

The Influence and Role of Arts on Community Well-being

by

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ABSTRACT

Arts and culture function as indispensable parts of humans' lives. Numerous studies have examined the impact and value of arts and culture, from individual quality of life to overall community health. However, research has been less focused on identifying the influence of crucial dimensions of arts and culture on overall community well-being, and contributing to understanding the intertwining connection between these elements and community well-being. To explore the dimensions of arts and cultural resources and community well-being, and in turn, to present the relationship between them in a community, this dissertation was based on three subsequent studies. A total of 518 counties were included in the analysis. Specifically, this study is unique in that it sought evidence based on county-level data drawn on the Local Arts Index (LAI) from Americans for the Arts (AFA) and County Health Rankings & Roadmaps (CHRR) variables to provide an arts-community measurement system suggesting critical and meaningful variables among a wide range of existing data. The results revealed the positive impacts of arts and cultural resources on community well-being. Each arts and cultural domain also has critical relationships with community individual, social, and economic well-being. Specifically, the 'arts business' domain was considerably associated with community individual well-being and comprehensive community well-being. The 'arts consumption' domain showed synthetically significant associations with community's individual and economic well-being, and by extension, influenced comprehensive community well-being. Lastly, the 'arts nonprofits' domain was related to all the components of community well-being. In conclusion, residents' arts consumption and the existence of arts and cultural/creative industries, including arts nonprofits, are

constantly suggested as key to improving county-level community well-being. This study centers on presenting a more realistic vision of how arts and cultural resources are associated with community well-being components. Recognizing the power of arts and cultural resources in society and bolstering them to promote community well-being is a global issue of the utmost pertinence. Thus, research utilizing a longitudinal data-driven approach is likely to continue measuring the impact of arts and culture, and examining how they are related to and can strengthen community well-being.

DEDICATION

This dissertation is dedicated to my husband June, and my loving parents.

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CHAPTER 1

INTRODUCTION

In recent years, the value of arts and culture and its impact on communities has drawn attention from both academia and practitioners. It has been strongly argued that arts and cultural facilities, strategies, productions, and consumptions are important for community revitalization, which contains processes and outcomes that enhance social, cultural, and economic development (Blessi, Tremblay, Sandri, & Pilati, 2012; Grodach, 2010; Grodach & Loukaitou-Sideris, 2007; Pratt, 2010). The exploration of arts and cultural resources has spawned many community projects. In turn, attempts to examine connections between arts and community have placed the arts and culture within the broader concept of well-being, which embraces from individual quality of life to overall community health.

More recently, academic accomplishments dedicated to understanding and determining the benefits of arts and culture have surfaced in the quality of life and well-being literature. Given a growing body of literature, sound arts infrastructure and various arts and cultural activities seem to provide promising opportunities for enhancing community health and the quality of life of residents. For example, Grodach and Loukaitou-Sideris (2007) argued that improving the quality of life of all citizens is the most essential benefit of cultural activities. A body of studies by the Victorian Health Promotion Foundation (VicHealth) emphasized community-based cultural events and networks as one way of development of community health and well-being (Eckersley, Wierenga, & Wyn, 2005; VicHealth, 2006, 2013). By extension, much research of the Arts Council England emphasized not only values of arts and culture on people's health

and well-being, but also a wider impact on their society and economy (Arts Council England, 2015a, 2015b; Reeves, 2002; Tuck & Dickinson, 2015).

Traditionally, arts have functioned as indispensable parts of humans' lives. Arts were considered as one virtue of a good person which stood for a wealth of cultural, intellectual, and aesthetic value in ancient Athens. Furthermore, philosophers such as Plato, Aristotle, and Locke claimed the influence of arts education on children's value and behaviors (Mark & Charles, 1992). The significance of arts and culture to American life was given attention to after the Revolutionary War in the 18th century. Americans began to pursue intellectual, artistic, and creative activities in the form of literature, music, and poetry to enhance their intellectual enjoyment in leisure and quality of life. Furthermore, the City Beautiful Movement in the late 19th century emerged as a societal function of arts, beautifying communities and increasing quality of life for residents (Phillips, 2004). Since the 1980s, arts and culture, as a characteristic of distinctive competitiveness against other places, have been used as important economic resources for community development, and in turn, have become a crucial industry for many communities (Ginsburgh & Throsby, 2006).

Supportively, empirical evidence for the impacts and values of the arts has been reviewed by numerous studies. These have ranged from studies on health (Stuckey & Nobel, 2010) and well-being (South, 2006), quality of life (Michalos & Kahlke, 2010), helping at-risk youth (Rapp-Paglicci, Ersing, & Rowe, 2006), education (Ruppert, 2006), social networks (Greaves & Farbus, 2006), social inclusion (Goodlad, Hamilton, & Taylor, 2002a, 2002b), social identity (McClinchey, 2008), community engagement (Johnson & Stanley, 2007), community economic development (Borup, 2006; Stern and

Seifert, 2010), and regeneration (Grodach & Loukaitou-Sideris, 2007). Following this lead, researchers and advocacy agents have used arts and cultural assessment to support their claims that arts and cultural prosperity has a strong correlation with regional economies and social health (Borgonovi, 2004; Jackson, Houghton, Russell, & Triandos, 2005; Lowe, 2000; Markusen & Gadwa, 2010b; Matarasso & Chell, 1998).

Along with attention to assessment of the impact of arts and cultural value on community, some studies, however, have acknowledged its methodological challenges (Evans, 2005; Galloway, 2009, Guetzkow, 2002; Newman, Curtis, & Stephens, 2003). One of the most commonly presented issues is that much research relies heavily on self-reported evidence collected by selective arts programs and projects (Galloway, 2009; Guetzkow, 2002; Merli, 2002; Mulligan, Humphery, James, Scanlon, Smith & Welch, 2006). Thus, it might expect to some degree to inflate results, while not every interaction results in a positive and long-term community-wide impact.

Furthermore, Guetzkow (2002) and Hoynes (2003) note that the use of the existing data is somewhat limited by a lack of sample size, regularity, and development of standard measures. For example, most research into the benefits and impacts of arts and culture has been based on case studies focusing on specific arts events, cities, or regions. Also, even though communities create arts and cultural indicators, different communities are apt to collect different kinds of data, complicating efforts to construct a clear concept having internal validity. Leaving the issues of arts' aesthetic or instrumental values for society aside, research is less focused on identifying the influence of crucial dimensions of arts and culture on overall community well-being, and understanding the intertwining connection between these elements and community well-being. It is still not

clear that indeed arts and culture cause community well-being. Although some cases show a robust connection between arts and community development (Blessi et al., 2012; Lavanga, 2006; Markusen & Gadwa, 2010a; Strom, 1999), they cannot be generalized because different cities capitalize on arts and culture in different ways.

Therefore, I propose a dissertation about the influence and role of arts and culture on communities, building a clear conceptual framework that links arts and culture to broader community well-being and deepening the understanding of the quality of life in communities. Instead of making overstated claims about and unconditional supports of the potential of the values and impacts of arts and culture on peoples' lives and communities, a more realistic vision of how arts and cultural resources influence community needs to be substantiated beyond following the self-referential, anecdotal evidences. The initial intention of this research was to identify arts and cultural resources in a community and examine the relationship between these resources and overall community well-being outcomes. Developing a new set of indicators for assessing community well-being outcome of the arts and cultural resources was not the aim of this study; rather, I placed the value in using publicly available arts and community data. Specifically, in pursuit of a methodologically sound approach, this study has sought evidence based on county level data drawn on the Local Arts Index (LAI) from American for the Arts (AFA) and County Health Rankings & Roadmaps (CHRR) variables since county level data could be adequate to not only embrace distinct community characteristics but also make possible the comparison of community results.

To help advance research in arts and community, this study 1) gathers crucial and key evidence connected to arts-based community development from previous literature,

2) organizes themes and concepts related to arts and community in order to provide an arts-community measurement system suggesting critical and meaningful variables among a wide range of existing data, and 3) presents findings that emerged from these variables and the relationship between the arts and community at the county level.

This dissertation takes the How Arts Works System Map developed by the National Endowment for the Arts (NEA) as its starting point. This system map is an overarching theoretical background to investigate various arts and cultural resources on different community outcomes. The study is divided into three parts. The first part (chapters 2, 3, and 4) reviews the impacts of arts in community based on previous literature, and explains several conceptual dimensions of arts and cultural factors drawn from the Local Arts Index (LAI) from American for the Arts. After reviewing the literature on arts and cultural resources in community, chapter 4 identifies and organizes representative factors which play an important role in communities.

The second part (chapters 5 and 6) develops community well-being concepts related to arts and cultural activities. After reviewing the literature on community well-being and its related concept, based on the How Arts Works System Map (Iyengar et al., 2012) as a theoretical framework, chapter 5 proposes a comprehensive model of arts and community well-being and hypotheses for this study. In chapter 6, drawing on CHRR variables, the study explores how these variables are classified within the three different aspects of community well-being, that is individual, social, and economic community well-being.

The last part (chapter 7) combines the previous two sections to examine the hypotheses and conceptual framework for this study, and expounds the overall arts and

cultural tendency on community well-being issues. It demonstrates the current state of relationship between factors of arts and cultural assets (e.g., arts and cultural participation, resources, and commodities) and community – individual, social, and economic – outcomes such as state of health, level of education, crime rate, income levels, and employment rate. The presentations on the findings in this chapter help to bolster a theoretical framework presenting a full and detailed picture of the ongoing relationship between arts and community well-being with an eye to examining both empirical and objective evidence that is collected from public data. Finally, chapter 8 includes a summary of the findings of the three sections of the paper, along with discussions and implications to the study of arts management and community well-being.

CHAPTER 2

VALUE OF THE ARTS

Since John Dewey (1934) declared in his book *Arts as Experience* that the value of the arts has to be incorporated into social relationships systems, the impact of this value on individuals and society has been discussed in various academic fields, as well as among arts practitioners and policymakers. Setting the “art for its own sake” versus “art for social value” argument aside, much research has provided empirical evidence of the impact and value of the arts as autotelic experience, to the arts as an instrumental way of sustaining society. In 1965, The National Foundation for the Arts and Humanities Act was adopted; reflecting the importance of arts and culture in the United States (Hoynes, 2003). Local government entities including arts boards and arts councils were established as a result and began to reflect on arts-based community development within public policy. They focused on public understanding of, and appreciation for, the positive impact of the arts on developing and expressing individual creativity, providing a tool for economic growth, and connecting people across cultural boundaries in order to enrich community life (Moore & Moore, 2005).

Since then, community prosperity through arts-based development has been somewhat taken for granted by communities, residents, policy-makers, and even academics. Beyond the expression of individual creativity and artistic appreciation, the arts and culture of a community are regarded as an important asset for creating an economic niche within the community and generating a distinctive community identity (Florida, 2002a, 2002b; Foster, 2009; Markusen & Schrock, 2006; Richards, 2011). Thus, this chapter focuses on previous literature on arts and cultural functions as forms of

community capital, and then discusses their role and impact on communities. Lastly, a comprehensive arts and cultural system map developed by Iyengar and colleagues (2012) is reviewed as a basis for exploring the value and impact of the arts.

2.1 Arts and Culture as Cultural Capital

Culture, in narrow usage, may connote peoples' tastes in the arts. From this perspective, it could be knowledge of and participation in high culture (DiMaggio & Useem, 1982). However, the term culture can be defined more broadly, embracing a way of viewing the world, traditions, and languages. Culture is a crucial element for fostering cohesive and sustainable communities (Jeannotte, 2003). In this vein, the term 'cultural capital' encompasses arts and cultural products and is explained as any cultural resources or assets communities own, whether they are tangible or intangible. Although the scope of cultural capital varies by research context, it can be consumed, invested in, and exchanged within society so as to promote the well-being of communities (Berkes & Folke, 1994; Bourdieu, 1986; Jacobs, 2007; Jeannotte, 2003; Throsby, 1999).

Flora and colleagues describe cultural capital as "the shared products of society" (Flora et al., 1992, p. 58). According to the Community Capitals Framework (CCF) developed by Flora and colleagues, there are seven diverse community assets for analyzing how communities work. These include natural, human, cultural, social, financial, built, and political capital (Emery & Flora, 2006; Flora, Flora, & Fey, 2007; Gutierrez-Montes, Emery, & Fernandez-Baca, 2009). In the CCF, cultural capital is described as representing each community's distinctive character—which is inherent in the language, shared identity, attitude, and heritage of community members—and influencing

how creativity and innovation emerge in a community (Emery & Flora, 2006; Jacobs, 2007). As one way of expressing a community's distinctiveness, festivals, celebrations, and events are a part of cultural capital. Others include community stories, food, and tradition, which affect the everyday lives of community members. In a community system, cultural capital has significant value in helping create a flow of other assets so as to sustain a community.

In a similar manner, Berkes and Folke (1992) posit that cultural capital is a vehicle for sustainability. They define cultural capital as "factors that provide human societies with the means and adaptations to deal with the natural environment and to actively modify it" (Berkes & Folke, 1994, p. 130). They stress the importance of cultural capital as an interface between natural capital and human-made capital (e.g., economic activity) (Berkes & Folke, 1992, 1994). In this regard, cultural capital is thought to attract people to visit a community and indeed may influence not only the economic prosperity of a community but also its social capital, human capital, and overall infrastructures (Jacobs, 2007).

On the other hand, Bourdieu identified the concept of cultural capital at the individual level. It may help to form an individual's character and guide their actions and tastes. Bourdieu defined cultural capital as "the form of long-lasting dispositions of the mind and body [and] the form of cultural goods" (Bourdieu, 1986, p.243). Also, in the way of cultural expression, cultural capital includes material objects such as paintings, written works, dances, and music, as well as a symbolic legacy that is transferable through generations. The transmission of cultural capital makes a group of people enable the reproduction of social structure and maintain their social status. Furthermore,

Bourdieu suggests that cultural capital in the form of academic qualifications establishes the value of the holder of a given qualification (Bourdieu, 1986; Jeannotte, 2003).

Recently, studies demonstrate that an investment of cultural capital provides benefits in academic performance, physical and psychological fitness, and social relationships (Daykin, Viggiani, Pilkington, & Moriarty, 2013; Dooris, 2005; Kinder & Harland, 2004; Lobo & Winsler, 2006; Schwarz & Tait, 2007; Spandler, Secker, Kent, Hacking, & Shenton, 2007).

On the one hand, Jeannotte (2003) describes the role of cultural capital for the collective well-being of society. She argues that cultural capital is created by peoples' engagement in arts, cultural, and heritage activities. Also, being involved in arts projects helps encourage intercultural connection and understanding of others. Community cultural organizations and local arts agencies play an important role in strengthening social ties and community spirit. Thus, cultural capital here is a crucial input for the formation of institutions, norms, and shared meanings in a community (Jeannotte, 2003).

On the other hand, by incorporating cultural capital into economic value, much research highlights growing cultural consumption as an essential economic resource for local development (Florida, 2002b; Lavanga, 2006). As an approach to the economic concept of cultural capital, Throsby (1999) defined cultural capital as "the stock of cultural value embodied in an asset" (p. 6). This asset can be used in the production of goods and services. As people consume these goods and services, cultural value facilitates economic value. Tangible cultural capital is embodied in artworks, artifacts, heritage buildings, and structures. On the other hand, intangible cultural capital comes in the form of ideas, beliefs, traditions, and languages. Moreover, as a part of the arts,

intangible cultural capital instigates a “flow of services” of tangible cultural capital, which can boost both economic value and cultural value itself (Throsby, 1999, p.7).

Phillips and Shockley (2010) propose that cultural capital is essential for asset-based community development (ABCD), which is “a planned effort to produce assets that increase the capacity of residents to improve their quality of life” (Green & Haines, 2007, p. vii). Cultural capital as “forces of creativity and innovation” (Phillips & Shockley, 2010, p. 98) promotes interactions among people, which, in turn, spur a synergistic effect on community development. Supporting community culture and infrastructures, as well as encouraging cultural participation among community residents, is germane to community sustainability (i.e., community health, public housing, ecological preservation, and rural revitalization). Such sustainability is commonly recognized as a way of enhancing community well-being.

Collectively, arts and culture in the term ‘cultural capital’ are crucially related to individuals’ lives and hold much potential to impact the broad sphere of community. Given that, the following section will focus more on three aspects of arts and cultural impacts—benefit of the arts to individuals, benefit to society and communities, and the economic benefit of the arts. Even though the following section focuses on three main categories that emerged from a review of existing literature, each category is not insulated from the other category. Rather, they overlap in the context of the value and impact of arts and culture.

2.2 Impact of the Arts on Individuals

With an emphasis on arts impacts on individual, previous research stresses not only its hedonic pleasure (Nicholson & Pearce, 2001; Van Zyl & Botha, 2004), but also instrumental value of arts—improving individuals’ ability and skills, and enhancing their physical and psychological well-being (Lowe, 2000; Macnaughton, White & Stacy, 2005; South, 2006). Various actions within the arts, such as public art, murals, festivals and fairs, museums, and performances provide people a chance to enjoy themselves and participate in the arts. A desire for an escape from one’s daily routine is fulfilled through arts experiences, while having fun, feeling free, and taking a rest (Nicholson & Pearce, 2001; Van Zyl & Botha, 2004). However, adding to hedonic pleasure or aesthetic appreciation, arts and cultural activities provide further benefits to participants in the way of self-expression, learning new skills, or even promoting their health and well-being (Daykin et al., 2013; Dooris, 2005; Eversole, 2005; Matarasso, 1997). A desire for novelty and uniqueness are important motivations for arts participation (Nicholson & Pearce, 2001; Van Zyl & Botha, 2004). Participating in the arts allows people to experience new and different arts products, seek a unique cultural experience, and satisfy their curiosity. Hall and Robertson (2001) state that acquisition of new arts skills is one of the benefits of public arts. Also, through arts projects, individuals develop artistic knowledge, appreciation of art forms, as well as enhanced creativity and skills (Kay, 2000; Shaw, 2003). Hence, an individual can fulfill his/her personal goals, whether they might be to be entertained or to improve their quality of life (Michalos, 2005; Prebensen, 2010).

Given growing interest in the relationship between art and health, many studies argue that the arts have a contribution to make in improving health and well-being (Macnaughton, White & Stacy, 2005; South, 2006). A study by Matarasso (1997) found that participation in the arts makes people feel better or healthier. Further, Stuckey and Nobel (2010) argued that adults' artistic engagement, in music or visual arts therapy, has significant positive effects on wellness and healing. Michalos and Kahlke (2010) highlighted that participating in arts activities, such as playing an instrument, significantly correlates with satisfaction with one's quality of life and happiness. Although the production of art had a more immediate effect on satisfaction compared to consuming art, 83 percent of respondents surveyed agreed or strongly agreed that the arts assume the role of self-health enhancers.

The arts do not only help participants feel better and healthier but they can also improve self-confidence, self-identity, and self-esteem (Matarasso, 1997; Michalos & Kahlke, 2010; Kay, 2000). For example, Daykin and colleagues (2008) reviewed 14 studies exploring the impact of the arts on young people. The findings demonstrated the positive impacts of participation in the arts, including development of self-confidence, improvement in social skill and empowerment, and enhanced peer interaction and co-operation. Greaves and Farbus (2006) show that engaging the aging population in creative activities increases their sense of self-worth, improves their social networks, and influences their physical and psychological well-being. A study by White (2006) shows that providing arts spaces and introducing the process of creating arts promote health in the following ways: by bringing people together, promoting positive feelings, and building artistic skill and confidence.

Furthermore, engagement in the arts increases an individuals' development by helping build their skills and increasing motivation. It allows individuals to discover new ways of seeing and doing things. Varied interpretations and meanings enable people to imagine and consider other perspectives, cultivate creative self-expressions, as well as evoke feelings and emotions (Lowe, 2000). Also, arts education encourages student success and achievement (Catterall, 2012; Respress, & Lutfi, 2006; Ruppert, 2006; Walker, 1995). Ruppert (2006) indicates that learning about the arts is of benefit to students. For instance, students who take more arts classes have higher SAT scores. Arts learning also enhances student motivation to learn, improves critical thinking and social skills, and increases reading and language skills (Ruppert, 2006). Walker (1995) mentioned that participation in the fine arts leads to academic success, resulting in higher grade point averages and a greater commitment to school attendance. More interestingly, the cultural arts have been used as a delinquency prevention program. Findings from numerous studies found that arts programs, which improve academic performance, as well as coping and conflict resolution skills, have an impact on reducing youth delinquency and making at-risk youth more engaged in their school activities (Rapp-Paglicci, Ersing, & Rowe, 2007; Rapp-Paglicci, Stewart, & Rowe, 2011; Respress & Lutfi, 2006).

In sum, the arts enhance the physical and psychological well-being of individuals, as well as the public health of communities. A review of literature indicates that art-related activities can be instrumental to enhancing individuals' ability to express their feelings and emotions, develop new skills, and increase their confidence and interpersonal skills. Further, some studies show that these activities are highly related to

greater civic engagement and an increase in social capital (Catterall, 2012; Dooris, 2005; Matarasso, 1997). Given that, the following section gives attention to the social benefit of arts and culture, focusing more on community arts.

2.3 Impact of the Arts on Society

Matarasso (1997) discuss the fifty distinct forms of social impact of the arts, although not all of these impacts were clearly measured in his research. The study covered sixty projects in varied settings (such as rural or urban) and collected a self-administered survey from 513 respondents. The findings were categorized into six themes: personal development, social cohesion, community empowerment and self-determination, local image and identity, imagination and vision, and health and well-being. In line with Matarasso (1997), the research stresses that participations in arts and cultural activities helps build social relationships and networks that strengthen social capital, enhance the civic engagement of residents, and develop social identity and community cohesion (Catterall, 2012; Derrett, 2003; Dooris, 2005; Small, 2007; Stuiver, Jagt, Erven, & Hoving, 2012).

Pickernell et al. (2007) mention that the value of social capital is that it strengthens aspects of human relationships like trust and reciprocity, and improves social interaction. Derrett (2003) mentions that social capital entails interpersonal and organizational trust, reciprocity, and collective action. In the context of arts and culture, much evidence has revealed that building social capital is one of the important social benefits of involvement in arts and culture (Buch, Milne, & Dickon, 2011; Reid, 2007; Rogers & Anastasiadou, 2011; Small, 2007; Van Zyl & Botha, 2004; Wood, 2005). For

example, Saleh and Wood (1998) investigated the motivations of volunteers at the Saskatoon Folkfest in Canada, and found that they were motivated by social reasons such as spending time with friends, sharing their culture with others, and meeting people. According to youth behavior studies, young people, whether they are at risk or not, experience and develop peer interaction, interpersonal relationships, and social skills through arts programs (Daykin et al., 2012; Daykin, Orme, Evans, Salmon, McEachran, & Brain, 2008).

Conversely, social capital reflects collective and collaborative aspects when it comes to communities. Developing a social network, social contact and encouragement of a community group's collaboration are important features of social capital in the arts and culture context (Derrett, 2003; Rogers & Anastasiadou, 2011; Show, 2003; Small, 2007). In this sense, the phenomena of community engagement and cooperation with others reflect the social capital of a community. Goodlad, Hamilton, & Taylor (2002a, 2002b) examined arts projects in Scotland, and discovered that arts programs buffer social inclusion in deprived areas. Buch, Milne, and Dickon (2011) investigated the perspective of different stakeholders from a cultural festival in New Zealand. In this study, the Auckland City Council, a representative of the policy level, stressed that social interaction, building stronger community networks, and collaboration with other organizations are all essential for the development of social capital. McCarthy (2006) argues that public arts within cultural quarters boost the corporation (business) area, which aims to work in partnership with all people concerned as a whole. Cultural quarters, here, mean spatially distinct areas that comprise more cultural facilities than other areas. Through public arts in cultural quarters, all stakeholders can develop their

interpersonal links to co-operate and enlarge networks for business or future investment (Hall & Robertson, 2001; McCarthy, 2006).

Moreover, Catterall (2012) indicates that students with intensive arts experiences are more likely to display civic-minded behavior such as high levels of volunteering, voting, and engagement with local or school politics. According to Kopczynski and Hager (2004), people who attend performing arts are likely to be involved in other community and volunteer activities. Further, a report by the National Endowment for the Arts (NEA) (2006) indicates that arts participants are more than twice as likely to volunteer or do charity work than non-attendees in their community. This clearly demonstrates that beyond an increase in the attendance rate of performing arts, attending arts performances boosts civic engagement or civic-minded behavior.

