information: Name: _____
                                  Address: _____
                                                   _____
                                  Telephone: _____

Interviewer Certification: "I certify that I have completed this interview according to the instructions provided me by the Afghan Center for Socio-economic and Opinion Research.

_____   _____
Signed   Date

To Be Completed By The Interviewer:

M23.   Which of the following statements do you think best describes the level of comprehension of the survey questionnaire by the respondent?

     1.   The respondent understood all of the questions
     2.   The respondent understood most of the questions
     3.   The respondent understood most of the questions but with some help.
     4.   The respondent had difficulty understanding most of the questions, even with help from me

M24.   Which of the following statements best describes the level of comfort or unease that the respondent had with the survey questionnaire?

     1.   The respondent was comfortable (at ease) with the entire questionnaire
     2.   The respondent was comfortable with most of the questions
     3.   The respondent was comfortable with only some of the questions
     4.   The respondent was generally uncomfortable with the survey questionnaire

To Be Completed By The Supervisor:

Page 13

M25.Was the interview subject to quality control/back-check?

1. Yes
2. No

M26.   Method of quality control/back-check

1. Direct supervision during interview
2. Back-check in person by supervisory team
3. Back-check by phone from the central office
4. Not applicable

M27.   **(If 1 'Yes' in M25)** Back-checker ID:

___   ___   ___   ___

9996. Not Asked

تشلك

Impacts of Afghan National Police Facilities on the Community Survey

Survey Management Information

M-1. **Respondent Identification Number** ___ ___ ___ ___

I-1. **Interview Number in Sample Point:** ___ ___
(Write in number from contact sheet written in the "Interview Number")

I-2. **Kish grid number** ____ ____

M-2. **Wave Number 1**

M-3. Region

1. Central/Kabul   4. South Western   7. Central/Hazarajat
2. Eastern   5. Western
3. South Central   6. Northern

M-4. **Sampling Point/District Where the Interview Was Completed:** ___ ___ ___

M-5. **Geographic Code**

1. Villages   2. Towns   3. City 4. Metro (Kabul)

M-6. **Province**

1. Kabul (KAB)   10. Nangarhar(NAN)   19. Samangan (SAM)   28. Kandahar(KAN)
2. Kapisa (KAP)   11. Laghman (LAG)   20. Jowzjan (JOW)   29. Zabul (ZAB)
3. Parwan (PAR)   12. Kunar (KNR)   21. Sari Pul(SAR)   30. Uruzgan(ORU)
4. Wardak (WAR)   13. Nuristan(NUR)   22.Faryab (FYB)   31.Ghor(GHO)
5. Logar (LOW)   14. Badakhshan(BDS) 23.Badghis (BDG)   32. Bamyan(BAM)
6. Ghazni (GHA)   15. Takhar(TAK)   24. Herat (HER)   33. Panjsher(PAN)
7. Paktya (PIA)   16. Baghlan (BGL)   25. Farah (FRA)   34. Day Kundi(DAY)
8. Paktika (PKA)   17. Kunduz(KDZ)   26. Nimroz (NIM)
9. Khost (KHO)   18. Balkh (BAL)   27. Helmand (HEL)

M-7. **Year of Interview: 2016**

M-8. **Month of Interview**

1. January   4. April   7. July   10. October
2. February   5. May   8. August   11. November

  3. March   6. June   9. September 12. December

M-9. Date of Interview: __ __

M-10. Day of Week of Interview

  1. Friday   3. Sunday   5.Tuesday   7. Thursday
  2. Saturday   4. Monday   6. Wednesday

M-11. Interviewer Code: __ __ __ __ __ __

M-12. Interview Completed on the …

  1. First Contact
  2. Second Contact
  3. Third Contact

M-13. Supervisor Code: ____ ____

M-14. Record Time (using 24 hour clock) Interview Began: __ __: __ __
      (Record Time Began Starting With P1)

M-15. Record Time (using 24 hour clock) Interview Ended: __ __:__ __
      (Fill in all four data positions)

M-16. Record Length of Interview in Minutes: ___ ___

M-17. Date Formatted Field: SEP 2016

M-18. Keypuncher Code __ __

M-19. Language of Interview:

  1. Pashto   2. Dari   3. Other

M-20. Coder Code __ __

M-21. Language of Questionnaire:

  1. Pashto   2. Dari

**RECORD THE TIME THE ACTUAL INTERVIEW BEGUN (M-14)
AND USE A 24 HOUR CLOCK (14:24, for 2:24 pm)**
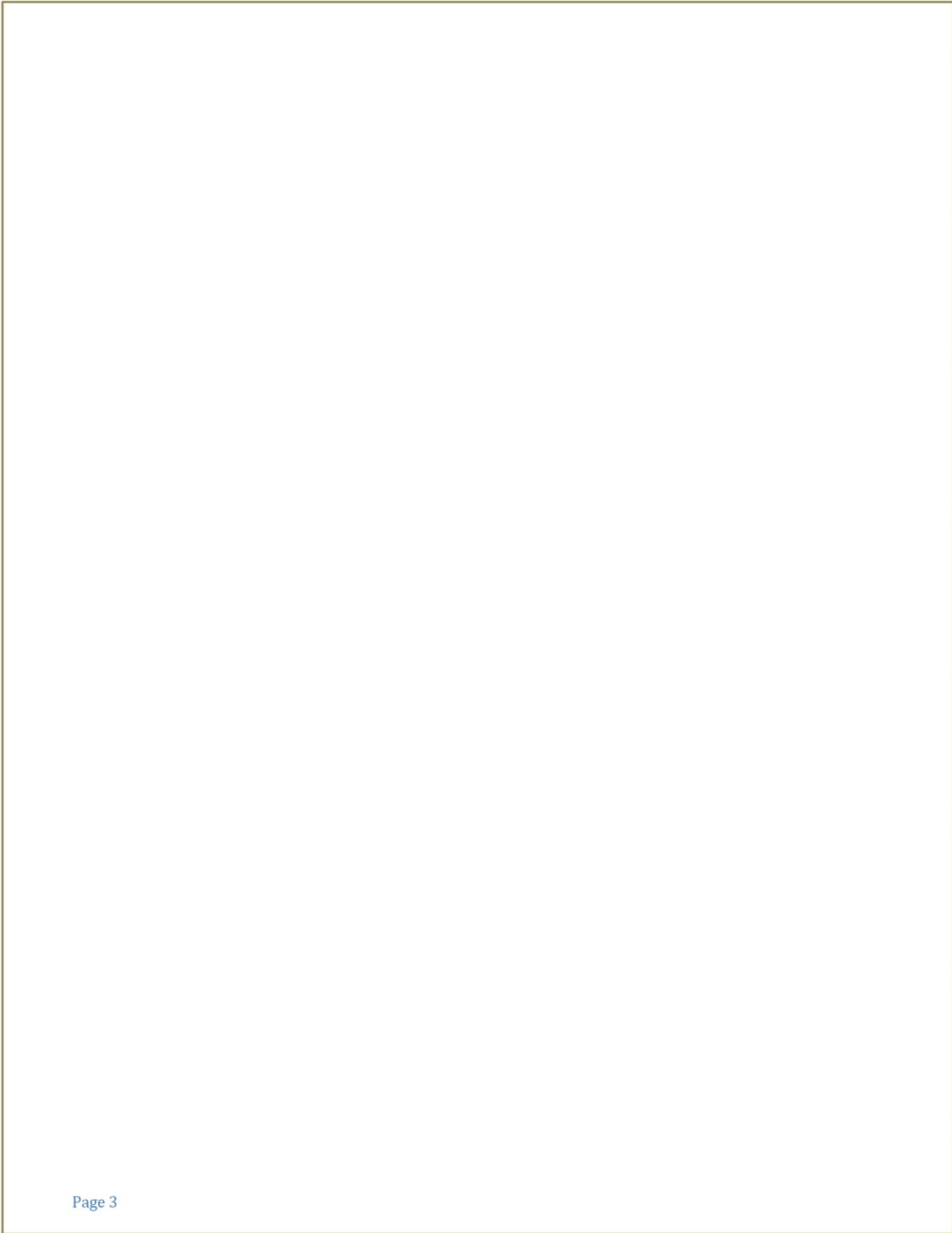
Dear local resident,

This survey gives you a chance to tell us what you think about the facilities built to house the Afghan National Police and the role these facilities have in providing security and growth to the community. This study is a research project conducted by the Department of Civil and Environmental Engineering at the University of New Hampshire (UNH), in the United States. The UNH Institutional Review Board for the Protection of Human Subjects in Research has approved this survey.

We request your participation in our survey for the following reasons: We want to know the effectiveness of the ANP buildings in providing safety and protection needs within a community and in promoting social security. Also, we want to know how convenient it is for both the community and employees to access the facility.

The actual survey, including the name and locations of the facilities, will be kept confidential. Your participation is purely voluntary, and you are free to withdraw your consent and discontinue participation at any time. As a resident member, not employed by the ANP, you must be over 18 years old to participate in the survey. This survey will take you approximately 30 minutes to complete. You are among a small group of participants that we have asked to help us. We truly appreciate your time completing the survey.

Should you have any questions about this inquiry, please contact **Rosa Affleck**, by phone at 603-646-4662 or by email at rosatambasacan@gmail.com or raffleck@unh.edu.

Thank you for your help with this study.

Sincerely,

Rosa Affleck

QUESTIONS FOR LOCAL CITIZENS IN THE VILLAGE:

P1.   Respondent Gender (DO NOT ASK):

1. Male
2. Female

P2.   How old were you on your last birthday? (Record actual age; if respondent refuses, please estimate)

_____

P3.   Do you know anyone in your village or community who is serving as a police officer or is working at the ANP facility nearby?
(1)   Yes
(2)   No

_____
98. Refused (vol)
99. Don't Know (vol)

P4.   Do you think the ANP facility's location is conveniently accessible for you and your neighbors, or not?
(1)   Yes
(2)   No

_____
98. Refused (vol)
99. Don't Know (vol)

P5.   Have you known people in the community who have visited the ANP facility to report an incident or a crime?
(1)   Yes
(2)   No

_____
98. Refused (vol)
99. Don't Know (vol)

P6.   If you were to report a crime or incident to the police, how would you do that? (Please select all that apply.)
(1)   By calling the police station
(2)   By walking to the police station
(3)   By using a vehicle to get to the police station
(4)   Other(Please describe.)_____

_____

98. Refused (vol)
99. Don't Know (vol)

P7.   Having the ANP facilities at their present locations, to what extent do you agree or disagree with the following statements?

		Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree	Refused	Don't know
a.	The ANP facility is in a suitable location for providing police services to the community.	(1)	(2)	(3)	(4)	(5)	98	99
b.	The police facility is accessibly located for local citizens.	(1)	(2)	(3)	(4)	(5)	98	99
c.	People in the community have been going to the police facility to report incidents and crimes.	(1)	(2)	(3)	(4)	(5)	98	99
d.	The policing in this village or community has improved.	(1)	(2)	(3)	(4)	(5)	98	99
e.	You are now feeling safer living in your community.	(1)	(2)	(3)	(4)	(5)	98	99

P8.   (If codes 1-3 in P7a) Why do you feel the ANP facility is located in a suitable location for providing police services to the community? (Single response)

_____

_____

97. Not Asked
98. Refused (vol)
99. Don't Know (vol)

P9. (If code 3-5 in P7a) Why do you feel the ANP facility is NOT located in a suitable location for providing police services to the community?

_____

_____

97. Not Asked
98. Refused (vol)
99. Don't Know (vol)

P10.   Since the ANP facilities came into existence, how has your level of trust in the local police force to protect your personal safety changed? Do you now have less trust, the same level of trust, or more trust?

      (1)   Less trust
      (2)   Same level of trust
      (3)   More trust

      ‾‾‾‾‾‾
      98. Refused (vol)
      99. Don't Know (vol)

P11.   Since the ANP facilities came into existence, how would you rate your present level of safety relative to the past?
      (1)   Much less safe
      (2)   Somewhat less safe
      (3)   No change
      (4)   Slightly safer
      (5)   Much safer

      ‾‾‾‾‾‾
      98. Refused (vol)
      99. Don't Know (vol)

P12.   Since the ANP facilities came into existence, how do you think the population in your community has changed? Do you think the population has decreased, stayed the same or increased?
      (1)   Decreased (People are leaving the community.)
      (2)   Stayed the same (People are staying in the community.)
      (3)   Increased (People from other locations are moving in.)

      ‾‾‾‾‾‾
      98. Refused (vol)
      99. Don't Know (vol)

P13.   Having the ANP facilities in your community, to what extent do you agree or disagree with the following statements on important factors the facility contributed to the community?

		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Refused	Don't know
a.	The ANP facility has provided security to the community.	(1)	(2)	(3)	(4)	(5)	98	99
b.	The ANP facility has provided income to	(1)	(2)	(3)	(4)	(5)	98	99

	the community (local jobs, for example).							
c.	New businesses have been created since the ANP facility was established.	(1)	(2)	(3)	(4)	(5)	98	99
d.	The ANP facility has provided community improvement to the area.	(1)	(2)	(3)	(4)	(5)	98	99
e.	The ANP facility has reestablished the police in the community.	(1)	(2)	(3)	(4)	(5)	98	99
f.	The ANP facility has promoted patriotism in the community.	(1)	(2)	(3)	(4)	(5)	98	99
g.	The ANP facility has promoted local and national identity and pride.	(1)	(2)	(3)	(4)	(5)	98	99
h.	By promoting community safety, this facility has helped people to reach their potential (for example, by learning skills, gaining employment, education, and/or participating in community life).	(1)	(2)	(3)	(4)	(5)	98	99

P14.   In what ways, if any, has the ANP facility helped to improve the community? (List up to three responses).

    a. _____
    b. _____
    c. _____

    _____
    95. The ANP facility has not helped to improve the community.
    98. Refused (vol)
    99. Don't Know (vol)

P15.   How would you rate your present level of safety as a result of police interaction in your community in enforcing the law and maintaining public order?
       (1)   Much less safe
       (2)   Slightly less safe
       (3)   No change or the same level of safety
       (4)   Slightly safer
       (5)   Much safer

       _____
       98. Refused (vol)
       99. Don't Know (vol)

P16.   How much confidence do you have in the police as a result of police interaction in your community in enforcing the law and maintaining public order?
       (1)   No confidence at all
       (2)   Not very much confidence
       (3)   Slight confidence
       (4)   Some confidence
       (5)   A great deal of confidence

       _____
       98. Refused (vol)
       99. Don't Know (vol)

P17.   Do you think that the security operations in the area are sufficient to keep crime in the area at an acceptable level?
       (1)   Yes
       (2)   No

       _____
       98. Refused (vol)
       99. Don't Know (vol)

P18a.   Were any Afghan people involved in building your local ANP facilities?
       (1)   Yes (Continue to P18b)
       (2)   No (Skip to P19a)

       _____
98. Refused (vol) (Skip to P19a)

99. Don't Know (vol) (Skip to P19a)

P18b. (If 1 Yes in P18a) In what way were they involved? (Select all that apply)

    1. Construction work
    2. Facility planning

3. Management or supervision of the project
4. Other services: _____

_____
97. Not Asked
98. Refused (vol)
99. Don't Know (vol)

P19a.   (Ask All) In what ways has your life been positively improved since the ANP facility was built?

_____

_____
98. Refused (vol)
99. Don't Know (vol)

P19b.   In what ways has your life been negatively impacted since the ANP facility was built?

_____

_____
98. Refused (vol)
99. Don't Know (vol)

P20a.   Since the ANP facility was built, has the ANP staff participated in community events or activities?

(1) Yes (Continue to P20b)
(2)   No (Skip to M22)

_____
98. Refused (vol) (Skip to M22)
99. Don't Know (vol) (Skip to M22)

P20b.   (If Q20a is 1 Yes)What sort of community events did the ANP staff participate in?

