8-2023

Connectedness and Wellbeing: Investigating Community and Nature-Based Connection in the Context of Utah's Rapid Growth

Sarah E. Wilson
Utah State University

CONNECTEDNESS AND WELLBEING: INVESTIGATING COMMUNITY AND NATURE-BASED CONNECTION IN THE CONTEXT OF UTAH'S RAPID GROWTH

by

Sarah E. Wilson

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Environment and Society

Approved:

Courtney Flint, Ph.D. Major Professor	Mark Brunson, Ph.D. Committee Member
Jessica Schad, Ph.D. Committee Member	D. Richard Cutler, Ph.D. Vice Provost of Graduate Studies

UTAH STATE UNIVERSITY
Logan, Utah

2023

ABSTRACT

Connectedness and Wellbeing: Community and Nature-Based Connection in the Context of Utah's Rapid Growth

by

Sarah E. Wilson, Master of Science

Utah State University, 2023

Major Professor: Dr. Courtney Flint
Department: Environment and Society

Research suggests that feeling connected to the natural world and feeling socially connected to your community positively influence wellbeing. However, significant demographic shifts within communities may reduce the amount of social and nature-based connectedness enjoyed by residents. As one of the fastest growing states, data from within Utah likely provides important insights related to how population growth impacts connectedness and wellbeing. Considering this, the present research investigated the relationships between personal wellbeing, community connection, and connection with nature in the context of Utah's rapid population growth by utilizing quantitative survey data from the Utah Wellbeing Project and demographic information from the American Community Survey (ACS). As a secondary goal, this research also investigated how participation in certain nature-based activities was related to community connection and if these relationships varied depending on the level of population growth.

Results suggest there was a positive association between community connection and connection with nature, and between both forms of connectedness and personal

wellbeing. However, population growth only negligibly impacted community connection, connection with nature, and their respective relationships with personal wellbeing. Instead, certain demographic variables were most influential. Older respondents and those who identify as a member of the Church of Jesus Christ of Latter-Day Saints rated their community connection higher than other groups, while older respondents and those with household incomes of $150,000 or above rated their connection with nature and personal wellbeing higher than other groups. Religious preference was also associated with personal wellbeing, but considerably *less* explanatory when considering community connections' contribution to wellbeing; indicating that the wellbeing of members of the Church of Jesus Christ of Latter-Day Saints was more comparable to other groups in the study when controlling for community-based social connections.

Additionally, those who participated in certain nature-based activities were more likely to rate their community connection high than those who did not, but these differences were most pronounced in communities experiencing more growth. Local leaders and community planners could likely improve resident wellbeing by stimulating opportunities to connect with other people and the natural environment, and by considering demographic differences and inequities.

(122 pages)

PUBLIC ABSTRACT

Connectedness and Wellbeing: Community and Nature-Based Connection in the Context of Utah's Rapid Growth

Sarah E. Wilson

Research suggests that feeling connected to the natural world and feeling socially connected to your community positively influence wellbeing. However, significant demographic shifts within communities may reduce the amount of social and nature-based connectedness enjoyed by residents. As one of the fastest growing states, data from within Utah likely provides important insights related to how population growth impacts connectedness and wellbeing. Considering this, the present research investigated the relationships between personal wellbeing, community connection, and connection with nature in the context of Utah's rapid population growth by utilizing quantitative survey data from the Utah Wellbeing Project and demographic information from the American Community Survey (ACS). As a secondary goal, this research also investigated how participation in certain nature-based activities was related to community connection and if these relationships varied depending on the level of population growth.

Results indicate there was a positive association between community connection and connection with nature, and between both forms of connectedness and personal wellbeing. However, population growth only negligibly impacted community connection, connection with nature, and their respective relationships with personal wellbeing. Instead, certain demographic variables were most influential. Older respondents and

those who identify as a member of the Church of Jesus Christ of Latter-Day Saints rated their community connection higher than other groups, while older respondents and those with household incomes of $150,000 or above rated their connection with nature and personal wellbeing higher than other groups. Religious preference was also associated with personal wellbeing, but considerably *less* explanatory when considering community connections' contribution to wellbeing; indicating that the wellbeing of members of the Church of Jesus Christ of Latter-Day Saints was more comparable to other groups in the study when controlling for community-based social connections.

Additionally, those who participated in certain nature-based activities were more likely to rate their community connection high than those who did not, but these differences were most pronounced in communities experiencing more growth. Local leaders and community planners could likely improve resident wellbeing by stimulating opportunities to connect with other people and the natural environment, and by considering demographic differences and inequities.

ACKNOWLEDGMENTS

I would like to acknowledge many people and groups who helped facilitate this project. Data used in this research was funded through the Utah League of Cities and Towns and the Utah Agricultural Experiment Station (UTA1400). Funding for my graduate tuition and assistantship was provided by the Department of Environment and Society at Utah State University and a National Science Foundation (NSF) award associated with the broader Transformation Network project (NSF Award #2115169). I would also like to thank my advisor, Dr. Courtney Flint, for this amazing opportunity. I cannot imagine attempting graduate school without her guidance, knowledge, and patience. And of course, thank you to my wonderful committee members, Dr. Mark Brunson and Dr. Jessica Schad, for their considerable guidance and always being there to help me through different phases of the research process. In addition, I would like to thank Dr. Matthew Carroll from Washington State University, whose efforts helped bring me to Utah State for my graduate studies. I am beyond grateful for these amazing people who have shaped me as a person and academic.

Sarah E. Wilson

CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER 1

INTRODUCTION

Wellbeing is a multifaceted concept used to describe and measure the factors that contribute to a good life and is often examined at different levels, including individual and community (Bache & Reardon, 2016). Although there is not a single well accepted definition, one way to conceptualize wellbeing is as "a state of being with others, which arises where human needs are met, where one can act meaningfully to pursue one's goals and where one can enjoy a satisfactory life" (Loveridge et al., 2020, p. 416). Prior to 1950, economic indicators were primarily utilized to assess wellbeing (Stiglitz et al., 2019). Between the 1950's and 70's, there was growing recognition that various non-economic factors heavily influence wellbeing and cannot be adequately assessed based solely on economic considerations (Bache & Reardon, 2013). Described by Bache and Reardon (2013) as the first wave of wellbeing, this shift away from economic focus precipitated a social indicators movement which led to increased governmental and scientific interest in the investigation of non-economic wellbeing determinants.

Although impactful, the social indicators movement tapered off in the 1970's and the second wave of wellbeing would not emerge until the 1990's (Bache & Reardon, 2013). At this time, significant improvements were made among the scientific community for reliably assessing wellbeing (particularly subjective components) and its determinants, while concerns for environmental health grew rapidly within the broader population (Bache & Reardon, 2013). Stemming from these changes, contemporary understandings of wellbeing among academic and governmental groups are generally

more dynamic and holistic, integrating objective measures, such as housing and job security, with both subjective and ecological measures to form indices (King et al., 2014).

The United States Environmental Protection Agency (EPA) developed the Human Wellbeing Index (HWBI), which includes eight wellbeing domains derived from both objective and subjective wellbeing data, with 25 indicators and 79 metrics across the domains (Summers et al., 2014). A similar approach was developed by the International Organisation for Economic Co-operation and Development (OECD) known as the Better Life Index, which is composed of 11 domains and 24 indicators (Hicks et al., 2016). The United Nations Development Programme's (UNDP) Human Development Index utilizes three domains (Flint, 2016), and these indices represent only a small portion of the approaches available today.

Each framework for measuring wellbeing described above contains slightly different but important factors related to wellbeing and were reviewed to construct community-based wellbeing surveys in Utah as part of the Utah Wellbeing Project. The Utah Wellbeing Project began in 2018 with the goal of tracking wellbeing and resident attitudes to help inform local policy and planning decisions. The Utah Wellbeing Project surveys featured questions to gauge subjective personal wellbeing, subjective community wellbeing, community-based social connections, perspectives on population growth and economic development, and ten wellbeing domains including mental health, physical health, living standards, substance use, leisure time, local environmental quality, connection with nature, social connections, safety and security, education, and cultural opportunities.

Many places in Utah have grown rapidly in recent years, potentially resulting in significant changes within communities. Two components of the Utah Wellbeing Project surveys are particularly relevant when considering potential wellbeing impacts associated with rapid growth: community connection and connection with nature. Although related findings are largely mixed, there is evidence to suggest that rapid community growth or urbanization can lower community connectedness (Slemp et al., 2012) and result in reductions in the availability of natural elements in the built and surrounding environment (Cox et al., 2018) that may impact how connected residents feel to the natural world.

Considering this, this research aims to investigate how subjective personal wellbeing (herein referred to as 'personal wellbeing') is associated with community and nature-based connectedness in the context of Utah's rapid population growth by utilizing quantitative survey data derived from the Utah Wellbeing Project. Additionally, this research investigates how connection with nature and participation in nature-based activities is associated with community connection. As one of the fastest growing states (US Census Bureau, 2021), data from within Utah may provide important insights needed to begin assessing potential growth-related consequences for wellbeing.

To address these inquiries, this research is guided by the following research questions:

1) What is the association between community connection and personal wellbeing in Utah?
2) What is the association between connection with nature and personal wellbeing in Utah?

3) What is the association between community connection and connection with nature in Utah?
4) What is the association between participation in nature-based activities and community connection? Does this vary depending on the rate of population growth?
5) How does the rate of population growth influence connection with nature, community connection, and their respective relationships with personal wellbeing in Utah?

CHAPTER 2

LITERATURE REVIEW

This chapter provides an overview of the literature related to community connection and wellbeing, connection with nature and wellbeing, and the need-to-belong theory. Additionally, this chapter discusses literature concerning the links between both forms of connectedness and the potential implications of community growth for connectedness and wellbeing. This is followed by a description of the research hypotheses associated with this study.

Community Connectedness and Wellbeing

Community connectedness is a specific form of social connectedness and is one of several interrelated or synonymous concepts including sense of community, social capital, and community cohesion (Umstattd Meyer et al., 2021). Social connections can occur within various "communities," such as faith-based communities or online groups. However, community connectedness in this sense, and for the purposes of this research, refers specifically to social connections within the geographic location in which people live. Although current conceptualizations vary throughout the literature, community connectedness was first developed within the field of community psychology by Seymore Sarason (1974) in his seminal work *The psychological sense of community: prospects for a community psychology*. He defined community connection as ‘‘the sense that one was part of a readily available mutually supportive network of relationships upon which one

could depend, and as a result of which one did not experience sustained feelings of loneliness" and emphasized its role in wellbeing (Sarason, 1974, p. 1).

Subsequent researchers extended Sarason's work throughout the 1970's, however, a more structured conceptualization was not introduced until the development of McMillan and Chavis's four-factor model (McMillan & Chavis, 1986; Nowell & Boyd, 2010). Similar to Sarason's approach, McMillan and Chavis (1986, p. 9) define community connectedness as "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together." Proving to be particularly influential, most contemporary work stems from the four-factor model developed by McMillan and Chavis (Nowell & Boyd, 2010).

High levels of community connectedness have been associated with various social outcomes that positively impact wellbeing. When compared to more disconnected locales, those living in connected communities tend to feel safer in their setting, have more trust for other residents, have higher levels of both political and civic participation (Francis et al., 2012), and tend to report higher personal wellbeing (Davidson & Cotter, 1991). A recent review "suggests a general consensus across the literature" that community connectedness is positively related to subjective, psychological, and social wellbeing in a variety of contexts and settings (Stewart & Townley, 2020, p. 1).

Although social and psychological wellbeing are primarily seen as separate from subjective wellbeing (Keyes, 2013), there is evidence to suggest that social and psychological forms of wellbeing have important implications for subjective wellbeing. Two recent longitudinal studies were largely unique in attempting to determine the

directionality of such relationships, and found that psychological (Joshanloo, 2019) and social wellbeing (Joshanloo et al., 2018) consistently predicted subjective wellbeing over a 20 year period. Conversely, subjective wellbeing did not predict social wellbeing (Joshanloo et al., 2018), while the findings related to the reverse effect on psychological wellbeing were largely inconsistent (Joshanloo, 2019). They conclude that psycho-social wellbeing is a "causal antecedent of subjective well-being" (Joshanloo et al., 2018, p. 2142).

Connection with Nature and Wellbeing

Relationships between humans and their surrounding environment have been discussed by a variety of early writers (Mayer & Frantz, 2004). In *A Sand Country Almanac*, Aldo Leopold detailed the importance of viewing nature as part of our community, maintaining that such an orientation could transform the way humans behave on the landscape and fundamentally alter how we value the natural environment (Leopold, 1949). The term "biophilia" was first used by Eric Fromm (1964) and explained as a deep love for all living things. Later, this idea was more fully described and theorized by Edward O. Wilson in his 1984 publication of *Biophilia.* Wilson's (1984) biophilia hypothesis maintains that humans have an innate, evolutionarily based need to feel connected to the natural world. As described by Kellert and Wilson (1993, p. 20):

> The human tendency to relate with life and natural processes might be the expression of a biological need, one that is integral to the human species' development process and essential in physical and mental growth…The biophilia hypothesis proclaims a human dependence on nature that extends far beyond the simple issues of material and physical sustenance to encompass as well the human craving for aesthetic, intellectual, cognitive, and even spiritual meaning and satisfaction.

This need is primarily met through time spent in natural environments, a lack of which is thought to alter healthy functioning and lower wellbeing (Zelenski & Nisbet, 2014). Although the biophilia hypothesis presumes that such an affiliation is inborn, it is also believed that the relationship can be impacted by cultural factors (Kellert & Wilson, 1993), as certain demographics appear to have a higher probability of nature connection compared to other groups. For example, evidence demonstrates that adults with higher nature connection reported engaging in more activities in nature during adolescence compared to those with lower connection (Tam, 2013), and one study found that children from the Menominee Tribe more frequently articulated "ecological relations and psychological closeness to nature" than children of European American decent (Unsworth et al., 2012). As such, "this research illustrates that developmental experiences and cultural context can have an influence on our evolved tendency to connect with nature" (Capaldi et al., 2014, p. 2).

The ideas described above led to the development of the connection with nature concept, which is one of multiple related concepts such as connectivity with nature, nature relatedness, and emotional affinity toward nature (Tam, 2013). However, it is important to note that Leopold was not the first to recognize nature as an integral part of the human community. Although not discussed as a contributor to the conceptual development of connection with nature throughout the literature reviewed thus far, many if not all Indigenous cultures maintained an intimate, familial-like relationship with nature (Salmon, 2000) that is still observable today but impacted by decades of

colonialism and settler colonialism (particularly in the US context) imposed on such groups (Schmitt et al., 2021).

Mayer and Frantz (2004) view connection with nature as an individual's "experiential sense of oneness with the natural world" that is largely shaped by direct interactions in both adults and youth (Skinner, 2019). This includes broadening one's sense of self to include the natural environment and expression varies between people along a continuum (Capaldi et al., 2014). For example, according to Lumber and associates (2017, p. 3), connection with nature varies between individuals: "It is a subjective and multidimensional construct. Nature connectedness is subject to personal and social influences and is comprised of cognitive, affective, learnt, experiential, and personality factors that together, create a connection with nature." From this perspective, connection with nature can be seen as a value-based trait or attitude that is consistent across situations and over time; but can also occur as a state-level phenomena which can grow or decline with specific exposure to natural environments (Whitburn et al., 2020).

High levels of connection with nature have been linked to various positive outcomes directly related to wellbeing. In their original work on nature connectedness, Mayer and Frantz (2004) found an association between overall life satisfaction and nature connection. Similarly, evidence suggests that those with higher levels of nature connectedness are happier (Capaldi et al., 2014) and exhibit higher wellbeing (Pritchard et al., 2019; Richardson et al., 2021). Although Capaldi and associates (2014) note that the effect on happiness is generally small, it is comparable to other widely accepted variables known to impact happiness such as income and education (Capaldi et al., 2014).

Previous research also shows that nature connectedness is associated with more nature contact, both in terms of developing a connection and because those high in nature connectedness seek out experiences and activities in the natural world (Wolsko & Lindberg, 2013; Capaldi et al., 2014). In fact, certain findings suggest that time spent is nature is directly related to an individual's level of connection with nature (Nisbet et al., 2020). As such, high levels of connection with nature can also indirectly impact wellbeing through repeated contact with natural environments, which has been shown to lower overall mortality risk and the occurrence of respiratory issues or allergies, while improving mental health, cognitive abilities, subjective wellbeing, and healing times (Cox et al., 2018). As described by Zelenski and Nisbet (2014, p. 4), "being an environmentalist probably does little to promote happiness on its own, but a strong sense of connection with nature, and the moments of nature contact that it facilitates, may promote wellbeing."

The Need-to-Belong Theory

A useful framework for understanding the importance of community and nature-based connectedness for wellbeing can be derived from Baumeister and Leary's (1995) need-to-belong theory. The theory posits that, as a foundationally social species, having close relationships with others satisfies a fundamental human need (Baumeister & Leary, 1995). They write, "the human mind contains a basic and nearly universal drive to form and maintain relationships with some other people" (Allen et al., 2022, p. 1136). As a universal drive, this implies that the need to belong will be found to some extent in all people across different cultural contexts (Baumeister & Leary, 1995).

Using the biophilia hypothesis, Baumeister and Leary's theory of belonging has also been extended to specifically include connections to the natural environment. According to Mayer and Frantz (2004, p. 509) "individuals have a basic need to feel a sense of belonging, to feel like a valued member of a community. From an ecopsychological and biophilia perspective, however, this sense of belonging extends beyond our city limits and includes a sense of belonging to the natural world." Given that both constructs are viewed as basic human needs, the theory posits that a lack of social and nature-based connections leads to negative wellbeing-related outcomes. As described previously, evidence largely supports this notion, as those with high levels of both forms of connectedness tend to experience more wellbeing benefits than those low in connectedness (Capaldi et al., 2014; Cox et al., 2018; Francis et al., 2012).

The Relationship Between Community and Nature-Based Connections

Scholarly literature points to multiple ways in which community and nature-based connections might be related. First, both forms of connectedness impact wellbeing and it has been hypothesized that nature connectedness may promote subjective happiness because it is directly associated with other forms of connectedness, including community (Zelenski & Nisbet, 2014). However, in testing this relationship, Zelenski and Nisbet (2014, p. 3) found that "general connectedness predicted happiness well, yet nature relatedness remained a significant distinct predictor of many happiness indicators, even after controlling for other connections."

Second, both forms of connection can be impacted by similar community characteristics. Namely, access to nature appears to be influential for both community

and nature connectedness. For example, activities and built features in communities are specifically augmented by natural elements that can facilitate interaction and connectedness in urban and rural spaces (Francis et al., 2012; Kuo et al., 1998). Community gardens (Kingsley & Townsend, 2006; Alaimo et al., 2010; Jennings & Bamkole, 2019) and other greenspaces such as parks (Francis et al., 2012; Gómez et al., 2015; Peters et al., 2010) have been shown to increase social contact and connection between users within a community and are often viewed as providing a space for social gathering. For example, Oh and colleagues (2022) found that those who more frequently visited local gardens and scored higher on nature relatedness (a concept similar to connection with nature) across two dimensions felt stronger levels of social cohesion. Other features in public spaces such as trails have been found to promote more social connection when they are specifically designed with natural elements or within natural areas (Francis et al., 2012).

Access to outdoor recreation is an important aspect of access to nature within communities, but the natural environment does not need to be utilized directly to foster connection between neighbors or individuals and the environment. Rural and urban residents with more surrounding nature, from street trees to urban streams, have been shown to be more socially active, to know more neighbors and have more positive views toward neighbors, and a greater sense of belonging in their community (Kuo et al., 1998). Likewise, those exposed to natural elements in the built environment are more likely to experience a higher connection with nature (Wolsko & Lindberg, 2013). As stated by Weinstein and colleagues (2015, p. 1141), the relationship between community and nature-based connections may be directly related to nature contact as “natural spaces

foster a sense of relating to the outside world, which generalizes to a caring and closeness with other people."