In a similar way, Dooris (2005) affirms that the arts promote health and well-being by enabling communication, building social capital, and engaging communities. He also points out the value of community arts for individuals' health and well-being. Johnson and Stanley (2007) and South (2006) stressed the importance of community arts as a method for engaging individuals at the community level. According to Barraket (2005), "community arts" is an approach to creative activity that utilizes the arts as a means of expression and development (p.3). Lowe (2000) illustrated that community art is distinct in its collaborative nature, involving individuals in a collective and creative process, and enriching group experiences (p. 364). In her findings, community arts participants improved their group solidarity and collective identity. Arts and cultural participation is a way to increase social identity in a community by fostering a feeling of belonging and a connection to a particular culture or group among community members.

Social identity can be defined as “a perception of oneness with a group of persons” (Ashforth & Mael, 1989, p.20). McClinchey (2008) reveals that cultural festivals, especially ethnic festivals, instill a sense of place or belonging for community membership. Also, celebrating culture and identity is conducive to the preservation or recovery of culture in a community. Essentially, it represents cultural authenticity and neighborhood distinctiveness (Crespi-Vallbona & Richards, 2007; McClinchey, 2008).

Additionally, arts and cultural participation helps individuals not only have positive self-identification and a sense of pride for their culture, but it also provides an awareness of their local or civic identity (Crespi-Vallbona & Richards, 2007; De Bres & Davis, 2001; Spiropoulos, Gargalianos, & Sotiriadou, 2006). Small (2007) conducted a case study in order to investigate the social impacts of community-based festivals in Australia. According to Small (2007), community identity and cohesion include a sense of identity, connectedness, a feeling of togetherness, a sense of ownership of the festival and a feeling of pride. Sharp, Pollock, and Paddison (2005), and Hall and Robertson (2001) argue that the benefits of public art are to instill civic pride and a sense of community, as well as to enhance local distinctiveness. Likewise, the arts support social values and identities of community members, who in turn take on critical roles for social change (Stuiver et al., 2012). The creation of various forms of the arts, no matter if the creator is an amateur or a professional, enables people to express their voices and communicate with each other (McDonald, Catalani, & Minkler, 2012). A case study by Stuiver and colleagues (2012) provided insight into art as an empowerment tool within a community. Artistic intervention (in this study, site-specific performance) gave a voice to underrepresented groups and generated community trust and belief. Addressing

community needs and giving voice to community stakeholders supports capacity building in the way of understanding community problems, facilitating solutions, and encouraging community empowerment (Hall & Robertson, 2001; McCarthy, 2006).

As noted earlier, strengthening community identity and pride is germane to building group trust. Likewise, increasing trust in a community helps people feel safe from crime (Shaw, 2003). Along with that, Quinn (2005) argues that arts participation helps people share their common interest so as to challenge community problems. Many works of art and art programs in areas of social deprivation help cities become revitalized, while gathering community members' collective abilities to address social problems and increase their community resilience (Bailey, Miles, & Stark, 2004; Lavanga, 2006). Strong investment in the cultural sector might contribute to an improvement of community image. For example, about 25 years ago, a museum park and new festivals were created in Rotterdam—a postindustrial city—so as to improve the city's image. Now the city is one of several cities that exude the multi-ethnic character of the Netherlands (Lavanga, 2006). As the city used arts and culture as a tool for urban development, it gained not only substantial social benefits but economic benefits as well. Arts and cultural assets can be used as tools for community regeneration, which subsequently revitalizes the community environment and impacts economic development.

2.4 Impact of the Arts on Economic Prosperity

It has become common for communities to use arts and cultural activities and resources to attract tourism, to promote a city's image, and to foster economic development. About one decade ago, the CEO of Americans for the Arts, Robert L. Lynch, contended that it is important to articulate the economic contributions of the arts, while acknowledging their intrinsic value to society (as cited in Cohen, Schaffer, & Davidson, 2003, p. 31). Arts as cultural and creative industries are essential resources for the economic growth of communities (Grodach, 2011; Hayter & Pierce, 2009; Lavanga, 2006; Markusen & Gadwa, 2010a; Phillips, 2004; Welch, Plosila, & Clarke, 2004). Throsby (1994) described comprehensive reflections of arts as forms of production and consumption in the context of cultural economics. Phillips (2004) argues that upward arts-based community development programs are a powerful contributor in the economic sphere, and claims that comprehensive approaches (e.g., art business incubators, artists' cooperatives, tourism venue development) are imperative. In a similar manner, Grodach (2010, 2011) focused on the economic development potential of "arts spaces," including artists' cooperatives, arts incubators, ethnic-specific art spaces, and community arts.

In line with previous works, some have argued that governments should take the lead in promoting artistic and cultural environments (Markusen & Schrock, 2006; Grodach & Loukautou-Sideris, 2007). Grodach and Loukautou-Sideris (2007) mention that as a strategy for urban revitalization, municipal governments endeavor to develop arts and cultural activities, events, and facilities. Furthermore, their findings also indicate that these arts and cultural resources attract visitors, strengthen the competitive advantage of cities, create employment opportunities, and support local businesses and services. For

example, in Tampa, Florida, the Department of Cultural Affairs developed an artist village to revitalize the place and to benefit local artists (Grodach & Loukautou-Sideris, 2007).

On the other hand, there are some studies that focus more on community-based arts activities as a source of community economic development. According to this thread, arts production and consumption generate businesses and jobs, which in turn provide support for local economic improvement (Borup, 2006; Stern and Seifert, 2010). Furthermore, given the growth of arts occupations in the U.S., researchers have emphasized the value of artists as economic actors in society (Markusen & King, 2003; Markusen, Schrock, & Cameron, 2004; Markusen, 2006). Markusen and colleagues, in particular, mention that artists amplify their economic contribution to a community in several ways: by generating artwork, providing arts activities to other people, supporting local businesses, and community development.

More generally, Hayter and Pierce (2009) highlight how art and culture as an industry stimulate state economic development. In their study, arts and culture-related industries included from creative individuals (e.g., artists) to nonprofit organizations and facilities, and from individual entrepreneurs to cultural sectors. Specifically, they ensured that arts nonprofits involved in the arts took a role as productive economic contributors. For instance, in the inner city of Cleveland, Ohio, Gorden Square Arts District—which three nonprofit organizations developed together—improved nearby streetscapes, created jobs, promoted new businesses, and generated half a billion dollars in income for the community (Markusen & Gadwa, 2010a).

According to Arts and Economic Prosperity IV (2013), the nonprofit arts and culture industry generates \$135.2 billion in economic activity, including \$74.1 billion in audience spending. In terms of government revenue, it contributes \$22.3 billion (See Table 1).

Table 1. Economic Impact of Arts and Culture Industry

Area of Impact	Organizations	Audiences	Total
Total Direct Expenditures	\$61.12 Billion	\$74.08 Billion	\$135.20 Billion
Full-Time Equivalent Jobs	\$2.24 Million	\$1.89 Million	\$4.13 Million
Resident Household Income	\$47.53 Billion	\$39.15 Billion	\$86.68 Billion
Local Government Revenue	\$2.24 Billion	\$3.83 Billion	\$6.07 Billion
State Government Revenue	\$2.75 Billion	\$3.92 Billion	\$6.67 Billion
Federal Income Tax Revenue	\$5.26 Billion	\$4.33 Billion	\$9.59 Billion

Note. Sources from Arts & Economic Prosperity IV by Americans for the Arts (p. 3)

This line of works affirms that cultural activities and facilities, along with successful arts production, help stir economic activity by attracting people from both within and outside the community. For example, arts-related activities yield arts products, create more jobs related to the arts, and subsequently promote arts consumption. Furthermore, affluent arts organizations such as studios, galleries, theaters, and other cultural spaces make a place more attractive to residents, artists, businessmen and women, and other visitors (Welch et al, 2004). Markusen (2006) mentions that greater visibility of artistic activity in a region makes the population patronize artists and art events. Meanwhile, a high rate of arts participation and funding leads to a relatively high concentration of artists in a region.

As discussed in the last three sections, much research has provided empirical evidence that a combination of local amenities, regional support for the arts, artists, and arts-related industries plays a significant role in amplifying the impact that the arts have on a community. Given a growing attention on arts and culture as essential assets for society, it has become imperative to determine how to measure the value of the arts using more realistic, tangible, and practical methods. The following section will focus more on the aspect of measuring the impact of the arts as it is presented in the current literature.

2.5 Measurement of Arts Impact

Measuring the impact and value of the arts has been discussed in previous studies, although some studies stress its methodological challenges (Galloway, 2009, Guetzkow, 2002; Meril, 2002; Newman, Curtis, & Stephens, 2003). Over the last few decades, researchers have brought attention to realistic evaluations of the impact of the arts and culture on our lives and society, instead of the general assumption that the arts and culture lead to positive personal, social, and economic changes. Given that, studies on the impact of the arts are widely implemented in relation to the role or contribution of arts participation and assets to society.

Much of the literature has drawn on empirical studies that attempt to measure the effect of arts and culture on individuals in areas such as health, education, and social inclusion (Goodlad, Hamilton, & Taylor, 2002a; Ruppert, 2006; Stuckey & Nobel, 2010). As with increased interest in arts as a method for engaging individuals and communities, many researchers have investigated community arts projects in order to provide evidence that the arts are effective at getting individuals and communities to interact and to

increase social value and community cohesion (Johnson & Stanley, 2007). Furthermore, the empirical evidence for the economic impact of the arts has been reviewed by numerous studies (Borup, 2006; Grodach & Loukautou-Sideris, 2007; Stern and Seifert, 2010). Table 2 provides an overview of some notable arts impact studies.

Table 2. A Summary of Selected Studies on Measurement of Arts Impact

Authors	Topic	Methods		Observations
		Research Strategy	Techniques	
Johns (1988)	Positive impact of community arts project	Analysis of community arts from state arts agency and local household	Interview, observation, documentation, and household survey	<ul style="list-style-type: none"> • Impacts identified by: <ul style="list-style-type: none"> - Develop strong personal relationships and artistic techniques - Increase community capacities - Increase arts exposure leading to support for arts participation - Enhance collective action and sense of community
25 Matarasso (1997)	Social impacts of arts participation	Case studies of 90 arts projects, including a variety of locations Reviews findings based on literature review	Interview, discussion group, observation, and participants survey	<ul style="list-style-type: none"> • Evidence supported by: <ul style="list-style-type: none"> - Personal development - Social cohesion - Community empowerment - Local identity - Imagination and vision - Health and well-being
Williams (1997)	Impacts of community-based arts projects	Survey of community participants from 89 community-based arts projects	Survey, descriptive analyses	<ul style="list-style-type: none"> • Economic impacts <ul style="list-style-type: none"> - Generate employment - Increase audiences for art work - Attract further community resources • Social impacts <ul style="list-style-type: none"> - Improve communication skills - Understand different cultures - Social cohesion - Community identity - Public awareness and actual action on a social issue

Table 2. *continued*

Authors	Topic	Methods		Observations
		Research Strategy	Techniques	
Matarasso & Chell (1998)	Mapping community arts	Analysis of community arts in Belfast	Telephone interview with local arts organization, discussion group, documentation, and participants survey	<ul style="list-style-type: none"> • Economic impacts <ul style="list-style-type: none"> - Create new jobs - Help training new skills and get work • Social impacts <ul style="list-style-type: none"> - Develop new friendships - Understand different cultures - Raise awareness of community issues - Increase community cooperation
26 Matarasso (1999)	Local culture index	Develop a local culture index to measure the cultural vitality of communities	Review of previous studies	Total 55 indicators were established:
				<ul style="list-style-type: none"> • Input indicators <ul style="list-style-type: none"> - Infrastructure and investment - Access and distribution • Output indicators <ul style="list-style-type: none"> - Activity and participation - Diversity - Education and training - Commercial creative activity • Outcome indicators <ul style="list-style-type: none"> - Personal development - Community development
Lowe (2000)	Creating community arts	Investigate two community arts projects, focusing on participants and artists	Observation, focus groups and evaluation reports	<ul style="list-style-type: none"> • Social impacts <ul style="list-style-type: none"> - Develop new relationships and networks between participants - Increase sense of place - Increase neighborhood identity and reduce isolation - Raise awareness of common community concerns

Table 2. *continued*

Authors	Topic	Methods		Observations
		Research Strategy	Techniques	
Keating (2002)	Community arts and Community well-being	Provide a tool guide for evaluating community arts projects	Interviews with key informants	<ul style="list-style-type: none"> • Define key elements to be evaluated: participants, project, community, process, impact, and outcome • Suggest six stages of evaluation <ul style="list-style-type: none"> - Setting project aims - Planning the evaluation - Determining evaluation indicators - Collecting and analyzing the data - Reporting the data and improving on current practice
Borgonovi (2004)	Influential factors of performing arts attendance	Analysis of 2002 Public Participation in the Arts (SPPA) survey	Secondary data, logistic regression	<ul style="list-style-type: none"> • Define factors that influence arts attendance
Jackson, Houghton, Russell, & Triandos (2005)	Economic impact of regional festivals	Case studies of seven regional festival in Victoria, Australia Provide a tool kit to assess the economic impacts	Survey of organizers and attendees, interview with key informants	<ul style="list-style-type: none"> • Whether regional or metropolitan festivals, economic multiplier impact is almost the same
Grodach & Loukaitou-Sideris (2007)	Cultural strategies and urban revitalization	Survey of the Department of Cultural Affairs, targeted managers/directors in 49 U.S cities	Survey, descriptive analyses	<ul style="list-style-type: none"> • Indicate type and scope of municipal cultural strategies • Examine important impacts of cultural activities and facilities • Flagship cultural projects

Table 2. *continued*

Authors	Topic	Methods		Observations
		Research Strategy	Techniques	
Michalos & Kahlke (2010)	Arts and perceived quality of life (QoL)	Survey of 1,027 adults in British Columbia regarding arts-related activities, health, and quality of life	Survey, descriptive analyses, correlations, and multiple regression	<ul style="list-style-type: none"> • Measure the impact of arts-related activities on the perceived quality of life • Arts motivation identified by: <ul style="list-style-type: none"> - Arts as self-health enhancers - Arts as self-developing activities - Arts as community builder - Arts-related activities itself • Significant correlation between arts-related activities, satisfaction with QoL, and general health
28 Americans for the Arts (Cohen, Cohen, & Kushner, 2012)	Local Arts Index	Analysis of 81 county-level arts and culture activity indicators from 2010 to 2012	Secondary data from multiple sources such as government, research organization, and arts nonprofits	<ul style="list-style-type: none"> • Understanding of the cultural vitality • Indicators identified by four dimensions: <ul style="list-style-type: none"> - Arts activity - Arts resources - Arts competitiveness - Local cultural character
Americans for the Arts (Kushner, & Cohen, 2014)	National Arts Index	Analysis of 81 national-level arts and culture activity indicators from 2001 to 2012	Secondary data from multiple sources such as government, research organization, and arts nonprofits	<ul style="list-style-type: none"> • Arts and culture activity measured by the 81 indicators • Indicators identified by four dimensions: <ul style="list-style-type: none"> - Financial flow - Capacity and infrastructure - Arts participation - Competitiveness • Provide index score (97.3), with 2003 as a benchmark year

Source: Partially adapted and modified from Galloway, Table 1 (2009, p. 134); Newman et al., Table 1 (2003, p. 317); with more studies added

The review demonstrated that various methodologies were employed to research ways of measuring the impact of the arts. The majority of studies focused on arts projects and festivals (arts production itself) to understand the values and impacts of the arts (Jackson, Houghton, Russell, & Triandos, 2005; Johns, 1988; Lowe, 2000; Matarasso, 1997; Matarasso & Chell, 1998; Williams, 1997). Evidence-based research has dominated the field of arts and culture, but simultaneously researchers have identified numerous measurement issues with evidence-based arts studies as well (Belfiore, 2006; Galloway 2009; Guetzkow, 2002; Meril, 2002). One of the issues that has been raised is reliability. Reliance on anecdotal evidence and subjective accounts of people involved in the arts as participants or organizers might make the claim weak, although anecdotes, to some extent, demonstrate evidence (Guetzkow, 2002). Following that, Meril (2002) raises concern that arts research methodology has a lack of internal validity since the method of measurement is not thoroughly observable, nor reliable. Furthermore, the contribution of arts and cultural participation could vary depending on community characteristics and individuals' interests or concerns (Galloway, 2006).

Given that, another strain of research has focused on developing a measurement system to further the possibility of generalizing study findings (Cohen, Cohen, & Kushner, 2012; Keating, 2002; Kushner & Cohen, 2014; Matarasso, 1999). As an example, a comprehensive framework of 'how art works' (Iyengar et al., 2012) suggests a robust research methodology with respect to the values of the arts as a significant component in our society. The following section describes how this system map is constructed and operationalized.

2.6 ‘How Art Works’ System Map

The ‘how art works’ system map is a framework that has been developed to visualize components related to the arts as a system and display the conceptual relationship between arts engagement and its impact on individuals and communities (Iyengar et al., 2012). This framework helps to create a clearer understanding of the value and impact of the arts, and each node in this map is supported by relevant studies and datasets. Arts infrastructure (e.g., arts venues, arts organizations, financial and volunteer support, and public policy) and arts-related education and training inspire arts creation (e.g., creating artifacts and producing arts performances) and participation. These arts-related inputs influence people’s actions (i.e., in cognitive, behavioral, emotional, and physiological ways), direct and indirect economic outputs through arts consumptions and related businesses, and society and communities, encouraging a sense of place, sense of belonging, and overall cultural vitality. Further, whole processes can induce a more prosperous societal capacity of communities/individuals to innovate and create new ideas, applications, and products. The result of these processes affects arts-related input so as to create a loop in a community system (Iyengar et al., 2012).

The system map is divided into four constructs—arts input, art, quality of life outcomes, and broader societal impact—and subsequent structures. The variables reflected in this system map are as follows (Iyengar et al., 2012, p. 18):

- Arts Input
 - *Arts infrastructure* includes physical spaces, organizations, associations, and formal and informal social support system that help arts creation and consumption.
 - *Education and training* refer to formal and informal arts-related education, practices, and skills that support artistic expression and consumption.

- Intervening variables
 - *Arts creation* covers professional and non-professional artists from musicians and dancers to writers, architects, and designers.
 - *Arts participation* includes artistic acts through performance, interpretation, and experience, and the consumption of arts products.
- Quality of life outcomes
 - *Direct and indirect economic benefits of art* include not only arts-related expenditure (direct benefits) but also travel and lodging expenditures (indirect benefits)
 - *Benefit of art to individuals* refers to the cognitive, emotional, and physical benefits that arts participation and experience can provide.
 - *Benefit of art to society and communities* embraces the values and impacts of arts engagement for communities, encouraging cultural vitality, social cohesion, and community improvement.
- Broader societal impact
 - *Societal capacities to innovate and to express ideas* refer to the individual and collective competencies of community members in order to innovate and to express ideas, systems, and products.

To understand the key variables within the construct, the system map of “how art works” is presented in Figure 1:

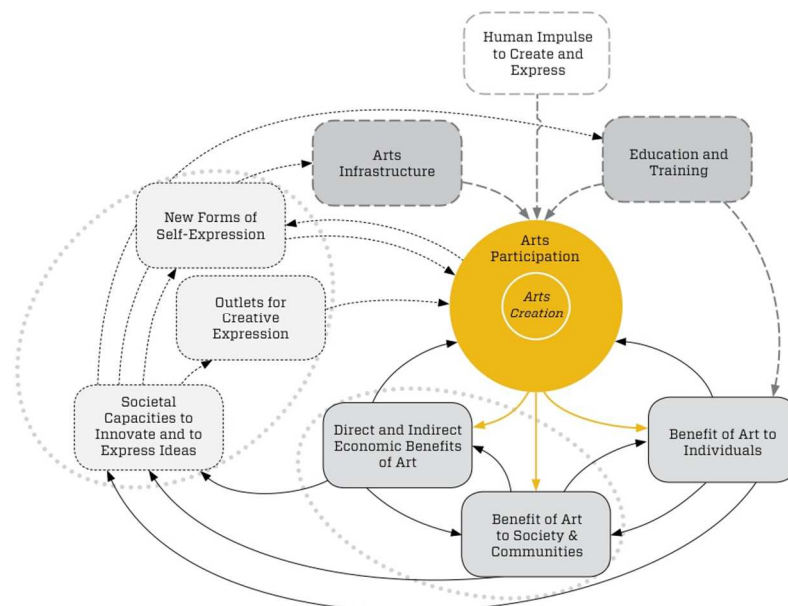


Figure 1. “How art works” illustrated by Iyengar et al. (2012, p. 17)

In the context of arts and cultural studies, while there is little doubt that subjective points of view of participants are critical, the objective of research to examine the value and impact of the arts on people and society should not be cast aside. Fortunately, valuable data collected by governments or research organizations exists in many areas of arts and culture. For example, as a longitudinal study, the National Arts Index and Local Arts Index provide extensive indicators based on conceptual frameworks (Cohen, Cohen, & Kushner, 2012; Kushner & Cohen, 2014; “Local arts index”, n. d.; “National arts index”, n. d.), although internal validity of these indicators were put aside. Given that, an aim of the present study was to overcome these limitations and offer a way forward for providing both evidence and verifying internal validity, contributing to future arts impact assessment studies.

The next chapter will introduce the data employed in this study in detail. Following Lee and Lingo’s (2011) emphasis on the importance of regional or city level research, the Local Arts Index (LAI) was used in examining local arts and cultural vitality. Also, this data was used as the basis for monitoring and gauging community well-being, which is discussed in a later chapter.

CHAPTER 3

THE DATA: THE LOCAL ARTS INDEX (LAI)

Given their importance to society, it is imperative to understand not only the benefit of arts and culture through a narrative and subjective point of view but also arts and cultural vitality through objectively measurable indicators. The Local Arts Index (LAI) was developed to examine local arts and cultural vitality, along with efforts to use this data as the basis for monitoring and gauging community well-being. Although the data for this current study was collected and combined with Americans for the Arts and other publicly available sources, this chapter focuses heavily on the data from Americans for the Arts (Cohen, Cohen, & Kushner, 2012; Kushner & Cohen, 2014; “Local arts index”, n. d.; “National arts index”, n. d.).

3.1 Background

The Local Arts Index (LAI) was developed in 2012 as a tool for providing a comprehensive understanding of the cultural vitality of individuals and communities. These indicators are used to capture the state of arts and culture in a community. In 2010, Americans for the Arts launched the National Arts Index (NAI) to measure the health and vitality of arts and culture in the United States. As of 2014, the NAI is comprised of 81 indicators. This index provides evidence-based data regarding arts and culture-related nonprofits and commercial organizations, artists, consumer spending, arts participation, support of the arts, arts education, and more (“National arts index”, n. d.). The NAI embodies the diverse characteristics of arts and culture through national-level indicators, which came from regularly published sources. Overall, the NAI has helped cultivate an

understanding of how arts thrive and are sustained, as well as how they impact the lives of Americans at the national level. However, its usefulness for examining local arts and culture is limited, resulting in a need for a scaled-down version of the index that is appropriate for use at the community level. In response to the growing demand for such an index at the community level, the Local Arts Index (LAI) was developed to examine the status of local arts and cultural prosperity and to provide comparative information on arts and culture at the community level (“Local arts index”, n. d.).

Cohen, Cohen and Kushner (2012) introduced the Local Arts Index and Community Arts Vitality Model (CAVM) in their initial report as a project of Americans for the Arts. They gathered data regarding arts and culture which reflected various aspects of the arts at the county level. The most current LAI includes 53 local arts and cultural measures, drawing from a variety of secondary sources such as the Bureau of Labor Statistics, Bureau of the Census, and the Internal Revenue Service, as well as commercial data providers such as Scarborough Research, and Dun & Bradstreet. At the county level, each county has its own FIPS code, which is regarded as the unit of analysis. In total, there are 3,143 counties including the District of Columbia.

Communities can capitalize on arts and culture in order to achieve sustainability and development. Thus, measuring the vitality of arts and culture, which affect its own industry and a community, is imperative for sustaining communities and helping them to thrive in the future. As an effort to reflect various aspects of the arts and cultural conditions at the local level, the Community Arts Vitality Model (CAVM) focuses largely on arts activity, resources, competitiveness, and local cultural character.

3.2 Conceptual Dimensions of CAVM

Local arts and cultural participation, nonprofit arts organizations, arts and cultural programs, employment in the arts and culture industry, and support of the arts can contribute to the vitality of arts and culture at the local level. As stated earlier, these factors are categorized under broader concepts such as arts activity, arts resources, arts competitiveness, and local cultural character in the Community Arts Vitality Model (CAVM) (Cohen, Cohen, & Kushner, 2012). CAVM used in the LAI was originally modeled on the Arts and Culture Balanced Scorecard¹ in the NAI reports (Kushner & Cohen, 2014). The figure below presents the four conceptual dimensions which make up the Community Arts Vitality Model (CAVM).