1.   Social gatherings (Local/Tribal/Village Shuras, etc)
2.   Community Development Councils' sessions
3.   National Solidarity Programs' sessions
4.   Eid prayers in mosques
5.   Funeral ceremonies
6.   Wedding parties
7.   New Year ceremony
8.   Other (Specify):_____

97. Not Asked

98. Refused (vol)
99. Don't Know (vol)

RECORD THE TIME (USING 24 HOUR CLOCK) INTERVIEW WAS COMPLETED AND THE LENGTH OF THE INTERVIEW (M-14 AND M-15)

M22. (Interviewer: Code, do NOT ask) How many people were present for the interview, including yourself and the respondent?

___ __

Read Closing Statement to the Respondent:

"Thank you for participating in our survey. Do you have any questions? In the next few days my supervisor may contact you to evaluate the quality of my work and answer any other questions you may have. To help him do that, could I have your telephone number, if you have any?"

Respondent Information: Name: _____
                                         Address: _____
                                                             _____
                                         Telephone: _____

Interviewer Certification: "I certify that I have completed this interview according to the instructions provided me by the Afghan Center for Socio-economic and Opinion Research.

_____   _____
Signed   Date

To Be Completed By The Interviewer:

M23.   Which of the following statements do you think best describes the level of comprehension of the survey questionnaire by the respondent?

        1.   The respondent understood all of the questions
        2.   The respondent understood most of the questions
        3.   The respondent understood most of the questions but with some help.
        4.   The respondent had difficulty understanding most of the questions, even with help from me

M24.   Which of the following statements best describes the level of comfort or unease that the respondent had with the survey questionnaire?

        1.   The respondent was comfortable (at ease) with the entire questionnaire
        2.   The respondent was comfortable with most of the questions
        3.   The respondent was comfortable with only some of the questions

    4.   The respondent was generally uncomfortable with the survey questionnaire

To Be Completed By The Supervisor:

M25. Was the interview subject to quality control/back-check?

1. Yes
2. No

M26.   Method of quality control/back-check

1. Direct supervision during interview
2. Back-check in person by supervisory team
3. Back-check by phone from the central office
4. Not applicable

M27**.** **(If 1 'Yes' in M25)** Back-checker ID:
    ___ ___ ____ ___

    9996. Not Asked

Appendix B: Spearman's Coefficients Rho

Table B-1. Spearman's correlations among variables in Study Area 1 (N = 100; N = 80 for A1, P3, P4, P5, and P7d).

Variables	a1	a2	P1	P2	P3	P4	P5	P7b	P7a	P7c	P7d	P7e	P10
a1: Distance centroid block		−0.70*	0.11	−0.06	0.14	−0.13	0.05	−0.19	0.14	−0.19	−0.34*	−0.18	0.10
a2: Distance sampling start	−0.70*		−0.17	0.16	0.13	−0.08	0.18	−0.10	0.15	−0.04	−0.18	−0.18	0.08
P1: Gender	0.11	−0.17		0.41*	−0.18	−0.06	−0.03	0	−0.06	−0.02	−0.01	−0.17	0.22*
P2: Age	−0.06	0.16	0.41*		0.04	0.18	0.09	0.06	0.03	−0.15	−0.09	0.05	0.06
P3: Know_anyone_police	0.14	0.13	−0.18	0.04		−0.26*	−0.27*	0.11	−0.13	−0.14	−0.05	−0.02	0.18
P4: Facility_accessible	−0.13	−0.08	−0.06	0.18	−0.26*		−0.22*	−0.08	−0.21	−0.06	−0.08	−0.16	0.08
P5: Known_visited_facility	0.05	0.18	−0.03	0.09	−0.27*	−0.22*		−0.06	−0.13	−0.09	0.08	0.13	−0.09
P7b: Accessibly_located	−0.19	−0.10	0	0.06	0.11	−0.08	−0.06		−0.45*	−0.35*	−0.37*	−0.38*	0.05
P7a: Suitable_location	0.14	0.15	−0.06	0.03	−0.13	−0.21	−0.13	−0.45*		−0.20*	−0.07	−0.35*	0.01
P7c: People_report_crimes	−0.19	−0.04	−0.02	−0.15	−0.14	−0.06	−0.09	−0.35*	−0.20*		−0.58*	−0.24*	0.10
P7d: Policing_improved	−0.34*	−0.18	−0.01	−0.09	−0.05	−0.08	0.08	−0.37*	−0.07	−0.58*		−0.61*	0.20
P7e: Feeling_safer	−0.18	−0.18	−0.17	0.05	−0.02	−0.16	0.13	−0.38*	−0.35*	−0.24*	−0.61*		0.32*
P10: Trust	0.10	0.08	0.22*	0.06	0.18	0.08	−0.09	0.05	0.01	0.10	0.20	0.32*	
P11: Rate_Safety_re_past	0.11	0.16	0.28*	−0.01	0.15	0.02	−0.14	0.19	0.18	0.05	0.15	0.35*	−0.50*
P12: Population_changed	0.12	0.20	0.37*	−0.21*	0.20	0.13	−0.17	0.05	0.09	0.07	0.03	0.25*	−0.24*
P13a: Provided_security	−0.09	−0.25*	−0.12	−0.12	0.18	−0.06	0.23*	−0.10	−0.08	−0.02	−0.16	−0.28*	0.07
P13b: Provided_income	0.21	0.25*	−0.20*	0.08	−0.02	−0.07	−0.13	−0.02	−0.10	−0.14	−0.05	−0.06	0.14
P13c: New_businesses	0.05	−0.01	−0.30*	−0.03	−0.25*	−0.29*	−0.23*	−0.01	−0.26*	−0.06	0.05	−0.07	0.26*
P13d: Provided_local_improv	−0.14	−0.22*	−0.35*	0.20*	−0.05	−0.12	−0.05	−0.28*	−0.20*	0.04	−0.06	−0.31*	0.19
P13e: Reestablsided_police	0.06	0.14	−0.31*	0.21*	−0.02	−0.05	−0.05	−0.12	−0.03	−0.12	−0.02	−0.02	0.09
P13f: Promoted_patriotism	−0.23*	−0.13	−0.07	0.03	0.15	−0.19	0.06	−0.17	0.06	−0.07	−0.27*	−0.29*	0.12
P13g: National_identity	0	−0.01	−0.37*	0.17	0.06	−0.18	−0.02	−0.06	0	.01	−0.21	−0.33*	0.23*
P13h: Gained skills, employ	0.23*	0.23*	−0.36*	0.17	−0.13	0.05	−0.20	0.16	0.02	0.06	0.20	0	−0.04
P15: Level_safetypol_interact	0.16	0.18	0.32*	−0.02	0.15	0.19	−0.11	0.19	0.09	0.17	0.15	0.25*	−0.27*
P16: Confidence	0.32*	0.42*	0.37*	−0.12	0.01	0.15	−0.23*	0.17	0.20	0.11	0.12	0.38*	−0.28*
P17: Security_operations_suf	0.05	0.04	0.05	−0.09	−0.25*	−0.37*	−0.05	−0.15	−0.21*	0.01	−0.11	−0.21*	0.17
P18a: Local_involved_buildin	−0.39*	−0.47*	−0.18	0.06	0.09	−0.21	−0.01	−0.16	−0.13	−0.11	−0.33*	−0.38*	0.07
P20a: Police_participated	−0.12	−0.11	−0.33*	0.24*	−0.07	−0.03	0.06	−0.15	−0.10	0.08	−0.01	−0.17	0.23*