Third, community and nature-based connections might be related through the experience of place attachment. Place attachment refers to the emotional bonds people feel toward specific settings based on the "conditions of place and characteristics of people" (Stedman, 2003, p. 672), and has been positively associated with wellbeing (Rollero & De Piccoli, 2010). Place attachment is distinct from community attachment, which typically only refers to the social attributes of a community that influence attachment (Trentelman, 2009). Early place attachment literature within sociology did primarily emphasize the social components of attachment, but research within the last few decades has increasingly viewed the natural environment as an important component of place attachment (Stedman, 2003; Brehm et al., 2006; Raymond et al., 2010). For example, one model views place attachment as including four interrelated components: place identity, place dependence, nature bonding, and social bonding (Raymond et al., 2010). Much of this research emphasizes how the physical aspects of place, including the natural elements, act to vacillate interactions and social bonds (Scannell & Gifford, 2010; Raymond et al., 2010). Although these components are interrelated, evidence from Brehm et al., (2006) and Ulrich-Schad et al., (2013) suggest that the social and environmental aspects of place attachment represent distinct dimensions.

That said, not all findings have indicated a positive relationship between connection with nature and community connection (or social connections more broadly). Some researchers view social and nature-based connections as two separate pathways for achieving a sense of belonging (Mayer et al., 2009; Passmore & Howell, 2014). As such,

it has been argued that certain individuals will actively look for opportunities to connect with nature if they are lacking in social connections (Moreton et al., 2019). This is potentially supported by Poon and colleagues (2015), who found that social ostracism led to more pronounced desires to connect with the natural world. In discussing these findings, Moreton and associates (2019, p. 60) note that over time, the desire to connect could lead to higher overall connection with nature, "Thus, decreased feelings of social connectedness could lead to the development of connectedness to nature."

The Role of Growth in Wellbeing and Connectedness

In terms of wellbeing generally, findings related to the impact of population growth are largely mixed. In certain communities that are struggling with depopulation and lacking in economic opportunities, both population growth and the (often) accompanying economic development may result in positive outcomes for local residents (Winters & Li, 2017). However, this may not be consistent in all contexts. For example, according to Potter and colleagues (2004), smaller communities may not have the resources and capacity to deal with large population influxes in the same way more established communities do, suggesting that wellbeing may decline in smaller communities as growth rates increase. However, Lindberg and Wolsko (2019) identified a negative relationship between overall life satisfaction and population growth among residents in Bend, Oregon, whose population was around 80,000 at the time of the study. These inconsistencies are summarized well by Lindberg and Wolsko (2019, p. 317):

> Population growth does not inherently lead to community prosperity, but it often is portrayed as a sign of community success, and concomitant energy and optimism may increase resident well-being. Moreover, growth may lead to

> agglomeration benefits and may both cause and be caused by an increase in employment opportunities, cultural and leisure options, or other tangible benefits that may be valued by residents. On the other hand, growth may generate dis-amenities, such as increased density, congestion, and commuting time along with decreased public greenspace, small town character, and governance quality.

Considering the contribution of community and nature-based connections to wellbeing, community growth may also impact wellbeing through how it effects connectedness. From the typologies of Tönnies to the massification of society, ideas of community decline have been prevalent in the field of sociology and beyond, and this includes the presence of a close-knit, community-based social fabric (Lyon & Driskell, 2012). Although it is generally maintained that community connectedness has not entirely disappeared in the modern world and remains an important aspect of people's daily lives (Krannich et al., 2011; Wilkinson, 1991), there are certain features of contemporary society that are often believed to make community interaction and overall closeness more difficult to cultivate. For example, it has been reported that various outcomes associated with population growth, such as increased urbanization and sprawling development patterns, have contributed to modern difficulties in fostering social connections within communities (Francis et al., 2012; Putnam, 2000; Talen, 2000). There is evidence to support these worries; in interviews performed by Slemp and colleagues (2012) in two urban communities experiencing population growth and land-use expansion, reductions in perceived community connections in the face of community change were commonly identified by participants. They conclude that both rapid in-migration and the associated land development resulted in social fragmentation (Slemp et al., 2012). Similarly, Wilson

and Baldassare (1996) found that both city size and population density reduced overall community connection.

Social issues associated with rapid community change have also been a focus of many rural sociological studies. For example, the "social disruption hypothesis" was commonly applied to communities experiencing significant changes associated with developments in energy-based economic sectors; leading "to social and psychological dislocations and to an erosion of established community social structures" (Smith et al., 2009, p. 426). Similar ideas have been applied to communities experiencing significant amenity migration (Ulrich-Schad, 2018). For example, researchers have described a "culture clash" between long-term residents and in-migrants, who are thought to exhibit conflicting values, that may lead to social conflict in communities' overtime (Gosnell & Abrams, 2011).

That said, the social impacts associated with culture clashes (Smith & Krannich, 2000; Krannich et al., 2006) and the disruption hypothesis (Freudenberg, 1986; Smith et al., 2009) have received mixed support throughout the literature. Freudenberg (1986, p. 56) found that the density of acquaintanceship declined in boomtown scenarios, however, they note that "although some disruptions have been created, they have fallen short of the dissolution of community described by some commentators." Similarly, Krannich and colleagues (2006) found that social integration in rapidly growing amenity-based communities did not substantially differ from communities with more stable populations. Additionally, it is important to note that both concepts have been applied specifically to communities growing due to specific drivers (energy and amenity development) which might be unique in the way they affect community-based social connections. For

example, growth associated with amenity and natural resource extraction development is often specifically studied within a rural or isolated context (Krannich & Grieder, 1984) where growth-related impacts would potentially be most noticeable, and it is possible that boom-type development attracts specific kinds of in-migrants that might differ from those moving to communities that do not fit the description of a boomtown.

Others have noted that as cities grow, land-use change often results in development of previously natural areas and loss of open space (Cox, 2018). As such, chances for incidental exposure to nature and overall nature dose are often higher in smaller rural areas compared to more urbanized locales (Cox, 2018). Although exposure to nature and nature connection are not the same concept, lack of exposure can result in a disconnect from the natural world (Lumber et al., 2017). Zylstra and colleagues (2014) note various modern drivers of nature disconnection, with the "size and speed of urbanization" and rapid population growth presented as key physical influences. However, testing the common hypothesis regarding higher levels of nature connection in less developed rural areas has yielded inconsistent findings. Because technological advancements and changing norms around leisure activities currently impact most demographics, some studies have found little difference between nature connection scores for urban and rural youths (Larson et al., 2018), while other findings support the notion of higher nature connection in less developed areas (Loebach & Gilliland, 2016; Bashan et al., 2021).

Specific perceptions of population growth and the associated changes may also be related to both social and nature-based connections. In studying the relationship between the social and environmental aspects of place attachment and their relationship to local

environmental concerns, Brehm and colleagues (2006) investigated concerns with likely implications for connectedness such as preserving agricultural land and open space and the importance of limiting population growth. Both social and environmental place attachments emerged as significant predictors of both concerns, reflecting how the natural and social environments within communities are linked and can be viewed by locals as threatened by significant sociodemographic changes (Brehm et al., 2006). Clearly, the findings are largely inconsistent, and more research is needed to understand how population growth may impact wellbeing and connectedness across different communities.

Research Hypotheses

Considering the literature reviewed thus far, it is clear that community connection and connection with nature can contribute to personal wellbeing in a variety of ways. However, it is unclear how both forms of connectedness are related to each other, as both positive and negative relationship have been identified in prior research (Moreton et al., 2019; Poon et al., 2015). Additionally, the findings related to how community growth impacts both forms of connectedness and wellbeing are largely inconsistent. As such, this research aims to investigate the associations between community connection, connection with nature, and personal wellbeing in the context of Utah's rapid growth.

In relation to these research goals, this study hypothesizes the following outcomes:

1. Similar to the findings of findings of Davidson and Cotter (1991) and Stewart and Townley (2020), *I hypothesize that there will be a positive correlation between*

community connectedness and personal wellbeing. Likewise, based on the findings of Pritchard et al., (2020) and Richardson et al., (2021), *I hypothesize a positive correlation between connection with nature and personal wellbeing.* When considering the work of Slemp et al., (2012) and Loebach and Gilliland (2016*), I hypothesize that these relationships will be more pronounced in communities with less population growth*.

2. Based on the findings of Kuo et al., 1998 and Oh et al., 2022, *I hypothesize that there will be a positive correlation between connection with nature and community connectedness.* In other words, it is expected that those who rate their connection with nature as high will also exhibit higher ratings of connection to their community. Again, *I hypothesize that these relationships will be more pronounced within communities with lower growth rates,* as rapid population growth may lead to increased development of natural and open spaces and lower overall nature dose and access (Weinstein et al., 2015; Cox et al., 2018).
3. Considering how time spent in nature can lead to positive social interactions and heightened community connectedness (Weinstein et al., 2015), *I hypothesize that those who participate in certain nature-based activities will be more likely to rate their level of community connection as high than those who do not participate*. In line with previous work, this includes recreating in city parks (Peters et al., 2010; Gómez et al., 2015) and watching birds or wildlife in your yard or neighborhood. Although it cannot be assumed that wildlife viewing always occurred in the kind of public spaces linked with increased social connections (Francis et al., 2012), there is evidence to suggest that residents with simply more surrounding nature experience a greater sense

of belonging to their community (Kuo et al., 1998). As with above, *I again hypothesize that these relationships will be less pronounced within communities with higher growth rates* (Figure 1) (Weinstein et al., 2015; Cox et al., 2018). Since the remaining nature-based activities from the survey do not necessarily take place in a community setting that would lead to locally-based interactions (motorized and non-motorized recreation on public lands or waters in Utah, gardening, and watching or reading nature-based programs or publications), I do not expect them to be highly related to community connection compared to the other activities.

4. Lastly and similar to above, *I hypothesize that higher levels of population growth will be negatively associated with both connection with nature and community connection* (Loebach & Gilliland, 2016; Slemp et al., 2012). Additionally, given the potential contributions of community and nature-based connectedness to wellbeing described above, *I hypothesize that personal wellbeing will be lower in communities experiencing high levels of population growth due to a reduction in both forms of connectedness* (Figure 2).

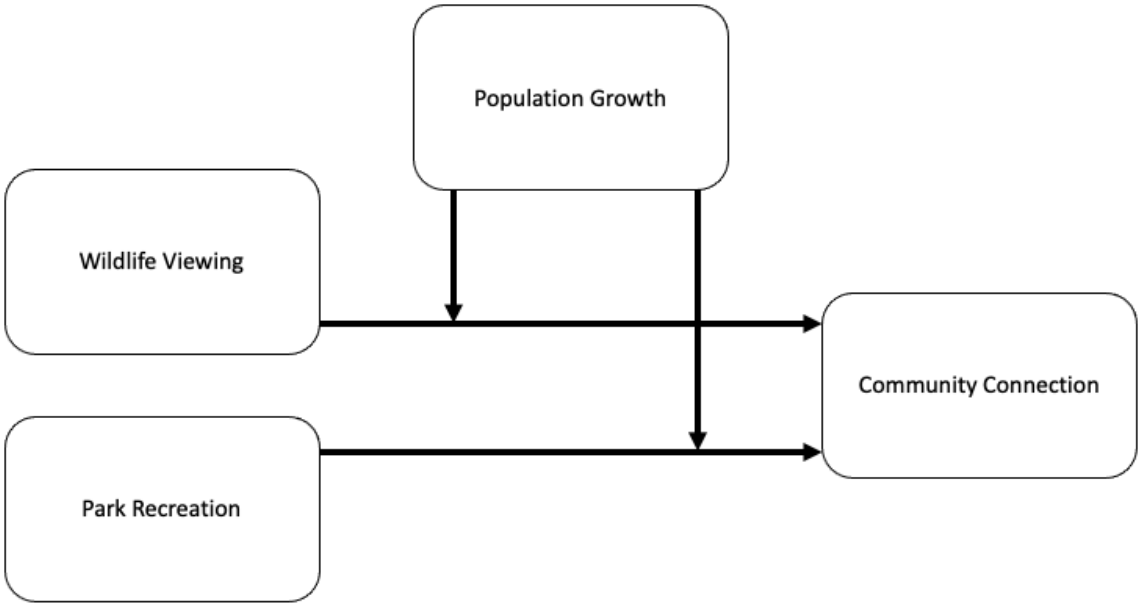

Figure 1.

Hypothesized Conceptual Model for the Relationships Between Participation in Nature-Based Activities, Community Connection, and Population Growth

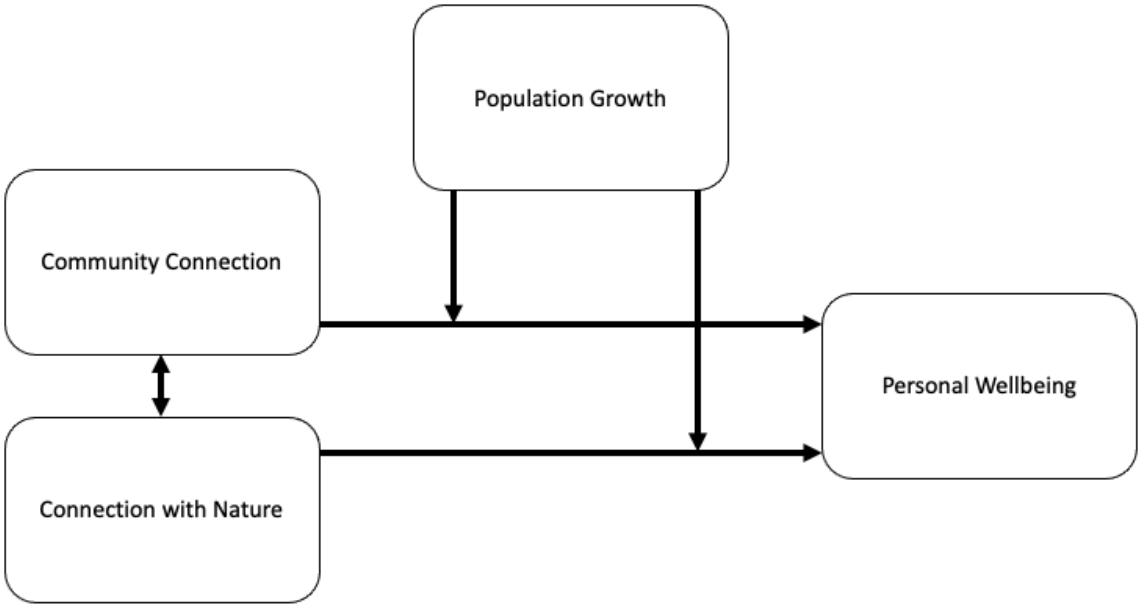

Figure 2.

Hypothesized Conceptual Model for the Relationships Between Community Connection, Connection with Nature, Personal Wellbeing, and Population Growth

CHAPTER 3

METHODS

Study Areas

To answer the proposed research questions, this study focused on 32 cities across Utah that vary considerably in size and growth trends (Table 1). A map of the cities included can be found in Figure 3. Between 2010 and 2020, Utah experienced a state-wide total population growth rate of 18.4%, the fastest in the nation over that period (Thiriot, 2021). In 2022, Utah was the tenth fastest growing state in terms of percent population growth at 1.2%, following North Carolina, Arizona, Delaware, South Dakota, Texas, South Carolina, Idaho, and Florida (Census, 2022b). This recent growth was considerably higher than the national rate of .47% and exceeded the previous historical high from 2006 (Albers et al., 2022). According to the Kem C. Gardner Policy Institute, in migration accounted for two-thirds of the total growth in 2022 (Albers et al., 2022). As such, as one of the fastest growing states, data from within Utah may be particularly useful for beginning to determine growth-related impacts.

Table 1.

City Population and 10-Year Growth Percentage Statistics

City	*2010*	*2020*	*% Change 2010-2020*
Beaver	2,985	3,115	4.36
Blanding	3,276	3,594	9.71
Bluff	260	260	0.00
Bountiful	42,363	43,991	3.84
Cottonwood Heights	33,544	33,865	0.96
Delta	3,330	3,604	8.23
Draper	39,252	48,594	23.80
East Carbon	1,292	1,589	23.00
Ephraim	5,789	7,222	24.80
Helper	2,161	2,346	8.60
Herriman	18,328	45,211	146.70
Highland	14,081	19,012	35.02
Hyde Park	3,623	4,703	29.81
Layton	65,674	77,268	17.70
Lehi	42,047	66,980	59.30
Logan	46,408	51,266	10.50
Millcreek	61,001	60,828	-0.30
Moab	4,950	5,303	7.13
Nephi	5,256	6,168	17.40
Nibley	4,763	6,993	46.82
North Logan	7,765	10,978	41.40
Park City	7,553	8,467	12.10
Price	8,473	8,303	-2.00
Sandy	87,168	96,137	10.30
Santaquin	8,365	12,276	46.80
Saratoga Springs	14,696	31,273	112.80
South Jordan	46,366	73,695	59.00
Spanish Fork	31,851	40,069	25.80
Tooele	30,167	35,313	17.10
Tremonton	7,219	8,890	23.15
Vineyard	192	8,628	4393.75
West Jordan	98,622	115,181	16.80

Note: Population statistics were gathered from the American Community Survey (5-Year Estimates) for 2006-2010 and 2016-2020. However, populations statistics for Bluff city were changed based on communications with city leaders over Census inaccuracy.

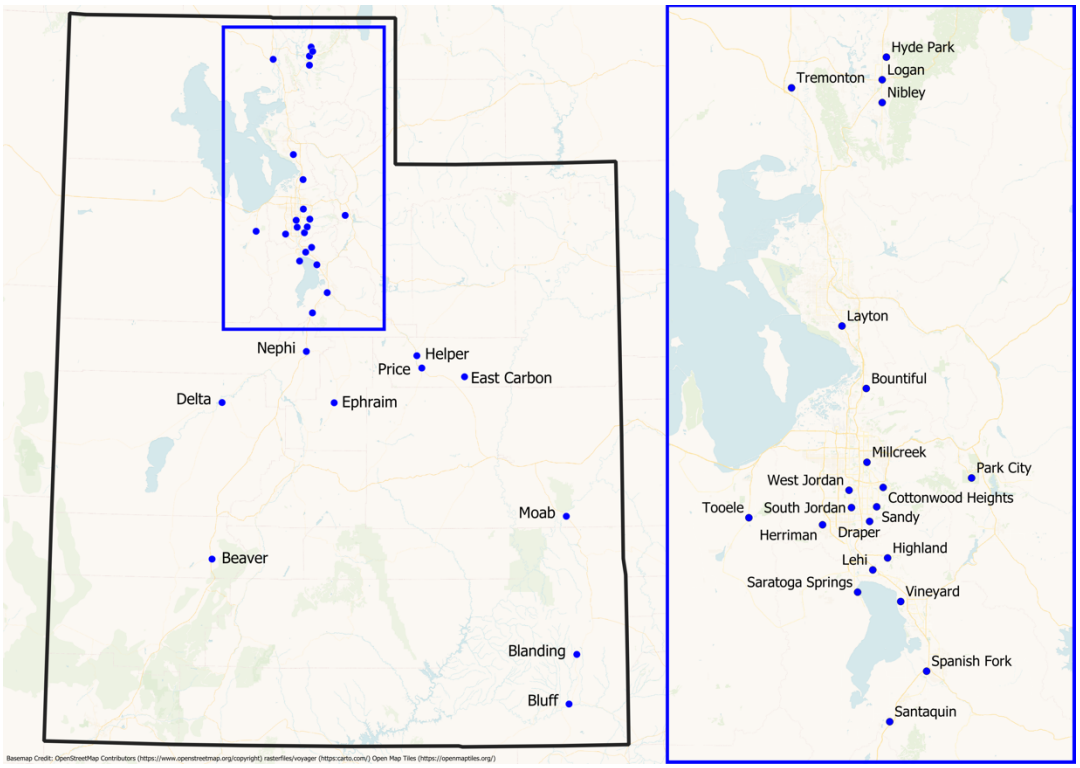

Figure 3.

Map of Cities Included from Utah Wellbeing Project (Holdaway, 2023)

Data Collection and Sampling

Data collection involved gathering secondary data from the US Census, the Utah State Tax Commission, and the Utah Wellbeing Project surveys. The American Community Survey (ACS) (5-Year Estimates) and the Utah State Tax Commission provided data related to growth trends. This data was used in conjunction with survey data to address research questions related to population growth. The Utah Wellbeing Project began in 2018 with the goal of tracking wellbeing and local attitudes to help inform local policy and planning decisions. The Utah Wellbeing Project surveys featured questions to gauge personal wellbeing, subjective community wellbeing, and ten

individual wellbeing domains including mental health, physical health, living standards, substance use, leisure time, local environmental quality, connection with nature, social connections, safety and security, education, and cultural opportunities. Additionally, the surveys included questions regarding community-based social connections and gathered information on various demographic characteristics, including length of residence, age, gender, educational attainment, annual household income, religious preference, and race.