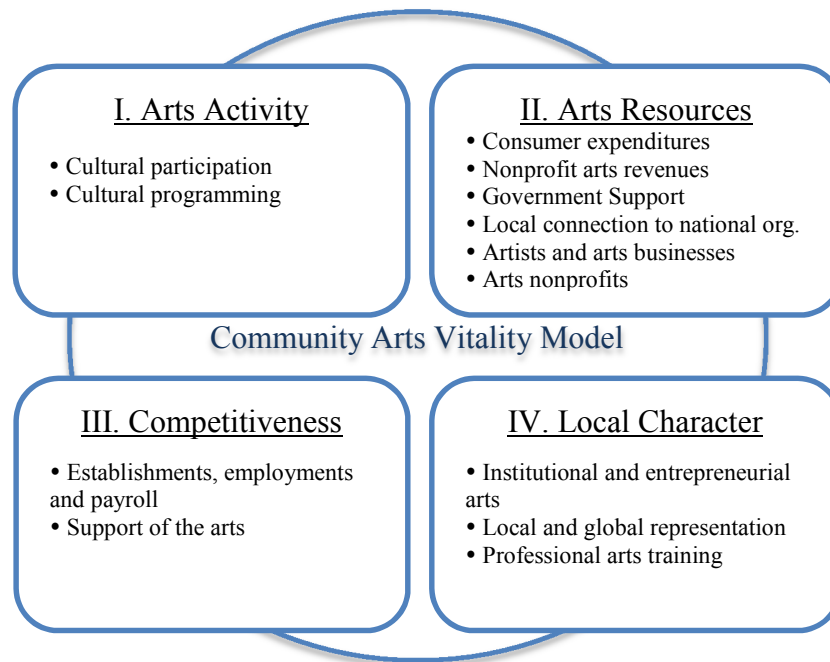


Figure 2. Four dimensions of CAVM (source from Cohen, Cohen, & Kushner, 2012)

¹ The 81 NAI indicators are organized into the Arts and Culture Balanced Scorecard which provides four key dimensions of the arts ecology: financial flows, capacity, arts participation, and competitiveness.

3.2.1 Arts Activity

‘Arts activity’ consists of the number of people attending arts-related activities and events as well as cultural programs provided by arts and culture organizations. It covers a wide range of cultural participation from attending performing arts and cultural events to attending movies and purchasing music online. Further, arts and cultural programming are also essential for encouraging people’s participation and their engagement in arts and culture (Cohen, Cohen, & Kushner, 2012; “Local arts index”, n.d.). Thus, this dimension of the CAVM considers arts and cultural programs as a way of increasing people’s participation in arts activity. Through participation in various arts and cultural programs, people can enjoy experiences of their own, gaining various social benefits.

3.2.1.1 Cultural participation

The cultural participation factor consists of seven indicators, which measure the extent of participation in arts and culture activities. The indicators are represented by the percentage of the local population engaged in a specific cultural activity, including arts and culture events, movie theaters, zoos, and on-line purchases of music. This data is drawn from Scarborough Research, which gathered consumer behavior information from 1,643 counties in 2009-2011.

3.2.1.2 Cultural programming

The cultural programs provided by local arts and culture nonprofit organizations are closely related to arts and cultural activities that local residents are engaged in. The LAI treats ‘total nonprofit arts expenditure per capita’ as an indicator of this dimension of the CAVM. This indicator also tries to show how much money the arts nonprofit

organizations are spending on their programs. Data for this indicator is obtained from the National Center for Charitable Statistics (NCCS) Core Files and is converted to a per capita measure, scaled to every 100,000 people in the county.

Table 3. Indicators of Arts Activities

Cultural participation	Adult population share attending popular entertainment Adult population share attending live performing arts Adult population share visiting art museums Adult population share visiting zoos Adult population share purchasing music media or online Adult population share attending movies Overall participation in arts and culture activities*
Cultural programming	Total nonprofit arts expenditure per capita

Note. * denotes that this variable is calculated based on other cultural participation variables.

3.2.2 Arts Resources

Building and strengthening community capacity is the cornerstone of community development. As community arts and cultural assets, arts resources include consumer expenditures on various cultural activities, which translate into the revenue of arts organizations, as well as public funds supported by municipal, state, and federal governments (Cohen, Cohen, & Kushner, 2012). Also, the number of artists is an indication of the status of the arts in a community. Furthermore, a tendency for having higher memberships within national arts-related organizations reflects a connection to the broader national arts scene. In turn, community arts resources can become more plentiful by becoming incorporated within national level organizations (Cohen, Cohen, & Kushner, 2012).

In addition, the number of arts nonprofits in a community mirrors the arts resources a community has. For example, how accessible arts nonprofits are to residents can be a key proxy for determining whether community arts resources are bountiful or lacking. Lastly, beyond consideration of arts nonprofits, commercial arts-centric businesses such as record stores, private galleries, and even bookstores are also responsive to arts resources of a community. The following six factors, which represent ‘Arts Resources’ dimensions focus on the economic influence of arts and culture at the local level, showing the number of arts-centric nonprofits/businesses and their revenue flows from consumer expenditure and government support.

3.2.2.1 Consumer expenditure

Within every community, there are a variety of arts-related activities for residents to enjoy. People consume various forms of local arts and culture, and in turn, their consumptions can provide financial returns to the arts nonprofits/businesses. Furthermore, consumer expenditures make it possible to estimate the breadth and scope of the arts-related market at the local level. Indicators for this factor focus specifically on how much money people spend on a variety of arts-related activities such as entertainment admission, purchase of books, musical instruments, and photographic equipment, as well as use of recorded media (music and DVDs). This data came from Claritas Research from 2009, and all six of the indicators were converted to a per capita estimate of dollars spent by county residents.

3.2.2.2 Nonprofit arts revenue

Nonprofit arts organizations include arts centers, theatres, museums, orchestras, and more, as identified by the National Taxonomy of Exempt Entities (NTEE)². The LAI chose 43 NTEE codes as the domains for nonprofit arts. Its revenues are resources for arts nonprofits to use in production of arts and cultural programs and services to their communities. Overall, revenue can come from the expenses of attendees and audiences, grants from the government, private contributions/donations, and other subsidies. Of all of the various revenue streams, here *nonprofit arts revenue* mainly focuses on program and contributed revenues which have the greatest impact on nonprofit arts revenue. First, program revenue usually covers ticket, subscription, admission, and other fees paid by consumers. The ‘nonprofit arts program revenue’ indicator measures program revenue per capita in each county for all arts and culture nonprofit organizations. This indicates the average earnings of these organizations for every 100,000 people in each county.

The ‘nonprofit arts contributions revenue’ indicator represents total private giving to arts and culture organizations per capita in each county. In parallel with the program revenue indicator, this indicator shows the capacity of local arts organizations to obtain revenue from donors. While program revenue mostly comes from individuals who consume program services, contributed revenues might come from either individuals or institutions such as foundations and businesses. Lastly, the ‘total nonprofit arts revenue’ indicator covers all other revenue sources, such as memberships and rents that can be brought in by local arts and culture organizations.

² The National Taxonomy of Exempt Entities (NTEE) system is used by the IRS and NCCS to classify nonprofit organizations. This system divides the universe of nonprofit organizations into 26 major groups under 10 broad categories; arts, culture, and humanities are categorized into a single major group.

This indicator also provides information about revenue per capita for each county, although further detail beyond that is lacking. Data for this section is drawn from the National Center for Charitable Statistics (NCCS) Core Files and converted to a per capita measure, which is scaled to every 100,000 people in a county.

3.2.2.3 Government support

Through various funding programs, governments support local arts and culture in order to enhance public access to the arts and enhance community benefit from a thriving arts and cultural industry. For example, all 50 states have state arts agencies (such as the Arizona Commission on the Arts), which are financially supported by state legislatures, the National Endowment for the Arts (NEA), and other government agencies. Public funds from governments can be critical resources for local arts and cultural organizations, artists, and arts institutions. To trace government support of local arts scenes, two indicators are introduced to explain arts funding over multiple years to grantees in each county by the NEA and state arts agencies. The data is obtained from the NEA and the National Assembly of State Arts Agencies (NASAA).

3.2.2.4 Local connection to national organizations

Connections to nationally well-known organizations can be an avenue for stimulating local arts and culture, whereby community art resources can become more plentiful. Therefore, measuring the presence of members of national arts service organizations by county might be an applicable proxy. The indicators used for this factor include the number of accredited museums, the sum of national arts service organization members, and the sum of national arts education organization members. Accredited museums refer to those museums that have been certified by the American Association of

Museums (AAM) accreditation program. According to the LAI, national arts service organizations include:

- Americans for the Arts
- American Association for State and Local History
- Chorus America
- League of American Orchestras
- League of Historic American Theaters
- National Guild of Community Schools of the Arts
- Opera America
- Theatre Communications Group

Lastly, measuring national arts education association members can be a good proxy for finding the number of educated arts professionals in a community. Thus, this indicator incorporates membership data of representative arts education associations such as the Educational Theater Association, National Art Education Association, National association for Music Education, and the National Dance Education Organization. All the indicators for this factor are also scaled to every 100,000 county residents.

3.2.2.5 Artists and arts businesses

Three indicators for this factor illuminate the commercial capacity of the arts by presenting the number of artists and businesses. The arts are quite the economic force in the United States. According to Kushner and Cohen's national arts index report (2014), in 2012, there were 91,000 nonprofit art organizations and 800,000 more arts businesses, 2.1 million artists active in the workforce, 749,000 self-employed artists, and \$151 billion in consumer spending. Given the growing number of arts businesses and independent artists, their contribution to driving arts and cultural prosperity is as important as that of nonprofit arts organizations or government agencies. First of all, the presence of solo artists can be regarded as an indication of the capacity of a community to deliver the arts.

Furthermore, they are valuable assets for enlivening a community and evidence of a thriving arts industry. This indicator measures solo artists per 100,000 people in a county with data drawn from the Bureau of the Census and the NAI.

In addition, arts-centric businesses are important arts resources in a community. This factor, termed ‘Creative Industries,’ is described using 644 codes in the Standard Industrial Classification (SIC) system from Americans for the Arts. This indicator measures the number of businesses that fall within the category of ‘Creative Industries’ in each county for every 100,000 people. It can be a suitable proxy of not only how available arts-centric businesses are in a community, but also how many arts-related options are available to residents. The data for this factor is provided by Dun & Bradstreet. Similar to the previous indicator, County Business Patterns under the Bureau of the Census provides a comparable resource, using the North American Industrial Classification System (NAICS) which is the standard used by Federal statistical agencies in classifying business establishments. This indicator measures the number of arts and culture establishments as defined in 44 codes from the NAICS system for every 100,000 residents in each county. It covers some of the same ground as the ‘Creative Industries’ category, but uses a broader and publicly available classification system.

3.2.2.6 Arts nonprofits

How broadly arts nonprofits are accessible to residents can be a key proxy of whether community arts resources are bountiful or depleted. In this regard, the nonprofit arts are a central character in the cultural vitality of American communities. Indicators in this factor reflect the nonprofit arts sector as a whole, and are comprised of eight types as follows:

- Arts education nonprofit organizations
- Collections-based nonprofit organizations
- Humanities and heritage nonprofit organizations
- Media arts nonprofit organizations
- Performing arts nonprofit organizations
- Field service arts nonprofit organizations
- Visual arts nonprofit organizations
- Other arts education nonprofit organizations

All the indicators measure the number of arts nonprofit organizations based on the NTEE codes which are assigned a specific type of organization and are scaled to every 100,000 county residents. In addition, all the data for this factor come from the Core Files of the National Center for Charitable Statistics (NCCS). More detailed information, which the specific NTEE codes include, will be shown in Appendix 1. The indicators (a total of 26) representing ‘Arts resources’ factors are as follows:

Table 4. Indicators of Arts Resources

Consumer expenditures	Expenditure on entertainment admission fees per capita Expenditure on recorded media per capita Expenditure on musical instruments per capita Expenditure on photographic equipment and supplies per capita Expenditure on reading materials per capita Total consumer expenditures on selected categories per capita
Nonprofit arts revenues	Nonprofit arts program revenue per capita Nonprofit arts contributions revenue per capita Total nonprofit arts revenue per capita
Government support	NEA grants per 10,000 population State arts agency grants per capita
Local connection to national organizations	AAM accredited museums per 100,000 population National arts service organization members per 100,000 population National arts education organization members per 100,000 population

Artists and arts businesses	Solo artists per 100,000 population “Creative Industries” businesses per 100,000 population Arts and culture establishments per 100,000 population
Arts nonprofits	Total nonprofit arts organization per 100,000 population Arts education nonprofit organizations per 100,000 population Collections-based nonprofit organizations per 100,000 population Humanities and heritage nonprofit organizations per 100,000 population Media arts nonprofit organizations per 100,000 population Performing arts nonprofit organizations per 100,000 population Field service arts nonprofit organizations per 100,000 population Visual arts nonprofit organizations per 100,000 population Other arts nonprofit organizations per 100,000 population

3.2.3 Arts Competitiveness

Based on the concept of the LAI (2012), ‘Arts competitiveness’ reflects how arts capital competes in the local market. The labor market can be important in arts competitiveness. For example, a high level of employment and payroll in arts-centric businesses leads to a healthy arts economy. Also, a high number of arts-related occupations could be seen as a part of community economic development. Arts-related businesses look for various community resources such as workspaces, community support, employment, and artists. Therefore, this may indicate that the higher employment in the arts industry is the more community resources there are for support, and the more competitive arts are in a community. Obtaining arts grants can be a mark of success in competitive circumstances, as demands for funding outnumber the actual number of funding resources available in communities. In addition to receiving arts grants, understanding how people and households support arts nonprofits might also

buffer the competitiveness of the arts sector. In this dimension, there are two factors—‘Establishments, employees and payroll’ and ‘Support of the arts’—which indicate arts’ share in a county’s economy and the robustness of philanthropy for the arts.

3.2.3.1 Establishments, employees, and payroll

Knowing the arts’ share of all business activity and the labor market helps in understanding how arts-centric businesses are competing in the local market. Indicators in this factor reflect the ability to compete in the local economic context based on arts establishments, employees, and payroll. This factor includes five indicators. First, ‘Creative Industries’ share of all businesses helps to explain the weight of the arts sector in a community’s overall business environment. The percentage of arts-centric businesses among all businesses in a community can demonstrate how competitive the arts are in the business sector of that community. Furthermore, ‘Creative industries’ share of all employees indicates the influence of the arts sector in a community’s overall labor market. It also refers to the percentage of all employees in each county who work in arts businesses. These two indicators are obtained from Dun & Bradstreet; as mentioned in the previous section, ‘Creative Industries’ are defined as the number of businesses by the 644 codes in the Standard Industrial Classification (SIC) system by Americans for the Arts. The remaining three indicators also show an important attribute of the arts economy in the context of businesses, following the NAICS system. These indicators measure arts and culture industry’s share of all establishments, employees, and their payroll. The same 44 NAICS codes are used to estimate the number of establishments, employees, and payroll. All the data are drawn from County Business Patterns of the Bureau of the Census.

3.2.3.2 Support of the arts

Local arts organizations are not only able to receive funds from various sources, but they also raise funds from individual donors. These activities are related to the market competitiveness of the arts industry. Two indicators are included in this factor: ‘State arts grant success rate’ and ‘Household share donating to public broadcasting or arts.’ The ‘State arts grant success rate’ indicator shows how successfully arts organizations in a community obtain state arts grants. For example, a county value of 100 percent means that the amount awarded equals the amount requested by the organizations in a community. The data are collected from the National Assembly of State Arts Agencies (NASAA). On the other hand, a community’s collective willingness to support the arts is undoubtedly a part of arts competitiveness. This helps capture local philanthropic activity related to the arts. Scarborough Research data provides insight into private contributions, such as people’s donations to arts nonprofits. The indicator ‘Household share donating to public broadcasting or arts’ measures the three-year average percentage of respondents whose households supported arts and culture organizations, including public broadcasting.

Table 5. Indicators of Arts Competitiveness

Establishments, employees and payroll	‘Creative Industries’ share of all businesses ‘Creative Industries’ share of all employees Arts and culture share of all establishments Arts and culture share of all employees Arts and culture share of all payroll
Support of the arts	State arts grant success rate Household share donating to public broadcasting or arts

3.2.4 Local Culture Character

Kushner (2014) argues that local environments are crucially conducive to arts entrepreneurship. Similarly, the character of arts organizations and arts businesses helps create distinctive characteristics of a community. The community atmosphere (such as whether or not arts organizations are new or old, commercial or nonprofit, and what kinds of arts organizations and businesses are mainstream) forms important local arts market conditions (Cohen, Cohen, & Kushner, 2012). Also, the presence of higher arts education institutions such as arts degrees and professional arts training programs promote the image and character of local culture.

Furthermore, arts activities organized or promoted by local ethnic organizations also help to mold a community's unique identity. Also, local historical sites reflect the characteristics of the community. When it comes to arts and culture as amenities, these cultural entities attract visitors and tourists. In this sense, arts and culture can represent a local community's character and image. There are three factors included in this dimension: 'Institutional and Entrepreneurial Arts,' 'Local and Global Representation,' and 'Professional Arts Training.' Together, they show some of the unique characteristics that are distinct from one place to another.

3.2.4.1 Institutional and entrepreneurial arts

Each community has a distinctive mix of arts organizations, including different programs, operating style, size, and age of establishments. The indicators for this factor focus on a blend of different kinds of arts organizations in each county as a matter of distinct character. The first two indicators measure the percentage of all nonprofits that are 'millennial' and their revenue share. The 'millennial' organizations are those that are

relatively new arts organizations, with an IRS ruling date of January 2000 or later (c.f., Kushner, 2014). In addition, the ‘Competitive environment for the nonprofit arts’ indicator looks at the mix of different-sized organizations. This indicator measures the share of total expenditure made by the four largest arts organizations in the market. How much of the arts are delivered by those top four arts organizations can be used as a proxy for the concentration of the arts market environment of each county.

In the LAI report by Cohen, Cohen, and Kushner (2012), on average the four big arts organization occupied 58 percent of expenditures in the market. The result presented that comparatively higher value of concentration suggested the less competitive arts market environment in a county. Lastly, depending on the characteristics of a community, there may be a mix of commercial and nonprofit organizations. Thus the last indicator measures the arts nonprofits’ share of all arts establishments to examine how arts nonprofit and business blend together. All of this data is obtained from the NCCS and Dun & Bradstreet.

3.2.4.2 Local and global representation

Local cultural expressions, traditions, and culture influence community cultural characteristics, and how they are displayed regionally, nationally, and even globally affect the uniqueness and distinctiveness of a particular community’s characteristics in the global arts scene. Among organizations that are identified using the NTEE, one of the codes (A23) refers to ‘cultural and ethnic awareness organizations’ that support the cultural life of particular ethnic groups in a community. This indicator measures the number of such organizations for every 100,000 residents as an aspect of a community’s particular cultural character, especially when viewed in the context of both the language

diversity and ethnic diversity of the population. In addition, historical sites serve as an important element in the cultural and educational life of a community. Heritage sites provide a sense of a community so as to make the community culturally unique. The indicator measures the number of places per 100,000 people included in the National Register of Historic Places.

3.2.4.3 Professional arts training

Active arts education can enhance the cultural atmosphere within the local community in several ways. Sometimes schools could be considered as arts and cultural venues for audiences. Also, arts students can be the most vigorous arts and culture consumers. Thus, two education-related indicators are presented to gauge how these institutions develop and promote the image of communities. The ‘Accredited degree granting programs’ indicator shows the number of accredited schools for every 100,000 residents in each county using the FIPs code. This indicator includes schools of music, theatre, and dance, as well as art and design.

In addition, the ‘Visual and performing arts degrees’ indicator measures the number of visual and performing arts degrees issued by degree-granting institutions, including associate’s, bachelor’s, master’s, and doctoral degrees. It is also scaled to every 100,000 residents in a county. The data comes from the National Center for Education Statistics in the federal Department of Education and is aggregated in counties for these indicators by the LAI.

Table 6. Indicators of Local Cultural Character

Institutional and Entrepreneurial Arts	Millennial share of all arts nonprofits Revenue share of millennial arts nonprofits Competitive environment for the nonprofit arts Nonprofit share of arts establishments
Local and Global Representation	Cultural and ethnic awareness nonprofits per 100,000 population National register of historic places sites per 100,000 population
Professional Arts Training	Accredited degree granting programs Visual and performing arts degrees per 100,000 population

3.3 Discussion of the Community Arts Vitality Model (CAVM)

The Local Arts Index (LAI) is deemed as having very useful indicators that allow one to examine various aspects of arts and cultural resources and arts vitality of each county. Correspondingly, the CAVM draws on four dimensions of arts and culture based on the findings in the LAI. This conceptual model has practical use. For example, one can find a series of indicators related to the arts for a county, as well as track and compare its arts industry to those of other counties. However, there is little explanation as to why it is divided into four dimensions. Since this model is not derived from evidence-based approaches, further examination to determine whether this model indeed represents local arts and cultural assets is necessary. Furthermore, when researchers and observers sift through each of the indicators, some indicators might seem similar, and thus, redundant. Therefore, dimensions of the model might overlap with each other. Given that, it is worthwhile to see whether there is a more efficient way to interpret local arts and cultural assets, by finding a parsimonious model based on statistical analyses.

As stated earlier, most indicators cover fewer counties due to their uneven population distribution and density, although the data heavily draw on information from

the federal government and national companies. Thus, from a statistical point of view, this might cause missing value issues when analyses are conducted. Also, several arts indicators are combined into one indicator. For example, the indicator ‘Overall participation in arts and culture activities’ is compiled from each cultural participation indicator, including popular entertainment, performing art, arts museum, etc. Also, variables such as ‘Arts and culture share of all establishments,’ ‘Nonprofit share of arts establishments,’ and ‘Millennial share of all arts nonprofits’ are calculated based on a set of NAICS and NTEE codes selected as the representation of arts and culture. This implies that same raw information is provided in more than one way (Meloun et al., 2002, p.443), and collinearity issues are also of concern.

Furthermore, after scanning all the indicators, the author found that there was overlap between indicators. For instance, the NTEE code for the ‘Cultural and ethnic awareness nonprofits’ indicator of the ‘Local character’ dimension is also included in the ‘Humanities and heritage nonprofit organizations’ indicator of the ‘Arts resources’ dimension. This raises questions of statistical overlap in categories. In regard to this matter, a thorough data screening process was conducted for further analysis in order to resolve issues within the data. The following chapter describes the research method utilized to reach an enhanced understanding of the arts and cultural dimensions drawn from the LAI. To that end, the subsequent sections discuss sample collection, screening procedures, and data analysis techniques used in this study, followed by the results.

CHAPTER 4

EMPIRICAL DIMENSIONS OF COMMUNITY ARTS

The purpose of this study is to explore the underlying dimensions of the Local Arts Indicators (LAI), and demonstrate the relationship between factors of arts and cultural assets (i.e., arts and cultural participation, resources, and commodities) and community well-being outcomes (i.e., individual, social and economic well-being). As a first step, this chapter explores dimensions of the LAI using a factor analysis to simplify the original Community Arts Vitality Model (CAVM) into a more interpretable, smaller number of factors.

4.1 Methodology

The general goal of this chapter is to examine the LAI in order to show applicable variables for a comprehensive understanding of the dimensions of arts and culture in a community. Specifically, the purpose of this chapter is to explore the underlying dimensions generated from a statistical approach. The research challenges the CAVM model as outlined in the previous chapter by using an exploratory factor analysis (EFA) to empirically derive dimensions of arts and cultural resources to measure community arts vitality. Factor analytic techniques help select a representative subset of variables and construct new or composite dimensions from the original ones, while it retains their original character (Hair, Anderson, Tatham, & Black, 1998; Tabachnick & Fidell, 2007). Thus, factor analysis (FA) derives underlying dimensions, summarizing patterns of correlations among observed variables in order to reduce a large set of data to a smaller number of factors. There are two major types of factor analysis: exploratory factor

analysis (EFA) and confirmatory factor analysis (CFA). The word ‘exploratory’ in this context connotes that it can start with relatively few preconceived ideas or little knowledge regarding the factor structures as compared with than CFA (Joliffe & Morgan, 1992). Thus, EFA is usually performed in the early stages of research to provide a tool for consolidating variables. This study employs EFA to determine the underlying factors, looking for the most parsimonious number of factors. As mentioned earlier, individual U.S. counties are the unit of analysis, and all the data utilized for this EFA are drawn from Americans for the Arts’ Local Arts Index. Specific details are provided in the following sections.