*$p < .05$; numbers highlighted in green and yellow are positive and negative correlations.

Table B-2. Additional Spearman's correlations among variables in Study Area 1 (N = 100; N = 80 for A1, P3, P4, P5, and P7d).

Variables	P11	P12	P13a	P13b	P13c	P13d	P13e	P13f	P13g	P13h	P15	P16	P17	P18a	P20a
a1	0.11	0.12	−0.09	0.21	0.05	−0.14	0.06	−0.23*	0	0.23*	0.16	0.32*	0.05	−0.39*	−0.12
a2	0.16	0.20	−0.25*	0.25*	−0.01	−0.22*	0.14	−0.13	−0.01	0.23*	0.18	0.42*	0.04	−0.47*	−0.11
P1	0.28*	0.37*	−0.12	−0.18	−0.30*	−0.35*	−0.31*	−0.07	−0.37*	−0.36*	0.32*	0.37*	0.05	−0.18	−0.33*
P2	−0.01	−0.21*	−0.12	0.08	−0.03	0.20*	0.21*	0.03	0.17	0.17	−0.02	0.12	−0.09	0.06	0.24*
P3	0.15	0.20	0.18	−0.02	−0.25*	−0.05	−0.02	0.15	0.06	−0.13	0.15	0.01	−0.25*	0.09	−0.07
P4	0.02	0.13	−0.06	−0.07	−0.29*	−0.11	−0.05	−0.19	−0.18	0.05	0.19	0.15	−0.37*	−0.21	−0.03
P5	−0.14	−0.17	0.23*	−0.13	−0.23*	−0.05	−0.05	0.06	−0.02	−0.20	−0.11	−0.30*	−0.05	−0.02	0.06
P7b	0.19	0.05	−0.10	−0.02	−0.01	−0.28*	−0.12	−0.17	−0.06	0.16	0.19	0.17	−0.15	−0.16	−0.15
P7a	0.18	0.09	−0.08	−0.10	−0.26*	−0.20*	−0.03	0.06	0	0.02	0.09	0.10	−0.21*	−0.13	−0.10
P7c	0.05	0.07	−0.020	−0.14	−0.06	0.04	−0.12	−0.07	0.01	0.06	0.17	0.11	0.01	−0.11	0.08
P7d	0.15	0.03	−0.16	−0.05	0.05	−0.06	−0.02	−0.27*	−0.21	0.20	0.15	0.12	−0.11	−0.33*	−0.01
P7e	0.35*	0.25*	−0.28*	−0.06	−0.07	−0.31*	−0.02	−0.29*	−0.33*	0	0.25*	0.38*	−0.21*	−0.38*	−0.17
P10	−0.50*	−0.24*	0.07	0.14	0.26*	0.19	0.09	0.12	0.23*	−0.04	−0.27*	−0.28*	0.17	0.07	0.23*
P11		−0.44*	0.23*	0.03	0.24*	0.32*	0.16	0.13	0.09	0.12	−0.41*	−0.53*	0.12	0.16	0.16
P12	−0.44*		0.19	−0.06	0.22*	0.36*	0.28*	0.23*	0.29*	0.26*	−0.60*	−0.52*	0.14	0.29*	0.33*
P13a	0.23*	0.19		−0.09	−0.05	−0.22*	−0.21*	−0.45*	−0.32*	−0.22*	0.22*	0.31*	−0.26*	−0.33*	−0.11
P13b	0.03	−0.06	−0.09		−0.25*	−0.06	−0.07	0.01	−0.20	−0.25*	−0.12	0.01	0.02	0.17	−0.01
P13c	0.23*	0.21*	−0.05	−0.25*		−0.34*	−0.05	−0.03	−0.08	−0.27*	0.12	0.20	−0.06	−0.15	0.05
P13d	0.32*	0.36**	−0.22*	−0.06	−0.34*		−0.33*	−0.18	−0.22*	−0.29*	0.23*	0.33*	−0.19	−0.23*	−0.31*
P13e	0.16	0.26*	−0.21*	−0.07	−0.05	−0.33*		−0.34*	−0.29*	−0.34*	0.17	0.25*	−0.09	−0.09	−0.20*
P13f	0.13	0.23*	−0.45*	0.01	−0.03	−0.18	−0.34*		−0.40*	−0.16	0.19	0.21*	−0.19	−0.44*	−0.12
P13g	0.09	0.29*	−0.32*	−0.20	−0.08	−0.22*	−0.29*	−0.40*		−0.32*	0.35*	0.27*	−0.11	−0.16	−0.14
P13h	0.12	0.26*	−0.21*	−0.25*	−0.27*	−0.29*	−0.34*	−0.16	−0.32*		0.23*	0.25*	−0.17	−0.15	−0.09
P15	−0.41*	−0.60*	0.22*	−0.12	0.12	0.23*	0.17	0.19	0.35*	0.23*		−0.56*	0.21*	0.31*	0.22*
P16	−0.53*	−0.52*	0.31*	0.01	0.20	0.33*	0.24*	0.21*	0.27*	0.25*	−0.56*		0.14	0.32*	0.17
P17	0.12	0.14	−0.26*	0.02	−0.06	−0.19	−0.08	−0.19	−0.11	−0.17	0.21*	0.14		−0.24*	−0.02
P18a	0.12	0.29*	−0.33*	0.16	−0.15	−0.23*	−0.09	−0.44*	−0.16	−0.15	0.31*	0.32*	−0.24*		−0.08
P20a	0.16	0.33*	−0.11	−0.01	0.05	−0.31*	−0.20*	−0.12	−0.14	−0.09	0.22*	0.17	−0.02	−0.08	