Each of the 32 cities listed above had voluntarily partnered with the Utah Wellbeing Project to participate in no-cost wellbeing surveys at the beginning of 2022. Because the Utah Wellbeing Project utilized partnerships with city leaders to distribute surveys with the goal of providing information to local leadership, traditional probabilistic sampling methods were not used to determine which cities to include or which residents to survey, and recruitment methods varied between cities. Some cities asked to participate in the project, while others were invited as part of an effort to include a balanced set of cities across a rural-urban gradient determined by the Utah League of Cities and Towns (ULCT).

The ULCT is “a non-partisan, inter-local, government cooperative” that provides various services, including the creation of specific tools to aid policymakers (ULCT, 2016). One such tool is their city classifications (caucus groups), which include cities of the first and second class, mid-sized cities, rapid growth cities, resort communities, and traditional rural towns (ULCT, 2016). Cities advertised the survey through a range of modes including city newsletters, social media pages, local websites, utility bills, flyers, and/or through local news media. Any current resident in a partner city age 18 and older was eligible to take part in the surveys. The surveys were created using Qualtrics

software and were available online for at least three weeks in each city between February and April of 2022 (see Appendix A for survey). These advertising efforts resulted in 9,895 completed surveys across the 32 cities (Table 2).

Respondent demographics were compared with Census data and the relevant tables (Tables B.1., B.2., B.3., and B.4.) can be found in Appendix B. Described further in the next section, the 32 cities were divided into four population growth rate categories based on percent population change between 2010 and 2020. Categories include negative-low growth, moderate growth, high growth, and very high growth. As such, the tables represent the demographic makeup of each growth category, resulting in four separate tables. Overall, survey respondents were not fully representative of each city or each growth category. Within the negative-low and moderate growth categories, the sample underrepresented people aged 18-29, those who identify as male, those without a college degree, those with household incomes under $25,000, and those who are non-white. Within the high and very high growth categories, the sample underrepresented people aged 18-29, those who identify as male, those without a college degree, and those who are non-white.

That said, there are a few important things to note about the nature of ACS data. The Utah Wellbeing Project surveys were open to any resident 18 or older, so age and gender statistics from the ACS were calculated based on the adult population for each city. Education statistics from the ACS are based on the population aged 25 and over, while income is calculated at the household level. However, the ACS does not provide statistics on race by age, so the race of the adult population could not be calculated. Thus, all statistics related to race from the ACS within Tables B.1. through B.4. refer to the

racial makeup of both youths and adults. According to the Pew Research Center (2020), younger generations (including Millennials and Generation Z), are more racially and ethnically diverse than prior generations. As such, the Utah Wellbeing Project adult sample may be slightly more racially representative than the comparative tables imply.

Table 2.

Survey Statistics by City

City	Total Surveys	% of Adult Population	Conservative Margin of Error (%)
Beaver	131	5.95	8.31
Blanding	207	9.18	6.49
Bluff	83	31.92	7.21
Bountiful	270	0.87	5.94
Cottonwood Heights	227	0.86	6.46
Delta	77	3.17	10.99
Draper	888	2.68	3.24
East Carbon	131	10.73	8.09
Ephraim	106	2.05	9.42
Helper	46	2.51	14.27
Herriman	136	0.49	8.38
Highland	187	1.67	7.11
Hyde Park	448	15.38	4.26
Layton	319	0.59	5.47
Lehi	245	0.61	6.24
Logan	476	1.22	4.46
Millcreek	274	0.58	5.90
Moab	208	4.85	6.63
Nephi	250	6.0	6.01
Nibley	457	11.16	4.32
North Logan	299	3.83	5.56
Park City	390	5.49	4.82
Price	261	4.39	5.93
Sandy	809	1.13	3.43
Santaquin	50	0.66	13.81
Saratoga Springs	109	0.64	9.36
South Jordan	467	0.94	4.51
Spanish Fork	595	2.36	3.97
Tooele	322	1.31	5.43
Tremonton	337	5.82	5.18
Vineyard	418	7.32	4.61
West Jordan	672	0.83	3.76

Note: Population Statistics were gathered from the ACS. Adult Population was determined by subtracting the total number of people under 18 from the total population for each city.

Growth Conceptualization and Variable Measurement

To assess the impact of growth, the 32 cities were organized into four ordinal categories based on percentage of population change between 2010 and 2020 (Table 1). Population change between 2010 and 2020 was chosen to assess the impact of recent growth trends and because Utah experienced its highest growth in this period (Thiriot, 2021). Categories for the population growth variable include declining or low growth cities (<0% to 5%), moderate growth cities (>5% to 20%), high growth cities (>20% - 40%), and very high growth cities (>40%) (Table 3). These categories were separated based on natural breaks in the data, with at least 2.77 percentage points separating the highest growth rates in one category from the lowest in the next category. Population statistics were gathered from the ACS (5-year estimates), utilizing both the 2006-2010 and 2016-2020 datasets, for all cities except Bluff, Utah. In speaking with city officials in Bluff, it was relayed that the 2020 Census activities were heavily impacted by the COVID-19 Pandemic, and that the current estimates were inaccurate compared to city records as Bluff had not lost population since 2010. As such, the population statistics used for Bluff in this study were based on recommendations from the Mayor of Bluff city. Specifically, the Mayor requested we use the population estimates from the 2010 ACS based on the level of accuracy compared with 2020 estimates.

Although the growth categories were determined based on percent population change over a ten-year period, other aspects of growth are also important to consider. For example, population growth can result in changes in land-use patterns, as well as economic processes. As such, growth is often felt both socially and spatially (Slemp et al., 2012). To account for this more spatial dimension of growth, two variables were also

created based on residential occupancy and property tax revenue. These measures were chosen based on recommendations from the ULCT and data availability at the city level. Specifically, the total number of occupied housing units for each city were gathered from the ACS (5-year estimates) 2006-2010 and 2016-2020 datasets to determine percent change in occupied housing units between 2010 and 2020. 10-year change percentages were also calculated based on total property tax revenue for each city (Table 4). Data related to property tax revenue was obtained for each participating city from the Utah State Tax Commission fiscal years 2011 and 2021, except for Bluff and Millcreek. Bluff and Millcreek were not officially incorporated until 2017 and 2018, respectively. As such, data regarding property tax revenue in these two cities were not available in 2011, resulting in their property tax data covering shorter periods than other study cities. These measures were chosen based on discussions with the ULCT as well as the availability of certain data at the city level.

Table 3.

Categorization of Cities Based on Percent Change in Population 2010-2020

Category Name	Completed Surveys	Cities Included
Negative-Low Growth (<0 – 5%)	1,246	Bluff Beaver Bountiful Cottonwood Heights Millcreek Price
Moderate Growth (>5 – 20%)	3,776	Blanding Delta Helper Layton Logan Moab Nephi Park City Sandy Tooele West Jordan
High Growth (>20 – 40%)	2,692	Draper East Carbon Ephraim Highland Hyde Park Spanish Fork Tremonton
Very High Growth (>40%)	2,181	Herriman Lehi Nibley North Logan Santaquin Saratoga Springs South Jordan Vineyard

To measure the three main variables of interest, this research draws from three specific questions from the Utah Wellbeing Project surveys. To measure personal wellbeing, respondents were asked “How would you rate your overall personal

wellbeing? (Use your own interpretation of wellbeing),” with response options on a 5-point Likert scale from 1 (poor) to 5 (excellent). To measure community connection, respondents were asked “In [City], to what degree do you feel connected to your community” with response options on a 5-point Likert scale ranging from 1 (not at all) to 5 (a great deal). Therefore, unlike common scales such as the Sense of Community index (Perkins et al., 1990), this is a single-item measurement aimed at determining resident perceptions of overall community connectedness in the form of a rating.

Lastly, to measure connection with nature, respondents were asked to rate their level of wellbeing in terms of connection with nature on a 5-point scale from 1 (poor) to 5 (excellent) (Table 5). Although this conceptualization of connection with nature is unique and does not utilize established scales associated with the concept, Garza-Teran and colleagues (2022, p. 1) stated that:

> This concept (connection with nature) is often studied in relation to the direct contact individuals have with the natural environment, which according to some studies have demonstrated to generate positive effects by fostering a feeling of connecting and bonding with nature, as well as improving their wellbeing.

As such, measuring how connected individuals feel to nature as a wellbeing domain rating in community-based research may be useful when considering the impact of community growth on connectedness and wellbeing in a non-longitudinal study, rather than measuring connectedness as a trait-like phenomenon as intended with established scales.

The connection with nature rating was the primary measurement used to determine how the concept is associated with community connection, personal wellbeing, and growth. But as previously described, participation in certain nature-based activities

has been shown to increase social cohesion in communities (Richardson et al., 2021). In the Utah Wellbeing Project surveys, respondents were asked if they had participated in six nature-based activities in the last 12 months with a yes/no response format. Activities included enjoying wildlife or birds in your yard or neighborhood, non-motorized recreation on public lands or waters, motorized recreation on public lands or waters, gardening, recreating in parks within your city, and watching or reading nature-related programs or publications. With these data available, it is worth determining if these relationships are apparent in Utah as well.

Table 4.

Change in Occupied Housing Units and Total Property Tax Revenue

City by Growth Category	Change in Occupied Housing Units (%)	Change in Total Property Tax Revenue (%)
Negative-Low		
Bluff	0.00	30.84
Beaver	22.14	46.00
Bountiful	-1.20	81.20
Cottonwood Heights	3.75	82.0
Millcreek	0.02	37.27
Price	6.41	38.60
Moderate		
Blanding	11.50	70.43
Delta	14.70	64.80
Helper	-0.53	55.00
Layton	21.20	98.31
Logan	8.73	84.81
Moab	11.54	95.64
Nephi	18.70	124.61
Park City	-11.70	28.42
Sandy	12.70	85.30
Tooele	11.70	77.44
West Jordan	19.90	111.20
High		
Draper	33.33	139.70
East Carbon	32.60	90.00
Ephraim	29.80	72.10
Highland	34.34	140.00
Hyde Park	33.33	139.92
Spanish Fork	24.50	139.40
Tremonton	32.60	56.90
Very High		
Herriman	155.51	300.40
Lehi	56.70	210.32
Nibley	34.52	132.30
North Logan	53.92	105.17
Santaquin	46.70	178.90
Saratoga Springs	107.53	328.22
South Jordan	78.40	132.00
Vineyard	4589.70	497.44

Note: With the exception of Bluff and Millcreek as described above, data for calculating change in occupied housing units was gathered for 2010 and 2020 (ACS). Data for calculating change in total property tax revenue was gathered for fiscal years 2011 and 2021 (Utah State Property Tax Commission).

Data Analysis

Survey data from the Utah Wellbeing Project was uploaded to SPSS version 28. Data from the ACS and the Utah State Tax Commission were downloaded as .xlxs files and used to determine percent change over a ten-year period (with the exception of property tax data for Bluff and Millcreek as described above) for each city in population, occupied housing units, and total property tax revenue. The population change values were used to construct four population growth categories to organize cities. Next, a categorical variable was created in SPSS that assigned each city to its respective growth category, resulting in six cities in the negative-low growth category, eleven cities in the moderate growth category, seven cities in the high growth category, and eight cities in the very high growth category (Table 3). For occupied housing unit and property tax data, two continuous variables were created in SPSS which assigned the raw percent change numbers to each city. Additionally, another continuous variable was created in SPSS to represent total population for each city to control for city size. Specifically, the total population as of 2020 was assigned to each city in units of 1000 persons to aid with interpretation because of the large range of population sizes across cities.

All analyses were performed using SPSS version 28. Descriptive statistics were first computed by city, by growth category, and for the aggregate dataset to determine mean scores for the three primary variables (community connection, connection with nature, and personal wellbeing), as well as frequencies to understand the distribution of the data. Frequencies were also computed by growth category and for the aggregate dataset for participation in each nature-based activity. Next bivariate relationships were assessed to answer research questions 1-3, with Spearman's Rank Order correlation

computed for each city, each growth category, and the data set as a whole. For research question 1 (What is the association between community connection and personal wellbeing in Utah?), community connection and personal wellbeing were used as the two variables in the analysis. For research question 2 (What is the association between connection with nature and personal wellbeing in Utah?), connection with nature rating and personal wellbeing were used as the two variables. Lastly, for research question 3 (What is the association between community connection and connection with nature in Utah?), community connection and connection with nature rating were used as the two variables.

Multi-variate relationships were then assessed to address research questions 4 and 5. To answer research question 4 (What is the association between participation in nature-based activities and community connection? Does this vary depending on the rate of population growth?) a series of 3-way contingency tables were created using the SPSS crosstabs function. Each of the six activities were analyzed separately to determine their relationship with community connection, resulting in 6 contingency tables. The community connection variable was originally measured on a 5-point Likert scale but was collapsed into 3 categories for this analysis to ensure there were at least five cases per cell in each contingency table. As such, a community connection score of 1 in this analysis represents community connection ratings 1 through 3 out of 5, while a community connection score of 2 represents a rating of 4 out of 5 and a community connection score of 3 represents a rating of 5 out of 5. Cramer's V was calculated for each activity by growth category and overall to compare the effect size of the chi-square

statistics, as Cramer's V is preferred to the Phi coefficient for any contingency table larger than 2 x 2 (Kotrlik et al., 2011).

Research question 5 (How does the rate of population growth influence connection with nature, community connection, and their respective relationships with personal wellbeing in Utah?) was addressed by running an Analysis of Co-Variance (ANCOVA) using the SPSS Univariate Generalized Linear Model (GLM) function. This was conducted to determine if there was a statistically significant difference between growth categories across the three primary variables, resulting in four separate models. ANCOVA was specifically chosen because it allowed for continuous covariates and categorical fixed effects.

Model 1 was used to determine the impact of growth on community connection with community connection as the dependent variable and growth categories as fixed effects. To control for demographics and spatial dimensions of growth, demographic variables (age, income, length of residence, gender, race, and religious preference) were also included as fixed effects with total population, percent change in occupied housing units, and total property tax revenue as covariates. Model 2 was used to determine the impact of growth on connection with nature ratings and utilized the same variables as Model 1, with the exception of connection with nature rating as the dependent variable in Model 2.

Model 3 was used to assess the impact of growth on the relationship between community connection and personal wellbeing. Personal wellbeing was used as the dependent variable while controlling for the same demographic fixed effects and covariates as Models 1 and 2. However, both community connection and growth categories were included as fixed effects and as an interaction term to assess if the

relationship between community connection and personal wellbeing varies significantly depending on growth category. Similarly, Model 4 utilized the same conventions as Model 3, but with connection with nature rating as the main fixed effect and as part of the interaction term with growth categories instead of community connection. All variables used in this study are summarized in Table 5.

Table 5.

Variables Used in Analysis

Variable Name	Survey Measurement	Response Options or Variable Type
Personal wellbeing	"How would you rate your level of personal wellbeing?"	1 = Very Poor to 5 = Excellent
Community connection	"How connected do you feel to [City] as a community?"	1= Not at All to 5 = A Great Deal
Connection with nature	"How would you rate your level of wellbeing in the following category – Connection with Nature?"	1 = Very Poor to 5 = Excellent
Participation in nature-based activities (6)	"Have you participated in any of the following activities in the past 12 months?"	1 = No; 2 = Yes
Growth categories	Categories based on percent change in population between 2010 and 2020	1 = Negative-Low; 2 = Moderate; 3 = High; 4 = Very High
Income	"What would you estimate your total household income was for 2021?"	1 = Under $25,000; 2 = $25,000 - $49,999; 3 = $50,000 - $74,999; 4 = $75,000 - $99,999; 5 = $100,000 - $149,999; 6 = $150,000+
Age	"Which category matches your age today?"	1 = 18 – 29; 2 = 30 – 39; 3 = 40 – 49; 4 = 50 – 59; 5 = 60 – 69; 6 = 70 or older
Education	"What is the highest level of education you have completed?"	0 = No college degree; 1 = College degree (4-year) or higher
Length of residence	"How long have you been a resident of [City]?"	0 = Length of residence 5 or more years; 1 = Length of residence less than 5 years
Race	"What is your race? Please select all that apply."	0 = White; 1 = Non-white or multiple race
Religious preference	"Which category best describes your religious preference, if any?"	1 = Atheist/Agnostic/No religious preference; 2 = Other religions; 3 = Latter-Day Saint
Property Tax Revenue (PTR)	Change in total property tax revenue between fiscal years 2011-2021	Continuous variable
Occupied Housing Units (OHU)	Change in occupied housing units between 2010 and 2020	Continuous variable
Population	Total population as of 2020 (in units of 1000 persons)	Continuous variable

CHAPTER 4
RESULTS

This chapter details the results of the analyses utilized to answer each research question. It begins with a summary of descriptive statistics related to community connection, connection with nature, personal wellbeing, and participation in nature-based activities. Next, there is an overview of the results of the correlational analyses for research question 1, 2, and 3. This is followed by a summary of the 3-way contingency table and ANCOVA results associated with research questions 4 and 5.

Descriptive Statistics

Personal wellbeing, community connection, and connection with nature ratings varied between study cities and growth categories. Mean ratings at the city level ranged from 3.50 to 4.31 for personal wellbeing, 2.71 to 4.00 for community connection, and 3.25 to 4.43 for connection with nature (Table 6). Within growth categories, the mean ratings ranged from 3.97 to 4.14 for personal wellbeing, from 3.03 to 3.22 for community connection, and from 3.65 to 3.91 for connection with nature (Figure 1). Specifically, the mean personal wellbeing score was highest in the high and very high growth categories, and the mean community connection and connection with nature sores were highest in the negative-low and high growth categories.

Table 6.