4.1.1 The Research Parameters and Procedure

The decision for selecting variables and samples to perform the EFA involves satisfaction of several basic conditions. First, this study screens the variables carefully to avoid multicollinearity or singularity issues. If an indicator is developed by its subscales, total score is from combining subscale scores. As mentioned earlier, since cultural participation indicators such as popular entertainment, performing art, and arts museum are included separately in the data set, the ‘Overall participation in arts and culture activities’ indicator, which is compiled from such individual cultural participation indicators, is excluded from the data set. Also, based on preliminary correlations screening among variables, in order to meet an assumption of the factorability, variables, which do not show at least some correlations greater than 0.3 among the variables to identify coherent factors, are excluded for further analytic processes (Tabachnick & Fidell, 2007). For example, the ‘millennial’-related indicators, which mean the indicators included by only nonprofit arts organizations established after January 2000 (Cohen,

Cohen, & Kushner, 2012; Kushner, 2014), are excluded in this study because, from a statistical point of view, the correlation matrix does not reflect sufficiently high correlations. Most correlation coefficients among the variables present less than 0.1; thus, factor analysis, including these variables, is probably questionable.

Next, several indicators are aggregated if the same data were collected in subsequent years. For example, variables such as ‘Total nonprofit arts revenue per capita 2009 (SNTRVPC09)’ and ‘Total nonprofit arts revenue per capita 2010 (SNTRVPC10)’ were combined into one variable ‘SNTRVPC.’ It could give a better sense of nonprofit arts revenue flow over time rather than just single-year revenue. In addition, although historic sites provide a sense of a community as well as makes the community culturally unique, the data are collected from the register’s web pages on the National Park Service site. The researcher considered national parks service as beyond a common perception of arts and culture, and excluded it for further analytic processes.

Furthermore, if the variable has greater than 50 percent of its data missing, or the case has greater than 90 percent of its data missing, the researcher can consider removing it from the data set prior to a factor analysis (Small, 2007). After the first phase of data screening process for the analysis, 32 local arts indicators with 518 counties are tentatively select for analysis. Among 3,144 counties in the U.S, 518 county data cover more than 68 percent of the U.S. population (Cohen, Cohen, & Kushner, 2012).

Finally, it satisfies the adequate sample size which is at least 300 cases for factor analysis, or a minimum ratio of five cases to every variables, with preferable 10 to 20 cases per variable (Hair et al., 1998; Tabachnick & Fidell, 2007). Possible variables that are used for this study are listed in Table 7.

Table 7. Potential Arts and Cultural Variables

No.	Arts and cultural variables	
1	SSCAPOP	Adult population share attending popular entertainment, 2009-2011
2	SSCAMUS	Adult population share visiting art museums, 2009-2011
3	SSCALPA	Population share attending live performing arts, 2009-2011
4	SSCAZOO	Adult population share visiting zoos, 2009-2011
5	SSCAMED	Adult population share purchasing music online, 2009-2011
6	SSCAMOV	Adult population share attending movies, 2009-2011
7	SNEXPPC	Total nonprofit arts expenditures per capita, 2009-2010
8	SCLAFEE	Expenditures on entertainment admission fees per capita, 2009
9	SCLAMED	Expenditures on recorded media per capita, 2009
10	SCLAMUS	Expenditures on musical instruments per capita, 2009
11	SCLAPHO	Expenditures on photographic equipment and supplies per capita, 2009
12	SCLABOK	Expenditures on reading materials per capita, 2009
13	SNTRVPC	Total nonprofit arts revenue per capita, 2005-2010
14	SSAGPEC	State arts agency grants per capita, 2003-2009
15	SARTSOLO	Solo artists per 100,000 population, 2009
16	SCIBSPC	Creative Industries businesses per 100,000 population, 2011
17	SCPBSPC	Arts and culture establishments per 100,000 population, 2011
18	SNPOEDU	Arts education nonprofit organizations per 100,000 population, 2011
19	SNPOCOL	Collections-based nonprofit organizations per 100,000 population, 2009-2010
20	SNPOHUM	Humanities and heritage nonprofit organizations per 100,000 population, 2009-2010
21	SNPOMED	Media arts nonprofit organizations per 100,000 population, 2009-2010
22	SNPOLPA	Performing arts and events nonprofit organizations per 100,000 population, 2009-2010
23	SNPOSRV	Field service arts nonprofit organizations per 100,000 population, 2009-2010
24	SNPOVIS	Visual arts nonprofit organizations services per 100,000 population, 2009-2010
25	SNPOOTH	Other arts nonprofit organizations per 100,000 population, 2009-2010
26	SCIBUSSH	Creative Industries share of all businesses, 2011
27	SCIEMPSH	Creative Industries share of all employees, 2011
28	SCBETSH	Arts and culture share of all establishments, 2011
29	SCBEMSH	Arts and culture share of all employees, 2011
30	SCBPYSH	Arts and culture share of all payroll, 2011
31	SVPADEG	Visual and performing arts degrees 2003-2009
32	SSCADON	Household share donating to public broadcasting or arts and culture, 2009-2011

4.1.2 Steps in Exploratory Factor Analysis

Factor analysis consists of the following steps: 1) selecting and measuring a set of variables; 2) determining whether the data is appropriate for the factor analysis; 3) extracting a set of initial factors from the correlation matrix; 4) determining the number of factors; 5) rotating the factors to make factors more interpretable; and 6) interpreting the results (Tabachnick & Fidell, 2007, p. 608).

Before proceeding with the data analysis, all variables were screened for possible missing values and outliers. Outliers were identified using z-scores and Mahalanobis D (Bandalos & Finney, 2006), and the distributions of the 32 variables were assessed by skew, kurtosis, and various graphical methods (Tabachnick & Fidell, 2007). Furthermore, if the skewness statistic was greater than $|3|$, and/or the kurtosis statistic was greater than $|10|$, it was considered as 'extreme' non-normality, and transformation of data was performed (Kline, 2005).

In order for the factor analysis to be considered appropriate, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (at least 0.6 as the minimum value for a good factor analysis) and Bartlett's test of sphericity were tested (Tabachnick & Fidell, 2007). A significant ($p < .001$) result would indicate that there is adequate correlation between the variables to execute factor analysis. By using Kaiser's criterion (eigenvalue greater than 1) and the scree test, as well as experiments with numbers of factors, the suitable number of factors was extracted. Principal axis factoring was performed to obtain a solution, followed by promax rotation. Principal axis factoring is the most commonly used extraction method (Tabachnick & Fidell, 2007). Furthermore, the research assumed that the arts and cultural factors using secondary data are expected to

correlate to a certain degree. Hence, promax, which is a common oblique rotation procedure, was used because it allowed correlation between factors (Finch, 2006). After examining and comparing each of the different factor solutions with consideration of a combination of decision rules, a final dimensionality was identified. Lastly, an internal reliability analysis of the variables that loaded on each factor was also performed. It will be explained in more detail in the next section with reference to the results generated in this study.

In sum, an exploratory factor analysis (EFA) was conducted using the data drawn from Americans for the Arts' Local Arts Index. The objective of this analysis was exploration of the underlying factors. Although the CAVM model suggested four dimensions (Arts activity, Arts resources, Arts competitiveness, and Local arts character), no further analysis was conducted by Kushner and colleagues to examine whether each factor was appropriately presented by the variables. Thus, the current analysis seeks to understand whether the factors explain the variables based on the statistical analytic approach. I seek to explore underlying dimensions and reduce a large set of variables to a smaller number of factors, while retaining the character of the original variables. For the analysis, 32 local arts indicators were chosen with 518 counties, representing more than 68 percent of the U.S. population (Cohen, Cohen, & Kushner, 2012). Also, it satisfied the adequate sample size (Hair et al., 1998; Tabachnick & Fidell, 2007), and the county was regarded as a unit of analysis.

4.2 Results

This section reports exploration of the arts and cultural factors based on the original LAI's Community Arts Vitality Model (CAVM) and included variables. Each step of the exploratory factor analysis (EFA) is explained followed by results of the EFA using SPSS 22.0.

4.2.1 The Exploratory Factor Analysis (EFA): Underlying Dimensions of Community Arts

Factor analysis can identify the structure of a set of variables as well as implement a process of data reduction. In this study, local arts and cultural characteristics from the LAI are examined to understand if these variables can be grouped, and provide a smaller number of empirically distinct factors. All the variables are metric data and appropriate for factor analysis. Regarding the adequacy of the sample size, there is approximately a 15-to-1 ratio of cases to variables, which falls into acceptable range (Hair et al., 1998; Tabachnick & Fidell, 2007). The analysis follows the steps mentioned in the earlier section: 1) selecting and measuring a set of variables; 2) preparing the correlation matrix to determine whether the data is appropriate for the factor analysis; 3) extracting a set of initial factors from the correlation matrix; 4) determining the number of factors; 5) rotating the factors to make factors more interpretable; and 6) interpreting the results (Tabachnick & Fidell, 2007, p. 608).

4.2.1.1 Data Preparation

Descriptions of variable distributions is a fundamental part of any quantitative research. As an initial step for this analysis, descriptive statistics of all variables were calculated; the results are presented in Table 11 including valid N, mean, standard

deviation, skewness, and kurtosis. Linearity is examined by the inspection of scatterplots. Furthermore, outliers are inspected using z-scores and Mahalanobis Distance (Bandalos & Finney, 2006) followed by examining collinearity issues. If necessary, data transformations are applied.

If a factor analysis is used descriptively, then assumptions about normality are not essential, but it enhances the solution (Tabachnick & Fidell, 2007). According to Kim (2013), there is no one standard method to assess normal distribution, but the formal normality tests such as the Kolmogorov-Smirnov test may be unreliable for large samples (e.g., $n > 300$). Therefore, the researcher checked normality based on skewness and kurtosis, and conducted visual inspection.

Also, linearity is an implicit assumption of multivariate techniques based on the measure of correlational relationships such as factor analysis and multiple regression analysis. It assumes that relationships among variables are linear, and nonlinear effects are not represented in the correlation value (Hair et al., 1998; Tabachnick & Fidell, 2007). Therefore, when linearity fails, it impacts actual strength of the relationship. The common way to inspect linearity is to examine bivariate scatterplots and to identify nonlinear pattern thereby. Screening all possible pairs might not be effective when there are numerous variables. Hair et al. (1998) suggests screening only pairs that are likely to show nonlinear pattern based on their skewness. Also, the differences in skewness for variables imply the possibility of curvilinearity as evidence of a nonlinear relationship (Tabachnick & Fidell, 2007).

Table 8. Descriptive Statistics for Local Arts and Culture Items

	Items	N	Mean	Std. Deviation	Skewness	Kurtosis
	Attending popular entertainment [SSCAPOP]	518	0.20	0.05	-0.04	0.37
	Visiting art museums [SSCAMUS]	518	0.13	0.07	1.77	5.43
	Attending live performance [SSCALPA]	518	0.25	0.09	0.60	0.56
	Visiting zoos [SSCAZOO]	518	0.25	0.11	0.59	-0.15
	Music purchase online [SSCAMED]	518	0.13	0.04	0.70	1.87
	Attending movies [SSCAMOV]	518	0.49	0.08	-0.22	0.21
	Entertainment admission fees [SCLAFEE]	518	24.45	5.08	0.19	0.48
8	Recorded media expenditures [SCLAMED]	518	57.82	11.39	0.62	0.58
	Musical instruments expenditures [SCLAMUS]	518	11.91	5.60	0.25	-0.01
	Photo equipment expenditures [SCLAPHO]	518	41.22	8.57	0.19	0.05
	Reading materials expenditures [SCLABOK]	518	164.73	33.53	0.08	0.68
	Arts education nonprofits [SNPOEDU]	518	0.64	0.77	2.49	10.99
	Collections based nonprofits [SNPOCOL]	518	2.49	2.65	2.22	5.90
	Humanities/heritage nonprofits [SNPOHUM]	518	2.46	2.27	2.38	8.60
	Media arts nonprofits [SNPOMED]	518	0.88	1.26	4.00	24.94
	Performing/events nonprofits [SNPOLPA]	518	3.80	3.62	4.25	38.91
	Field service arts nonprofits [SNPOSERV]	518	1.80	2.02	4.06	27.42

Table 8. *continued*

	Items	N	Mean	Std. Deviation	Skewness	Kurtosis
	Visual arts nonprofits [SNPOVIS]	518	0.48	0.65	2.48	8.75
	Other arts nonprofits [SNPOOTH]	518	0.72	1.03	3.89	24.77
	Total nonprofit arts expenditures [SNEXPPC]	518	87.31	296.96	12.01	168.35
	Total nonprofit arts revenue [SNTRVPC]	518	88.18	295.15	12.12	172.74
	State arts agency grants [SSAGPEC]	514	5.66	9.08	5.01	37.86
	Solo artists [SARTSOLO]	516	199.46	142.59	4.62	38.35
	Creative industry (CI) businesses [SCIBSPC]	518	273.05	125.29	2.37	12.74
19	Arts/cultural (AC) establishments [SCPBSPC]	518	54.07	41.91	6.81	85.43
	AC share of all establishments [SCBETSH]	518	0.02	0.01	2.82	15.81
	AC share of all employees [SCBEMSH]	518	0.01	0.01	3.61	22.53
	AC share of all payroll [SCBPYSH]	518	0.01	0.01	3.61	23.71
	CI share of all businesses [SCIBUSSH]	518	0.04	0.01	1.14	4.02
	CI share of all employees [SCIEMPSH]	518	0.02	0.01	2.53	17.14
	Visual/performing arts degrees [SVPADeg]	518	227.56	376.08	3.72	18.79
	Donation to arts and culture/publc broadcasting [SSCADON]	518	0.19	0.06	0.90	2.02
	Valid N (listwise)	512				

Note. For all variables, standard error of skewness = 0.11; standard error of kurtosis = 0.21.

In this study, with 32 variables, examination of all bivariate scatterplots is impossible. Therefore, the researcher examines several pairs of scatterplot expected to reflect the least linear relationship based on the differences in skewness. The scatterplot matrix of original variables is displayed in the left section of Figure 3. Although the plot might not display strong linear relationships as well as show the possibility of outliers, there is no evidence of curved set of points, which would denote a nonlinear relationship (see Figure 3). However, transformation of the variables is considered to achieve more strong linearity.

Following a suggestion by Kline (2005), if the skewness statistic was greater than |3|, and/or the kurtosis statistic is greater than |10|, it was considered as “extreme” non-normality and transformation of data was performed. The researcher executed an Arcsine transformation on a variable if it was expressed as a proportion (Kirk, 2013); otherwise, natural logarithm, in which the constant e (2.7182818) is the base, is performed (Osborne, 2002). In brief, arcsine transformation is used to normalize data when data are proportion between 0 and 1 or percentage between 0 percent and 100 percent. Furthermore, the logarithm is commonly used for reducing right skewness in distribution shape. As the logarithm of any negative or number less than one cannot be applied, a constant must be added to in order to move the minimum value of the distribution if a variable contains value less than one (Osborne, 2002). In this study, Ln[variable name] denotes natural logarithm transformation; T[variable name] denotes Arcsine transformation (see Table 9).

Table 9. Descriptive Statistics of Variables with Data Transformation

Items	N	Mean	Std. Deviation	Skewness	Kurtosis
Attending popular entertainment [SSCAPOP]	518	0.20	0.05	-0.04	0.37
Visiting art museums [SSCAMUS]	518	0.13	0.07	1.77	5.43
Attending live performance [SSCALPA]	518	0.25	0.09	0.60	0.57
Visiting zoos [SSCAZOO]	518	0.25	0.11	0.59	-0.15
Music purchase online [SSCAMED]	518	0.13	0.04	0.70	1.87
Attending movies [SSCAMOV]	518	0.49	0.08	-0.22	0.21
Entertainment admission fees [SCLAFEE]	518	24.45	5.08	0.19	0.48
Recorded media expenditures [SCLAMED]	518	57.82	11.39	0.62	0.58
Musical instruments expenditures [SCLAMUS]	518	11.91	5.60	0.25	-0.01
Photo equipment expenditures [SCLAPHO]	518	41.22	8.57	0.19	0.05
Reading materials expenditures [SCALBOK]	518	164.73	33.53	0.08	0.68
Arts education nonprofits [LnSNPOEDU]	518	0.41	0.39	0.83	0.44
Collections based nonprofits [LnSNPOCOL]	518	1.04	0.63	0.36	-0.09
Humanities/heritage nonprofits [LnSNPOHUM]	518	1.08	0.57	0.19	0.08
Media arts nonprofits [LnSNPOMED]	518	0.50	0.47	0.99	1.31
Performing/events nonprofits [LnSNPOLPA]	518	1.36	0.67	-0.23	0.14
Field service arts nonprofits [LnSNPOSERV]	518	0.86	0.56	0.31	0.42

Table 9. *Continued.*

	Items	N	Mean	Std. Deviation	Skewness	Kurtosis
	Visual arts nonprofits [LnSNPOVIS]	518	0.32	0.35	1.15	1.16
	Other arts nonprofits [LnSNPOOTH]	518	0.44	0.43	0.99	1.22
	Total nonprofit arts expenditures [LnSNEXPPC]	518	3.47	1.34	0.11	0.12
	Total nonprofit arts revenue [LnSNTRVPC]	518	3.51	1.32	0.08	0.21
	State arts agency grants [LnSSAGPEC]	514	1.41	0.93	0.50	-0.32
	Solo artists [LnSARTSOLO]	516	5.14	0.54	0.22	1.54
	Creative industry share of all businesses [SCIBUSSH]	518	0.04	0.01	1.14	4.02
	Creative industry (CI) businesses [LnSCIBSPC]	518	5.53	0.42	-0.03	0.87
64	Arts/cultural (AC) establishments [LnSCPBSPC]	518	3.84	0.55	0.16	1.26
	AC share of all establishments [TSCBETSH]	518	0.29	0.06	1.33	5.15
	AC share of all employees [TSCBEMSH]	518	0.16	0.09	0.33	1.57
	AC share of all payroll [TSCBPYSH]	518	0.16	0.09	0.63	1.95
	CI share of all employees [TSCIEMPSH]	518	0.26	0.06	0.87	3.55
	Visual/performing arts degrees [LnSVPADG]	518	3.74	2.48	-0.53	-1.19
	Donation to arts and culture/publc broadcasting [SSCADON]	518	0.19	0.06	0.90	2.02
	Valid N (listwise)	512				

Note. Ln[variable] denotes natural logarithm transformation; T[variable] denotes Arcsine Transformation

After the transformation of variables, the researcher re-checked the data to ensure that the transformation improved the distribution of the data. For example, as shown in Table 8, the item ‘SNTRVPC (Total nonprofit arts revenue per capita)’ demonstrates severe positive skewness ($\gamma_1=12.12$) and kurtosis ($\gamma_2=172.74$). After performing the natural logarithm, the new obtained log transformed scores indicated normalized distribution, showing skewness ($\gamma_1=0.78$), kurtosis ($\gamma_2=0.21$) and normality (Kolmogorov-Smirnov test: $D = .031, p = .200$).

Furthermore, linearity is examined again using the transformed variables in order to inspect whether they show oval-shaped organization of points as evidence of linear relationship (Tabachnick & Fidell, 2007). As expected, the scatterplot matrix using transformed variables, which is shown in the right side of Figure 3, displays a relatively balanced spread of scores, indicating oval-shaped pattern of points along with a straight line. Therefore, it verifies a linear relationship between each pair of variables.

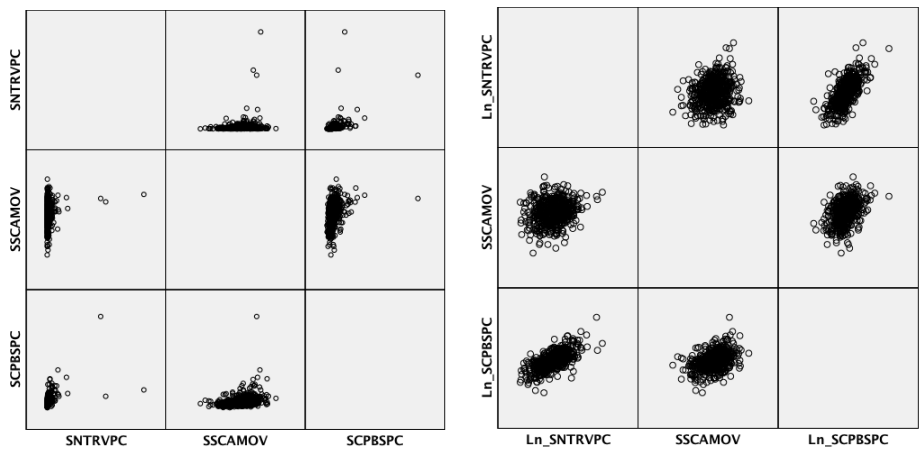


Figure 3. Scatterplot matrix of variables

The 518 cases, with transformation applied to variables, are screened for univariate and multivariate outliers. Cases that fall at the outer ranges of the distribution are regarded as potential outliers. If the sample sizes are larger than 80, univariate outliers can be detected when the threshold value of standard (z score) is ranged from 3 to 4 ($p < .001$, two-tailed test) (Hair et al., 1998, p. 65). On the other hand, Mahalanobis Distance can be used for the multivariate outliers. It measures the distance from the mean center of the cases in multidimensional space of each case. It is suggested as a very conservative probability estimate for a case being an outlier ($p < .001$ for the x^2 value) (Hair et al., 1998; Tabachnick & Fidell, 2007). However, the researcher has to cautiously decide the retention or deletion of each outlier. Even though the potential outliers have been identified, they should be retained unless there is demonstrable proof that they are truly aberrant and not representatives of cases in the population (Hair et al., 1998, p. 66). Also, case deletion might be limited on its generalizability. In this study, some counties might have much higher arts and cultural assets than others, and it is obvious when a county includes a city that is famous for its arts. Although some outliers were identified using z -scores and Mahalanobis Distance (Bandalos & Finney, 2006), in consideration of the context of this research, outliers were left in the data.

Multicollinearity is a problem that occurs when there is high correlation (.90 and above) between two variables; singularity occurs when one of the variables is a combination of two or more of the other variables (Tabachnick & Fidell, 2007). However, Hair et al. (1998) state that some degree of multicollinearity is desirable when factor analysis is performed since the purpose of this analysis is to identify interrelated sets of variables (p. 99). That said, multicollinearity and singularity often cause statistical

instability. Hence, screening steps should be taken to reduce the multicollinearity and singularity. As mentioned previously, if an indicator is developed by its subscales, the variable is regarded as a redundant variable, and excluded from the set of the data so as to avoid singularity. Also, if a bivariate correlation is 0.9 above, it suspects multicollinearity and one of the two variables is not included in the same analysis (Tabachnick & Fidell, 2007). After checking a correlation matrix, two strong positive correlations between variables are identified; these are SNEXPPC (Total nonprofit arts expenditures) and SNTRVPC (Total nonprofit arts revenue), presenting $r = 0.99$, $n = 518$, $p < 0.001$, and SCPBSPC (Arts/cultural (AC) establishments) and SCBETSH (AC share of all establishments), presenting $r = 0.93$, $n = 518$, $p < 0.001$. Therefore, after several EFA trials, SNEXPPC and SCBETSH are excluded from analysis.

Also, checking the squared multiple correlation (SMC) of a variable helps investigate multicollinearity. High SMC indicates that the variable is highly related to the others, suggesting multicollinearity (Tabachnick & Fidell, 2007). SPSS provides SMCs (1- Tolerance) as a collinearity statistics table, along with condition index and variance proportions. Furthermore, Belsely, Kuh, and Welsch (1980) suggest a condition index and variance proportions as other criteria for multicollinearity. If the condition index is greater than 30 and a given dimension has at least two or more variables along with large variance proportions (> 0.5), it indicates multicollinearity problems and a researcher might delete the variable with the highest variance proportion (Tabachnick & Fidell, 2007). As a result of SMCs and condition index, SCLABOK (Reading materials expenditures) is excluded from the final set of the data.

Lastly, factorability is the assumption that there are at least some correlations amongst the variables to identify coherent factors. In order for the factor analysis to be considered appropriate, the data matrix must reflect sufficiently high correlations. If no correlation exceeds 0.3, factor analysis is probably inappropriate. A visual examination of the correlations helped identify those which were statistically significant. The results revealed that most correlations were significant at $p < 0.01$ level and provided a basis for examining the Bartlett's test and Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy.

The Bartlett's test of sphericity measures the presence of correlations among the variables. It tests the hypothesis that the correlations in a correlation matrix are zero. Therefore, if the null hypothesis is rejected at the significant level, it can conclude that the correlation matrix has significant correlations among at least some of the variables and is appropriate for factor analysis (Hair et al., 1998). In addition, Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy also quantifies the degree of inter-correlations among the variables. It compares a ratio of the sum of squared correlations to the sum of squared correlations plus sum of squared partial correlations. The Measure of Sampling Adequacy for individual variables is examined first through the Anti-image Correlation Matrix, and variables falling below 0.5 ranges are removed in the variable set. In the same manner, the overall KMO is evaluated to decide whether the set of variables are appropriate for factor analysis. The index ranges from 0 to 1. Kaiser (1970, 1974) has described *MSAs* (Measure of Sampling Adequacy) above 0.9 as marvelous; above 0.8 as meritorious; above 0.7 as middling; above 0.6 as mediocre; above 0.5 as miserable; and below 0.5 as unacceptable (Hair et al., 1998).