* $p < .05$; numbers highlighted in green and yellow are positive and negative correlations.

Table B-3. Spearman's correlations among variables in Study Area 2 (N = 120; N = 100 for A1, P3, P4, P5, and P7d).

Variables	a1	a2	P1	P2	P3	P4	P5	P7b	P7a	P7c	P7d	P7e	P10
a1: Distance centroid block		−0.77*	−0.18	−0.04	0.07	−0.04	0.11	0.13	0.08	0.20	0.16	0.05	−0.13
a2: Distance sampling start	−0.77*		−0.31*	0.03	−0.05	−0.04	−0.08	−0.06	−0.05	0.02	−0.05	−0.22*	0.03
P1: Gender	−0.18	−0.31		0.23*	−0.18	−0.15	−0.12	−0.09	−0.16	−0.20*	0.17	−0.10	0.12
P2: Age	−0.04	0.03	0.30*		−0.01	−0.03	−0.12	0.09	0.10	0.09	−0.21*	0	−0.01
P3: Know_anyone_police	0.07	−0.05	−0.18	−0.01		−0.48*	−0.39*	−0.15	−0.26*	−0.47*	−0.15	−0.18	0.24*
P4: Facility_accessible	−0.04	−0.04	−0.15	−0.03	−0.48*		−0.19	−0.39*	−0.34*	−0.32*	−0.12	−0.22*	0.28*
P5: Known_visited_facility	0.11	−0.08	−0.12	−0.12	−0.39*	−0.19		−0.11	−0.22*	−0.21*	−0.08	−0.26*	0.18
P7b: Accessibly_located	0.13	−0.06	−0.09	0.09	−0.15	−0.39*	−0.11		−0.70*	−0.64*	−0.44*	−0.65*	0.45*
P7a: Suitable_location	0.08	−0.05	−0.16	0.10	−0.26*	−0.34*	−0.22*	−0.70*		−0.51*	−0.41*	−0.48*	0.41*
P7c: People_report_crimes	0.20*	0.02	−0.20*	0.09	−0.47*	−0.32*	−0.21*	−0.64*	−0.51		−0.43*	−0.61*	0.48*
P7d: Policing_improved	0.16	−0.05	0.17	−0.21*	−0.15	−0.12	−0.08	−0.44*	−0.41*	−0.43*		−0.45*	0.42*
P7e: Feeling_safer	0.05	−0.22*	−0.10	0	−0.18	−0.22*	−0.26*	−0.65*	−0.48*	−0.61*	−0.45*		0.42*
P10: Trust	−0.13	0.03	0.12	−0.01	0.24*	0.28*	0.18	0.45*	0.41*	0.48*	0.42*	0.42*	
P11: Rate_Safety_re_past	−0.22*	−0.11	0.18*	−0.09	0.25*	0.38*	0.32*	0.51*	0.43*	0.47*	0.31*	0.35*	−0.65*
P12: Population_changed	−0.17	0.01	0.24*	−0.15	0.17	0.33*	0.13	0.73*	0.59*	0.67*	0.30*	0.61*	−0.45*
P13a: Provided_security	0.02	−0.09	−0.22*	0.08	−0.28*	−0.40*	−0.20	−0.60*	−0.71*	−0.59*	−0.38*	−0.48*	0.47*
P13b: Provided_income	0.12	0	−0.24*	0.10	−0.21*	−0.33*	−0.32*	−0.62*	−0.68*	−0.63*	−0.32*	−0.53*	0.45*
P13c: New_businesses	.22*	0.02	−0.22*	0.06	−0.23*	−0.26*	−0.23*	−0.69*	−0.63*	−0.68*	−0.49*	−0.58*	0.44*
P13d: Provided_local_improv	0.05	−0.13	−0.14	0.05	−0.31*	−0.29*	−0.18	−0.69*	−0.57*	−0.66*	−0.43*	−0.63*	0.48*
P13e: Reestablsided_police	0.08	−0.08	−0.14	0.03	−0.23*	−0.14	−0.13	−0.55*	−0.51*	−0.57*	−0.40*	−0.46*	0.38*
P13f: Promoted_patriotism	0.16	−0.01	−0.19*	0.13	−0.22*	−0.21*	−0.29*	−0.63*	−0.55*	−0.59*	−0.36*	−0.60*	0.45*
P13g: National_identity	0.08	−0.15	−0.13	0.03	−0.17	−0.16	−0.25*	−0.66*	−0.56*	−0.56*	−0.29*	−0.62*	0.36*
P13h: Gained skills, employ	0.16	−0.02	−0.19*	0.05	−0.24*	−0.16	−0.19	−0.61*	−0.58*	−0.70	−0.49*	−0.59*	0.42*
P15: Level_safetypol_interact	−0.07	0.10	0.10	0.05	0.35*	0.38*	0.28*	0.35*	0.32*	0.40*	0.43*	0.34*	−0.55*
P16: Confidence	−0.15	−0.04	0.22*	0.07	0.28*	0.46*	0.33*	0.46*	0.40*	0.47*	0.41*	0.42*	−0.51*
P17: Security_operations_suf	−0.20*	−0.36*	−0.12	0.03	−0.02	−0.11	−0.02	−0.31*	−0.36*	−0.33*	−0.26*	−0.32	0.07
P18a: Local_involved_buildin	0.38*	0.32*	0.10	0.03	0.08	−0.06	−0.18	−0.11	−0.12	−0.12	−0.21*	−0.02	0.29*
P20a: Police_participated	0.23*	0.25*	−0.11	0.11	−0.22*	−0.30*	−0.26*	−0.23*	−0.26*	−0.36*	−0.15	−0.22*	0.16