Descriptive Statistics for the Aggregate Dataset and by City for Primary Variables

City by Growth Category	Personal Wellbeing		Community Connection		Connection with Nature	
	M	*SD*	*M*	*SD*	*M*	*SD*
Negative-Low						
Bluff	3.96	.756	3.77	1.076	4.43	.786
Beaver	4.18	.830	3.66	1.186	4.21	.998
Bountiful	4.09	.774	3.17	1.094	3.64	1.014
Cottonwood Heights	4.19	.707	3.00	1.060	4.07	.916
Millcreek	4.25	.735	3.27	1.023	4.00	.933
Price	3.83	.910	2.93	1.072	3.64	1.066
Moderate						
Blanding	3.85	.882	3.13	1.212	4.07	.894
Delta	3.88	.959	3.45	1.171	3.63	1.124
Helper	4.15	.729	4.00	1.210	4.13	.919
Layton	4.16	.702	3.06	1.086	3.62	.937
Logan	3.89	.844	2.98	1.176	3.85	.973
Moab	3.50	1.072	3.00	1.238	3.93	1.126
Nephi	4.11	.812	3.29	1.062	3.92	.900
Park City	4.04	.840	3.23	1.130	4.19	.881
Sandy	4.07	.825	3.03	1.013	3.78	1.015
Tooele	3.76	.885	2.81	1.198	3.33	1.187
West Jordan	4.03	.747	2.81	.973	3.34	1.056
High						
Draper	4.27	.716	3.20	.991	3.95	.864
East Carbon	3.73	1.006	2.86	1.152	3.94	.941
Ephraim	3.89	.876	3.11	1.100	4.05	.924
Highland	4.28	.732	3.28	.991	4.01	.794
Hyde Park	4.26	.738	3.30	1.058	4.00	.895
Spanish Fork	4.15	.737	3.45	.974	3.77	.897
Tremonton	4.10	.697	2.92	1.179	3.51	1.075
Very High						
Herriman	3.87	.925	2.71	1.042	3.36	1.086
Lehi	4.10	.726	2.86	1.123	3.41	1.064
Nibley	4.20	.704	3.12	.962	3.80	.943
North Logan	4.15	.793	3.35	1.052	3.91	.877
Santaquin	3.98	.742	3.00	1.291	3.61	1.205
Saratoga Springs	4.02	.757	2.71	1.052	3.25	1.014
South Jordan	4.06	.821	3.25	1.016	3.61	1.029
Vineyard	4.31	.638	3.15	1.027	3.70	.915
Overall:	4.08	.803	3.12	1.084	3.78	1.001

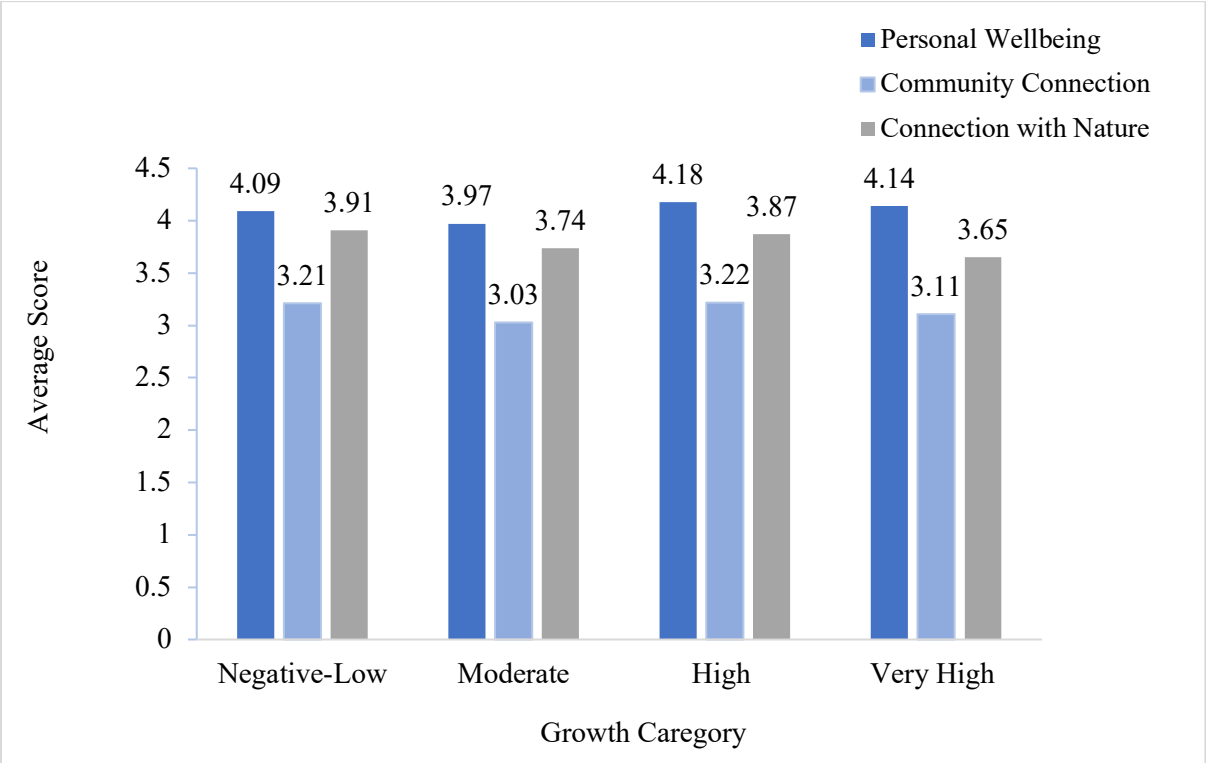

Figure 4.

Means for Primary Variables by Growth Category

In terms of participation in nature-based activities, the majority of respondents across growth categories indicated that they had participated in 4 of the 6 activities in the past 12 months (Table 7). The most common activities across growth categories included enjoying wildlife or birds in your yard or neighborhood (77.7 – 86.4% indicated 'yes'), gardening (72.4– 78.0% indicated 'yes'), non-motorized recreation on public lands or waters in Utah (74.2 – 77.2% indicated 'yes'), and recreating in city parks (75.5 – 82.2% indicated 'yes'). The least common activities across growth categories included motorized recreation on public lands or waters in Utah (38.1 – 42.7% indicated 'yes') and

watching or reading nature-related programs or publications (52.3 – 61.2% indicated 'yes').

Table 7.

Participation in Nature-Based Activities

Activity	Growth Category				Overall (%)
	Negative-Low (%)	Moderate (%)	High (%)	Very High (%)	
Enjoying Wildlife/Birds	86.4	83.2	84.0	77.7	82.6
Gardening	78.0	74.8	76.3	72.4	75.1
Motorized Recreation	40.0	38.1	42.7	36.8	39.3
Non-Motorized Recreation	77.2	75.1	76.8	74.2	75.6
Park Recreation	75.5	75.8	79.3	82.2	78.1
Nature Programs/Publications	61.2	56.5	55.0	52.3	55.8

Note: Percentages refer to the portion of respondents who answered 'yes.'

Research Questions 1, 2, and 3

Spearman's rank order correlation was used to assess if there was an association between community connection and personal wellbeing (research question 1), connection with nature and personal wellbeing (research question 2), and community connection and connection with nature (research question 3). For the aggregate dataset, there was a significant positive correlation between personal wellbeing and community connection, r = .355, p = <.001, and personal wellbeing and connection with nature, (r= .398, p = .000). As hypothesized, these relationships remained consistent when examined at the city level and by growth category (Table 8). However, these relationships did not vary by growth level as anticipated. Contrary to the hypotheses, the correlations between both forms of connectedness and personal wellbeing were not highest in the negative-low growth category compared to others. Specifically, community connection was more highly

correlated with wellbeing within the moderate growth category, followed by the very high, high, and negative-low growth categories. Likewise, connection with nature was more highly correlated with personal wellbeing within the moderate growth category, followed by the high, negative-low, and very high growth categories.

As hypothesized, there was a significant positive correlation between community connection and connection with nature in each city except Bluff ($r = .184$, $p = .102$). All correlation results by city can be found in Appendix C (Table C). This remained true for the aggregate dataset, $r = .305$, $p = <.001$, and across growth categories (Table 8). But like above, the correlation between community connection and connection with nature was not highest in the negative-low growth category as hypothesized. Rather, the correlation was greatest within the moderate and high growth categories, followed by the negative-low growth category. Thus, across all three variable relationships, correlations were generally highest among cities experiencing moderate growth. That said, apart from the correlation between connection with nature and personal wellbeing among the moderate ($r = .415$) and high ($r = .406$) growth categories, all coefficients across growth categories indicate an overall weak relationship between the variables.

Table 8.

Spearman's RHO Correlations for Primary Variables by Growth Category

Variable	Community Connection				Personal Wellbeing				Connection with Nature
	C1	C2	C3	C4	C1	C2	C3	C4	
1.Community Connection	.	.	.	.					
2.Personal Wellbeing	.336**	.373**	.337**	.341**	.	.	.	.	
3.Connection with Nature	.230**	.335**	.277**	.322**	.379**	.415**	.406**	.374**	. . .

Note: C1 = Negative-low growth; C2= Moderate growth; C3= High growth; C4= Very high growth.
**. Correlation is significant at the .01 level (2-tailed).

Research Question 4

To determine if there was an association between participation in nature-based activities and community connection and if these relationships varied depending on the level of growth, a series of 3-way contingency tables were computed. Each SPSS output for the 3-way contingency tables provided an overall chi-square statistic and significance level as well as partial tables and statistics by growth category. Results of the overall chi-square test for each activity are in Table 9. Tables by growth category can be found for each activity in Appendix D (Tables D.1. through D.6.). Overall, each activity examined was significantly associated with community connection, but the association was more pronounced for certain activities including recreating in city parks (χ^2= 124.026, p = <.001), enjoying wildlife or birds in your yard or neighborhood (χ^2= 118.755, p = <.001), and motorized recreation on public lands or waters in Utah (χ^2= 75.681, p = <.001) (Table 9).

In terms of recreating in city parks, 40% of those who said they participated rated their community connection as a 4 or 5 out of 5 compared to only 26.5% who did not participate. Similarly, of those who participated in bird or wildlife viewing in their yard or neighborhood, 39.8% rated their community connection as a 4 or 5 out of 5 compared to 25.2% who did not participate. Finally, of those who participated in motorized recreation on public lands or waters in Utah, 42% rated their community connection a 4 or 5 compared to 33.8% of those who did not participate. However, as Table 9 shows, the overall effect sizes for most activities were negligible, with only enjoying wildlife or birds (V = .116) and recreating in city parks (V = .118) yielding weak overall effect sizes (Kotrlik et al., 2011). These results support part of the hypothesis, as it was expected that park recreation and enjoying wildlife or birds in your yard or neighborhood would be most associated with community connection compared to other activities.

Table 9.

Chi-Square Results on the Association Between Community Connection and Participation in Nature-Based Activities

	Community Connection						
Activity	1	2	3	Total	Sig.	χ^2	V
Enjoying Wildlife/Birds							
No	1155 (74.9%)	305 (19.8%)	83 (5.4%)	1543	<.001	118.755	.116
Yes	4446 (59.0%)	2063 (28.1%)	834 (11.7%)	7343			
Total	5601	2368	917	8886			
Gardening							
No	1540 (69.4%)	488 (22.0%)	191 (8.6%)	2219	<.001	51.449	.076
Yes	4065 (60/9%)	1881 (28.2%)	727 (10.9%)	6673			
Total	5605	2369	918	8892			
Park Recreation							
No	1425 (73.5%)	396 (20.4%)	118 (6.1%)	1939	<.001	124.026	.118
Yes	4154 (60.0%)	1969 (28.4%)	800 (11.6%)	6923			
Total	5579	2365	918	8862			
Non-motorized Recreation							
No	1509 (69.7%)	501 (23.1%)	156 (7.2%)	2166	<.001	60.878	.083
Yes	4087 (60.9%)	1866 (27.8%)	763 (11.4%)	6716			
Total	5596	2367	919	8882			
Motorized Recreation							
No	3576 (66.2%)	1360 (25.2%)	463 (8.6%)	5399	<.001	75.681	.092
Yes	2026 (58.0%)	1014 (29.0%)	456 (13.0%)	3496			
Total	5602	2374	919	8895			
Nature Programs/ Publications							
No	2612 (66.4%)	983 (25.0%)	337 (8.6%)	3932	<.001	42.250	.069
Yes	2985 (60.2%)	1389 (28.0%)	582 (11.7%)	4956			
Total	5597	2372	919	8888			

When looking at these associations across growth categories, results generally indicate that those who participate in any nature-based activity were more likely to rate their community connection as high than those who did not participate in the activity, but the strength of this association varied between groups. Within the negative-low growth category, there was not a significant association between community connection and any

nature-based activity except recreating in city parks ($\chi^2 = 7.688$, p = .021), but the effect size for this activity was negligible (V = .082).

The association between community connection and recreating in city parks was significant for all other growth categories but was most pronounced in the high ($\chi^2 = 50.161$, p = <.001, V = .144), and very high ($\chi^2 = 29.806$, p = <.001, V = .124) growth categories. In the high growth category, 45.2% of those who said they participated in park recreation rated their community connection as a 4 or 5 out of 5 compared to only 27.7% who did not participate in the activity. In the very high growth category, 38.3% of those who participated rated their community connection as a 4 or 5 out of 5 compared to only 23.7% who did not participate in the activity.

Within the moderate, high, and very high growth categories, all other activities were also significantly associated with community connection. Community connection was most associated with non-motorized recreation ($\chi^2 = 37.760$, p = <.001, V = .105) the moderate growth category compared to other growth categories. In the high growth category, the association between community connection and enjoying wildlife and birds ($\chi^2 = 48.312$, p = <.001, V = .141), gardening ($\chi^2 = 26.960$, p = <.001, V = .105), motorized recreation ($\chi^2 = 25.475$, p = <.001, V = .102), and watching or reading nature-related programs or publications ($\chi^2 = 25.737$, p = <.001, V = .103) were more pronounced compared to other growth categories (see Appendix D for more details). As such, the hypothesis regarding a more pronounced association between nature-based activity participation and community connection in communities experiencing less growth was not supported.

Research Question 5

To determine how the rate of population growth influences connection with nature, community connection, and their respective relationships with personal wellbeing, a series of ANCOVA's were computed resulting in four models. For each model, partial eta squared (η_p^2) values were computed to determine and compare effect sizes across independent variables. Additionally, all four models account for the same demographic variables including age, educational attainment, gender, household income, length of residence, race, and religious preference.

Model 1 assesses the relationship between community connection and growth categories controlling for demographic characteristics. The results of the ANCOVA for model 1 are presented in Table 10 and revealed that the overall model was statistically significant, F = 36.369, p = <.001. All demographic variables and covariates were significant except gender, with age (η_p^2 = .020) and religious preference (η_p^2 = .038) explaining the largest amount of the total variance (R^2_{adj} = .087). Contrary to the hypothesis, the main effect of growth category on community connection did not reach significance, F = 2.013, p = .110, indicating community connection did not vary significantly by growth level when accounting for demographic characteristics. Respondents aged 70 and over and those from the Church of Jesus Christ of Latter-Day Saints rated their community connection significantly higher than respondents aged 18-69 and those from other religions or who identify as Agnostic, Atheist, or as having no religious preference (Table 11). The full SPSS parameter estimate output for model 1 can be found in Appendix E.

Table 10.

ANCOVA Results for Model 1

Test of between-subject effects							
Dependent variable: Community connection							
Source	Type III sum of squares	df	Mean square	*F*	Sig.	Partial eta squared	Observed power[b]
Corrected model	817.943[a]	21	38.950	36.369	<.001	.089	1.000
Intercept	5217.522	1	5217.522	4871.862	.000	.385	1.000
Growth categories	6.467	3	2.156	2.013	.110	.001	.521
Age	167.723	5	33.545	31.322	<.001	.020	1.000
Education	12.517	1	12.517	11.688	<.001	.001	.928
Gender	3.725	1	3.725	3.478	.062	.000	.462
Income	49.759	4	12.440	11.616	<.001	.006	1.000
Length of residence	50.642	1	50.642	47.287	<.001	.006	1.000
Race	5.840	1	5.840	5.453	.020	.001	.646
Religious preference	327.460	2	163.730	152.883	<.001	.038	1.000
Population	33.489	1	33.489	31.270	<.001	.004	1.000
PTR	11.232	1	11.232	10.488	.001	.001	.899
OHU	9.107	1	9.107	8.504	.004	.001	.830
Error	8350.199	7797	1.071				
Total	86407.00	7819					
Corrected total	9168.143	7818					

Note: OHU = percent change in occupied housing units; PTR = percent change in total property tax revenue.

[a] R Squared = .089 (Adjusted R Squared = .087); [b] Computed using alpha = .05

Table 11.

Model 1 Selected Parameter Estimates for Age and Religious Preference

Parameter	B	95% CI	t	p
Age				
18-29	-.484	[-.596, -.373]	-8.511	<.001
30-39	-.443	[-.531, -.354]	-9.806	<.001
40-49	-.433	[-.531, -.356]	-9.978	<.001
50-59	-.283	[-.375, -.191]	-6.016	<.001
60-69	-1.79	[-.237, -.085]	-3.740	<.001
70+	0[a]	.	.	.
Religious Preference				
A/A/NRP	-.481	[-.537, -.425]	-16.728	<.001
Other Religions	-.336	[-.402, -.770]	-10.017	<.001
Church of Jesus Christ of Latter-Day Saints	0[a]	.	.	.

[a] This parameter is set to zero because it is redundant
Note: A/A/NRP = Agnostic, Atheist, or No Religious Preference

Model 2 assess the relationship between connection with nature and growth categories accounting for demographic characteristics. The results of the ANCOVA for model 2 are presented in Table 12. The overall model was statistically significant, F = 30.546, p = <.001. Growth categories and all covariates reached statistical significance along with three demographics variables including age, education, and income. Gender, length of residence, race, and religious preference were not statistically significant. Although significant after controlling for demographics and covariates, growth level (η_p^2 = .002) explained little of the total variance (R^2_{adj} = .073). As such, the results did not fully support the hypothesis of notably higher connection with nature in cities

experiencing less growth. Most of the total variance was explained by age ($\eta_p^2 = .028$), total population ($\eta_p^2 = .016$), and income ($\eta_p^2 = .015$).

Respondents aged 70 and above rated their connection with nature significantly higher than respondents aged 18-69, while those with annual household incomes of $150,000 and above rated their connection with nature significantly higher than those in all lower income groups (Table 13). Likewise, Table 13 shows that total population was significantly related to connection with nature, with B = -.004. This indicates that for every one-unit increase in population (1,000 persons), the average connection with nature rating drops by .004. Although this is statistically significant, the change indicated is small enough to not produce a meaningful effect. The full SPSS parameter estimate output for model 2 can be found in Appendix F.

Table 12.

ANCOVA Results for Model 2

Test of between-subject effects							
Dependent variable: Connection with nature							
Source	Type III sum of squares	df	Mean square	*F*	p	Partial eta squared	Observed power[b]
Corrected model	585.687[a]	21	27.890	30.564	<.001	.076	1.000
Intercept	8569.600	1	8569.600	9391.201	.000	.546	1.000
Growth categories	16.412	3	5.471	5.995	<.001	.002	.959
Age	206.133	5	41.227	45.179	<.001	.028	1.000
Education	17.978	1	17.087	18.725	<.001	.002	.991
Gender	.371	1	.371	.407	.524	.000	.098
Income	107.830	4	26.957	29.542	<.001	.015	1.000
Length of residence	.594	1	.594	.651	.420	.000	.127
Race	.189	1	.189	.207	.649	.000	.074
Religious preference	2.284	2	1.142	1.252	.286	.000	.274
Population	114.759	1	114.759	125.761	<.001	.016	1.000
PTR	8.241	1	8.241	9.031	.003	.001	.852
OHU	3.875	1	3.875	4.274	.039	.001	.540
Error	7130.382	7814	.913				
Total	120141.000	7836					
Corrected total	7716.069	7835					

Note: OHU = percent change in occupied housing units; PTR = percent change in total property tax revenue.

[a] R Squared = .076 (Adjusted R Squared = .073); [b] Computed using alpha = .05

Table 13.

Model 2 Selected Parameter Estimates for Age, Household Income, and Population

Parameter	B	95% CI	t	p
Age				
18-29	-.403	[-.506, -.300]	-7.683	<.001
30-39	-.483	[-.564, -.401]	-11.602	<.001
40-49	-.429	[-.509, -.349]	-10.477	<.001
50-59	-.275	[-.360, -.190]	-6.343	<.001
60-69	-.091	[-.178, -.005]	-2.066	.039
70+	0[a]	.	.	.
Income				
> $50,000	-.385	[-.464, -.306]	-9.589	<.001
$50,000-$74,999	-.279	[-.351, -.207]	-7.602	<.001
$75,000-$99,999	-.250	[-.316, -.183]	-7.377	<.001
$100,000-$149,999	-.130	[-.188, -.071]	-4.360	<.001
$150,000 and over	0[a]			
Population	-.004	[-.005, -.003]	-11.214	<.001

[a] This parameter is set to zero because it is redundant

Model 3 assesses whether the relationship between personal wellbeing and community connection varied by growth level using an interaction term between community connection and growth categories. The results of the ANCOVA for model 3 are presented in Table 14. The overall model was statistically significant, F = 54.910, p = .000. Growth categories were significant (F = 16.300, p = <.001), along with all demographic variables except gender and length of residence. Only total population reached significance among the covariates. The ANCOVA for model 3 revealed a significant interaction between community connection and growth rate categories (F = 2.082, p = .015), indicating that the relationship between community connection and personal wellbeing varied depending on growth level even when controlling for

demographic influences and percent change in occupied housing units and total property tax revenue.

However, although significant, it is important to note that growth categories (η_p^2 = .006) and the interaction between community connection and growth categories (η_p^2 = .003) explained only a very small portion of the total variance (R^2_{adj} = .204). Thus, these results did not provide strong support for the hypothesis. While there is some evidence that the relationship between community connection and personal wellbeing varied depending on growth level, this relationship was negligible in practical terms. Most of the total variance was explained by community connection alone (η_p^2 = .098), followed by income (η_p^2 = .046). Table 15 shows that those who rated their community connection as a 5 out of 5 reported statistically significantly higher personal wellbeing than those who rated it 1-4. Like in model 2, those indicating an annual household income of $150,000 and above rated their personal wellbeing significantly higher than those in all lower income groups (Table 15). The full SPSS parameter estimate output for model 3 can be found in Appendix G.