As shown in Table 10, Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was 0.934, exceeding the recommended value of 0.5 (Kaiser, 1970, 1974). Bartlett's test of sphericity ($\chi^2 (406) = 11749.804$) reached statistical significance ($p < .001$). Also, there is no individual variable falling into unacceptable MSA values. Therefore, the result supports the factorability of the correlation matrix, and the remaining variables are correlated enough to be appropriate for factor analysis.

In sum, prior to the factor analysis, variables were examined through SPSS for missing values, normal distributions and the assumptions of multivariate analysis such as linearity and multicollinearity. In this stage, three more variables (i.e., SNEXPPC, SCBETSH and SCLABOK) were excluded from analysis in order to avoid multicollinearity. To reduce the extreme skewness and kurtosis, some variables are transformed using arcsine transformation and natural Logarithm. By using Mahalanobis Distance with $p < 0.001$ $\chi^2(33) = 63.870$, approximately five percent (27) of cases were identified as multivariate outliers. However, in consideration of the context of this research, all 518 cases were retained for the factor analysis. Lastly, the factorability of the correlation matrix was assessed to determine whether the variables are adequate for the factor analysis. The results of The Bartlett's test of sphericity and Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy showed that the variables collectively meet the fundamental requirements for factor analysis.

Table 10. KMO and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.934
Bartlett's Test of Sphericity	Approx. Chi-Square	11749.804
	df	406
	Sig.	.000

4.2.1.2 Factor Extraction and Rotation

In consideration of all the criteria mentioned above, an exploratory factor analysis (EFA) was applied to the arts and cultural variables in order to gain an understanding of the dimensions of arts and cultural resources. To determine the number of underlying dimensions, the principal axis factoring method was chosen. As noted earlier, principal axis factoring is the most commonly used extraction method (Tabachnick & Fidell, 2007). Contrary to the principal component analysis which uses total variance to reduce the original information to a minimum number of the factors, factor analysis primarily focuses on identifying underlying dimensions based on the common variance, excluding error and unique variance (Hair et al., 1998). Common variance is defined as the variance in a variable that is shared with all other variables in the analysis. This shared variance is estimated by communalities. In other words, communalities give information about how much of the variance in each item is accounted for by factors. Thus, low values (less than .30) indicate that the variable does not fit well with the other variables (Pallant, 2010). Given that, if an item had a communality of less than 0.3, it is regarded as an ineligible item and dropped out of the final models. By removing ineligible items, overall communality and variance can be increased.

Hair et al. (1998) noted that factor loadings greater than 0.3 are considered to be adequate; factor loadings of 0.4 are considered important. Furthermore, if factor loadings are 0.5 or greater, they are considered practically significant. In a similar manner, Costello and Osborne (2005) mentioned that the premise of the 'cleanest' factor structure has the best fit to the data with item loadings above 0.3, no or few item cross-loadings, and no factors with fewer than three items. Tabachnick and Fidell (2007) supported a

0.32 criterion as a minimum threshold. On the other hand, Stevens (2002) suggested a loading criterion above 0.4 as the threshold in order to interpret the factor. Adding to that, Gänswain (2011) argued that it is necessary that not only loadings more than 0.4 on the expected factor but also cross-loadings less than 0.4 on the other factors in order to provide distinct differentiation between factors. Hair et al. (1998) noted that factor loadings are influenced by sample size and significance. Sample sizes of 250 require minimum factor loadings of 0.35 for significance at $p < 0.05$, whereas, sample sizes of 350 require minimum factor loadings of 0.3 for significance at $p < 0.05$.

First, by using Kaiser's criterion (eigenvalue > 1) and the scree test, the suitable number of factors was examined (Henson & Roberts, 2006) (see Figure 4). As an initial run to estimate possible number of factors, principal components extraction with varimax rotation was performed. The maximum number of factors with eigenvalues larger than 1.0 was five. However, the scree plot indicated there was a clear break between the third and the fourth factors. In addition, the fifth factor has only one variable. Since only one variable on a factor implied a poor fit of the factor to the analysis (Hair et al., 1998), the variable 'LnSNPOEDU (Arts education nonprofits)' was eliminated.

Second, a common factor analysis extraction (e.g., principal axis factoring), eliminating unique and error variance from each variable, was used to find a final solution. In particular, principal axis factoring (PAF) extraction was run to specify the optimal number of factors. The trial PAF run with four factors was performed, and eliminated four more variables which communalities are less than 0.3 (Pallant, 2010) (see Appendix 2). Furthermore, as the eigenvalue for the fourth factor was less than 1.0 (The Kaiser criterion), three factors with eigenvalues over 1.0 were chosen for follow-up runs.

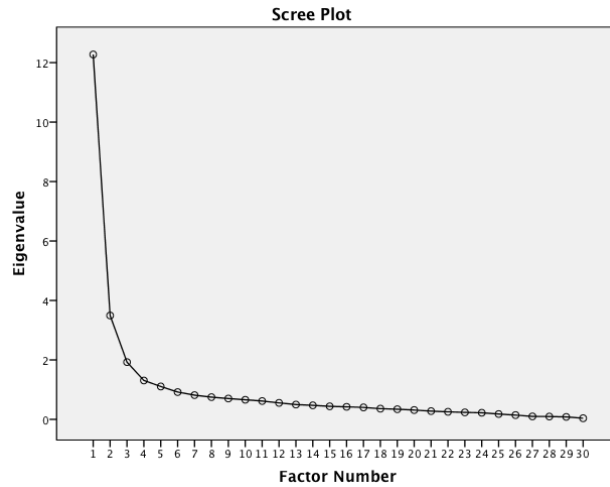


Figure 4. Scree plot produced by principal components extraction

In addition, the complexity of the variables was considered as well. Factor loadings and cross-loadings for each individual variable were examined. If the variable showed severe cross-loadings across the factors, it was considered to be excluded for the next run because it might have little contribution to identifying the underlying dimension (Hair et al., 1998). For example, ‘SSCADON’ (Household donations to arts and culture) showed a severe cross-loading pattern across the all three factors: 0.46 for factor 1; 0.41 for factor 2; and 0.31 for factor 3. Thus, this variable was eliminated from further analysis because it was not likely to uniquely contribute to any of the underlying dimensions. More detailed information regarding items excluded in this analysis will be shown in Appendix 2. In consideration of the rule-of thumb suggested by previous literature (Costello & Osborne, 2005; Hair et al., 1998; Pallant, 2010; Stevens, 2002), the researcher computed several additional trial solutions, and finally 17 variables were selected as the best representation of the data.

The next step was the decision regarding a rotation method. The decision was based on the result of the factor correlation matrix. Tabachnick and Fidell (2007) suggested that if correlations exceed 0.32, oblique rotation method is adequate. Correlations exceeding 0.32 means approximately more than 10 percent overlap in variance among factors. Thus, it supports the oblique rotation procedure which allows correlation between factors. The researcher used promax rotation, which is a common oblique rotation procedure based on varimax, along with the value of *Kappa* 2 ($k=2$). Promax takes the rotated matrix provided by varimax, and the orthogonal loadings are raised to a stated power, *Kappa* (k) (Tataryn, Wood, & Gorsuch, 1999). As a result, values for the smaller loadings become much smaller with the promax solution, while the larger loadings are not reduced as much. Promax has an advantage of reaching a simple structure, particularly for larger data sets (Finch, 2006). Hedrickson and White (1964) described that lower k value is acceptable even though the optimal value for k is 4. The rules-of-thumb for the value of k suggested by Tataryn, Wood, & Gorsuch (1999) is 2, 3, or 4. Table 14 shows the correlation between factor 1 and 2 (0.357), and factor 1 and 3 (0.391) are larger than Hair's suggestion 0.32. Therefore, principal axis factoring extraction with promax ($k=2$) rotation was used to interpret the final analytic solution.

Table 11. Factor Correlation Matrix

Factor	1	2	3
1	1.000		
2	.357	1.000	
3	.391	.180	1.000

Note. Extraction method: Principal Axis Factoring; Rotation method: Promax with Kaiser Normalization

4.2.1.3 Interpretation of Factor Results

Principal axis factoring (PAF) extraction with promax ($k=2$) rotation was performed in order to estimate a generated number of factors and variables with consideration of a combination of decision rules from previous studies (Hair et al., 1998; Henson & Roberts, 2006; Kaiser, 1970, 1974; Pallant, 2010; Tabachnick & Fidell, 2007; Tatarzyn, Wood, & Gorsuch, 1999). Finally, the analysis identified three underlying structures for the 17 variables. As noted earlier, PAF considers only the common variance associated with a set of variables, and the estimates of communality (squared multiple correlations) are in the diagonal of the observed correlation matrix (Hair et al., 1998; Tabachnick & Fidell, 2007). Also, promax rotation needs the value of k (kappa). This is the power to which the loadings are raised, so higher value of k leads to higher correlation among factors and simpler structure of the loadings. For this study, promax rotation ($k=2$) was employed as rotated solution which revealed the presence of a simple structure.

In addition, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy also quantifies the degree of inter-correlations among the variables. As shown in Table 12 and 13, the Kaiser-Meyer-Olkin index of sampling adequacy (0.908), as well as the anti-image correlation matrix for individual variables exceeded the recommended value of 0.5 (Kaiser, 1970, 1974). Barlett's test of sphericity indicated ($\chi^2 (136) = 7469.278$) reached statistical significance ($p < .001$). Therefore, it indicated that the set of correlations in the correlation matrix was significantly different from zero and appropriate for factor analysis. Also, communalities were examined for the 17 variables and the range noted. The initial communalities ranged from 0.43 to 0.86, exceeding the cut-off value of 0.3.

Extraction of communalities ranged from 0.30 to 0.92, indicating the amount of variance in a variable that is accounted for by the three factors taken together (See Table 15). As noted earlier, based on the Kaiser's criterion (eigenvalue > 1) and the scree test, a three-factor solution was extracted.

Table 12. KMO and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.908
Bartlett's Test of Sphericity	Approx. Chi-Square	7469.278
	df	136
	Sig.	.000

Table 13. Correlations, Measures for Sampling Adequacy, and Partial Correlations

		1	2	3	4	5	6	7	8	9
1. SSCALPA	Attending live performance	.945	.540	.641	.355	.460	.674	.487	.324	.663
2. SSCAMED	Online music purchase	-0.11	.969	.517	.433	.421	.569	.257	.054	.504
3. SCLAFEE	Entertainment admission fees	-0.05	-0.06	.847	.423	.254	.802	.324	.136	.576
4. SCLAMED	Recorded media expenditures	0.13	-0.06	-0.024	.864	.507	.554	.162	-.146	.391
5. SCALMUS	Musical instruments expenditures	-0.12	-0.13	0.386	-0.318	.794	.501	.215	.136	.391
6. SCLAPHO	Photo equipment expenditures	-0.35	-0.10	-0.647	-0.136	-0.353	.800	.200	.012	.486
7.LnSNTRVPC	Total nonprofit arts revenue	-0.04	0.01	-0.028	-0.064	0.034	0.07	.941	.621	.632
8.LnSSAGPEC	State arts agency grants	-0.08	0.10	-0.066	0.322	-0.144	0.096	-0.286	.875	.424
9.LnSARTSOLO	Solo artists	-0.13	-0.13	-0.153	0.013	-0.101	0.135	0.016	-0.063	.948
10.LnSCPBSPC	Arts/cultural establishments	-0.05	0.04	0.025	-0.019	-0.132	-0.017	-0.03	-0.164	-0.107
11.LnSNPOCOL	Collections-based nonprofits	-0.05	-0.01	0.037	0.152	0.01	0.058	-0.213	0.018	-0.092
12.LnSNPOHUM	Humanities/heritage nonprofits	0.04	0.00	-0.036	-0.058	0.05	-0.124	-0.121	-0.1	-0.036
13.LnSNPOLPA	Performing/events nonprofits	-0.11	-0.03	0.058	-0.139	0.055	0.009	-0.291	-0.088	-0.153
14.TSCBEMSH	Arts/cultural share of all employees	-0.12	-0.05	-0.09	0.008	-0.035	0.06	-0.103	0.07	0.134
15.TSCBPYSH	Arts/cultural share of all payroll	0.04	0.03	0.005	-0.009	-0.011	0.136	-0.039	-0.073	-0.10
16.TSCIEMPSH	Creative industry share of all employees	-0.13	-0.04	-0.036	0.015	0.067	0.054	-0.142	0.077	-0.184
17.LnSCIBSPC	Creative industry businesses	0.12	0.01	-0.021	-0.128	0.12	-0.196	0.003	0.102	-0.345

Table 13. *continued*

		10	11	12	13	14	15	16	17
1. SSCALPA	Attending live performance	.636	.239	.351	.569	.507	.500	.569	.630
2. SSCAMED	Online music purchase	.433	.071	.198	.364	.329	.314	.418	.499
3. SCLAFEE	Entertainment admission fees	.515	.080	.291	.411	.369	.352	.488	.616
4. SCLAMED	Recorded media expenditures	.384	-.089	.138	.311	.239	.240	.335	.490
5. SCALMUS	Musical instruments expenditures	.413	.055	.178	.306	.267	.274	.273	.386
6. SCLAPHO	Photo equipment expenditures	.448	.009	.266	.349	.237	.209	.379	.571
7.LnSNTRVPC	Total nonprofit arts revenue	.689	.521	.520	.739	.608	.660	.558	.567
8.LnSSAGPEC	State arts agency grants	.495	.430	.428	.516	.394	.476	.305	.305
9.LnSARTSOLO	Solo artists	.838	.318	.406	.717	.621	.711	.751	.850
10.LnSCPBSPC	Arts/cultural establishments	.935	.346	.443	.737	.724	.812	.737	.865
11.LnSNPOCOL	Collections-based nonprofits	-0.074	.866	.546	.471	.250	.277	.137	.196
12.LnSNPOHUM	Humanities/heritage nonprofits	-0.128	-0.317	.899	.550	.246	.302	.203	.317
13.LnSNPOLPA	Performing/events nonprofits	-0.074	-0.114	-0.179	.957	.567	.627	.553	.662
14.TSCBEMSH	Arts/cultural share of all employees	-0.011	-0.037	0.092	-0.015	.894	.870	.666	.635
15.TSCBPYSH	Arts/cultural share of all payroll	-0.317	0.07	-0.007	-0.008	-0.648	.886	.738	.696
16.TSCIEMPSH	Creative industry share of all employees	0.025	0.122	0.106	0.07	-0.004	-0.234	.951	.774
17.LnSCIBSPC	Creative industry businesses	-0.483	0.061	0.123	-0.084	-0.037	0.065	-0.247	.914

Note. Diagonal values in bold are MSAs for individual variables; correlations are above diagonal; and partial correlations are below the diagonal.

Table 14 explains the information regarding the number of factors selected based on the latent root criterion (eigenvalue > 1). The three-factor solution explained a total of 65.9% of the variance of the 17 variables--with factor 1 contributing 47.7%, factor 2 contributing 12.2%, and factor 3 contributing 6.1%, while the remaining 15 factors each explained a relatively trivial amount of information. Therefore, the first three factors were retained for further analysis. In social sciences, factor solutions that account for 60 percent of the total variance are considered as satisfactory (Hair et al, 1998). Thus, the three-factor solution met the satisfactory condition.

Table 14. Results for the Extraction of Common Factors

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	Percent of Variance	Cumulative Percent	Total	Percent of Variance	Cumulative Percent
1	8.38	49.30	49.30	8.10	47.65	47.65
2	2.45	14.41	63.72	2.07	12.18	59.83
3	1.35	7.96	71.68	1.03	6.05	65.88
4	0.87	5.09	76.77			
5	0.67	3.94	80.71			
6	0.56	3.30	84.01			
7	0.45	2.66	86.67			
8	0.42	2.49	89.16			
9	0.37	2.16	91.32			
10	0.32	1.86	93.17			
11	0.27	1.59	94.76			
12	0.24	1.43	96.20			
13	0.19	1.11	97.31			
14	0.16	0.94	98.25			
15	0.12	0.69	98.94			
16	0.10	0.61	99.55			
17	0.08	0.45	100.00			

Note. Extraction method: principal axis factoring; rotation method: promax with Kaiser normalization.

Rotations of factors simplify the factor structure and make its interpretation clearer. It is obtained by rotating the primary axes for the data plot so as to redistribute the variance to achieve a more meaningful factor pattern. For example, the sums of squared loadings before rotation were 8.10, 2.07, and 1.02 respectively. At rotation, the sums of squared loadings increased to 6.40, 5.04, and 3.83. It indicated that the variance in each variable accounted for by each factor was redistributed, so that the second and third factor could account for much increased variance. Furthermore, while orthogonal rotation should maintain the 90 degrees axes rotation, the new axes in oblique rotations are free to take any position, allowing correlations among factors (Abdi, 2003; Hair et al., 1998). Hair et al. (1998) noted that the oblique solution represents more accurate variable clusters because each rotated factor axis can be close to the respective group of variables.

To aid in the interpretation of these three factors, promax oblique rotation with $k=2$ was performed. Table 15 contains the pattern and structure matrices with the factor loadings for each variable on each factor greater than 0.40 (Bandalos & Finney, 2010; Gänswain, 2011; Stevens, 2002). The structure matrix is the factor loading matrix, representing the variance in a measured variable explained by a factor on both a unique and common contribution. Simply put, it represents the correlations between the variables and the factors. In contrast, the pattern matrix contains loadings that represent the unique contribution of each variable to the factor.

Table 15. Pattern/Structure Matrix Coefficients and Communalities (h^2)

Variables	Pattern Matrix			Structure Matrix			h^2
	1	2	3	1	2	3	
Arts/cultural share of all payroll	0.93			0.94		0.41	0.88
Arts/cultural share of all employees	0.82			0.84			0.70
Creative industry share of all employees	0.78			0.82	0.48		0.72
Arts/cultural establishments	0.69			0.87	0.56	0.54	0.87
Creative industry businesses	0.64	0.45		0.80	0.68		0.82
Solo artists	0.59			0.80	0.62	0.49	0.80
Photographic equipment expenditures		0.99			0.95		0.92
Entertainment admission fees		0.71		0.40	0.76		0.60
Recorded media expenditures		0.62			0.64		0.44
Online music purchase		0.60			0.66		0.45
Attending live performance		0.58		0.55	0.71	0.41	0.64
Musical instruments expenditures		0.49			0.54		0.30
Collections-based nonprofits			0.74			0.72	0.53
Humanities/heritage nonprofits			0.73			0.73	0.56
State arts agency grants			0.57	0.47		0.66	0.51
Total nonprofit arts revenue	0.48		0.56	0.70		0.74	0.74
Performing/events nonprofits			0.51	0.67	0.45	0.70	0.72

Note. Extraction method: principal axis factoring; rotation method: promax with Kaiser normalization; 6 iterations required; all values less than .40 were omitted; communality values (h^2) are not equal to the sum of the squared loadings due to the correlation of the factors.

First of all, in interpreting factors, assessing statistical significance of factor loadings is necessary to consider whether the variable is enough to account for the expected underlying factor. With the use of a 0.05 significance level, if sample size is greater than 350, loadings of 0.3 has practical significance which denotes approximately 10 percent of explanation by the factor (Hair et al., 1998). As shown in Table 15, all the variables loaded significantly on at least one factor. For this study, a loading criterion above 0.4 suggested by Stevens (2002) was used to interpret the factor.

For the first factor, pattern coefficients ranged from 0.59 to 0.93, including six variables: Arts/cultural share of all payroll; arts/cultural share of all employees; creative industry share of all employees; arts/cultural establishments; creative industry businesses; and solo artists. Arts and cultural business related variables tended to have high loadings (coefficients) on this factor followed by creative industry related variables. Also, the solo artists variable was included in this factor. The presence of artists might show a flourishing local arts scene and, in turn, it usually links to the capacity of local arts business. To sum, these six variables showed the level of arts businesses; thus, factor 1 could be named as 'arts business,' and help understand that arts economy as arts businesses are related to a direct economic impact on arts and cultures.

On the other hand, the second factor reflects the consumption of arts and cultural facilities and resources. The pattern coefficients ranged from 0.49 to 0.99, including six variables: Photographic equipment expenditures; entertainment admission fees; recorded media expenditures; online music purchase; attending live performance; and musical instruments expenditures. All the variables presented in this factor indicated arts-related consumptions such as expenditures and arts-related activity participation. Hence, this

factor could be named as ‘arts consumption,’ and help estimate the number of people engaged in and how much money people spend on art-related activities. Furthermore, it provides insight into the scope of the arts and cultural market through participation and expenditures by the local population.

The third factor derived from the result of the EFA covered the overall scope of the nonprofit arts sectors in a community. The pattern coefficients ranged from 0.51 to 0.74, including five variables: Collections-based nonprofits; humanities/heritage nonprofits; state arts agency grants; total nonprofit arts revenue; and performing/events nonprofits. Given that many arts and cultural facilities and programs are run by nonprofit organization, total nonprofit arts revenue per capita can capture how broadly nonprofit arts organizations are available for the people. In addition, humanities and heritage nonprofit organization includes ethnic and historical organizations, while performing arts and events cover music, theatre, dance, other arts performance, and fairs and festival. Collections-based nonprofits cover a variety of museums such as arts, history, and science museums. Furthermore, obtaining state arts grants can be a sign of the competence of these local arts nonprofits. Therefore, it could be named as ‘arts nonprofit,’ and provides insight into the prosperity of the arts and cultural market in a community.

Lastly, internal consistency describes the extent to which all the variables in a factor measure the same concept. One of the most commonly used types of internal consistency reliability is Cronbach’s coefficient alpha, which applies to the consistency among the variables in a factor (Tavakol & Dennick, 2011). Cronbach’s coefficient alpha ranges between 0 and 1; the closer Cronbach’s coefficient alpha is to 1.0, the greater the

internal consistency of the items in the scale. Although Schmitt (1996) argued that there is no sacred level of acceptable or unacceptable level of alpha (p.353), general rule-of-thumb for the acceptable value of ranged from 0.70 to 0.95 (DeVellis, 2003; Nunnally & Bernstein, 1994; Tavakol & Dennick, 2011), and even above 0.60 in exploratory research (Hair et al, 1998). Low estimates of internal consistency are more likely to have an unstable factor solution with relatively weak relationships (Bandalos & Finney, 2010). To assess the internal consistency and reliability for each of three factors, Cronbach's alpha was employed. The alpha based on standardized items is calculated from the correlations matrix, so it is useful in cases where the variables use different measurement unit (Falk & Savalei, 2011). In this study, the standardized Cronbach's alpha of all three factors ranged from 0.85 to 0.95. Specifically, the reliability for the six variables in 'arts business' (n = 516) resulted in an alpha of 0.948. Also, the reliability for the six variables in 'arts consumption' (n = 518) indicated an alpha of 0.863. With regard to the factor 'arts nonprofit,' Cronbach's coefficient alpha based on 514 cases was 0.853. Thus, the results show each of variables in that factor was measuring the same concept.

4.3 Discussion

An exploratory factor analysis was conducted based on the LAI. As a result of the factor analysis, arts business, consumption, and nonprofit (ABCN) dimensions were identified, while CAVM originally supported four dimensions (i.e., arts activity, arts resources, competitiveness, and local character). These three dimensions encompassed most parts of arts activity, arts resources, and competitiveness in the CAVM, although three dimensions did not include any variables from the fourth factor of CAVM (i.e.,

local character). These variables did not meet the general rules-of-thumb and were eliminated during factor analysis.

Using principal axis factoring extraction with promax ($k=2$) rotation, the results indicated that the presence of three independent factors accounted for a total of 65.9% of the variance of the 17 variables—with ‘arts business’ contributing 47.7%, ‘arts consumption’ contributing 12.2%, and ‘arts nonprofit’ contributing 6.1%. Furthermore, Cronbach’s alpha was calculated to assess the internal consistency and reliability for each of three factors. Standardized Cronbach’s alpha of all three factors ranged from 0.85 to 0.95, falling into the acceptable range (DeVillis, 2003; Hair et al., 1998; Nunnally & Bernstein, 1994; Tavakol & Dennick, 2011).

In comparison to the CAVM, the first factor covers ‘arts business’ related activities, including six variables with respect to arts and cultural businesses, employees, payroll, and number of artists. In other words, the ‘arts business’ factor puts ‘arts resources’ and ‘competitiveness’ factors from CAVM together (see Table 16). As mentioned previously, arts businesses, their employments and payroll, and solo artists are related each other, so it might be more legitimate if these are accounted for under the one factor. Given that, the factor ‘arts business’ will help represent the local arts economy in that arts businesses are related to a direct economic impact on arts and cultures.