* $p < .05$; numbers highlighted in green and yellow are positive and negative correlations.

Table B-4. Additional Spearman's correlations among variables in Study Area 2 (N = 120; N = 100 for A1, P3, P4, P5, and P7d)

Variables	P11	P12	P13a	P13b	P13c	P13d	P13e	P13f	P13g	P13h	P15	P16	P17	P18a	P20a
a1	−0.22*	−0.17	0.02	0.12	0.23*	0.05	0.08	0.16	0.08	0.16	−0.07	−0.15	−0.20*	0.38*	0.23*
a2	−0.11	0.01	−0.09	0	0.02	−0.13	−0.08	−0.01	−0.15	−0.02	0.10	−0.04	−0.36*	0.32*	0.25*
P1	0.18*	0.24*	−0.22*	−0.24*	−0.22*	−0.14	−0.14	−0.20*	−0.13	−0.19*	0.10	0.22*	−0.12	0.10	−0.11
P2	−0.09	−0.15	0.08	0.10	0.06	0.05	0.03	0.13	0.03	0.05	0.05	0.07	0.03	−0.03	0.12
P3	0.26*	0.17	−0.28*	−0.21*	−0.23*	−0.31*	−0.23*	−0.22*	−0.17	−0.24*	0.35*	0.28*	−0.02	0.08	−0.22*
P4	0.38*	0.33*	−0.40*	−0.33*	−0.29*	−0.29*	−0.14	−0.21*	−0.16	−0.16	0.38*	0.46*	−0.11	−0.06	−0.30*
P5	0.32*	0.13	−0.19	−0.32*	−0.23*	−0.18	−0.13	−0.29*	−0.25*	−0.19	0.28*	0.33*	−0.02	−0.18	−0.26*
P7b	0.51*	0.73*	−0.60*	−0.62*	−0.69*	−0.69*	−0.55*	−0.63*	−0.66*	−0.61*	0.35*	0.46*	−0.31*	−0.11	−0.30*
P7a	0.43*	0.59*	−0.71*	−0.68*	−0.63*	−0.57*	−0.51*	−0.55*	−0.56*	−0.58*	0.32*	0.40*	−0.36*	−0.12	−0.26*
P7c	0.47*	0.67*	−0.59*	−0.63*	−0.68*	−0.66*	−0.57*	−0.59*	−0.56*	−0.70*	0.40*	0.47*	−0.33*	−0.12	−0.36*
P7d	0.31*	0.30*	−0.38*	−0.32*	−0.49*	−0.43*	−0.40*	−0.36*	−0.29*	−0.49*	0.43*	0.41*	−0.26*	−0.21*	−0.15
P7e	0.35*	0.61*	−0.48*	−0.53*	−0.58*	−0.63*	−0.46*	−0.60*	−0.62*	−0.59*	0.36*	0.42*	−0.32*	−0.02	−0.22*
P10	−0.65*	−0.45*	0.47*	0.45*	0.44*	0.48*	0.38*	0.45*	0.36*	0.42*	−0.55*	−0.51*	0.07	0.29*	0.16
P11		−0.59*	0.51*	0.57*	0.54*	0.56*	0.40*	0.58*	0.50*	0.48*	−0.67*	−0.49*	−0.04	0.34*	0.42*
P12	−0.59*		0.61*	0.72*	0.75*	0.68*	0.56*	0.68*	0.65*	0.63*	−0.40*	−0.47*	0.28*	0.19*	0.43*
P13a	0.51*	0.61*		−0.77*	−0.64*	−0.70*	−0.53*	−0.56*	−0.59*	−0.63*	0.41*	0.49*	−0.35*	−0.14	−0.30*
P13b	0.57*	0.72*	−0.77*		−0.74*	−0.67*	−0.59*	−0.65*	−0.68*	−0.67*	0.43*	0.49*	−0.22*	−0.25*	−0.44*
P13c	0.54*	0.75*	−0.64*	−0.74*		−0.74*	−0.55*	−0.73*	−0.68*	−0.75*	0.51*	0.60*	−0.31*	−0.20*	−0.46*
P13d	0.56*	0.68*	−0.70*	−0.67*	−0.74*		−0.62*	−0.65*	−0.72*	−0.74*	0.49*	0.54*	−0.24*	−0.14	−0.40*
P13e	0.40*	0.56*	−0.53*	−0.58*	−0.55*	−0.62*		−0.64*	−0.52*	−0.65*	0.30*	0.32*	−0.12	−0.11	−0.30*
P13f	0.58*	0.68*	−0.56*	−0.65*	−0.73*	−0.65*	−0.64*		−0.67*	−0.69*	0.43*	0.51*	−0.23*	−0.15	−0.46*
P13g	0.50*	0.65*	−0.59*	−0.68*	−0.68*	−0.72*	−0.52*	−0.6*		−0.63*	0.42*	0.47*	−0.27*	−0.11	−0.25*
P13h	0.48*	0.63*	−0.63*	−0.67*	−0.75*	−0.74*	−0.65*	−0.69*	−0.63*		.42*	.46*	−0.34*	−0.15	−0.36*
P15	−0.67*	−0.40*	0.41*	0.43*	0.51*	0.49*	0.30*	0.43*	0.42*	0.42*		−0.62*	−0.03	0.33*	0.35*
P16	−0.49*	−0.47*	0.49*	0.49*	0.60*	0.54*	0.32*	0.51*	0.47*	0.46*	−0.62*		0.07	0.37*	0.41*
P17	−0.04	0.28*	−0.35*	−0.22*	−0.31*	−0.24*	−0.12	−0.23*	−0.27*	−0.34*	−0.03	0.07		0.20*	0.12
P18a	0.34*	0.19*	−0.14	−0.25*	−0.20*	−0.14	−0.11	−0.15	−0.11	−0.15	0.33*	0.36*	0.20*		−0.30*
P20a	0.42*	0.43*	−0.30*	−0.44*	−0.46*	−0.40*	−0.30*	−0.46*	−0.25*	−0.36*	0.35*	0.41*	0.12	−0.30*	