Table 14.

ANCOVA Results for Model 3

Test of between-subject effects							
Dependent variable: Personal wellbeing							
Source	Type III sum of squares	df	Mean square	*F*	p	Partial eta squared	Observed power[b]
Corrected model	1025.027[a]	37	27.703	54.910	.000	.207	1.000
Intercept	7682.365	1	7682.365	15226.836	.000	.662	1.000
Community connection	426.773	4	106.693	211.472	<.001	.098	1.000
Growth categories	24.672	3	8.224	16.300	<.001	.006	1.000
Age	33.269	5	6.654	13.188	<.001	.008	1.000
Education	2.677	1	2.677	5.306	.021	.001	.634
Gender	.465	1	.465	.921	.337	.000	.160
Income	189.777	4	47.444	94.037	<.001	.046	1.000
Length of residence	1.385	1	1.385	2.745	.098	.000	.381
Race	4.486	1	4.486	8.891	.003	.001	.846
Religious preference	19.086	2	9.543	18.914	<.001	.005	1.000
POP	8.302	1	8.302	16.454	<.001	.002	.982
PTR	.008	1	.008	.015	.903	.000	.052
OHU	1.661	1	1.661	3.292	.070	.000	.442
Community connection * growth categories	12.606	12	1.050	2.082	.015	.003	.941
Error	3918.669	7767	.505				
Total	135135.000	7805					
Corrected total	4943.696	7804					

Note: OHU = percent change in occupied housing units; PTR = percent change in total property tax revenue.

[a] R Squared = .207 (Adjusted R Squared = .204); [b] Computed using alpha = .05

Table 15.

Model 3 Selected Parameter Estimates for Community Connection and Household Income

Parameter	B	95% CI	t	p
Community Connection				
1	-.1.002	[-.1.172, -.833]	-11.580	<.001
2	-.707	[-.843, -.570]	-10.126	<.001
3	-.367	[-.491, -.243]	-5.798	<.001
4	-.216	[-.345, -.087]	-3.288	.001
5	0[a]			
Income				
> $50,000	-.540	[-.599, -.481]	-18.014	<.001
$50,000-$74,999	-.338	[-.392, -.284]	-12.312	<.001
$75,000-$99,999	-.263	[-.312, -.213]	-10.389	<.001
$100,000-$149,999	-.126	[-.169, -.082]	-5.661	<.001
$150,000 and over	0[a]			

[a] This parameter is set to zero because it is redundant

Model 4 assesses whether the relationship between personal wellbeing and connection with nature varied by growth level using an interaction term between connection with nature and growth categories. The results of the ANCOVA for model 4 are presented in Table 16. The overall model was statistically significant, F = 69.206, p = .000, along with the effect of growth categories (F = 16.300, p = <.001). All demographic variables except education, gender, and length of residence were significant, while total population and percent change in occupied housing units reached significance among the covariates. Unlike model 3, the interaction term between connection with nature rating and growth categories was not significant. As such, the relationship between connection with nature and wellbeing did not significantly vary depending on growth level and the

corresponding hypothesis was not supported. Similar to models 2 and 3, although significant, growth categories ($\eta_p^2 = .005$) explained a small portion of the total variance ($R^2_{adj} = .244$). Most of the total variance was explained by connection with nature alone ($\eta_p^2 = .138$), followed by income ($\eta_p^2 = .037$), and religious preference ($\eta_p^2 = .020$).

Specifically, respondents who rated their connection with nature as a 5 out of 5 reported statistically significantly higher personal wellbeing than those who rated it 1-4 (Table 17). As to be suspected based on model 4's similarity to model 3 (which uses all the same variables except connection with nature), those who indicated an annual household income of $150,000 and above again rated their personal wellbeing significantly higher than those in all lower income groups, indicating that this relationship doesn't change whether considering community connection or connection with nature. Similarly, the effect of religious preference reached significance in both model 3 and model 4. However, religious preference described a considerable amount more of the variance in model 4 compared to model 3, with those from the Church of Jesus Christ of Latter-Day Saints rating their personal wellbeing higher than respondents from other religions or who identify as Agnostic, Atheist, or as having no religious preference (Table 17). The full SPSS parameter estimate output for model 4 can be found in Appendix H.

Table 16.

ANCOVA Results for Model 4

Test of between-subject effects							
Dependent variable: Personal wellbeing							
Source	Type III sum of squares	df	Mean square	*F*	p	Partial eta squared	Observed power[b]
Corrected model	1224.733[a]	37	33.101	69.206	.000	.248	1.000
Intercept	5951.207	1	5951.207	12442.542	.000	.615	1.000
Connection with nature	595.156	4	148.789	311.082	<.001	.138	1.000
Growth categories	17.217	3	5.739	11.999	<.001	.005	1.000
Age	27.645	5	5.529	11.560	<.001	.007	1.000
Education	1.702	1	1.702	3.559	.059	.000	.471
Gender	.005	1	.005	.010	.922	.000	.051
Income	143.901	4	35.975	75.215	<.001	.037	1.000
Length of residence	.064	1	.064	.133	.716	.000	.065
Race	7.315	1	7.315	15.295	<.001	.002	.974
Religious preference	75.228	2	37.614	78.642	<.001	.020	1.000
Population	25.203	1	25.203	52.694	<.001	.007	1.000
PTR	.062	1	.062	.133	.715	.000	.065
OHU	2.787	1	2.787	5.828	.016	.001	.675
Connection with nature * growth categories	6.071	12	.558	1.167	.300	.002	.686
Error	3723.049	7784	.478				
Total	135509.000	7822					
Corrected total	4947.782	7821					

Note: OHU = percent change in occupied housing units; PTR = percent change in total property tax revenue.

[a] R Squared = .246 (Adjusted R Squared = .244); [b] Computed using alpha = .05

Table 17.

Model 4 Selected Parameter Estimates for Connection with Nature, Household Income, and Religious Preference

Parameter	B	95% CI	t	p
Connection with Nature				
1	-.1.144	[-.1.349, -.940]	-10.990	<.001
2	-.918	[-1.052, -.785]	-13.482	<.001
3	-.534	[-.633, -.435]	-10.602	<.001
4	-.358	[-.450, -.267]	-7.704	<.001
5	0[a]			
Income				
> $50,000	-.468	[-.525, -.410]	-15.923	<.001
$50,000-$74,999	-.305	[-.358, -.253]	-11.417	<.001
$75,000-$99,999	-.220	[-.268, -.171]	-8.916	<.001
$100,000-$149,999	-.102	[-.145, -.060]	-4.739	<.001
$150,000 and over	0[a]			
Religious Preference				
A/A/NRP	-.219	[-.257, -.181]	-11.372	<.001
Other Religions	-.193	[-.237, -.149]	-8.574	<.001
Church of Jesus Christ of Latter-Day Saints	0[a]	.	.	.

[a] This parameter is set to zero because it is redundant

Note: A/A/NRP = Agnostic, Atheist, or No Religious Preference

CHAPTER 5

DISCUSSION

The goal of this research was to determine the relationships between community connection, connection with nature, and personal wellbeing in the context of Utah's considerable population growth. This research also investigated how participation in nature-based activities was associated with community connection and how these relationships varied by growth level. Consistent with a growing body of literature (Davidson & Cotter, 1991; Oh et al., 2022; Pritchard et al., 2020; Richardson et al., 2021; Stewart & Townley, 2020), there was a significant and positive association between both forms of connectedness and wellbeing, and both forms of connectedness and each other. As described above, most coefficients indicate an overall weak relationship between the variables. However, the correlations identified in this research are comparable to or slightly higher than those found in studies investigating similar concepts (Oh et al., 2022; Richardson et al., 2021; Stewart & Townley, 2020; Wolsko & Lindberg, 2013).

Across all three variable relationships, correlations were highest in the moderate growth category, generally followed by the high or very high growth categories. It is currently unclear why this is the case, and the directionality of these relationships could not be determined with the methods of this research. But in comparison to certain declining or low-growth communities, it is possible that some growing communities have additional economic resources and investments into the local community that may directly or indirectly impact wellbeing (Lindberg & Wolsko, 2019), which may have

implications for the way community and nature-based connections relate to wellbeing. Put simply, a lack of certain stressors may lead to increased benefits in other areas (Peters, 2019). Because of this or other factors, people may prefer residing in communities that are not experiencing significant population and economic decline, while also preferring communities that are not changing so rapidly that they cannot access the social and natural amenities important to their wellbeing. But additional research at the city-level is necessary to determine what these potential differences and benefits are among Utah communities.

In terms of participation in nature-based activities, community connection was most associated with two activities: enjoying wildlife or birds in your yard or neighborhood and recreating in city parks. The role of park recreation has been extensively studied, and the findings of this research are in line with prior work indicating that such public spaces can facilitate interactions and increase social connectedness in communities (Francis et al., 2012; Gómez et al., 2015; Peters, 2019). No study to my knowledge has specifically investigated how wildlife viewing in a community is associated with community connectedness and it is unclear if respondents participated in this activity exclusively in the public spaces that generally lead to social interactions. However, even if wildlife viewing primarily occurred in a private yard rather than in a more social public space, there is evidence to support the finding of higher community connection among wildlife viewers. For example, as described by Kuo and colleagues (1998), rural and urban residents with more surrounding nature have been shown to be more socially active, to know more neighbors and have more positive views toward neighbors, and have a greater sense of belonging to their community. That said,

the mechanisms through which this activity leads to greater connectedness needs further investigation.

Considering how prior work generally views rapid community growth as a factor lowering resident access to nature (Weinstein et al., 2015), it was anticipated that the social benefits afforded by participation in nature-based activities would be greater among communities experiencing less growth. However, the results of this research indicate a different relationship. The association between participation in nature-based activities and community connection was generally most pronounced in the high and very high growth categories, indicating that participation in nature-based activities was more highly associated with community connection among cities with higher growth rates. These findings partially support the work of Cox and colleagues (2018). Although their research examined communities characterized as either rural or urban and did not consider population growth per se, they found social cohesion was highest among urban residents who spent time in nature (Cox et al., 2018). They conclude that "A potential explanation is that the increased density of people in urban areas means that there is greater potential for positive interactions between neighbors, with greenspaces being locations that facilitate these interactions" (Cox et al., 2018, p. 78). As such, it is possible that an increased density of people associated with community growth had similar effects in the locales included in this research.

When looking across models 1 through 4, growth level was not significantly associated with community connection, and only negligibly associated with connection with nature and personal wellbeing. Likewise, growth did not change the relationship between either form of connectedness and personal wellbeing to a degree of practical

significance. To my knowledge, no study has specifically investigated how the rate of population growth influences connectedness and wellbeing irrespective of specific drivers (i.e., extraction-based or amenity development-related growth), so these results do not support or contradict any directly comparable studies. However, the results related to community connection are similar to certain literature discussed previously. For example, Krannich and colleagues (2006) found that social integration in rapidly growing amenity-based communities did not substantially differ from communities with more stable populations. Although Freudenberg (1986) found a reduction in the density of acquaintanceship within boomtown settings, evidence that this reduction significantly reduced the experience of community connection was not found.

Additionally, the results related to connection with nature contradict those of Loebach and Gilliland (2016) and Bashan and colleagues (2021), who found higher nature connection in less developed rural areas. This may be due to the unique environment enjoyed by Utah residents. Utah is renowned for its diverse landscapes and outdoor recreation opportunities, and many move to the state for these natural assets. As one example, according to the Kem C. Gardner Policy Institute (2021):

> Utah's tech sector is the fastest growing industry in the state while offering well-paying jobs that often encourage a healthy work-life balance. Access to year-round outdoor recreation is the most important factor to tech employees when deciding to locate or stay in Utah.

Although growth did not relate to the variables of interest as anticipated, other interesting findings emerged in terms of demographic relationships. Within model 1 and 2, community connectedness was most associated with age and religious preference, while connection with nature was most associated with age and income. As previously

described, the effect of demographics in models 3 and 4 were anticipated to be similar as personal wellbeing was the dependent variable in each model. Higher income earners (and older respondents) did exhibit higher wellbeing ratings in both models. However, religious preference was considerably more explanatory in model 4 than model 3. Thus, personal wellbeing remained significantly higher for members of the Church of Jesus Christ of Latter-Day Saints compared to other groups when considering both forms of connectedness, but this affiliation explained much less of the difference in personal wellbeing when specifically controlling for community connection.

Based on prior work, these demographic findings are largely consistent. Utah is unique in its level of religious homogeneity, which has important implications for the social environment experienced by residents (Brehm et al., 2006). For example, evidence from Toney and associates (1997) shows that membership in the Church of Jesus Christ of Latter-Day Saints affords individuals immediate social connection in Utah, regardless of length of residence or prior residence. Although it should be noted that cities across Utah and within this sample vary considerably in their religious makeup; in this research, between 41.0% and 70.6% of respondents in each growth category identified as a member of the Church of Jesus Christ of Latter-Day Saints. In terms of connection with nature, the finding related to income may reflect the costs associated with accessing nature. Equipment necessary for outdoor recreation is often expensive, and if certain individuals have less access to nature near their home, disposable economic resources are necessary for travelling to natural areas. Likewise, those with lower incomes may need to work multiple jobs to maintain their basic needs, thus reducing the amount of free time available for enjoying nature; both nearby and further away.

That said, it is surprising that length of residence lacked a considerable effect. Length of residence was only statistically significant in model 1 where community connection was the dependent variable. However, the effect of length of residence in model 1 was negligible ($\eta_p^2 = .006$). Length of residence has been highly correlated with community-based social attachments in prior studies (Beggs, Hurlbert, & Haines, 1996; Kasarda & Janowitz, 1974) and has even been associated with increased local environmental attachments (Relph, 1976; Tuan, 1977). As with above, this may also be impacted by the unique social and natural environment of Utah, with many of those moving here having access to immediate social connection through religious institutions (Toney et al., 1997), as well as access to highly sought-after landscapes.

Further, income has been related to personal wellbeing in a wide array of studies, which generally show those with higher incomes commonly reporting higher personal wellbeing (Killingsworth, 2021). Among studies that utilize cross-sectional data, the relationship between age and personal wellbeing is most often U-Shaped, with personal wellbeing being highest later in life (Biermann et al., 2022). However, findings related to age do vary considerably and are the subject of intense debate, with some authors attributing differences to methodological shortcomings (Biermann et al., 2022).

Overall, these findings might have important implications related to community planning in Utah. Although not highly impacted by Utah's significant growth according to this research, both community connection and connection with nature were notably associated with personal wellbeing in multivariate analyses, explaining 9.8% and 13.8% of the variance in personal wellbeing scores, respectively (even when controlling for demographic influences). If an important goal is to increase or maintain the wellbeing of

residents, decision-makers should consider how to increase individual ability to connect to the local community and the surrounding natural environment, regardless of the level of population change occurring in a community. Likewise, decision-makers from both local and national institutions should consider how socio-demographic characteristics impact connectedness and wellbeing, and work to devise solutions to lower these discrepancies.

This research has certain limitations that are important to note. First, probabilistic sampling methods were not used in the Utah Wellbeing Project surveys and demographic comparisons with survey data show that the sample was not fully representative of each growth category. Because the Utah Wellbeing Project surveys were based on no-cost partnerships with local cities to provide valuable information to city leaders, there was no sampling frame for this effort and all adults aged 18 and over were eligible to participate. As such, the results of this research cannot be directly generalized and coefficients and p-values require cautious interpretation (Hirschauer et al., 2020; Ulrich-Schad et al., 2022). Second, respondents in the surveys were not prompted to interpret connection with nature, community, or wellbeing in a specific way and were able to use their own interpretation of these concepts, which may have measurement implications. When asked questions about ones "city," respondents may have had different mental maps regarding where their city begins and ends. However, each respondent included was a resident of their respective city.

Third, Census data collected within 2020 was highly impacted by the COVID-19 pandemic. Evident in the data complications discussed prior for Bluff, some community populations may have been highly underestimated. According to recent Census figures,

the 2020 population of Bluff was only 150; but city leaders maintain that this is highly inaccurate. As another example, according to the Census, as of 2022, Utah was the tenth fastest growing state in terms of percent population growth (Census, 2022b). However, there are discrepancies between Census estimates and those made by the Kem C. Gardner Policy Institute at the University of Utah. The Kem C. Gardner Policy Institute calculates change based on similar datasets as the Census, but also uses localized housing information that the Census does not (Williams, 2022). Based on estimates from the Policy Institute, percent growth in 2022 would place Utah second in the nation, tied with Idaho and following Florida (Williams, 2022). It is unclear how these discrepancies may have impacted the findings, but it is possible that the Census population figures used in this study were more inaccurate than previous iterations. Census population figures are still highly utilized within social science research (Kenny et al., 2021; Prewitt, 2001), but future work may consider comparing results between different population estimates to identify how differences effect results.

Fourth, although statistically significant in some models, the findings related to the impact of population growth may have been impacted by the large sample size (n = 9,895). Very large sample sizes can lead to trivial relationships appearing significant (Kaplan et al., 2014). Finally, it is also possible that utilizing 10-year growth rates is not ideal for addressing how population growth impacts wellbeing and connectedness, as 23.4% of respondents in this study had lived in Utah for 5 years or less. As such, future research might consider investigating similar concepts utilizing shorter growth periods. This research also did not consider whether growth was driven by in-migration or natural increase, and the cities in each growth category varied considerably in terms of their rural

or urban classifications, as well as how they have dealt with growth. Further research may consider examining the potential effects associated with specific drivers of growth and how they may differ. Similarly, it may be informative to investigate the specific ways in which growth has occurred in these areas spatially, such as whether community planners opted for annexation or infill development.

To better inform community planning and related interventions, it would be useful to fully understand the pathways between both forms of connectedness and wellbeing. Future research may consider using longitudinal (Joshanloo, 2019) or qualitative methods (Oh et al., 2022) to better understand these pathways specifically in the context of Utah's rapid growth. As this research utilized single-item indicators to measure the main concepts, future researchers may also benefit from using multi-item scales that are currently available, as they may provide more robust measurements.

CHAPTER 6

CONCLUSION

The goal of this research was to investigate the relationships between personal wellbeing, community connection, and connection with nature in the context of Utah's rapid population growth by utilizing quantitative survey data derived from the Utah Wellbeing Project. As a secondary goal, this research also investigated how participation in different nature-based activities was associated with community connection. Findings suggest that there is a positive relationship between community connection and personal wellbeing, connection with nature and personal wellbeing, and community connection and connection with nature. Additionally, this research found that those who participate in nature-based activities were more likely to rate their community connection as high compared to those who did not participate, but this relationship was more pronounced for two activities: watching birds or wildlife in your yard or neighborhood and recreating in city parks.

However, contrary to expectations, growth level did not highly influence any of the relationships investigated. Rather, demographic factors were more impactful. Older respondents and those who identify as a member of the Church of Jesus Christ of Latter-Day Saints rated their community connection as higher than other groups, while older respondents and those with household incomes of $150,000 or above rated their connection with nature higher than other groups. Similarly, personal wellbeing was most associated with age, income, and religious preference. However, religious preference was

considerably *less* explanatory when considering community connections' contribution to wellbeing; indicating that the wellbeing of members of the Church of Jesus Christ of Latter-Day Saints was more comparable to other groups in the study when controlling for community-based social connections. That said, it is possible that more subjective measures of growth influence connectedness and wellbeing. As such, a useful line of inquiry for future research would be to investigate if resident *perceptions* of growth in a community influence connectedness or other relevant indicators of wellbeing.

Taken together, these findings have important implications related to community planning. Although not highly impacted by Utah's significant growth according to this research, both community connection and connection with nature were notably positively associated with personal wellbeing. Wellbeing enhancement is typically a planning goal, so whether a community is rapidly changing or not, community planners should carefully consider how possible development of the local landscape might augment or inhibit individual ability to connect with other residents and the surrounding natural environment. Utah is projected to continue its considerable growth, which will inevitably result in even more physical and social community changes. From high quality public spaces and walkability to community events and access to outdoor spaces and recreation, prior research shows that there are multiple pathways to maintaining and creating connectedness from a planning perspective.