Next, the ‘arts consumption’ factor includes six variables regarding people’s participation and expenditures of arts and culture. In CAVM, participation and expenditure are presented in ‘arts activity’ and ‘arts resources’ respectively. However, all the variables can be broadly construed as peoples’ arts consumption. Furthermore, according to the LAI, there is no specific reason that participation and expenditure

variables should be separately presented. Therefore, as shown in Table 16, arts and cultural participation and expenditures account for ‘arts consumption’ as a result of the factor analysis. As individuals’ spending time and money on arts and cultural activities show the vitality of the arts in a community, its presence can be a key marker of a local arts scene. Also, this factor helps estimate the scope of the arts and cultural market through participation and expenditure by the local population.

Table 16. The comparison between CAVM and ABCN

CAVM	Categories of Variables	ABCN
Arts activity	Cultural participation	Arts consumption
	Consumer expenditures	
Arts resources	Nonprofit arts revenues	Arts nonprofit
	Government support	
	Arts nonprofits	
	Artists and arts businesses	Arts business
Competitiveness	Establishments, employments, and payroll	

Note. ‘Local character’ dimension is not accounted for by ABCN factors.

Lastly, ‘arts nonprofits’ with five variables encompasses overall scope of the nonprofit arts sector in a community. For example, the number of nonprofit arts in a community that are accessible to people might provide insight into the prosperity of the arts nonprofit sector. Moreover, government support, such as state arts agency grants and nonprofit arts revenue, are important to estimate their income streams which indicate the prosperity of arts nonprofit sector in a community as well. As shown in Table 16, all variables in this factor are originally in the CAVM ‘arts resources’ category. The ‘Arts business’ factor overlaps somewhat the ‘arts nonprofits’ since the ‘arts business’ factor can cover both commercial and nonprofit arts and cultural businesses. However, as a

basis for the U.S arts and culture, it would be worthwhile to focus on ‘arts nonprofit’ alone to understand overall scope of the nonprofit arts sector in a community.

In sum, the three-factor solution successfully implements a process of data reduction, identifying the meaningful underlying factors. Arts businesses and nonprofits are becoming involved more and more in distributing arts and cultural benefits to communities. Given circumstances, people have more chances to spend their time and money on arts activities as well as benefit from them. Furthermore, arts-related activities may result in the economic impact, strengthen social cohesion, and encourage quality of life. In this sense, as a crucial part of a community, the state of arts and cultural assets can be consistent predictors of community well-being. For a further analysis, identification of the underlying dimensions with respect to arts and cultural assets is important to utilize in examining the relationship between arts and cultural factors, and community well-being, which will be discussed the following chapter.

CHAPTER 5

ARTS AND COMMUNITY WELL-BEING

This chapter reviews a broad array of community well-being literature and then specifies the dimensions of community well-being (i.e., individual, social, and economic well-being). Also, the notion of arts and cultural impacts within community well-being dimensions is discussed in light of discussions in chapter 2 and 4. Lastly, based on the literature, this chapter proposes a conceptual model of arts and community well-being and propositions which are used to examine the relationship between arts and cultural assets and community well-being outcomes. Specifically, the next section provides an overview of the general concept of community well-being. A number of components that influence community well-being are then discussed followed by an introduction to a measurement system of community well-being.

5.1 A general concept of community well-being

When we envision a concept of community well-being, people may agree that community well-being is reflected by a wide range of economic, social, environmental, cultural, human, and political forces. Also, the well-being of a community is reflected in personal life and a resident's satisfaction. Residents, especially at the local level, play an essential role in determining the economic, social and cultural prosperity (Insch & Florek, 2008) and collective outcomes of residents regarding various economic, social, and physical statuses that can be considered evidence of community well-being.

To put it another way, community well-being can encompass residents' quality of life and related community conditions. From the community perspective, while there is

no one universal definition, the premise of the well-being of a community is “enhancing, creating or recreating healthy and viable communities” (Christakopoulou, Dawson, & Gari, 2001, p. 321). Much literature defines community well-being within similar boundaries. For example, the Local Government Community Services Association of Australia (IGCSAA) defines community well-being as “qualities for developing healthy and sustainable communities” (Derrett, 2003, p. 53). Also, Wiseman and Brasher (2008) describe community well-being as “the combination of social, economic, environmental, cultural, and political conditions identified by individuals and their communities as essential for them to flourish and fulfill their potential” (p. 358).

Some researchers consider community well-being as subjective resident satisfaction regarding a local place. Whorton and Moore (1984) argued that collective and subjective information serve as reasonable indicators for community satisfaction, and then discussed six core community satisfaction concepts included concern for crime, concern for the availability of jobs, concern for access to adequate health care, concern for available housing, satisfaction with public education, and satisfaction with community (p. 299). Forjaz and colleagues (2011) suggested that satisfaction with the local place of residence entails the social and physical environment, community services and facilities, and attachment to community. They claimed that community well-being is an important indicator to gauge the impact of local community on peoples’ health and general well-being, and develop a community well-being index that included eleven items.

On the other hand, Wills (2001) posited that the ultimate goal of community well-being is to make a community successful in balancing between environmental sustainability, economic prosperity, and outcomes such as livability, equity, vitality,

sustainability, and prosperity. Furthermore, she held that in order for a community to achieve the state of wellness, good governance is essential. Following this, Cuthill (2004) claimed, “community well-being is the ultimate goal of all democratic governance including that delivered by local government” (p. 9). He emphasized that building human and social capital achieved by citizen participation is critical as a basis for community well-being. In a similar manner, a research study conducted by Finlay and colleagues (2010) posited that social factors (e.g., education, employment and working conditions, health care services, housing, social safety, communications, and special factors based on community context) are essential for understanding community wellness. According to their research, these factors are related to community health outcomes, especially in a distressed community, and improvements of these factors influence the rebuilding of a community which is embodied in community well-being.

Another approach focusing on social factors can be found in the study of Maybery and colleagues (2009). Specifically they approach community well-being as community resilience of residents coping with their stressful circumstances. In this study, key ecological factors that influence resilient communities are social assets, service assets that support community action and behavior, neighborhood and economic resources, and community risk factors such as levels of crime. As a result of a survey of small inland rural communities in Australia, it demonstrates that social assets are the most valued in the community as a way to build community well-being. Again, it supports the claim that social connectedness and social ties are critical determinants for community resilience and well-being.

Furthermore, the burgeoning literature in Australia seeks to provide an integrated understanding of local community well-being (Cox, Frere, West, & Wiseman, 2010; Davern, West, Bodenham, & Wiseman, 2011; Miles, Greer, Kraatz, & Kinnear, 2008; Wills, 2001; Wiseman, Heine, Langworthy, McLean, Pyke, Raysmith, & Salvaris, 2006; Wiseman & Brasher, 2008). Their focus goes beyond individual and collective well-being and moves on to the circumstances and outcomes of the broader community. Wills (2001) proposed three community domains (i.e., social, economic, and environmental domains) linked to seven community well-being outcomes, including livability, equity, conviviality, vitality, adequate prosperity, sustainability, and viability. Furthermore, Miles et al. (2008) developed a model to measure community well-being. The model is referred to as the six-by-six community well-being model. It is comprised of six dimensions featuring 36 indicators, with each dimension consisting of six indicators to cover economic, social, and environmental well-being in a community. The six dimensions include: 1) wealth and affordability, 2) safety and public health, 3) personal health and fitness, 4) diversity and learning, 5) community and governance, and 6) environment and infrastructure. Based on these six dimensions, they suggested that community well-being indicators could reflect a community's health and its basic quality of life, and be used as a tool for better understanding of status quo of the community in relation to other communities.

Similarly, Wiseman and Brasher (2008), Cox et al., (2010), and Davern et al, (2011), presented the Community Indicators Victoria (CIV) commissioned by the Victorian Health Promotion Foundation (VicHealth) as a tool for measuring well-being of a local community. The CIV provides a broad picture of progress and well-being of

community, combining not only subjective measures but also objective ones in five overarching domains:

- Health, safe and inclusive communities
- Dynamic, resilient economies
- Sustainable built and natural environment
- Culturally rich and vibrant communities
- Democratic and engaged communities

More interestingly, CIV regarded arts and cultural activities, sporting and recreational activities, and cultural diversity as important components for community well-being. These indicators are included in the domain titled ‘culturally rich and vibrant communities.’

There are several other instruments that are broadly linked to community well-being, although these are established to measure the state of cities and communities from the perspective of well-being and sustainability. The City Monitor was initiated by the Department of Urban Policy of the central Flemish administrative organization in Belgium (Van Asseche, Block, & Reynaert, 2010).

They agitated that indicators simplify the representation of societal problems, and in this manner, they proposed a sustainability framework (The City Monitor) to map livable signs of Flemish cities. The City Monitor is based on the concept of sustainability, focusing on economic, social, physical-ecological, and institutional principles; these sustainability principles interrelate eight activity domains that can take place in the city such as living, education, working, safety, social welfare, culture, environment, and mobility. As community indicators, the implementation of the City Monitor helped

analyze the quality of life in Flemish communities (Van Asseche, Block, & Reynaert, 2010).

On the other hand, Michalos and colleagues (2011) offer a different take on the well-being concept by suggesting a Canadian Index of Wellbeing (CIW). Even though their primary goal was to measure a composite index of well-being, they posited that most of the phenomena relevant to well-being at the present time could be conceptualized in eight domains. As shown in Figure 5, each domain of the CIW system is symbolized in three resources (i.e., personal, public, and ecosystem resources). For example, the personal resources for well-being includes resources in order to achieve personal well-being; that is, healthy populations, time use, and education. The second concentric circle presents public resources that encompass living standards, demographic engagement, community vitality, and leisure and culture. As an ecosystem resource, the environment affects all of the domains. The authors noted that the CIW system illustrates the general shape of domains and interaction among all the circles occurs to sustain well-being.

Lastly, the County Health Ranking and Roadmaps (CHRR) was developed as a collaborative work between the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute to measure community vital health factors in nearly every county in the United States (“County health ranking and roadmaps (CHRR)”, n. d.). It provides a reliable, sustainable source of local data to communities to help them identify opportunities to improve their community health. The health factors emphasized were divided into health behaviors and clinical care (e.g., diet and exercise, smoking, and access to physicians), social and economic factors (e.g., education, crime rate, and employment), and physical environment (e.g., air and water quality, housing,

and transit); these factor influence a multi-dimensional concept of quality of life that includes domains related to physical, mental, emotional, and social functioning.

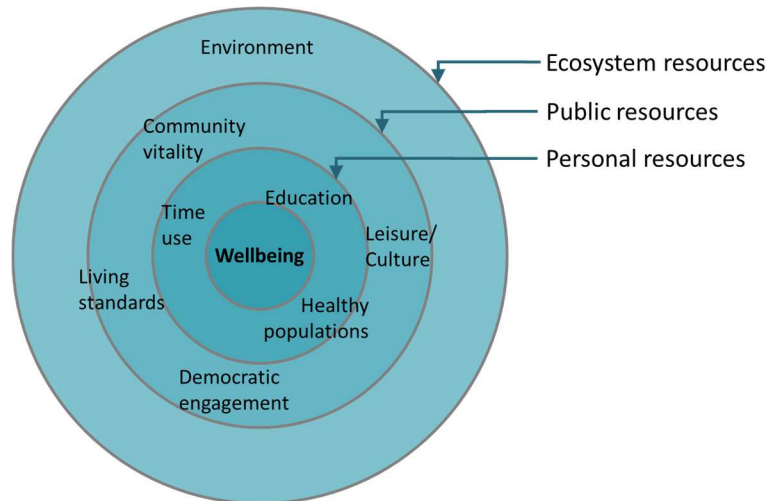


Figure 5. The Mandala of Wellbeing adapted from Michalos et al. (2010, p. 7)

Given the above rationale, it is recognized that the concept of community well-being is grounded in not only the residents' perceptions and satisfaction to the community but also on community conditions, qualities, and assets. The aforementioned studies focusing on identifying components that were comprehensive and consistent across the communities also offered intriguing insights into how community indicators are developed and used to gauge current community well-being. Thus, the following section shows how a range of aspects affecting the state of a local community are categorized under the community well-being studies, focusing more on various community well-being dimensions and subsequent measurements.

5.2 Measuring Community Well-Being

As a framework for community assessment, community well-being should be reflected by a range of aspects affecting the state of a local community. A number of studies suggested a range of community well-being indicators with multidimensional aspects of well-being as a viable proxy for community. These are summarized below in Table 17.

Table 17. Summary of Studies related to Community Well-being (CWB) Measurement

Authors	CWB Domains	Subsequent Measurement
Whorton & Moore (1984)	<ul style="list-style-type: none"> • Concern for crime • Availability of jobs • Concern for health care • Concern for housing • Satisfaction with public education • Satisfaction with community 	<p><u>Subjective</u></p> <ul style="list-style-type: none"> • Total 24 items to present six core factors, with each factor comprising four items
Chistakopoulou, Dawson, & Gari (2001)	<ul style="list-style-type: none"> • Place to live <ul style="list-style-type: none"> a) Satisfaction with built environment b) Service and facilities c) Environmental quality d) Personal safety • Social community <ul style="list-style-type: none"> a) Community spirit b) Informal interaction • Economic community <ul style="list-style-type: none"> a) Income sufficiency • Political community <ul style="list-style-type: none"> a) Decision making process • Personal space <ul style="list-style-type: none"> a) Place attachment • Part of the city 	<p><u>Subjective and objective</u></p> <ul style="list-style-type: none"> • Total 45 items to present nine sub-domains • ‘Part of the city’ was not measured in this study
Wills (2001)	<ul style="list-style-type: none"> • Social/physical well-being • Economic well-being • Environmental well-being 	<ul style="list-style-type: none"> • Economic development • Environmental sustainability • Public/environmental health • Community safety • Housing • Physical, emotional social and spiritual development • Social determinants of health

Authors	CWB Domains	Subsequent Measurement
Cuthill (2004)	<ul style="list-style-type: none"> • Social capital • Human capital • Physical capital • Financial capital • Natural capital 	<ul style="list-style-type: none"> • The cohesiveness of people and societies • The status of individuals • Local infrastructure including education, housing, and health services • Stocks of money, savings, and pensions • Nature's goods and services
Wiseman et al. (2006); Cox et al. (2010); Davern et al. (2011)	<p><u>Community Indicator Victoria</u></p> <ul style="list-style-type: none"> • Healthy, safe, and inclusive communities • Dynamic, resilient and fair economies • Sustainable built and natural environments • Culturally rich and vibrant communities • Democratic and active citizenship 	<p><u>Subjective and objective</u></p> <ul style="list-style-type: none"> • Multi-item scales in terms of 23 sub-domains and 72 indicators
Miles et al. (2008)	<ul style="list-style-type: none"> • Wealth and Affordability • Safety and Public Health • Personal health and Fitness • Diversity and Learning • Community and Governance • Environment and Infrastructure 	<p><u>Subjective and objective</u></p> <ul style="list-style-type: none"> • Total 36 items to present six core factors, with each factor comprising six items
Maybery et al. (2009)	<ul style="list-style-type: none"> • Social assets • Service agency assets • Neighborhood and economic resources • Community risks 	<p><u>Subjective</u></p> <ul style="list-style-type: none"> • Total 20 items—17 asset typed items and 3 items of common risk types of community

Authors	CWB Domains	Subsequent Measurement
Finlay et al. (2010)	<p><u>Emphasis on northern First Nations in Canada</u></p> <ul style="list-style-type: none"> • Social determinants of health • Factors with respect to the northern context, including First Nations cultural perspectives 	<p><u>Subjective</u></p> <ul style="list-style-type: none"> • 13 sub-domains of social determinants of health (e.g., education, employment, food security, health care services, social safety, etc.) • 8 factors regarding First Nations context (e.g., colonization, territory, poverty, cultural continuity, etc.)
Van Assche, Block, & Reynaert (2010)	<p><u>The city monitor</u></p> <p>1) Eight activity domains</p> <ul style="list-style-type: none"> • Living • Learning and education • Care and welfare • Culture and leisure • Working and enterprise • Safety and protection • Transportation and mobility • Nature and environment <p>2) Four sustainable principles</p> <ul style="list-style-type: none"> • Economic principles • Social principles • Physical-ecological principles • Institutional principles 	<ul style="list-style-type: none"> • 200 indicators from statistics, registrations, surveys, and other data sources
Sirgy et al. (2010)	<ul style="list-style-type: none"> • Social well-being • Leisure well-being • Health well-being • Safety well-being • Family and home well-being • Political well-being • Spiritual well-being • Neighborhood well-being • Environmental well-being • Transportation well-being • Education well-being • Work well-being • Financial well-being • Consumer well-being 	<p><u>Subjective</u></p> <ul style="list-style-type: none"> • 87 multi-items based on 14 domains

Authors	CWB Domains	Subsequent Measurement
White (2010)	<ul style="list-style-type: none"> • The material • The social • The human 	<u>Subjective and objective</u> <ul style="list-style-type: none"> • Practical welfare and standards of living • Social relations and public goods • Capabilities, values and attitudes
Michalos, et al. (2011)	<u>Canadian Index of Wellbeing</u> <ol style="list-style-type: none"> 1) Personal resources <ul style="list-style-type: none"> • Healthy populations • Time use • Education 2) Public resources <ul style="list-style-type: none"> • Living standards • Community vitality • Democratic engagement • Leisure and culture 3) Ecosystem resources <ul style="list-style-type: none"> • Environment 	<ul style="list-style-type: none"> • Total 64 items to present eight core factors, with each factor comprising eight items
Forjaz et al. (2011)	<ul style="list-style-type: none"> • Community services • Community attachment • Physical and social environment 	<u>Subjective</u> <ul style="list-style-type: none"> • Support to families • Social services • Leisure • Health services • Security • Belonging • Trust in people • Social conditions • Economic situation • Environment
Prilleltensky et al. (2015)	<ul style="list-style-type: none"> • Community well-being as one of well-being components of ICOPPE Scale, including six domains 	<ul style="list-style-type: none"> • Satisfaction with ones' community
County Health Rankings and Roadmaps (n.d.)	<ul style="list-style-type: none"> • Health outcomes • Health behaviors • Clinical care • Social and economic factors • Physical environment 	<ul style="list-style-type: none"> • Total 36 items under the 16 sub-domains of determinants of community health (e.g., education, employment, diet and exercise, safety, social support, etc.)

As in the community well-being literature, empirical investigations of community well-being have examined the effects of several objective and subjective items.

Community well-being can be driven by residents' subjective quality of life in that if people are satisfied with their living conditions in a community, the community will be more likely to reach a status of well-being. On the other hand, if the community endeavors to develop infrastructure and community systems, this can also influence the quality of life of residents, and in turn, impact community well-being. Overall, the community well-being assessment was built on a mix of indicators such as personal physical and mental health, education, poverty, unemployment, and crime. In other words, potential data assessing community well-being can be derived from not only peoples' perceived evaluation of their life circumstances, but also from objective indices which are publicly collected in the communities. Also, while there is some dispute in the literature regarding the definition and operationalization of community well-being, as well as the construction of its system, domains and a variety of characteristics can be classified into more general dimensions. Taken the studies illustrated in the above table as a whole, important components for community well-being can be parsed in physical (human), economic, social, and environmental contexts. The following offers four distinct ways of characterizing community well-being:

- *Physical (individual) community well-being* refers to the well-being of personal health and nutrition associated with the state of physical and mental health. With respect to characteristics, indicators could be physical activity, smoking and drug use, obesity, and mental and physical health of residents.
- *Social community well-being* refers to the well-being outcome derived from relation-dynamics in a community. It includes social networks, inclusion, safety, and community formation indicators such as voting rate, crime rate, education attainment, and volunteering rate.

- *Economic community well-being* encompasses the economic state of the community. Economic well-being is reflected in income levels, housing quality, employment, and investment and spending patterns.
- *Environmental community well-being* embraces nature-related dimensions of community infrastructures. Furthermore, it also covers overall living environments associated with physical, social, and economic well-being components in a community.

It is difficult to find and measure all the constituents and determinants that impact community well-being system. Also, the function of each community well-being dimension based on the above literature can overlap and interact with each other. In many discussions of community well-being, there is not enough attention paid to the role of arts and cultural assets, while much literature from arts and cultural industry fields claims arts impact on residents' and community quality of life (See chapter 2). To see a broad, as well as detailed image of the relationship between community well-being and arts and cultural capacity, the next section focuses more on synthesizing arts and cultural values and impacts within community well-being context. While there are many other variables that influence community well-being, it is necessary in the context of this research to focus on art-community well-being relationship which are highlighted in chapter two and four.

5.3 Approach to Conceptualization of Arts and Culture on Community Well-being

Community well-being is grounded in community conditions, qualities, and assets that are derived from community characteristics. Previously, chapter 2 described how arts and culture are embodied in, or at least related to, human and community life. It seems that arts and cultural assets and residents' consumptions of these are linked to community

well-being, despite the lack of attention on the impacts of arts and culture in community well-being studies. A few studies related to community indicators emphasized the values of arts and culture in community well-being (Besleme, Maser, Silverstein, 1999; Cox et al., 2010; Davern et al., 2011). Besleme, Maser, and Silverstein (1999) introduced two local community indicators from Jacksonville, FL and Truckee Meadows region, NV. Jacksonville indicators discuss culture and recreation as one of the ten elements of quality of life in Jacksonville, while Truckee Meadows indicators more specifically point out arts as one of the ten elements of community quality of life. Another approach can be found in Community Indicators Victoria (CIV). It evaluated cultural viability—arts and cultural activities, sporting and recreational activities, and cultural diversity—as important components for community well-being (Cox et al., 2010; Davern et al., 2011). Supportively, based on reviewing literature in chapter 2, although they did not quote community well-being directly, it was found that much research has examined the relationship between arts and various well-being components of a community such as residents’ health, social networks, civic engagement, and economic prosperity (Catterall, 2012; Daykin et al., 2012; Grodach, 2011; Hayter & Pierce, 2009; Michalos & Kahlke, 2010; Rogers & Anastasiadou, 2011). Table 18 summarizes a wide range of arts and cultural benefits related to community well-being (CWB).

Table 18. Summary of Arts and Cultural Impact Related to Community Well-being

Physical (individual) well-being	Social well-being	Economic well-being
<ul style="list-style-type: none"> • Achieve hedonic pleasure or aesthetic appreciation • Build artistic skills • Promote physical and psychological health • Cultivate self expression • Improve self confidence and self esteem • Increase creativity 	<ul style="list-style-type: none"> • Reduce youth delinquency • Build social relationships and networks • Enhance civic engagement • Develop community cohesion • Support social inclusion • Improve community cooperation • Understand local identity and culture • Encourage community empowerment 	<ul style="list-style-type: none"> • Generate employment • Yield arts products • Promote arts consumption • Forster artists and arts industries • Promote a city’s image • Foster local businesses and services • Support nonprofit organizations and facilities

In this sense, promoting artistic and cultural environments synthetically influence overall community well-being. Furthermore, as a result of the factor analysis in chapter four, the ABCN framework was indicated that arts business, arts consumption, and arts nonprofit could be essential components to measure the vitality of arts and culture in a community. Given that, accordance with the ABCN and community well-being components, Figure 6 illustrates how arts and cultural resources are synthesized in the context of community well-being.

CWB ABCN	Physical WB	Social WB	Economic WB
Arts Business			Solo artists
	Arts and cultural establishment		
			Employment and payroll
Arts Consumption	Cultural participation		
	Consumer expenditure		
Arts Nonprofit	Arts nonprofits		
			Government support
			Arts revenue

Figure 6. A diagram of the evidence of arts and cultural contribution to CWB

This diagram demonstrates how diverse factors of arts and culture are related to, and have potential to make a contribution toward community well-being. The detailed arts and cultural indicators of each domain are presented in chapter four.

In addition, as shown in chapter two, the “how art works” system map constructed by Iyengar and colleagues (2012) shows a clear vision with respect to arts-related inputs and direct and indirect community outcomes. In particular, focusing on art inputs and quality of life outcomes in this system (see Figure 7), arts infrastructure and arts-related

education and training invigorate arts creation and participation, and in turn, these arts-related inputs influence individuals, society, and communities, and direct and indirect economic outputs. Therefore, in consideration of aforementioned discussions in this chapter, it could be concluded that interactions between arts and each well-being dimension influence overall community well-being environment.