* $p < .05$; numbers highlighted in green and yellow are positive and negative correlations.

Appendix C: UNH Institutional Review Board Approval

University *of* New Hampshire

Research Integrity Services, Service Building
51 College Road, Durham, NH 03824-3585
Fax: 603-862-3564

20-May-2015

Affleck, Rosa T.
NRESS, James Hall
132 Ibey Road
Enfield, NH 03748

IRB #: 6250
Study: Impacts on Afghan National Police Facilities within the Community Survey
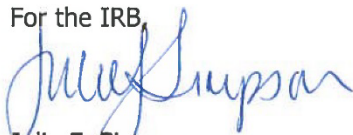**Approval Date:** 12-May-2015

The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved the protocol for your study as Exempt as described in Title 45, Code of Federal Regulations (CFR), Part 46, Subsection 101(b). Approval is granted to conduct your study as described in your protocol.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the attached document, *Responsibilities of Directors of Research Studies Involving Human Subjects.* (This document is also available at http://unh.edu/research/irb-application-resources.) Please read this document carefully before commencing your work involving human subjects.

Upon completion of your study, please complete the enclosed Exempt Study Final Report form and return it to this office along with a report of your findings.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or Julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,

Julie F. Simpson
Director

cc: File
    Gardner, Kevin

REPORT DOCUMENTATION PAGE

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July 2018	Technical Report/Final	

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University of New Hampshire Natural Resources and Earth Systems Science (NRESS) PhD Program 105 Main St., Durham, NH 03824	UNH
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES

Under the ERDC Long-Term Training Program and the U.S. Army ERDC Section 219 Innovative Basic and Applied Program

14. ABSTRACT

Constructing the Afghan National Police (ANP) facilities was among the U.S. Government's (USG) infrastructure development efforts for the stability operation mission in Afghanistan. Therefore, this study selected two communities in the northern and eastern parts of Afghanistan to assess how the introduction of these police stations has influenced the perception of neighborhood safety and local growth. This study used complementary datasets and methods, including multilevel models, to relate qualitative and quantitative information.

This study revealed contrasting outcomes: (a) people's feeling of safety attributed to the ANP facilities is higher in the less safe area, and (b) people's perception of the overall neighborhood safety in the two study areas is unrelated to each other. These feelings of safety are associated with perceived trust and confidence in the police; and most importantly, the ANP facilities contributed to a level of perceived institutional influence in promoting patriotism and national identity in the community. Overall, the addition of police infrastructure and institutions in these two study areas has supported security, resilience, and growth in the community. These measures provide novel insights that are practical for assessing impacts on infrastructure development in conflict-ridden environments and can facilitate better-informed decisions for future infrastructure development supporting USG missions.

15. SUBJECT TERMS

Afghanistan. National Police, Confidence, Infrastructure (Economics), Security sector, Stability operations, Trust

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