There are a large variety of governmental resources available to community planners that may provide useful information related to connectedness, wellbeing, and sustainable growth practices. The US EPA offers the *Creating Equitable, Healthy, and Sustainable*

Communities[1] guide developed by the Office of Environmental Justice and the Office of Sustainable Communities. This guide provides a variety of evidence-based tools and solutions that may directly or indirectly influence connectedness and wellbeing, such as recommendations for improving park access and quality, and the EPA provides a variety of additional resources related to smart growth and equitable development strategies. Similarly, the United Nations Environment Program has developed a useful guide for cities detailing the use of nature-based solutions and green infrastructure, titled *Smart, Sustainable and Resilient cities: the Power of Nature-based Solutions.*[2] Other useful resources from both governmental and non-governmental groups were compiled as part of the Utah Wellbeing Project and are currently available online to both community leaders and residents within Utah and beyond.[3]

Of equal importance on both a national and local level, decision-makers should consider how sociodemographic inequities or differences, such as those related to age and income, potentially influence the wellbeing and connectedness of individuals. In practice,

---

[1] For more information on the EPA's *Creating Equitable, Healthy, and Sustainable Communities* guide, visit the following link: https://www.epa.gov/smartgrowth/creating-equitable-healthy-and-sustainable-communities

[2] For more information on the United Nations *Smart, Sustainable and Resilient cities: the Power of Nature-based Solutions* guide, visit the following link: https://www.unep.org/resources/report/smart-sustainable-and-resilient-cities-power-nature-based-solutions

[3] To view the Utah Wellbeing Project's resource page, visit the following link: https://www.usu.edu/utah-wellbeing-project/resources/index

addressing these differences in the context of connectedness would likely involve considering social and recreational opportunities for residents that are free or low-cost and highly accessible. Wilkinson (1991, p. 62) writes, “Probably the most effective action at the social level would be to create and maintain ‘humane’ institutional and organizational structures within which the individual’s capacity for wellbeing in private relations can be liberated.” Based on the findings of the current research, this speculation appears as relevant today as when it was written over 30 years ago. In research and practice, more work is undoubtedly necessary to fully elucidate the many factors that influence personal wellbeing (and solutions for addressing them), which are likely variable and context dependent. Regardless, centering human wellbeing in decision-making frameworks will undoubtedly have positive benefits for individuals and the larger society, now into the future (Diener & Seligman, 2004).

REFERENCES

Alaimo, K., Reischl, T. M., & Allen, J. O. (2010). Community gardening, neighborhood meetings, and social capital. *Journal of Community Psychology*, *38*(4), 497–514. https://doi.org/10.1002/jcop.20378

Albers, E., Bateman, M., & Harris, E. (2022). *State and County Population Estimates for Utah: 2022*. https://gardner.utah.edu/wp-content/uploads/UPC-Estimates-Dec2022.pdf?x71849

Allen, K.-A., Gray, D. L., Baumeister, R. F., & Leary, M. R. (2022). The Need to Belong: A Deep Dive into the Origins, Implications, and Future of a Foundational Construct. *Educational Psychology Review*, *34*(2), 1133–1156. https://doi.org/10.1007/s10648-021-09633-6

Bache, I., & Reardon, L. (2013). An Idea Whose Time has Come? Explaining the Rise of Well-Being in British Politics. *Political Studies*, *61*(4), 898–914. https://doi.org/10.1111/1467-9248.12001

Bache, I., & Reardon, L. (2016). *The politics and policy of wellbeing: Understanding the rise and significance of a new agenda*. Edward Elgar Publishing.

Bashan, D., Colléony, A., & Shwartz, A. (2021). Urban versus rural? The effects of residential status on species identification skills and connection to nature. *People and Nature*, *3*(2), 347–358. https://doi.org/10.1002/pan3.10176

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*(3), 497–529. https://doi.org/10.1037/0033-2909.117.3.497

Beggs, J. J., Hurlbert, J. S., & Haines, V. A. (2010). Community Attachment in a Rural Setting: A Refinement and Empirical Test of the Systemic Model1. *Rural Sociology*, *61*(3), 407–426. https://doi.org/10.1111/j.1549-0831.1996.tb00626.x

Biermann, P., Bitzer, J., & Gören, E. (2022). The relationship between age and subjective well-being: Estimating within and between effects simultaneously. *The Journal of the Economics of Ageing*, *21*, 100366. https://doi.org/10.1016/j.jeoa.2021.100366

Brehm, J. M., Eisenhauer, B. W., & Krannich, R. S. (2006). Community Attachments as Predictors of Local Environmental Concern: The Case for Multiple Dimensions of Attachment. *American Behavioral Scientist*, *50*(2), 142–165. https://doi.org/10.1177/0002764206290630

Census Bureau (2022a). *Census Bureau Projects U.S. and World Populations on New Year's Day*. Census.Gov. Retrieved from https://www.census.gov/newsroom/press-releases/2022/new-years-day-population.html

Census Bureau (2022b). *Growth in U.S. Population Shows Early Indication of Recovery Amid COVID-19 Pandemic*. Census.Gov. Retrieved from https://www.census.gov/newsroom/press-releases/2022/2022-population-estimates.html

Capaldi, C. A., Dopko, R. L., & Zelenski, J. M. (2014). The relationship between nature connectedness and happiness: A meta-analysis. *Frontiers in Psychology*, *5*. https://doi.org/10.3389/fpsyg.2014.00976

Cox, D. T. C., Shanahan, D. F., Hudson, H. L., Fuller, R. A., & Gaston, K. J. (2018). The impact of urbanisation on nature dose and the implications for human health. *Landscape and Urban Planning*, *179*, 72–80. https://doi.org/10.1016/j.landurbplan.2018.07.013

Davidson, W. B., & Cotter, P. R. (1991). The relationship between sense of community and subjective well-being: A first look. *Journal of Community Psychology*, *19*(3), 246–253. https://doi.org/10.1002/1520-6629(199107)19:3<246::AID-JCOP2290190308>3.0.CO;2-L

Diener, E., & Seligman, M. E. P. (2004). Beyond Money: Toward an Economy of Well-Being. *Psychological Science in the Public Interest*, *5*(1), 1–31. https://doi.org/10.1111/j.0963-7214.2004.00501001.x

Flint, C. G. (2016). Framing the Human Dimensions of Mountain Systems: Integrating Social Science Paradigms for a Global Network of Mountain Observatories. *Mountain Research and Development*, *36*(4), 528–536. https://doi.org/10.1659/MRD-JOURNAL-D-15-00110.1

Francis, J., Giles-Corti, B., Wood, L., & Knuiman, M. (2012). Creating sense of community: The role of public space. *Journal of Environmental Psychology*, *32*(4), 401–409. https://doi.org/10.1016/j.jenvp.2012.07.002

Freudenburg, W. R. (1986). The Density of Acquaintanceship: An Overlooked Variable in Community Research? *American Journal of Sociology*, *92*(1), 27–63. https://doi.org/10.1086/228462

Fromm, E. (1964). *The heart of man: Its genius for good and evil*. American Mental Health Foundation Books.

Garza-Terán, G., Tapia-Fonllem, C., Fraijo-Sing, B., Borbón-Mendívil, D., & Poggio, L. (2022). Impact of Contact With Nature on the Wellbeing and Nature Connectedness Indicators After a Desertic Outdoor Experience on Isla Del Tiburon. *Frontiers in Psychology*, *13*, 864836. https://doi.org/10.3389/fpsyg.2022.864836

Gómez, E., Baur, J. W. R., Hill, E., & Georgiev, S. (2015). Urban Parks and Psychological Sense of Community. *Journal of Leisure Research*, *47*(3), 388–398. https://doi.org/10.1080/00222216.2015.11950367

Gosnell, H., & Abrams, J. (2011). Amenity migration: Diverse conceptualizations of drivers, socioeconomic dimensions, and emerging challenges. *GeoJournal*, *76*(4), 303–322. https://doi.org/10.1007/s10708-009-9295-4

Hicks, C. C., Levine, A., Agrawal, A., Basurto, X., Breslow, S. J., Carothers, C., Charnley, S., Coulthard, S., Dolsak, N., Donatuto, J., Garcia-Quijano, C., Mascia, M. B., Norman, K., Poe, M. R., Satterfield, T., St. Martin, K., & Levin, P. S. (2016). Engage key social concepts for sustainability. *Science*, *352*(6281), 38–40. https://doi.org/10.1126/science.aad4977

Hirschauer, N., Grüner, S., Mußhoff, O., Becker, C., & Jantsch, A. (2020). Can p-values be meaningfully interpreted without random sampling? *Statistics Surveys*, *14*(none). https://doi.org/10.1214/20-SS129

Holdaway B. (2023). Map of Cities Included from Utah Wellbeing Project [map]. (ca. 1:1,100,000; 1:2,750,000). Utah State University.

Jennings, V., & Bamkole, O. (2019). The Relationship between Social Cohesion and Urban Green Space: An Avenue for Health Promotion. *International Journal of Environmental Research and Public Health*, *16*(3), 452. https://doi.org/10.3390/ijerph16030452

Joshanloo, M. (2019). Investigating the relationships between subjective well-being and psychological well-being over two decades. *Emotion*, *19*(1), 183–187. https://doi.org/10.1037/emo0000414

Joshanloo, M., Sirgy, M. J., & Park, J. (2018). Directionality of the relationship between social well-being and subjective well-being: Evidence from a 20-year longitudinal study. *Quality of Life Research*, *27*(8), 2137–2145. https://doi.org/10.1007/s11136-018-1865-9

Kaplan, R. M., Chambers, D. A., & Glasgow, R. E. (2014). Big Data and Large Sample Size: A Cautionary Note on the Potential for Bias. *Clinical and Translational Science*, *7*(4), 342–346. https://doi.org/10.1111/cts.12178

Kasarda, J.D., & Janowitz, M. (1974). Community Attachment in Mass Society. *American Sociological Review, 39*, 328.

Kellert, S. R., & Wilson, E. O. (Eds.). (1993). *The Biophilia hypothesis*. Island Press.

Kem C. Gardner Policy Institute. (2021). Outdoor Recreation and Utah Business [Fact sheet]. University of Utah. https://gardner.utah.edu/wp-content/uploads/OutdoorRec-FS-July2021.pdf?x71849

Kenny, C. T., Kuriwaki, S., McCartan, C., Rosenman, E. T. R., Simko, T., & Imai, K. (2021). The use of differential privacy for census data and its impact on redistricting: The case of the 2020 U.S. Census. *Science Advances*, *7*(41), eabk3283. https://doi.org/10.1126/sciadv.abk3283

Keyes, C. L. M. (2013). *Mental well-being: International contributions to the study of positive mental health*. Springer.

Killingsworth, M. A. (2021). Experienced well-being rises with income, even above $75,000 per year. *Proceedings of the National Academy of Sciences*, *118*(4), e2016976118. https://doi.org/10.1073/pnas.2016976118

King, M. F., Renó, V. F., & Novo, E. M. L. M. (2014). The Concept, Dimensions and Methods of Assessment of Human Well-Being within a Socioecological Context: A Literature Review. *Social Indicators Research*, *116*(3), 681–698. https://doi.org/10.1007/s11205-013-0320-0

Kingsley, J., & Townsend, M. (2006). 'Dig In' to Social Capital: Community Gardens as Mechanisms for Growing Urban Social Connectedness. *Urban Policy and Research*, *24*(4), 525–537. https://doi.org/10.1080/08111140601035200

Kotrlik, J., Williams, H., & Jabor, K. (2011). Reporting and Interpreting Effect Size in Quantitative Agricultural Education Research. *Journal of Agricultural Education*, *52*(1), 132–142. https://doi.org/10.5032/jae.2011.01132

Krannich, R. S., Luloff, A. E., & Field, D. R. (2011). *People, places and landscapes: Social change in high amenity rural areas*. Springer.

Krannich, R. S., Petrzelka, P., & Brehm, J. M. (2006). Social Change and Well-Being in Western Amenity-Growth Communities. In W. A. Kandel & D. L. Brown (Eds.), *Population Change and Rural Society* (Vol. 16, pp. 311–331). Springer Netherlands. https://doi.org/10.1007/1-4020-3902-6_15

Kuo, F. E., Sullivan, W. C., Coley, R. L., & Brunson, L. (1998). Fertile Ground for Community: Inner-City Neighborhood Common Spaces. *American Journal of Community Psychology*, *26*(6), 823–851. https://doi.org/10.1023/A:1022294028903

Larson, L. R., Szczytko, R., Bowers, E. P., Stephens, L. E., Stevenson, K. T., & Floyd, M. F. (2019). Outdoor Time, Screen Time, and Connection to Nature: Troubling Trends Among Rural Youth? *Environment and Behavior*, *51*(8), 966–991. https://doi.org/10.1177/0013916518806686

Leopold, A. (1949). *A Sand County almanac, and sketches here and there*. Oxford University Press.

Lindberg, K., & Wolsko, C. (2019). Assessing Well-Being Factors in a Growing Community: A Multi-Attribute Vignette Approach. *Social Indicators Research*, *144*(1), 315–335. https://doi.org/10.1007/s11205-018-2040-y

Loebach, J. E., & Gilliland, J. A. (2016). Free Range Kids? Using GPS-Derived Activity Spaces to Examine Children's Neighborhood Activity and Mobility. *Environment and Behavior*, *48*(3), 421–453. https://doi.org/10.1177/0013916514543177

Loveridge, R., Sallu, S. M., Pesha, I. J., & R Marshall, A. (2020). Measuring human wellbeing: A protocol for selecting local indicators. *Environmental Science & Policy*, *114*, 461–469. https://doi.org/10.1016/j.envsci.2020.09.002

Lumber, R., Richardson, M., & Sheffield, D. (2017). Beyond knowing nature: Contact, emotion, compassion, meaning, and beauty are pathways to nature connection. *PLOS ONE*, *12*(5), e0177186. https://doi.org/10.1371/journal.pone.0177186

Lyon, L., & Driskell, R. B. (2012). *The community in urban society* (2nd ed). Waveland Press.

Mayer, F. S., & Frantz, C. M. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology*, *24*(4), 503–515. https://doi.org/10.1016/j.jenvp.2004.10.001

Mayer, F. S., Frantz, C. M., Bruehlman-Senecal, E., & Dolliver, K. (2009). Why Is Nature Beneficial?: The Role of Connectedness to Nature. *Environment and Behavior*, *41*(5), 607–643. https://doi.org/10.1177/0013916508319745

Mcmillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, *14*(1), 6–23. https://doi.org/10.1002/1520-6629(198601)14:1<6::AID-JCOP2290140103>3.0.CO;2-I

Mitchell, T. (2020, May 14). On the Cusp of Adulthood and Facing an Uncertain Future: What We Know About Gen Z So Far. *Pew Research Center's Social & Demographic Trends Project*. https://www.pewresearch.org/social-trends/2020/05/14/on-the-cusp-of-adulthood-and-facing-an-uncertain-future-what-we-know-about-gen-z-so-far-2/

Moreton, S., Arena, A., & Tiliopoulos, N. (2019). Connectedness to Nature is More Strongly Related to Connection to Distant, Rather Than Close, Others. *Ecopsychology*, *11*(1), 59–65. https://doi.org/10.1089/eco.2018.0063

Nisbet, E. K., Shaw, D. W., & Lachance, D. G. (2020). Connectedness With Nearby Nature and Well-Being. *Frontiers in Sustainable Cities*, *2*, 18. https://doi.org/10.3389/frsc.2020.00018

Nowell, B., & Boyd, N. (2010). Viewing community as responsibility as well as resource: Deconstructing the theoretical roots of psychological sense of community. *Journal of Community Psychology*, *38*(7), 828–841. https://doi.org/10.1002/jcop.20398

Oh, R. R. Y., Zhang, Y., Nghiem, L. T. P., Chang, C., Tan, C. L. Y., Quazi, S. A., Shanahan, D. F., Lin, B. B., Gaston, K. J., Fuller, R. A., & Carrasco, R. L. (2022). Connection to nature and time spent in gardens predicts social cohesion. *Urban Forestry & Urban Greening*, *74*, 127655. https://doi.org/10.1016/j.ufug.2022.127655

Passmore, H.-A., & Howell, A. J. (2014). Eco-existential positive psychology: Experiences in nature, existential anxieties, and well-being. *The Humanistic Psychologist*, *42*(4), 370–388. https://doi.org/10.1080/08873267.2014.920335

Perkins, D. D., Florin, P., Rich, R. C., Wandersman, A., & Chavis, D. M. (1990). Participation and the social and physical environment of residential blocks: Crime and community context. *American Journal of Community Psychology*, *18*(1), 83–115. https://doi.org/10.1007/BF00922690

Peters, D. J. (2019). Community Resiliency in Declining Small Towns: Impact of Population Loss on Quality of Life over 20 Years. *Rural Sociology*, *84*(4), 635–668. https://doi.org/10.1111/ruso.12261

Peters, K., Elands, B., & Buijs, A. (2010). Social interactions in urban parks: Stimulating social cohesion? *Urban Forestry & Urban Greening*, *9*(2), 93–100. https://doi.org/10.1016/j.ufug.2009.11.003

Poon, K.-T., Teng, F., Chow, J. T., & Chen, Z. (2015). Desiring to connect to nature: The effect of ostracism on ecological behavior. *Journal of Environmental Psychology*, *42*, 116–122. https://doi.org/10.1016/j.jenvp.2015.03.003

Prewitt, K. (2001). Policy Knowledge: Census. In *International Encyclopedia of the Social & Behavioral Sciences* (pp. 11568–11573). Elsevier. https://doi.org/10.1016/B0-08-043076-7/04523-X

Pritchard, A., Richardson, M., Sheffield, D., & McEwan, K. (2020). The Relationship Between Nature Connectedness and Eudaimonic Well-Being: A Meta-analysis. *Journal of Happiness Studies*, *21*(3), 1145–1167. https://doi.org/10.1007/s10902-019-00118-6

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. Simon & Schuster.

Raymond, C. M., Brown, G., & Weber, D. (2010). The measurement of place attachment: Personal, community, and environmental connections. *Journal of Environmental Psychology*, *30*(4), 422–434. https://doi.org/10.1016/j.jenvp.2010.08.002

Relph, E. (1976). *Place and placelessness*. London: Pion Limited.

Richardson, M., Passmore, H.-A., Lumber, R., Thomas, R., & Hunt, A. (2021). Moments, not minutes: The nature-wellbeing relationship. *International Journal of Wellbeing*, *11*(1), 8–33. https://doi.org/10.5502/ijw.v11i1.1267

Rollero, C., & De Piccoli, N. (2010). Does place attachment affect social well-being? *European Review of Applied Psychology*, *60*(4), 233–238. https://doi.org/10.1016/j.erap.2010.05.001

Salmon, E. (2000). Kincentric Ecology: Indigenous Perceptions of the Human-Nature Relationship. *Ecological Applications*, *10*(5), 1327. https://doi.org/10.2307/2641288

Sarason, S. B. (1974). *The psychological sense of community: Prospects for a community psychology* (1st ed.). Jossey-Bass.

Scannell, L., & Gifford, R. (2010). The relations between natural and civic place attachment and pro-environmental behavior. *Journal of Environmental Psychology*, *30*(3), 289–297. https://doi.org/10.1016/j.jenvp.2010.01.010

Schmitt, M. T., Neufeld, S. D., Fryberg, S. A., Adams, G., Viljoen, J. L., Patrick, L., Atleo, C. G., & Fabian, S. (2021). “Indigenous” Nature Connection? A Response to Kurth, Narvaez, Kohn, and Bae (2020). *Ecopsychology*, *13*(1), 64–67. https://doi.org/10.1089/eco.2020.0066

Skinner, E. K. (2019). *Nature Relatedness: Investigating Differences Among Rural, Suburban, and Urban Populations in Connection to Nature Scores* [Master's thesis, Stephen F. Austin State University]. SFSAU Campus Repository. https://scholarworks.sfasu.edu/cgi/viewcontent.cgi?article=1321&context=etds

Slemp, C., Davenport, M. A., Seekamp, E., Brehm, J. M., Schoonover, J. E., & Williard, K. W. J. (2012). "Growing too fast:" Local stakeholders speak out about growth and its consequences for community well-being in the urban–rural interface. *Landscape and Urban Planning*, *106*(2), 139–148. https://doi.org/10.1016/j.landurbplan.2012.02.017

Smith, M. D., & Krannich, R. S. (2000). "Culture Clash'' Revisited: Newcomer and Longer-Term Residents' Attitudes Toward Land Use, Development, and Environmental Issues in Rural Communities in the Rocky Mountain West*. *Rural Sociology*, *65*(3), 396–421. https://doi.org/10.1111/j.1549-0831.2000.tb00036.x

Smith, M. D., Krannich, R. S., & Hunter, L. M. (2009). Growth, Decline, Stability, and Disruption: A Longitudinal Analysis of Social Well-Being in Four Western Rural Communities. *Rural Sociology*, *66*(3), 425–450. https://doi.org/10.1111/j.1549-0831.2001.tb00075.x

Stedman, R. C. (2003). Is It Really Just a Social Construction?: The Contribution of the Physical Environment to Sense of Place. *Society & Natural Resources*, *16*(8), 671–685. https://doi.org/10.1080/08941920309189

Stewart, K., & Townley, G. (2020). How Far Have we Come? An Integrative Review of the Current Literature on Sense of Community and Well-being. *American Journal of Community Psychology*, *66*(1–2), 166–189. https://doi.org/10.1002/ajcp.12456

Stiglitz, J. E., Fitoussi, J.-P., & Durand, M. (2019). *Measuring what counts: The global movement for well-being*. The New Press.