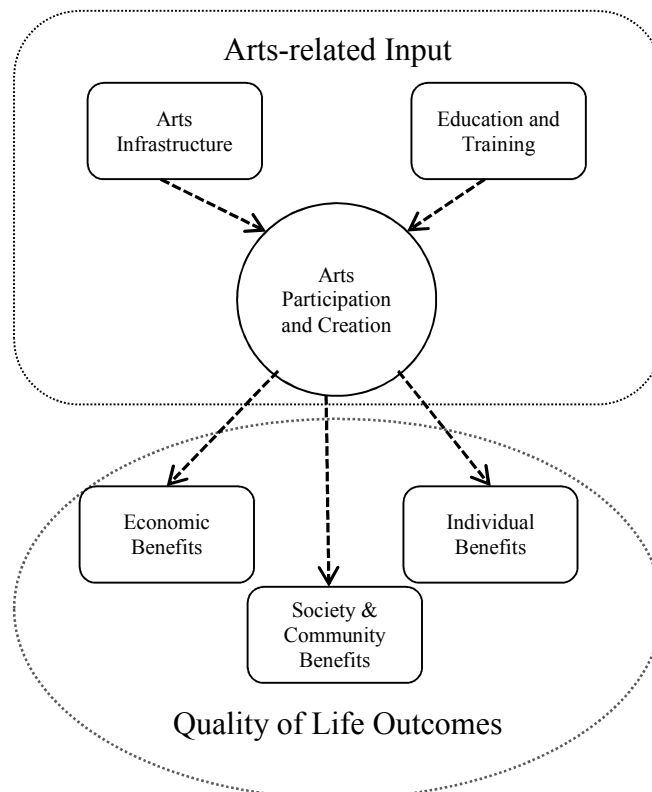


Figure 7. Arts and community well-being excerpted and modified from “how art works” illustrated by Iyengar and colleagues (2012, p. 17)

However, to operationalize the above conceptual framework, there are some gaps in previous empirical studies. For example, arts infrastructure, and arts education and training influence primarily arts participation rather than other community outcomes. Although their claim that arts infrastructure and education impact arts participation and

creation is obvious, others argue that arts infrastructure such as arts organizations and arts venue also can be used as a tool for community economic development (Grodach, 2010, 2011; Hayter & Pierce, 2009; Lavanga, 2006; Makusen & Gadwa, 2010a).

Also, arts education and training influence not only the likelihood of arts participation and creation, but also, as an independent factor, are related to the individual and social benefits. Ruppert (2006) and others (Catterall, 2012; Respress, & Lutfi, 2006; Walker, 1995) indicate that arts learning is of benefit to students, supporting their academic success and reducing youth delinquency. Furthermore, Bailey and colleagues (2004) examine how art works and programs in areas of social deprivation support community revitalization, gathering the collective ability to relieve social problems and increase capacity. Lastly, based on the result of factor analysis described in chapter four, it was identified that arts business, arts consumption, and arts nonprofit domains encompass the essential attributes of arts and culture in the context of community environment. Therefore, on the basis of all things considered in this chapter, a model for investigating the relationship between the arts and community well-being can be laid out.

5.4 Arts and Community Well-Being Model

The purpose of this study is to investigate the relationship between key domains of arts and culture and community outcomes in the context of community well-being. The conceptual model for this study was initiated by drawing a simple relationship (see Figure 8). As mentioned earlier, determination and construction of key variables with consistent and interpretable data are imperative to understand comprehensive phenomena regarding arts and community. Previous community well-being literature and Local Arts

Index (LAI) reports helped construct a concrete model to gauge arts' value and impact on the lives of individuals and communities.

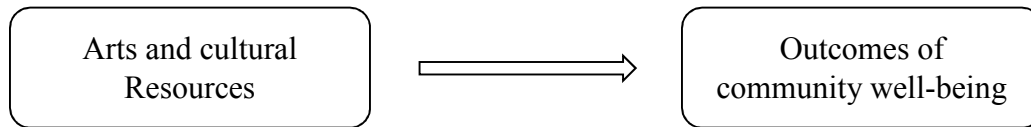


Figure 8. The relationship between arts and community

As a next step, to measure arts and cultural resources, categorizing these into key factors was important. In chapter four, the result of the factor analysis, drawing on the Local Arts Index identified three underlying dimensions of arts and culture: arts business (e.g., artists, arts and cultural establishment, employee, and payroll), arts consumption (e.g., arts participation and consumption), and arts nonprofit (e.g., nonprofit arts revenues and government support). Given that, Figure 9 suggests that the core dimensions with supporting indicators were suggested in the left box. Furthermore, outcome of community well-being are dependent variables in this study. From the previous literature, community well-being is accounted by the multicultural character of communities (see Table 17). However, with consideration for the notable well-being domains related to arts and culture, this study covers individual, social, and economic well-being variables.

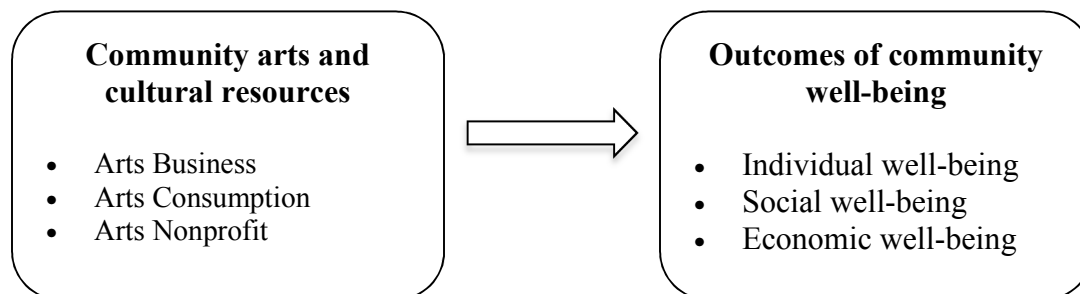


Figure 9. The model of arts and community well-being

In effect, this model will investigate a more complicated relationship between arts and cultural resources and outcomes of community well-being. Based upon an understanding of the impact of arts and culture on community, this study argues that each arts and cultural dimension influences outcomes of community well-being. Furthermore, these might selectively support specific dimensions of community well-being. For example, arts business might be related to economic community well-being outcome rather than individual well-being. On the other hand, arts consumption might broadly influence all three dimensions of community well-being. Given that, the present research considers whether or not arts and cultural resources of local communities positively affect community human, social, economic outcomes, and, by extension, collective well-being which combines above three well-being components at the county level, examining my broadest research question “if a community has more abundant arts and cultural resources and activities, does it have better community well-being?” Therefore, the expanded model and propositions are as follows (see Figure 10 below):

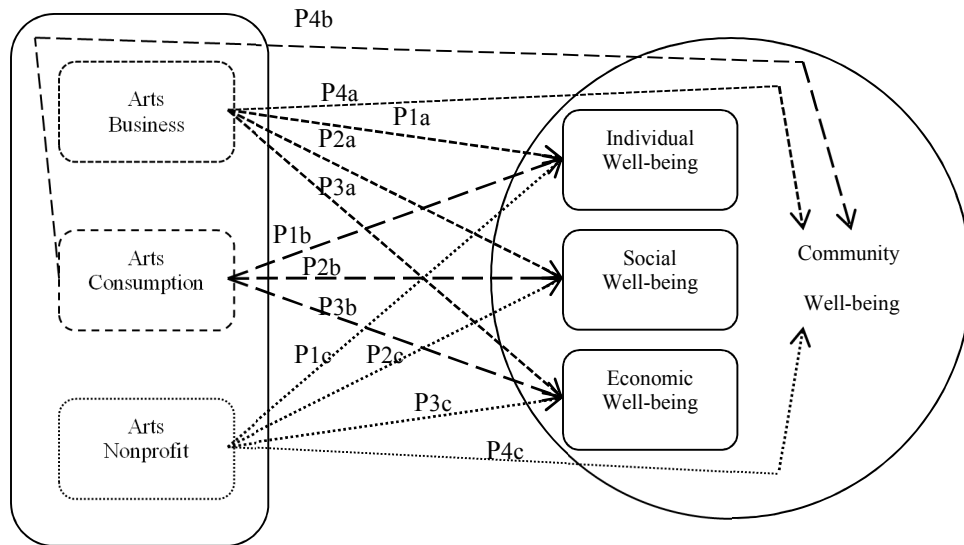


Figure 10. An expanded model of arts and community well-being

Proposition 1: *With an abundant presence of arts and cultural assets within a community, community individual well-being will be positively enhanced.*

Proposition 1a: *With an abundant presence of arts and cultural business factors within a community, community individual well-being will be positively enhanced.*

Proposition 1b: *Peoples' arts and cultural consumptions and experiences have a positive impact on community individual well-being outcomes.*

Proposition 1c: *With an abundant presence of arts and cultural nonprofit factors within a community, community individual well-being will be positively enhanced.*

Proposition 2: *With an abundant presence of arts and cultural assets within a community, community social well-being will be positively enhanced.*

Proposition 2a: *With an abundant presence of arts and cultural business factors within a community, community social well-being will be positively enhanced.*

Proposition 2b: *Peoples' arts and cultural consumptions and experiences have a positive impact on community social well-being outcomes.*

Proposition 2c: *With an abundant presence of arts and cultural nonprofit factors within a community, community social well-being will be positively enhanced.*

Proposition 3: *With an abundant presence of arts and cultural assets within a community, community economic well-being will be positively enhanced.*

Proposition 3a: With an abundant presence of arts and cultural business factors within a community, community economic well-being will be positively enhanced.

Proposition 3b: Peoples' arts and cultural consumptions and experiences have a positive impact on community economic well-being outcomes.

Proposition 3c: With an abundant presence of arts and cultural nonprofit factors within a community, community economic well-being will be positively enhanced.

Proposition 4: *With an abundant presence of arts and cultural assets within a community, overall community well-being will be positively enhanced.*

Proposition 4a: With an abundant presence of arts and cultural business factors within a community, overall community well-being will be positively enhanced.

Proposition 4b: Peoples' arts and cultural consumptions and experiences have a positive impact on overall community well-being outcomes.

Proposition 4c: With an abundant presence of arts and cultural nonprofit factors within a community, overall community well-being will be positively enhanced.

5.5 Summary

This chapter reviewed a broad array of community well-being literature and the dimensions of community well-being (i.e., individual, social, and economic well-being) and their measurement system was discussed. Also, this chapter proposed a conceptualization of the arts and community well-being model. It included a number of propositions that focus on the impact of the arts and cultural resource dimensions in a community on the individual, social, and economic outcomes within a county level. Specifically, in line with the result of the factor analysis drawn from the Local Arts Index

(see Chapter 4 for details), it is postulated that arts and cultural business, consumption, and nonprofit factors influence local individual, social, and economic outcomes, which reflect different dimensions of community well-being. To examine propositions postulated in this chapter, the following chapter will discuss the research methodology with respect to community well-being: how this study simplifies community well-being data, and develops the measurement and statistical analysis.

CHAPTER 6

EMPIRICAL DIMENSIONS OF COMMUNITY WELL-BEING

The preceding chapter addressed the literature that was relevant to community well-being and its relationship with arts and cultural prosperity in a community. Furthermore, several propositions were proposed in light of that review, along with a conceptual model (see Figure 10). The purpose of this chapter is to describe the research methodology utilized and results in order to 1) reach an enhanced understanding of community well-being variables; 2) simplify a set of community well-being data into a more interpretable, three-factor solutions (i.e., individual well-being, social well-being, and economic well-being); 3) create factor scores to incorporate factor information in subsequent analyses; and 4) examine the validity of community well-being constructs as a general construct using higher-order factor analysis.

As a first step, variables and data, drawing on the County Health Rankings and Roadmaps (CHRR) are explained. Given the data was gathered from the County Health Rankings and Roadmaps (CHRR), community well-being variables rely heavily on several CHRR sources (“CHRR”, n. d.; “Trends data”, 2014). To that end, the subsequent sections discuss the methodology, data analysis, and interpretation of the results.

6.1 Data: Community well-being

6.1.1 The County Health Rankings and Roadmaps (CHRR)

The CHRR was originally developed by collaboration between the Robert Wood Johnson Foundation (RWJF) and University of Wisconsin Population Health Institute for American’s healthier lives in a diverse society. The major goal of the CHRR is to

measure and report a variety of health factors using county level as a unit of analysis, and rank them within the same state (“CHRR”, n. d.). It helps raise an understanding of many health features that influence a community, and shows the current status of community health compared to other counties in the same state. In addition, it provides tools to understand data and assists communities to make changes toward healthy communities.

The original data are synthesized from a variety of national data sources such as the Behavioral Risk Factor Surveillance System (BRFSS) and the National Center for Health Statistics (NCHS). The set of data was comprised of several categories such as quality of life, health behaviors, clinical care, social and economic factors, and physical environment. Each category is broken down into a number of sub-components. Even though the ranking system was based on the summary composite scores weighted by its sub-components, CHRR clearly states that there is no one accurate formula that is perfectly exemplified in order to indicate community health (“CHRR”, n. d.). Therefore, given that the community well-being variables are drawn on the data set of the County Health Rankings and Roadmaps (CHRR), this study specifically focuses on individual, social, and economic well-being so as to explain overall community well-being.

Based on a review of existing literature (see chapter 2 and 5), the researcher determined possible 17 variables from the CHRR to identify three dimensions of community well-being outcomes (i.e., individual well-being, social well-being, and economic well-being), and further to investigate the relationship between arts and culture, and community well-being. With an effort to reflect various aspects of community well-being at a local level, specific variables chosen for this study will be discussed in more detail in the next section.

6.1.2 Community well-being variables

As stated in the previous chapter, the model for this study was developed to analyze the statistical relationship between the three assets of arts and culture in a community and three dimensions of community well-being (see Figure 10). The dependent variable for this study is county-level community well-being. Therefore, it is necessary to not only explain potential community well-being variables but also understand expected well-being dimensions. As noted earlier, the researcher used CHRR variables in examining county-level community well-being. To clarify the variables, this section relies heavily on several sources from CHRR (“CHRR”, n. d.; “Trends data”, 2014).

6.1.1.1 Individual well-being

Individual well-being consists of human health-related indicators that measure people’s overall health (PFHEALTH), physical and mental health (PPHD and PMHD), smoking and obesity rate (ASMOK and AOBESY), and physical activity (PINACT). As shown in Table 19, the first three indicators are related to health related quality of life of a population. The data are based on self-reported health in contrast with other well-being indicators, so it can be more subjective than others. However, self-reported health indicators have been the most frequently used in health research (“CHRR”, n. d). Thus, it is judicious to include three self-reported health indicators to know the individual well-being of a county population.

Also, health behaviors such as smoking, obesity, and exercise are also critical for the individual well-being of a county. According to the Centers for Disease Control and Prevention (2014), cigarette smoking is a fatal cause of disease such as cancer and stroke,

and secondhand smoke exposure is pernicious as well. Thus, it could be an influential indicator to check individual well-being. In a similar manner, adult obesity and physical exercise can reflect the status of healthy life. Obesity is a chronic disease in the U.S, increasing many health problems such as type 2 diabetes (“CHRR”, n. d). Therefore, knowing the county-level obesity rate might reflect the individual well-being of a county. Furthermore, since physical activities such as regular exercise are an essential element to assess individual well-being, physical inactivity percentage is included as well. It is calculated based on the amount of time people spend participating in various physical activities (“CHRR”, n. d). The data of six variables in this category were obtained from the Behavioral Risk Factor Surveillance System (BRFSS) and National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP).

Table 19. Prediction of Variables Loading for Individual Well-being Factor

	Potential Individual well-being variables	Predicted factor loaded
PFHEALTH	Percent of adults reporting fair or poor health	Individual Well-being
PPHD	Physically unhealthy days per month	
PMHD	Mentally unhealthy days per month	
ASMOK	Percent of current adult smoker	
AOBESY	Percent of adults that report a BMI \geq 30	
PINACT	Percent of adults reporting physical inactivity	

6.1.1.2 Social well-being

The concept of social well-being is derived from interpersonal dynamics (Wilkinson, 1979), including socioeconomic security, community formation, and family and social support. In this view, six variables were chosen from the CHRR (see Table 20). The rate of pregnant teens (TNBIRTH) is associate with social well-being in a community in that they are more likely to involve other risky behaviors such as drug use,

alcohol use, and delinquency. Also, teen moms would likely rely on public assistance for their child support, and be less likely to complete high school (38%) compared to their peers (Ng & Kaye, 2012). On the other hand, higher level of education leads to control over one's life, which is connected to healthier lifestyle and increased social supports ("CHRR", n. d). Thus, tracking high school graduation rate (HSGRAD) obtained from the National Center for Education Statistics is appropriate to monitor the social well-being in a community.

Furthermore, family and social support helps live in neighborhoods with healthier influences. Communities with a greater social support increase social capital, which is referred to as interpersonal trust and civic engagement ("CHRR", n. d). In this study, children in single-parent households (CHSIGPA), percent of children eligible for free lunch (CHFLUN), and percent of adults without social support (SOSUPT) were used as proxy measures of support. In the way that people who have a job with higher income get greater social supports than those with less income ("CHRR", n. d), SOSUPT variable expects to reflect economic well-being to an extent. These data came from BRFSS and the American Community Survey. Lastly, unsafe neighborhoods affect directly and indirectly community health as well as social disadvantage (Egerter, Barclay, Grossman-Kahn, and Braveman, 2011). Thus, community safety was measured using the levels of violence (VICRIME) and injuries (INDEATH) experienced by the population. Violent crime is defined to include murder and non-negligent manslaughter, forcible rape, robbery, and aggravated assault (The FBI's Uniform Crime Report, 2013). According to the Centers for Disease Control and Prevention (CDC), injury mortality includes car accidents, poisoning, suicide, and other accidents ("CDC", n.d.).

Table 20. Prediction of Variables Loading for Social Well-being Factor

	Potential social well-being variables	Predicted factor loaded
TNBIRTH	Birth rate per 1,000 female populations ages 15-19	
HSGRAD	Rate of high school graduation	
SOSUPT	Percent of adults that report not getting emotional/social support	
CHSIGPA	Percent of children in single-parent households	Social Well-being
VICRIME	Violent crime rate per 100,000 population	
INDEATH	Injury mortality rate per 100,000 population	
CHFLUN	Percent of children eligible for free lunch	

6.1.1.3 Economic well-being

The economic state of the community such as income and employment level is correlated with health and other community circumstances like sense of community, neighborhood stability, social exclusion (Christakopoulou, Dawson, & Gari, 2001) and community health (“CHRR”, n. d). As shown in Table 21, four indicators show an important attribute of the economic well-being in a community. The annual average unemployment rate, which indicates the total unemployed persons as a percent of the labor force ages 16 and older (UNEMPT) is used to assess economic well-being. Unemployment rate could be an effective indicator that obviously shows community economic conditions. In a similar manner, the rate of people having insurance can be a barometer of economic conditions in a community. According to a report by the Henry J. Kaiser Family Foundation (2014), the number of uninsured people increased during recessionary periods when people lost their jobs. Also, most of the uninsured are in low-income family and about 60% of the uninsured have family income below 200% of poverty. Thus, measuring the percent of the population younger than age 65 without health insurance (UNINSURE) can explain the status of economic well-being in a

community. The data for this measure come from the Census Bureau’s Small Area Health Insurance Estimates (SAHIE).

Along with variables reflecting job situations, measuring a rate of poverty in a community can mirror the economic conditions in a community. Specially, CHRR measures the percentage of children living in poverty (CHPOVT) based on data from the Census’ Small Area Income and Poverty Estimates (SAIPE). Challenges associated with poverty have an impact on people’s housing options. Housing also reflects the largest single monthly expenditure for many individuals and families and a significant source of wealth. Quality housing is not affordable for everyone, and those with lower incomes are most likely to live in unhealthy, overcrowded, or unsafe housing conditions (Braveman, Dekker, Egerter, & Sadegh-Nobari, 2011). Given that, measuring the percentage of the population living with severe housing problems (HOPROBM) can signify the overall economic situations in a community. Based on the variables chosen for community well-being, the rest of this chapter will focus on a determination and interpretation of the community well-being components and subcomponent variables.

Table 21. Prediction of Each Variables Loading for Economic Well-being Factor

	Potential economic well-being variables	Predicted factor loaded
UNINSURE	Percent of population under age 65 without health insurance	Economic Well-being
UNEMPT	Percent of population age 16+ unemployed	
CHPOVT	Percent of children under age 18 in poverty	
HOPROBM	Percent of households with severe housing problems	

6.2 Methodology

The objective of this section is 1) to summarize most of the original information in three factors and 2) to create composite scores in order to incorporate factor information as part of a regression analysis in Chapter 7; and 3) to define a broader construct that encompasses all factors identified. Thus, in consideration of all the criteria outlined by chapter 4 (Hair et al., 1998; Tabachnick & Fidell, 2007), a principal component analysis (PCA) with promax rotation was conducted. A principal component analysis and factor analysis are very close in that it allows a researcher to identify the structure of relationships among variables by examining the correlations between variables. However, a principal component analysis considers total variance (i.e., common, specific, and error variance taken together) to extract factors, while a factor analysis uses only common variance. The primary goal of the PCA derives the minimum number of factors in order to account for as much of the variance represented in the set of variables as possible (Hair et al., 1998).

Similar to the chapter 4, the following steps were taken: 1) selecting and measuring a set of variables; 2) determining whether the data is appropriate for the PCA; 3) extracting a set of initial factors from the correlation matrix; 4) determining the number of factors; 5) rotating the factors to make components more interpretable; and 6) interpreting the results (Tabachnick & Fidell, 2007, p. 608). In addition, to enhance interpretability of community well-being, a higher-order factor analysis is conducted. In other words, the correlations among the original factors are used as the correlations for a higher-order factor analysis (Gorsuch, 1997). The processes and results of the PCA will be elaborated upon in the next section, and the data were analyzed with SPSS 22.0.

6.2.1 The Research Parameters and Procedure

As an initial step for this PCA, descriptive statistics of all variables were performed and the results are displayed in Table 22, including valid N, mean, standard deviation, skewness, and kurtosis. Even though Tabachnick and Fidell (2007) stated assumptions about normality are not necessary as long as PCA are used to summarize the relationships in a large set of observed variables, normal distribution enhances the solution. However, since variables do not reflect “extreme” non-normality variable (Kline, 2005), transformation of data was not considered.

Table 22. Descriptive Statistics for Community Well-being Variables

	Variables (N=486)	N	Mean	Std. Deviation	Skewness	Kurtosis
PFHEALTH	Percent of adults overall fair or poor health	515	0.15	0.05	0.98	1.71
PPHD	Physical unhealthy days per month	516	3.57	0.78	1.31	3.71
PMHD	Mental unhealthy days per month	515	3.51	0.71	0.89	2.56
ASMOK	Percent of adults currently smoking	499	0.19	0.05	0.47	0.27
AOBESY	Percent of adults BMI more than 30	518	0.28	0.05	-0.21	0.20
PINACT	Percent of adults no leisure physical activity	518	0.24	0.05	0.16	0.05
TNBIRTH	Birth rate age 15-19	518	34.98	15.66	0.57	0.30
HSGRAD*	Percent of not graduated high school	516	0.19	0.09	1.02	2.74

	Variables (N=486)	N	Mean	Std. Deviation	Skewness	Kurtosis
SOSUPT	Percent of adults no social emotional support	513	0.19	0.04	0.38	0.20
CHSIGPA	Percent of children in single family	518	0.31	0.09	0.88	1.85
CHFLUN	Percent of children for free Lunch	518	0.37	0.15	0.42	-0.03
VICRIME	Violent crime per 100,000	514	344.34	244.20	2.03	7.31
INDEATH	Injury mortality rate per 100,000	518	59.75	17.50	0.72	0.89
UNINSURE	Percent of younger than 65 no health insurance	518	0.15	0.05	0.69	0.86
UNEMPT	Percent of the unemployed age 16+	518	0.08	0.02	1.09	2.37
CHPOVT	Percent of children living in poverty	518	0.20	0.08	0.55	0.34
HOPROBM	Percentage of household with severe housing problem	518	0.16	0.05	1.13	1.30

Note. For all variables, standard error of skewness = 0.11; standard error of kurtosis = 0.22; * denotes the variable was reversed.

Also, to inspect linearity, the researcher examined bivariate scatterplots to identify nonlinear patterns. Following the suggestion by Hair et al. (1998), only pairs that are likely to show nonlinear patterns based on their skewness were screened. Therefore, to check linearity, bivariate scatterplots for AOBESY ($\gamma_1 = -0.21$) and VICRIME ($\gamma_1 = 2.03$), and PPHD ($\gamma_1 = 1.31$) and AOBESY ($\gamma_1 = -0.21$) were conducted. As shown in Figure 11, the plot of AOBESY and PPHD displayed an oval-shaped organization of points,

although it suggested some possible outliers. Furthermore, compared to the plot of AOBESY and PPHD, even though the plot of VICRIME and AOBESY might not be a pleasing strong relationship, there was no evidence of curvilinearity as evidence of a nonlinear relationship (Tabachnick & Fidell, 2007).