Summers, J., Smith, L., Harwell, L., Case, J., Wade, C., Straub, K., & Smith, H. (2014). An Index of Human Well-Being for the U.S.: A TRIO Approach. *Sustainability*, *6*(6), 3915–3935. https://doi.org/10.3390/su6063915

Talen, E. (2000). Measuring the Public Realm: A Preliminary Assessment of the Link Between Public Space and Sense of Community. *Journal of Architectural and Planning Research*, *17*(4), 344-360.

Tam, K.-P. (2013). Concepts and measures related to connection to nature: Similarities and differences. *Journal of Environmental Psychology*, *34*, 64–78. https://doi.org/10.1016/j.jenvp.2013.01.004

Thiriot, N. (2021, April 26). Census 2020: Utah fastest growing state in U.S. *Kem C. Gardner Policy Institute*. https://gardner.utah.edu/census-2020-utah-fastest-growing-state-in-u-s/

Toney, M. B., Stinner, W. F., & Byun, Y. (1997). Social and demographic characteristics of the Mormon culture region. In J. M. Wardell & J. H. Coop (Eds.), Population change in the rural West: 1975-1990 (pp. 75-89). Lanham, MD: University Press of America.

Trentelman, C. K. (2009). Place Attachment and Community Attachment: A Primer Grounded in the Lived Experience of a Community Sociologist. *Society & Natural Resources*, *22*(3), 191–210. https://doi.org/10.1080/08941920802191712

Tuan, Y. (2011). *Space and place: The perspective of experience*. Minneapolis: University of Minnesota Press.

Ulrich-Schad, J., Givens, J., & Beacham, M. (2022). Preventive Behaviors Along the Rural-Urban Continuum in Utah During the COVID-19 Pandemic. *Journal of Rural Social Sciences*, *37*(2). https://egrove.olemiss.edu/jrss/vol37/iss2/4

Ulrich-Schad, J. D., Henly, M., & Safford, T. G. (2013). The Role of Community Assessments, Place, and the Great Recession in the Migration Intentions of Rural Americans: Migration Intentions. *Rural Sociology*, *78*(3), 371–398. https://doi.org/10.1111/ruso.12016

Ulrich-Schad, J. (2018). "We didn't move here to move to Aspen": Community making and community development in an emerging rural amenity destination. *The Journal of Rural and Community Development, 13*(4), 43–66

Umstattd Meyer, M. R., Prochnow, T., Pickett, A. C., Perry, C. K., Bridges Hamilton, C. N., Abildso, C. G., & Pollack Porter, K. M. (2021). The Effects of Play Streets on Social and Community Connectedness in Rural Communities. *International Journal of Environmental Research and Public Health*, *18*(19), 9976. https://doi.org/10.3390/ijerph18199976

Unsworth, S. J., Waxman, S. R., Levin, W., Washinawatok, K., Bang, M., & Medin, D. L. (2012). Cultural Differences in Children's Ecological Reasoning and Psychological Closeness to Nature: Evidence from Menominee and European American Children. *Journal of Cognition and Culture*, *12*(1–2), 17–29. https://doi.org/10.1163/156853712X633901

The Utah League of Cities and Towns. (2016). Cluster Analysis. https://www.ulct.org/member-services/policy-research/cluster-analysis

Weinstein, N., Balmford, A., DeHaan, C. R., Gladwell, V., Bradbury, R. B., & Amano, T. (2015). Seeing Community for the Trees: The Links among Contact with Natural Environments, Community Cohesion, and Crime. *BioScience*, *65*(12), 1141–1153. https://doi.org/10.1093/biosci/biv151

Whitburn, J., Linklater, W., & Abrahamse, W. (2020). Meta-analysis of human connection to nature and proenvironmental behavior. *Conservation Biology*, *34*(1), 180–193. https://doi.org/10.1111/cobi.13381

Wilkinson, K. P. (1991). *The community in rural America*. Greenwood Press.

Williams, C., (2022, December 2022). Census: How does Utah's '22 population growth compare with other states? *KSL*. https://www.ksl.com/article/50544855/census-how-does-utahs-22-population-growth-compare-with-other-states

Wilson, E. O. (1984). *Biophilia*. Harvard University Press.

Wilson, G., & Baldassare, M. (1996). Overall "Sense of Community" in a Suburban Region: The Effects of Localism, Privacy, and Urbanization. *Environment and Behavior*, *28*(1), 27–43. https://doi.org/10.1177/0013916596281002

Winters, J. V., & Li, Y. (2017). Urbanisation, natural amenities and subjective well-being: Evidence from US counties. *Urban Studies*, *54*(8), 1956–1973. https://doi.org/10.1177/0042098016631918

Wolsko, C., & Lindberg, K. (2013). Experiencing Connection With Nature: The Matrix of Psychological Well-Being, Mindfulness, and Outdoor Recreation. *Ecopsychology*, *5*(2), 80–91. https://doi.org/10.1089/eco.2013.0008

Zelenski, J. M., & Nisbet, E. K. (2014). Happiness and Feeling Connected: The Distinct Role of Nature Relatedness. *Environment and Behavior*, *46*(1), 3–23. https://doi.org/10.1177/0013916512451901

Zylstra, M. J., Knight, A. T., Esler, K. J., & Le Grange, L. L. L. (2014). Connectedness as a Core Conservation Concern: An Interdisciplinary Review of Theory and a Call for Practice. *Springer Science Reviews*, *2*(1–2), 119–143. https://doi.org/10.1007/s40362-014-0021-3

APPENDICES

APPENDIX A

UTAH WELLBEING PROJECT ONLINE SURVEY 2022

UtahStateUniversity

2022 Survey

Draft

Thank you for your interest in the Utah Wellbeing Project Survey, a statewide initiative! This is the [city] version.

This survey is available in English and Spanish. Please use the box in the upper right-hand corner to select your preferred language. The survey works best on a computer or tablet, but will also work on smartphones.

If you took the Wellbeing Survey in 2020 or 2021, please take this survey again now!

The goal of this survey is to better understand the life conditions of people in Utah cities and towns and how different aspects of wellbeing vary from person to person and place to place. Results will be shared with your city's leaders.

We would like to hear from adults (age 18 or over) who are full or part-time residents of [city]. The survey should take about 10 minutes or less. We will not collect any identifying information about you. It may be possible for someone to recognize specifics in the information you share, but reporting is done at the city level (not about individuals). All questions are important to us, but you may decline to answer any questions.

Please encourage others age 18 and over in your household and community to take the survey as well.

Please do not take this survey more than once.

Are you a full or part time resident of [city]?

I am a full-time resident of [city].
I am a part-time resident of [city].
No, I am not a resident of [city]. → Skip to Thank you and End of Survey

How long have you been a resident of [city]?

_____ years

How would you rate your overall personal wellbeing? (Use your own interpretation of "wellbeing".)

Very poor (1) – Excellent (5)

How would you rate overall wellbeing in [city]?

Very poor (1) – Excellent (5)

How would you rate your level of personal wellbeing in each of the following categories?

	Poor	Fair	Moderate	Good	Excellent
	1	2	3	4	5
Connection to Nature	○	○	○	○	○
Cultural Opportunities	○	○	○	○	○
Education	○	○	○	○	○
Leisure Time	○	○	○	○	○
Living Standards	○	○	○	○	○
Local Environmental Quality	○	○	○	○	○
Mental Health	○	○	○	○	○
Physical Health	○	○	○	○	○
Safety and Security	○	○	○	○	○
Social Connections	○	○	○	○	○

How important are the following categories to your overall personal wellbeing?

	Not at all important	Slightly important	Moderately important	Important	Very important
	1	2	3	4	5
Connection to Nature	○	○	○	○	○
Cultural Opportunities	○	○	○	○	○
Education	○	○	○	○	○
Leisure Time	○	○	○	○	○
Living Standards	○	○	○	○	○
Local Environmental Quality	○	○	○	○	○
Mental Health	○	○	○	○	○
Physical Health	○	○	○	○	○
Safety and Security	○	○	○	○	○
Social Connections	○	○	○	○	○

In [city], to what degree do people take action together in response to local problems and opportunities?

Not at all (1) – A great deal (5)

In [city], to what degree do you feel connected to your community?

Not at all (1) – A great deal (5)

Have you participated in any of the following activities during the past 12 months?

Motorized recreation on public lands or waters in Utah

Non-motorized recreation on public lands or waters in Utah
City recreation programs
Recreating in parks in your city
Walking with a pet in your city
Enjoying wildlife or birds in your yard or neighborhood
Gardening
Watching or reading nature-related programs or publications

How does the presence of the following landscape features influence your wellbeing?

	Very Negatively	Negatively	Neither Positively nor Negatively	Positively	Very Positively
City Parks	○	○	○	○	○
Farmland	○	○	○	○	○
Extractive Industry (e.g. mining, gravel pits)	○	○	○	○	○
Lakes	○	○	○	○	○
Manufacturing Industry	○	○	○	○	○
Mountains	○	○	○	○	○
Red Rock	○	○	○	○	○
Rivers and Streams	○	○	○	○	○
Trails	○	○	○	○	○
Commercial Development	○	○	○	○	○
Residential Development	○	○	○	○	○

How would you describe the current rate of population growth in [city]?

Too Slow Just Right Too Fast No Opinion

How would you describe the current pace of economic development in [city]?

Too Slow Just Right Too Fast No Opinion

As you look to the future of [city], how much of a concern are the following issues?

	Not a Concern	Slight Concern	Moderate Concern	Major Concern
Access to Health Care				
Access to Mental Health Care				
Access to Public Land				
Access to Quality Food				
Affordable Housing				
Air Quality				
Climate Change				
Employment Opportunities				
Opportunities for Youth				
Public Safety				
Recreation Opportunities				
Roads and Transportation				
Shopping Opportunities				

Social and Emotional Support
Substance Abuse
Suicide
Water Supply
Other _____

What do you value the most about living in and/or doing business in [city]?

Respondent Characteristics

This last section asks questions that help us ensure that we have heard from a full range of perspectives. Remember that your answers are anonymous. These questions are very important to this project.

Which category matches your age today?

18-29
30-39
40-49
50-59
60-69
70 or over

What is your gender?

Female
Male
Gender non-conforming or non-binary

What is the highest level of education you have completed?

Some high school or less
High school diploma or GED
Some college, no degree
Associates degree
Vocational/Technical degree
Bachelor's degree (4-year college)
Graduate Degree

What would you estimate your total household income was for 2021?

Under $15,000
$15,000 to $24,999
$25,000 to $34,999
$35,000 to $49,999
$50,000 to $74,999
$75,000 to $99,999
$100,000 to $149,999
$150,000 to $199,999
$200,000 or higher

Are you currently….?

Employed full time for wages
Employed part time for wages
Self-employed
Volunteer working at least 20 hours per week
Out of work and looking for work
Out of work but not currently looking for work
Homemaker
Student
Military
Retired
Unable to work

Which category best describes your religious preference, if any?

Atheist or Agnostic
Catholic
Church of Jesus Christ of Latter-day Saints
Judaism
Muslim
Other Christian Religion
Other Non-Christian Religion
I have No Religious Preference
Other _____

Are you of Hispanic, Latino, or Spanish origin?

Yes
No

What is your race? Please select all that apply.

American Indian or Alaska Native
Asian
Black or African American
Middle Eastern or North African
Pacific Islander
White
Other _____

What is your marital status?

Single, never married
Married or domestic partnership
Widowed
Divorced
Separated

Do you have children under the age of 18 in your household?

Yes
No

Do you own or rent your place of residence in [city]?

Own
Rent
Other

Is there anything else you'd like to tell us about wellbeing in [city]?

_____

_____

APPENDIX B

SAMPLE CHARACTERISTICS AND CENSUS COMPARISON TABLES BY GROWTH CATEGORY

Table B.1.

Sample Demographic Characteristics and Comparison with Census Data for the Negative-Low Growth Category

Characteristic	Negative-Low Growth Category (%, n = 1246)	American Community Survey 2017-2021 Estimates (%)
Age 18-29	7.8	21.1
Age 30-39	20.1	20.0
Age 40-49	23.0	16.2
Age 50-59	16.8	14.4
Age 60-69	18.6	13.3
Age 70 or over	13.7	15.0
Adult Female	66.5	51.1
Adult Male	33.5	48.9
No college degree	37.2	51.6
College degree (4-year)	62.8	48.4
Income under $25,000	4.8	11.7
Income $25,000 to $49,999	13.1	16.4
Income $50,000 to $74,999	14.5	17.0
Income $75,000 to $99,999	19.9	13.2
Income $100,000 to $149,999	24.0	19.7
Income $150,000 or over	23.6	22.0
Church of Jesus Christ of Latter-day Saints	41.1	NA
Other religion	23.4	NA
Agnostic/Atheist/No religious preference	35.5	NA
White	94.6	87.4
Nonwhite	5.4	12.6
Resident less than 5 years	16.2	NA

Table B.2.

Sample Demographic Characteristics and Comparison with Census Data for the Moderate Growth Category

Characteristic	Moderate Growth Category (%, n = 3776)	American Community Survey 2017-2021 Estimates (%)
Age 18-29	8.8	27.5
Age 30-39	21.4	20.0
Age 40-49	23.3	17.7
Age 50-59	18.4	13.6
Age 60-69	16.2	12.2
Age 70 or over	11.8	9.0
Adult Female	65.3	49.5
Adult Male	34.7	50.5
No college degree	40.5	66.2
College degree (4-year)	59.5	33.8
Income under $25,000	4.1	10.4
Income $25,000 to $49,999	11.0	17.1
Income $50,000 to $74,999	16.6	17.1
Income $75,000 to $99,999	18.1	16.0
Income $100,000 to $149,999	26.4	21.1
Income $150,000 or over	23.8	18.3
Church of Jesus Christ of Latter-day Saints	45.6	NA
Other religion	21.8	NA
Agnostic/Atheist/No religious preference	32.6	NA
White	93.8	82.6
Nonwhite	6.2	17.4
Resident less than 5 years	17.3	NA

Table B.3.

Sample Demographic Characteristics and Comparison with Census Data for the High Growth Category

Characteristic	High Growth Category (%, n = 2692)	American Community Survey 2017-2021 Estimates (%)
Age 18-29	5.5	25.2
Age 30-39	20.8	20.6
Age 40-49	28.0	20.6
Age 50-59	21.3	15.0
Age 60-69	15.2	9.8
Age 70 or over	9.2	8.8
Adult Female	61.2	48.7
Adult Male	38.8	51.3
No college degree	38.5	56.9
College degree (4-year)	61.5	43.1
Income under $25,000	3.0	7.2
Income $25,000 to $49,999	8.4	12.9
Income $50,000 to $74,999	14.2	16.9
Income $75,000 to $99,999	15.8	13.5
Income $100,000 to $149,999	27.2	22.5
Income $150,000 or over	31.3	27.0
Church of Jesus Christ of Latter-day Saints	67.6	NA
Other religion	14.8	NA
Agnostic/Atheist/No religious preference	17.7	NA
White	95.1	89.8
Nonwhite	4.9	10.2
Resident less than 5 years	22.4	NA

Table B.4.

Sample Demographic Characteristics and Comparison with Census Data for the Very High Growth Category

Characteristic	Very High Growth Category (%, n = 2181)	American Community Survey 2017-2021 Estimates (%)
Age 18-29	9.9	25.0
Age 30-39	29.2	25.4
Age 40-49	25.6	21.0
Age 50-59	12.7	12.9
Age 60-69	12.5	8.6
Age 70 or over	10.1	7.1
Adult Female	64.9	50.2
Adult Male	35.1	49.8
No college degree	33.3	56.3
College degree (4-year)	66.7	43.7
Income under $25,000	2.5	5.6
Income $25,000 to $49,999	7.0	10.3
Income $50,000 to $74,999	12.3	14.7
Income $75,000 to $99,999	19.9	16.0
Income $100,000 to $149,999	32.2	27.6
Income $150,000 or over	26.2	25.8
Church of Jesus Christ of Latter-day Saints	70.6	NA
Other religion	10.3	NA
Agnostic/Atheist/No religious preference	19.2	NA
White	94.0	87.8
Nonwhite	6.0	12.2
Resident less than 5 years	39.5	NA

APPENDIX C

SPEARMAN'S RHO CORRELATIONS FOR RESEARCH QUESTIONS 1, 2 AND 3 BY CITY

Table C.

City	Personal Wellbeing & Community Connection	Personal Wellbeing & Connection with Nature	Community Connection & Connection with Nature
Beaver	.399**	.503**	.507**
Blanding	.453**	.456**	.254**
Bluff	.440**	.321**	NS
Bountiful	.372**	.333**	.224**
Cottonwood Heights	.351**	.334**	.139*
Delta	.538**	.499**	.351**
Draper	.278**	.417**	.304**
East Carbon	.291**	.382**	.262**
Ephraim	.476**	.406**	.356**
Helper	.582**	.434**	.375*
Herriman	.412**	.427**	.306**
Highland	.329**	.450**	.328**
Hyde Park	.378**	.381**	.258**
Layton	.320**	.447**	.350**
Lehi	.300**	.269**	.328**
Logan	.433**	.414**	.326**
Millcreek	.240**	.380**	.138*
Moab	.342**	.496**	.403**
Nephi	.455**	.442**	.312**
Nibley	.262**	.387**	.234**
North Logan	.442**	.441**	.318**
Park City	.365**	.455**	.329**
Price	.343**	.408**	.135*
Sandy	.376**	.430**	.336**
Santaquin	.504**	.376**	.369*
Saratoga Springs	.404**	.400**	.346**
South Jordan	.379**	.409**	.393**
Spanish Fork	.300**	.380**	.241**
Tooele	.386**	.486**	.333**
Tremonton	.356**	.458**	.254**
Vineyard	.230**	.282**	.219**
West Jordan	.300**	.376**	.242**

**. Correlation is significant at the .01 level (2-tailed).

*. Correlation is significant at the .05 level (2-tailed).

APPENDIX D

CONTINGENCY TABLES ON THE ASSOCIATION BETWEEN COMMUNITY CONNECTION AND PARTICIPATION IN NATURE-BASED ACTIVITIES

Table D.1.

3-way Chi-Square Results on the Association Between Community Connection and Enjoying Wildlife or Birds in your Yard or Neighborhood by Growth Category

	Community Connection						
Group	1	2	3	Total	p	χ^2	V
Negative-Low							
No	106 (68.4%)	36 (23.2%)	13 (8.4%)	155	.055	5.794	.072
Yes	575 (59.0%)	265 (27.2%)	135 (13.8%)	975			
Total	681	301	148	1130			
Moderate							
No	438 (76.6%)	100 (17.5%)	34 (5.9%)	572	<.001	32.823	.098
Yes	1822 (64.4%)	697 (24.6%)	310 (11.0%)	2829			
Total	2260	797	344	3401			
High							
No	287 (74.2%)	82 (21.2%)	18 (4.7%)	387	<.001	48.312	.141
Yes	1133 (55.5%)	675 (33.1%)	232 (11.4%)	2042			
Total	1420	757	250	2427			
Very High							
No	324 (75.5%)	87 (20.3%)	18 (4.2%)	429	<.001	33.566	.132
Yes	916 (61.6%)	426 (28.4%)	157 (10.5%)	1499			
Total	1240	513	175	1928			

Table D.2.

3-way Chi-Square Results on the Association Between Community Connection and Gardening by Growth Category

	Community Connection						
Group	1	2	3	Total	p	χ^2	V
Negative-Low							
No	158 (63.5%)	59 (23.7%)	32 (12.9%)	249	.488	1.604	.038
Yes	525 (59.3%)	243 (27.5%)	117 (13.2%)	885			
Total	683	302	149	1134			
Moderate							
No	620 (72.1%)	169 (19.7%)	71 (8.3%)	860	<.001	15.934	.068
Yes	1646 (64.7%)	626 (24.6%)	373 (10.7%)	2545			
Total	2266	795	344	3405			
High							
No	389 (67.7%)	139 (24.2%)	47 (8.2%)	575	<.001	26.960	.105
Yes	1025 (55.4%)	621 (33.6%)	203 (11.0%)	1849			
Total	1414	760	250	2424			
Very High							
No	373 (69.7%)	121 (22.6%)	41 (7.7%)	535	.010	9.188	.069
Yes	869 (63.3%)	391 (28.0%)	157 (9.6%)	1394			
Total	1242	512	175	1929			

Table D.3.

3-way Chi-Square Results on the Association Between Community Connection and Recreating in City Parks by Growth Category

	Community Connection						
Group	1	2	3	Total	p	χ^2	V
Negative-Low							
No	185 (67.0%)	64 (23.2%)	27 (9.8%)	276	.021	7.688	.082
Yes	495 (58.0%)	237 (27.8%)	122 (14.3%)	854			
Total	680	301	149	1130			
Moderate							
No	620 (75.2%)	156 (18.9%)	48 (5.8%)	824	<.001	42.611	.112
Yes	1635 (63.5%)	644 (25.0%)	296 (11.5%)	2575			
Total	2255	800	344	3399			
High							
No	360 (72.3%)	107 (21.5%)	31 (6.2%)	498	<.001	50.161	.144
Yes	1047 (54.8%)	646 (33.8%)	218 (11.4%)	1911			
Total	1407	753	249	2409			
Very High							
No	260 (76.2%)	69 (20.2%)	12 (3.5%)	341	<.001	29.806	.124
Yes	977 (61.7%)	442 (27.9%)	164 (10.4%)	1583			
Total	1237	511	176	1924			

Table D.4.

3-way Chi-Square Results on the Association Between Community Connection and Non-Motorized Recreation on Public Lands or Waters in Utah by Growth Category

	Community Connection						
Group	1	2	3	Total	p	χ^2	V
Negative-Low							
No	167 (64.5%)	63 (24.3%)	29 (11.2%)	259	.261	2.683	.049
Yes	515 (58.9%)	239 (27.3%)	120 (13.7%)	854			
Total	682	302	149	1133			
Moderate							
No	623 (73.7%)	178 (21.1%)	44 (5.8%)	845	<.001	37.760	.105
Yes	1640 (64.2%)	616 (24.1%)	299 (11.7%)	2555			
Total	2263	794	343	3400			
High							
No	369 (65.7%)	143 (25.4%)	50 (8.9%)	562	<.001	16.528	.083
Yes	1042 (56.1%)	617 (33.2%)	200 (10.8%)	1859			
Total	1411	760	250	2421			
Very High							
No	350 (70.0%)	117 (23.4%)	33 (6.6%)	500	.005	10.743	.075
Yes	890 (62.3%)	394 (27.6%)	144 (10.1%)	1482			
Total	1240	511	177	1928			

Table D.5.

3-way Chi-Square Results on the Association Between Community Connection and Motorized Recreation on Public Lands or Waters in Utah by Growth Category

	Community Connection						
Group	1	2	3	Total	p	χ^2	V
Negative-Low							
No	423 (62.0%)	181 (26.5%)	78 (11.4%)	682	.095	2.683	.095
Yes	260 (57.4%)	122 (26.9%)	71 (15.7%)	453			
Total	683	303	149	1135			
Moderate							
No	1471 (69.8%)	458 (21.7%)	178 (8.4%)	2107	<.001	33.016	.098
Yes	788 (60.7%)	343 (26.4%)	167 (12.9%)	1298			
Total	2259	801	345	3405			
High							
No	869 (62.5%)	406 (29.2%)	116 (8.3%)	1391	<.001	25.457	.102
Yes	550 (53.1%)	352 (34.0%)	134 (12.9%)	1036			
Total	1419	758	250	2427			
Very High							
No	813 (66.7%)	315 (25.8%)	91 (7.5%)	1219	.002	12.912	.082
Yes	428 (60.4%)	197 (27.8%)	84 (11.8%)	709			
Total	1241	512	175	1928			

Table D.6.

3-way Chi-Square Results on the Association Between Community Connection and Watching or Reading Nature-Related Programs or Publications by Growth Category

	Community Connection						
Group	1	2	3	Total	p	χ^2	V
Negative-Low							
No	278 (63.2%)	112 (25.5%)	50 (11.4%)	440	.189	3.332	.054
Yes	402 (58.2%)	190 (27.5%)	99 (14.3%)	691			
Total	6830	302	149	1131			
Moderate							
No	1022 (68.9%)	334 (22.5%)	127 (8.6%)	1483	.007	9.812	.054
Yes	1239 (64.5%)	464 (24.2%)	218 (11.3%)	1921			
Total	2261	798	345	3404			
High							
No	699 (64.1%)	295 (27.0%)	97 (8.9%)	1091	<.001	25.737	.103
Yes	718 (53.9%)	462 (34.7%)	153 (11.5%)	1333			
Total	1417	757	250	2424			
Very High							
No	613 (66.8%)	242 (26.4%)	63 (6.9%)	918	.004	11.265	.076
Yes	626 (61.9%)	273 (27.0%)	112 (11.1%)	1011			
Total	1239	515	175	1929			

APPENDIX E

SPSS PARAMETER ESTIMATES OUTPUT FOR MODEL 1

Parameter Estimates

Dependent Variable: How connected do you feel to [city] as a community?

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power[b]
					Lower Bound	Upper Bound			
Intercept	3.723	.093	39.912	.000	3.540	3.906	.170	39.912	1.000
[Growth_Clusters4=1.00]	.033	.056	.598	.550	-.076	.143	.000	.598	.092
[Growth_Clusters4=2.00]	-.043	.045	-.948	.343	-.132	.046	.000	.948	.158
[Growth_Clusters4=3.00]	.028	.038	.737	.461	-.047	.103	.000	.737	.114
[Growth_Clusters4=4.00]	0[a]	.	.	.	.	.	.	.	.
[AgeCategory_re=1]	-.484	.057	-8.511	<.001	-.596	-.373	.009	8.511	1.000
[AgeCategory_re=2]	-.443	.045	-9.806	<.001	-.531	-.354	.012	9.806	1.000
[AgeCategory_re=3]	-.443	.044	-9.978	<.001	-.531	-.356	.013	9.978	1.000
[AgeCategory_re=4]	-.283	.047	-6.016	<.001	-.375	-.191	.005	6.016	1.000
[AgeCategory_re=5]	-.179	.048	-3.740	<.001	-.273	-.085	.002	3.740	.962
[AgeCategory_re=6]	0[a]	.	.	.	.	.	.	.	.
[Education_College=0]	-.086	.025	-3.419	<.001	-.136	-.037	.001	3.419	.928
[Education_College=1]	0[a]	.	.	.	.	.	.	.	.
[Gender2=1.000]	.046	.025	1.865	.062	-.002	.095	.000	1.865	.462
[Gender2=2.000]	0[a]	.	.	.	.	.	.	.	.
[Income5=1.00]	-.228	.043	-5.244	<.001	-.313	-.143	.004	5.244	.999
[Income5=2.00]	-.234	.040	-5.865	<.001	-.312	-.156	.004	5.865	1.000
[Income5=3.00]	-.146	.037	-3.990	<.001	-.218	-.075	.002	3.990	.979
[Income5=4.00]	-.079	.032	-2.438	.015	-.142	-.015	.001	2.438	.684
[Income5=5.00]	0[a]	.	.	.	.	.	.	.	.
[LengthLessthan5=0]	.207	.030	6.877	<.001	.148	.266	.006	6.877	1.000
[LengthLessthan5=1]	0[a]	.	.	.	.	.	.	.	.
[Nonwhite=0]	.119	.051	2.335	.020	.019	.219	.001	2.335	.646
[Nonwhite=1]	0[a]	.	.	.	.	.	.	.	.
[Religion3=1.00]	-.481	.029	-16.728	<.001	-.537	-.425	.035	16.728	1.000
[Religion3=2.00]	-.336	.034	-10.017	<.001	-.402	-.270	.013	10.017	1.000
[Religion3=3.00]	0[a]	.	.	.	.	.	.	.	.
Population_1000	-.002	.000	-5.592	<.001	-.003	-.001	.004	5.592	1.000
EconGrowthRate	-.001	.000	-3.239	.001	-.002	.000	.001	3.239	.899
HousingGrowthRate	8.994E-5	3.084E-5	2.916	.004	2.948E-5	.000	.001	2.916	.830

a. This parameter is set to zero because it is redundant.

b. Computed using alpha = .05

APPENDIX F

SPSS PARAMETER ESTIMATES OUTPUT FOR MODEL 2

Parameter Estimates

Dependent Variable: How would you rate your level of personal wellbeing in each of the following categories? - Connection with Nature

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power[b]
					Lower Bound	Upper Bound			
Intercept	4.472	.086	51.945	.000	4.303	4.640	.257	51.945	1.000
[Growth_Clusters4=1.00]	.143	.052	2.779	.005	.042	.244	.001	2.779	.794
[Growth_Clusters4=2.00]	.112	.042	2.688	.007	.030	.194	.001	2.688	.767
[Growth_Clusters4=3.00]	.148	.035	4.204	<.001	.079	.217	.002	4.204	.988
[Growth_Clusters4=4.00]	0[a]	.	.	.	.	.	.	.	.
[AgeCategory_re=1]	-.403	.052	-7.683	<.001	-.506	-.300	.007	7.683	1.000
[AgeCategory_re=2]	-.483	.042	-11.602	<.001	-.564	-.401	.017	11.602	1.000
[AgeCategory_re=3]	-.429	.041	-10.477	<.001	-.509	-.349	.014	10.477	1.000
[AgeCategory_re=4]	-.275	.043	-6.343	<.001	-.360	-.190	.005	6.343	1.000
[AgeCategory_re=5]	-.091	.044	-2.066	.039	-.178	-.005	.001	2.066	.542
[AgeCategory_re=6]	0[a]	.	.	.	.	.	.	.	.
[Education_College=0]	-.101	.023	-4.327	<.001	-.147	-.055	.002	4.327	.991
[Education_College=1]	0[a]	.	.	.	.	.	.	.	.
[Gender2=1.000]	-.015	.023	-.638	.524	-.060	.030	.000	.638	.098
[Gender2=2.000]	0[a]	.	.	.	.	.	.	.	.
[Income5=1.00]	-.385	.040	-9.589	<.001	-.464	-.306	.012	9.589	1.000
[Income5=2.00]	-.279	.037	-7.602	<.001	-.351	-.207	.007	7.602	1.000
[Income5=3.00]	-.250	.034	-7.377	<.001	-.316	-.183	.007	7.377	1.000
[Income5=4.00]	-.130	.030	-4.360	<.001	-.188	-.071	.002	4.360	.992
[Income5=5.00]	0[a]	.	.	.	.	.	.	.	.
[LengthLessthan5=0]	.022	.028	.807	.420	-.032	.077	.000	.807	.127
[LengthLessthan5=1]	0[a]	.	.	.	.	.	.	.	.
[Nonwhite=0]	.021	.047	.455	.649	-.071	.114	.000	.455	.074
[Nonwhite=1]	0[a]	.	.	.	.	.	.	.	.
[Religion3=1.00]	-.031	.026	-1.184	.236	-.083	.021	.000	1.184	.220
[Religion3=2.00]	.020	.031	.631	.528	-.041	.080	.000	.631	.097
[Religion3=3.00]	0[a]	.	.	.	.	.	.	.	.
Population_1000	-.004	.000	-11.214	<.001	-.005	-.003	.016	11.214	1.000
EconGrowthRate	-.001	.000	-3.005	.003	-.002	.000	.001	3.005	.852
HousingGrowthRate	5.867E-5	2.847E-5	2.061	.039	2.862E-6	.000	.001	2.061	.540

a. This parameter is set to zero because it is redundant.

b. Computed using alpha = .05

APPENDIX G

SPSS PARAMETER ESTIMATES OUTPUT FOR MODEL 3

Parameter Estimates

Dependent Variable: How would you rate your overall persnal wellbeing? (Use your own interpretation of "wellbeing.")

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power[b]
					Lower Bound	Upper Bound			
Intercept	4.756	.083	57.597	.000	4.594	4.918	.299	57.597	1.000
[Connected=1]	-1.002	.087	-11.580	<.001	-1.172	-.833	.017	11.580	1.000
[Connected=2]	-.707	.070	-10.126	<.001	-.843	-.570	.013	10.126	1.000
[Connected=3]	-.367	.063	-5.798	<.001	-.491	-.243	.004	5.798	1.000
[Connected=4]	-.216	.066	-3.288	.001	-.345	-.087	.001	3.288	.908
[Connected=5]	0[a]	.	.	.	.	.	.	.	.
[Growth_Clusters4=1.00]	.021	.087	.238	.812	-.150	.191	.000	.238	.057
[Growth_Clusters4=2.00]	-.029	.072	-.404	.686	-.170	.112	.000	.404	.069
[Growth_Clusters4=3.00]	.089	.074	1.201	.230	-.056	.234	.000	1.201	.225
[Growth_Clusters4=4.00]	0[a]	.	.	.	.	.	.	.	.
[AgeCategory_re=1]	-.007	.039	-.180	.857	-.084	.070	.000	.180	.054
[AgeCategory_re=2]	-.120	.031	-3.823	<.001	-.181	-.058	.002	3.823	.969
[AgeCategory_re=3]	-.179	.031	-5.825	<.001	-.240	-.119	.004	5.825	1.000
[AgeCategory_re=4]	-.193	.032	-5.945	<.001	-.257	-.129	.005	5.945	1.000
[AgeCategory_re=5]	-.063	.033	-1.910	.056	-.128	.002	.000	1.910	.480
[AgeCategory_re=6]	0[a]	.	.	.	.	.	.	.	.
[Education_College=0]	-.040	.017	-2.304	.021	-.074	-.006	.001	2.304	.634
[Education_College=1]	0[a]	.	.	.	.	.	.	.	.
[Gender2=1.000]	-.016	.017	-.960	.337	-.050	.017	.000	.960	.160
[Gender2=2.000]	0[a]	.	.	.	.	.	.	.	.
[Income5=1.00]	-.540	.030	-18.014	<.001	-.599	-.481	.040	18.014	1.000
[Income5=2.00]	-.338	.027	-12.312	<.001	-.392	-.284	.019	12.312	1.000
[Income5=3.00]	-.263	.025	-10.389	<.001	-.312	-.213	.014	10.389	1.000
[Income5=4.00]	-.126	.022	-5.661	<.001	-.169	-.082	.004	5.661	1.000
[Income5=5.00]	0[a]	.	.	.	.	.	.	.	.
[LengthLessthan5=0]	-.034	.021	-1.657	.098	-.075	.006	.000	1.657	.381
[LengthLessthan5=1]	0[a]	.	.	.	.	.	.	.	.
[Nonwhite=0]	.105	.035	2.982	.003	.036	.173	.001	2.982	.846
[Nonwhite=1]	0[a]	.	.	.	.	.	.	.	.
[Religion3=1.00]	-.109	.020	-5.389	<.001	-.148	-.069	.004	5.389	1.000
[Religion3=2.00]	-.106	.023	-4.553	<.001	-.151	-.060	.003	4.553	.995
[Religion3=3.00]	0[a]	.	.	.	.	.	.	.	.
Population_1000	.001	.000	4.056	<.001	.001	.002	.002	4.056	.982
EconGrowthRate	-3.026E-5	.000	-.122	.903	-.001	.000	.000	.122	.052
HousingGrowthRate	3.880E-5	2.138E-5	1.814	.070	-3.122E-6	8.072E-5	.000	1.814	.442
[Connected=1] *	-.037	.133	-.280	.780	-.299	.224	.000	.280	.059

APPENDIX H

SPSS PARAMETER ESTIMATES OUTPUT FOR MODEL 4

Parameter Estimates

Dependent Variable: How would you rate your overall persnal wellbeing? (Use your own interpretation of "wellbeing.")

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power[b]
					Lower Bound	Upper Bound			
Intercept	4.669	.070	66.338	.000	4.531	4.807	.361	66.338	1.000
[ConnNature_Rating=1]	-1.144	.104	-10.990	<.001	-1.349	-.940	.015	10.990	1.000
[ConnNature_Rating=2]	-.918	.068	-13.482	<.001	-1.052	-.785	.023	13.482	1.000
[ConnNature_Rating=3]	-.534	.050	-10.602	<.001	-.633	-.435	.014	10.602	1.000
[ConnNature_Rating=4]	-.358	.047	-7.704	<.001	-.450	-.267	.008	7.704	1.000
[ConnNature_Rating=5]	0[a]	.	.	.	.	.	.	.	.
[Growth_Clusters4=1.00]	-.004	.059	-.073	.942	-.119	.111	.000	.073	.051
[Growth_Clusters4=2.00]	-.084	.050	-1.684	.092	-.182	.014	.000	1.684	.391
[Growth_Clusters4=3.00]	.050	.049	1.023	.306	-.046	.146	.000	1.023	.176
[Growth_Clusters4=4.00]	0[a]	.	.	.	.	.	.	.	.
[AgeCategory_re=1]	-.019	.038	-.500	.617	-.094	.056	.000	.500	.079
[AgeCategory_re=2]	-.084	.030	-2.742	.006	-.143	-.024	.001	2.742	.783
[AgeCategory_re=3]	-.162	.030	-5.419	<.001	-.221	-.104	.004	5.419	1.000
[AgeCategory_re=4]	-.191	.032	-6.055	<.001	-.253	-.129	.005	6.055	1.000
[AgeCategory_re=5]	-.087	.032	-2.732	.006	-.150	-.025	.001	2.732	.780
[AgeCategory_re=6]	0[a]	.	.	.	.	.	.	.	.
[Education_College=0]	-.032	.017	-1.887	.059	-.065	.001	.000	1.887	.471
[Education_College=1]	0[a]	.	.	.	.	.	.	.	.
[Gender2=1.000]	-.002	.017	-.098	.922	-.034	.031	.000	.098	.051
[Gender2=2.000]	0[a]	.	.	.	.	.	.	.	.
[Income5=1.00]	-.468	.029	-15.923	<.001	-.525	-.410	.032	15.923	1.000
[Income5=2.00]	-.305	.027	-11.417	<.001	-.358	-.253	.016	11.417	1.000
[Income5=3.00]	-.220	.025	-8.916	<.001	-.268	-.171	.010	8.916	1.000
[Income5=4.00]	-.102	.022	-4.739	<.001	-.145	-.060	.003	4.739	.997
[Income5=5.00]	0[a]	.	.	.	.	.	.	.	.
[LengthLessthan5=0]	.007	.020	.364	.716	-.032	.047	.000	.364	.065
[LengthLessthan5=1]	0[a]	.	.	.	.	.	.	.	.
[Nonwhite=0]	.134	.034	3.911	<.001	.067	.201	.002	3.911	.974
[Nonwhite=1]	0[a]	.	.	.	.	.	.	.	.
[Religion3=1.00]	-.219	.019	-11.372	<.001	-.257	-.181	.016	11.372	1.000
[Religion3=2.00]	-.193	.022	-8.574	<.001	-.237	-.149	.009	8.574	1.000
[Religion3=3.00]	0[a]	.	.	.	.	.	.	.	.
Population_1000	.002	.000	7.259	<.001	.001	.002	.007	7.259	1.000
EconGrowthRate	-8.764E-5	.000	-.365	.715	-.001	.000	.000	.365	.065
HousingGrowthRate	5.017E-5	2.078E-5	2.414	.016	9.429E-6	9.090E-5	.001	2.414	.675