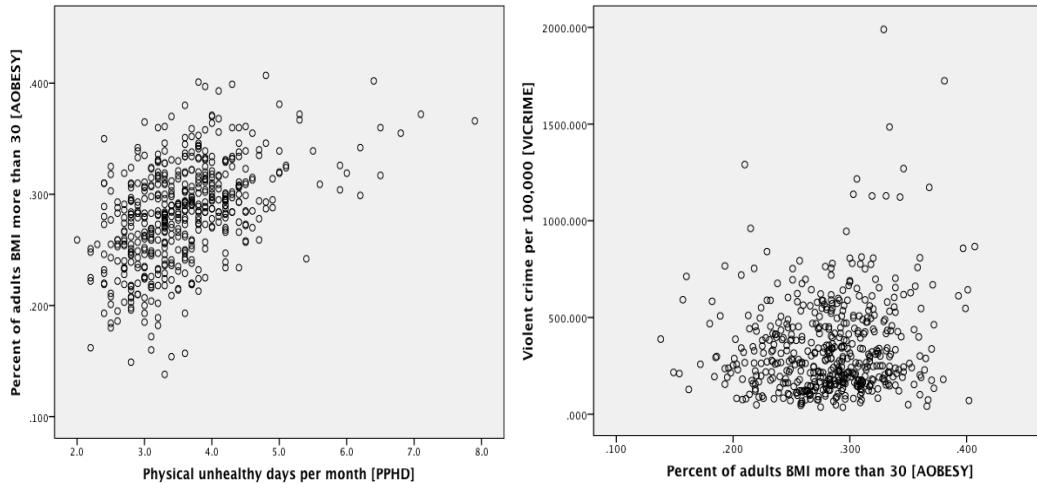


Figure 11. Bivariate Scatterplots

The 518 cases are screened for univariate and multivariate outliers. Cases, which fall at the outer ranges of the distribution, are regarded as potential outliers. To detect univariate outliers, the threshold value of standard (z score) is ranged from 3 to 4 ($p < .001$, two-tailed test) when the sample sizes are larger (Hair et al., 1998). On the other hand, Mahalanobis Distance can be used for the multivariate outliers. As described in Chapter 4, it is suggested a very conservative probability estimate for a case being an outlier ($p < .001$ for the χ^2 value) (Hair et al., 1998; Tabachnick & Fidell, 2007). In this study, if Mahalanobis Distance is greater than 40.790 ($\chi^2(17) = 40.790$, $p < .001$), the case could be estimated as an outlier. Approximately 4.9 percent (24) of cases were

identified as potential multivariate outliers. However, even though the potential outliers have been identified, they should be retained unless there is demonstrable proof that they are truly aberrant and not representatives of any cases in the population (Hair et al., 1998, p. 66). Also, case deletion might be limited on its generalizability. In consideration of the context of this research, there was no evidence that the cases were not in the population, so outliers were kept in the data.

The statistical problem created by singularity and multicollinearity occurs when a matrix inversion is used in the analysis. A PCA does not need to invert a matrix, so multicollinearity is not a problem (Tabachnick & Fidell, 2007). Furthermore, there is no evidence that indicates much higher correlations (0.90 and higher) between variables. Therefore, multicollinearity is not a threat to the dimensions of the dependent variable. In addition, the correlation matrix revealed that there were numerous correlations among the 17 variables, exceeding $r = .30$ (Hair et al., 1998; Tabachnick & Fidell, 2007). Therefore, the data matrix has sufficient correlations and it is appropriate for the further PCA.

Lastly, the factorability of the correlation matrix assessed whether the variables are adequate for the factor analysis. Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (MSA) was 0.897, exceeding the recommended value of 0.5 (Kaiser, 1970, 1974). Furthermore, MSA values of individual variables were acceptable, presenting from 0.76 to 0.95; most of the values in the anti-image correlation matrix were small. The results of The Bartlett's test of sphericity ($\chi^2 (136) = 7183.695$) reached statistical significance ($p < 0.001$). Therefore, the result supported the factorability of the correlation matrix, and the variables collectively met the fundamental requirements for component analysis.

6.3 The Results

To review the study, the purpose of this chapter was 1) to simplify a large set of data to a smaller number of factors, retaining their original character, and 2) to discover a set of variables that are correlated with each other as factors; 3) to create composite scores in order to incorporate factor information as part of a regression analysis in chapter 7; and 4) to define a broader construct that encompasses all factors identified using higher order factor analysis. As an initial step, a principal component analysis was employed.

6.3.1 Principal Component Analysis

Principal component analysis with promax rotation was performed with a sample of 518 counties and 17 variables. For this analysis, promax rotation ($k=4$) was employed, which revealed the presence of a simple structure (Tataryn, Wood, & Gorsuch, 1999). As pointed out earlier, the aim of PCA is to extract maximum variance from the data set with each factor. Thus, PCA analyzed all the variance in the observed variables. In other words, all the variance is distributed to factors, including error and unique variance for each observed variable. Contrary to the EFA, factors are simply aggregates of correlated variables, so there is no underlying theory, while they are empirically associated (Tabachnick & Fidell, 2007). Furthermore, the first extracted factor accounts for the largest possible amount of variance, and the last factor has the least variance.

To estimate the possible number of components, Kaiser's criterion (eigenvalue greater than 1) and the scree test were used. The number of components which eigenvalue is larger than one was three, explaining 72.4% of total variance. As shown in Figure 12, the scree plot showed that the curve flattened after the first three components. It also supported a three-component solution. Communalities were inspected in order to

see that the variables are well-explained by the solution. Communalities represent the proportion of the variance in the original variables that is accounted for by the component solution (Tabachnick & Fidell, 2007). Since all variables exceeded the cut-off value of 0.3 (Pallant, 2010), the analysis proceeded to the next stage.

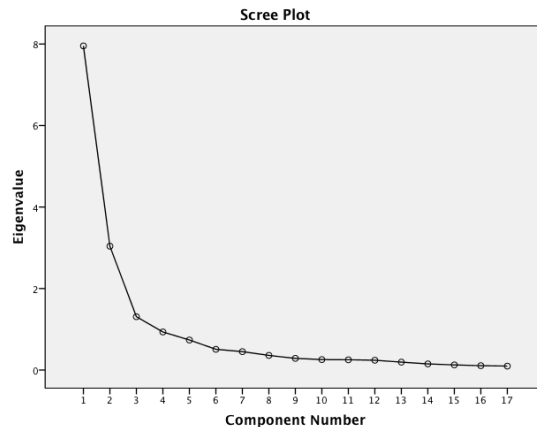


Figure 12. The Scree plot of the PCA for community well-being components

Next, factor loadings and cross-loadings for each individual variable were examined. If a variable showed severe cross loadings across the factors, it was considered to be excluded for next run (Hair et al., 1998). Also, any variable that loaded above 0.40 was considered for the further analysis (Stevens, 2002). In consideration of the rules-of-thumb suggested by previous literature (Costello & Osborne, 2005; Hair et al., 1998; Pallant, 2010; Stevens, 2002; Tataryn, Wood, & Gorsuch, 1999) (c.f., chapter 4), the researcher computed several additional trial solutions, and 14 variables were finalized. For example, percent of adults reporting fair or poor health (PFHEALTH), injury mortality rate per 100,000 population (INDEATH), and percent of children under age 18 in poverty (CHPOVT) were excluded after several PCA trials due to low loadings or

cross-loadings. Specially, contrary to the expectation, the result of PCA showed that percent of adults without social support (SOSUPT) was finally included in the factor ‘economic well-being.’ Noting that people with higher income get greater social supports than those with less income (“CHRR”, n. d), SOSUPT can show the extent to which it is related to people’s income, and it can be included in the economic well-being factor (See Table 23).

Table 23. Community Well-being Variables Loaded for Each Factor

Community well-being variables		Factor loaded
PPHD	Physically unhealthy days per month	Individual Well-being
PMHD	Mentally unhealthy days per month	
ASMOK	Percent of adults that reported currently smoking	
AOBESY	Percent of adults that report a BMI \geq 30	
PINACT	Percent of adults reporting no leisure-time physical activity	
TNBIRTH	Birth rate per 1,000 female populations ages 15-19	Social Well-being
HSGRAD	Rate of high school graduation	
CHSIGPA	Percent of children in single-parent households	
VICRIME	Violent crime rate per 100,000 population	
CHFLUN	Percent of children eligible for free lunch	
UNINSURE	Percent of population under age 65 without health insurance	Economic Well-being
UNEMPT	Percent of population age 16+ unemployed	
SOSUPT	Percent of adults that report not getting emotional/social support	
HOPROBM	Percent of households with severe housing problems	

As with the original set of variables, the Kaiser-Meyer-Olkin index of sampling adequacy (0.897) as well as the Barlett's test of sphericity indicated (χ^2 (136) = 7183.695, $p < .001$) satisfied the recommended value (Hair et al., 1998; Kaiser, 1970, 1974). As shown in Table 24, the reduced set of 14 variables also collectively met the necessary MSA value of 0.6 and the Bartlett's test of sphericity indicated that nonzero correlations existed at the significance level of .0001.

Table 24. KMO and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.855
Bartlett's Test of Sphericity	Approx. Chi-Square	4949.874
	df	91
	Sig.	.000

Table 25 contained the correlation matrix along with the MSAs for individual variables and their partial correlations. As indicated in the table, there were many medium to large correlations ($r > 0.30$) in this matrix. Measures of sampling adequacy for each variable also exceeded the threshold value of 0.6, presenting 0.73 to 0.91. Also, most partial correlations were legitimately low. Thus, it showed that the set of 14 variables was appropriate for principal component analysis. Communalities were examined for the 14 variables and extraction of communalities ranged from 0.5 to 0.85, indicating the amount of variance in a variable that is accounted for by the three factors taken together (See Table 27).

Table 25. Correlations, Measures for Sampling Adequacy, and Partial Correlations; Indicators of CWB

		1	2	3	4	5	6	7
1. PPHD	Physical unhealthy days per month	0.861	0.613	0.466	0.594	0.749	0.228	0.322
2. ASMOK	Percent of adults currently smoking	-0.116	0.883	0.605	0.702	0.592	0.203	0.313
3. AOBESY	Percent of adults BMI more than 30	0.03	-0.051	0.866	0.73	0.399	0.083	0.298
4. PINACT	Percent of adults no leisure physical activity	-0.21	-0.31	-0.417	0.811	0.496	0.085	0.309
5. PMHD	Mental unhealthy days per month	-0.516	-0.231	-0.026	0.035	0.861	0.32	0.363
6. HSGRAD*	Percent of not graduated high school	0.048	-0.146	0.063	0.197	-0.122	0.879	0.631
7. CHSIGPA	Percent of children in single family	0.101	-0.127	-0.111	-0.053	0.014	-0.225	0.875
8. CHFLUN	Percent of children for free Lunch	-0.03	0.05	-0.067	-0.163	-0.072	-0.317	-0.28
9. VICRIME	Violent crime per 100,000	0.112	0.107	0.046	-0.076	-0.004	-0.094	-0.42
10. TNBIRTH	Birth rate age 15-19	-0.251	-0.112	-0.162	0.136	0.145	0.099	-0.141
11. UNINSURE	Percent of younger than 65 no health insurance	0.023	0.098	0.105	-0.085	-0.038	-0.159	0.241
12. UNEMPT	Percent of the unemployed age 16+	-0.096	-0.097	-0.06	0.123	-0.082	0.103	-0.064
13. HOPROBM	Household with severe housing problem	-0.049	0.212	0.203	0.227	0.042	0.019	-0.162
14. SOSUPT	Percent of adults no social emotional support	-0.037	0.026	0.028	-0.215	-0.141	0.069	-0.102

Table 25. *continued*

		8	9	10	11	12	13	14
1. PPHD	Physical unhealthy days per month	0.463	0.151	0.574	0.371	0.343	-0.009	0.41
2. ASMOK	Percent of adults currently smoking	0.328	0.111	0.453	0.141	0.15	-0.303	0.195
3. AOBESY	Percent of adults BMI more than 30	0.309	0.138	0.443	0.101	0.067	-0.346	0.139
4. PINACT	Percent of adults no leisure physical activity	0.356	0.153	0.449	0.163	0.078	-0.304	0.252
5. PMHD	Mental unhealthy days per month	0.463	0.196	0.464	0.32	0.352	0.05	0.428
6. HSGRAD*	Percent of not graduated high school	0.676	0.536	0.474	0.463	0.251	0.38	0.355
7. CHSIGPA	Percent of children in single family	0.771	0.749	0.618	0.388	0.4	0.429	0.554
8. CHFLUN	Percent of children for free Lunch	0.91	0.629	0.753	0.641	0.423	0.447	0.572
9. VICRIME	Violent crime per 100,000	-0.054	0.872	0.51	0.32	0.288	0.433	0.438
10. TNBIRTH	Birth rate age 15-19	-0.267	-0.225	0.829	0.692	0.366	0.173	0.491
11. UNINSURE	Percent of younger than 65 no health insurance	-0.191	0.167	-0.556	0.794	0.348	0.403	0.437
12. UNEMPT	Percent of the unemployed age 16+	0.006	0.055	-0.066	0.008	0.902	0.489	0.544
13. HOPROBM	Household with severe housing problem	-0.229	-0.134	0.3	-0.252	-0.272	0.731	0.568
14. SOSUPT	Percent of adults no social emotional support	0.033	0.016	-0.138	0.033	-0.167	-0.432	0.886

Not Note. Diagonal values in bold are MSAs for individual variables; correlations are above diagonal; partial correlations are below the diagonal; and * denotes the variable reversed.

As seen in Table 26, based on the Kaiser's criterion (eigenvalue > 1) and the scree test, a three-component solution was extracted. Factor 1 explained 43.3% of the variance in the variables, while factor 2 accounted for 20.4%, and factor 3 accounted for 8.5% of the variance in the variables. Therefore, the three-extracted factor explained a total of 72.2% of the variance with 14 variables. In addition, factor rotations with promax helped redistribute the variance to make a clearer, more meaningful pattern. For example, the sum of squared loadings before rotation were 6.07, 2.86, and 1.18 respectively. At rotation, the sums of squared loadings were changed to 4.21, 4.88, and 4.31. While a total of 72.2% of the variance was explained by the three factors, the variance in each variable accounted for by each factor was redistributed.

Table 26. Results for the Extraction of Principal Component Analysis

Variables	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	Percent of Variance	Cumulative Percent	Total	Percent of Variance	Cumulative Percent
1	6.07	43.32	43.32	6.07	43.32	43.32
2	2.86	20.43	63.75	2.86	20.43	63.75
3	1.18	8.45	72.20	1.18	8.45	72.20
4	0.85	6.05	78.25			
5	0.67	4.77	83.02			
6	0.48	3.44	86.46			
7	0.39	2.77	89.23			
8	0.32	2.31	91.54			
9	0.26	1.82	93.37			
10	0.24	1.69	95.06			
11	0.23	1.62	96.68			
12	0.20	1.40	98.08			
13	0.15	1.08	99.16			
14	0.12	0.84	100.00			

Note. Extraction method: Principal Component Analysis.

As noted earlier, communalities indicate the amount of variance in a variable accounted for by these three components. The communalities of the 14 variables are presented from 0.5 to 0.85, exceeding the cut-off value of 0.3 (Pallant, 2010). Table 27 displays the variables and factor loadings for the rotated factors, with loadings less than 0.4 (16% of variance) omitted to improve clarity (Stevens, 2002). Factor loadings indicate the correlation between the factor and the original variables. Moreover, squaring the factor loadings provides information about how much variance in a variable is explained by the factor. The higher factor loading a variable has, the more important that variable is to the factor. To aid in the interpretation of these three factors, promax oblique rotation with $k=4$ was performed. The structure matrix is the factor loading matrix, representing the correlations between the variables and the factors. In contrast, the pattern matrix contains loadings that represent the unique contribution of each variable to the factor. As shown in Table 27, variables are ordered and grouped by size of loading to interpret three-extracted factors.

Table 27. Pattern/Structure Matrix Coefficients and Communalities (h^2)

Note. Extraction method: principal component analysis; rotation method: promax with Kaiser normalization; all values less than 0.4 were omitted.

Variables	Pattern Matrix			Structure Matrix			h^2
	1	2	3	1	2	3	
Percent of adults no leisure physical activity	0.89			0.88			0.78
Percent of adults currently smoking	0.86			0.86			0.75
Percent of adults BMI more than 30	0.84			0.81			0.71
Physical unhealthy days per month	0.70		0.51	0.78		0.58	0.79
Mental unhealthy days per month	0.61		0.53	0.71		0.60	0.70
Violent crime per 100,000		0.94			0.89	0.53	0.73
Percent of children in single family		0.86		0.41	0.89	0.66	0.82
Percent of not graduated high school		0.82			0.84		0.63
Percent of children for free Lunch		0.72			0.79	0.43	0.85
Birth rate age 15-19	0.41	0.53		0.58	0.73	0.58	0.72
Percent of the unemployed age 16+			0.88		0.57	0.81	0.65
Percent of adults no social emotional support			0.72			0.80	0.67
Percent of younger than 65 no health insurance	-0.62		0.66		0.52	0.68	0.50
Household with severe housing problem			0.44		0.60	0.64	0.84

As seen in Table 27, it is concluded that the first factor included five variables, displaying pattern coefficients from 0.61 to 0.88. These five variables included adults' inactivity, smoking, obesity, and physical and mental health. Thus, this factor collectively explained individual well-being in the community. On the other hand, the second factor covered social well-being variables. It included five variables regarding violent crime, children in single family, children eligible for free lunch, teen birth rate, and non-graduates from high school. The factor loadings ranged from 0.53 to 0.94, and showed a clear pattern. Lastly, the third component explained the percent of unemployment, no insurance, no social support, and severe housing problems in a community. The factor loadings ranged from 0.44 to 0.88. This factor reflected the economic conditions of a community through the status of peoples' employment, insurances, and social support. Furthermore, households who cannot afford to fix their housing problems might live in poorer economic well-being circumstances. Hence, this component could be named as community economic well-being. The variables with negative definitions had their data values reversed when calculates factor scores later.

As displayed in Table 28, the correlations between these three factors were identified, ranging from 0.25 to 0.57. The correlation coefficient between 'individual well-being (IW)' and 'social well-being (SW)' was 0.25. Also, the correlation coefficient between 'individual well-being (IW)' and 'economic well-being (EW)' was 0.26. On the other hand, 'social well-being (SW)' and 'economic well-being (EW)' were highly inter-correlated, presenting $r = 0.57$. As previously noted, as correlations exceed 0.32, oblique method with promax rotation was employed for the data.

Table 28. Component Correlation Matrix

Component	IW	SW	EW
IW	1.000		
SW	.254	1.000	
EW	.256	.574	1.000

Note. Extraction method: principal component analysis; rotation method: promax with Kaiser normalization.

Lastly, to assess the internal consistency and reliability for each of three factors, Cronbach's alpha was employed. Since the variables used different measurement unit, the alpha based on standardized items that was calculated from the correlations matrix was reported for this study (Falk & Savalei, 2011). The standardized Cronbach's alpha of all three factors ranged from 0.78 to 0.90. Specifically, the reliability for the five variables in 'social well-being' (n = 512) resulted in an alpha of 0.897. Also, the reliability for the five variables in 'individual well-being' (n = 494) indicated an alpha of 0.879. Lastly, with regard to the component 'economic well-being', Cronbach's coefficient alpha based on 513 cases was 0.776. The alpha of 'Economic well-being' was relatively lower than other two components, but it fell into the acceptable range (above 0.6) in exploratory research (Hair et al., 1998). Furthermore, the values of all the correlations between the constructs were not excessively high (> 0.85) or excessively low (< 0.1) (Kline, 2011). The result supported the discriminant validity of the constructs in this research model.

6.3.2 Factor Score

The objective of this section is to create composite scores in order to incorporate factor information as part of a regression analysis in chapter seven. The preceding section identified the dimensionality of the variables, reducing the number of variables. The

dimensionality was supported by the interpretation of each factor, showing high factor loadings of each variable on one factor. Thus, in order to substitute for the original 14 variables, three new variables (factor score for factor 1 to 3) were created based on the result of the PCA. Factor scores are composite variables that provide information about each observation's placement on the factors (Distefano, Shu, & Mîndrilă, 2009), and it is determined by using factor score coefficients. Before calculating factor scores for each of the three factors, the variables with negative definitions had their data values reversed. For example, if the scale was 0 to 30 (e.g., per month data), the value of the variable was reversed by subtracting the original value from 30. PPHD (physically unhealthy days per month) was changed to physically healthy days per month (30 - PPHD). Likewise, all the scores of the variables, except the variable 'HSGRAD (rate of high school graduation),' were reversed. These processes did not influence the aforementioned factor results but make factor scores reverse, retaining all distributional characteristics.

Since regression-based factor scores have been regarded as common practice in the factor analysis literature (Distefano, Zhu, & Mîndrilă, 2009; Gorsuch, 1983), this study used the regression approach to estimating factor scores through the SPSS program. As noted earlier, regression factor scores estimate the location of each individual on the factor, and the computed factor scores are standardized to a mean of zero and a standard deviation of one via principal component analysis. Table 29 shows the coefficients used to calculate the factor scores. Using the coefficients for factor 1, the method of creating factor scores is equivalent to using the equations.

$$F_1 = 0.191 \times \text{the standardized form of the variable PPHD (zPPHD)} + 0.235 \times zASMOK + \dots + 0.004 \times zSOSUPT$$

This method helps maximize validity of estimates in that it amplifies the correlation between factor scores and the corresponding factor (Distefano, Zhu, & Mîndrilă, 2009).

Table 29. Factor Score Coefficient Matrix

		Factor		
		1	2	3
PPHD	Physical unhealthy days per month*	0.191	-0.076	0.199
ASMOK	Percent of adults currently smoking*	0.235	-0.007	-0.009
AOBESY	Percent of adults BMI more than 30*	0.226	0.047	-0.111
PINACT	Percent of adults no leisure physical activity*	0.24	0.013	-0.046
PMHD	Mental unhealthy days per month*	0.167	-0.062	0.203
HSGRAD	Percent of graduated high school	-0.022	0.24	-0.03
CHSIGPA	Percent of children in single family*	0.018	0.249	-0.017
CHFLUN	Percent of children for free Lunch*	0.037	0.205	0.06
VICRIME	Violent crime per 100,000*	-0.036	0.28	-0.073
TNBIRTH	Birth rate age 15-19*	0.102	0.146	0.053
UNINSURE	Percent of younger than 65 no health insurance*	0.003	0.091	0.158
UNEMPT	Percent of the unemployed age 16+*	-0.012	-0.056	0.338
HOPROBM	Household with severe housing problem*	-0.173	0.081	0.246
SOSUPT	Percent of adults no social emotional support*	0.004	0.028	0.269

Note. Extraction method: principal component analysis; rotation method: promax with Kaiser normalization; *denotes the variable reversed to estimate factor scores.

Factor scores are new data for a follow-up analysis. In this study, these three new variables will be used in the multiple regression analyses to investigate the relationship with arts and cultural variables identified in Chapter 4. Data screening processes are needed in order to use factor scores in subsequence analyses. This will be discussed in more detail in the Chapter 7.

6.3.3 Higher-order Factor Analysis

The aim of higher-order factor analysis in this study was to determine whether a higher-order factor could explain a broader construct that encompasses the primary three

factors. Simply put, higher-order factor analysis is a factor analysis based on factor correlations, obtaining a more parsimonious structure. The original factors (first order factors) become the variables for the second factor analysis. In other words, the correlations among the rotated first order factors, which are obtained from the original variables, are used as the correlations for a second factor analysis (Gorsuch, 1997; Wind, Green, & Jain, 1973; Wolff & Preising, 2005). In the way that if factors are inter-correlated, it can be factored with the higher order factors, this procedure may be repeated until a general factor or multiple uncorrelated factors are obtained (Wind, Green, & Jain, 1973; Wolff & Preising, 2005).

So, to enhance interpretability of community well-being, a higher-order factor analysis was employed. In this study, it was necessary that individual, social, and economic well-being factors derive a general factor of 'community well-being' for further analyses in Chapter 7. It was expected that community well-being factor as a second order factor could provide a more parsimonious explanation of the primary three factors. To perform a higher-order factor analysis with principal component extraction, the estimation criteria for extraction of factors were consistent with the criteria of PCA.

First, Kaiser's criterion (eigenvalue > 1) test supported one factor, explaining 58.3% of total variance. The Kaiser-Meyer-Olkin index of sampling adequacy (0.579) barely fell into the acceptable range above 0.5 guided by Kaiser (1970, 1974), but the Barlett's test of sphericity indicated $\chi^2(3) = 234.9909$, $p < .0001$ satisfying the recommended value (Hair et al., 1998; Kaiser, 1970, 1974). Furthermore, communalities were inspected in order to see if the primary factors—IW, SW, and EW—are well explained by the solution. Even though IW (0.33) is slightly lower than SW (0.71) and EW (0.71),

all variables exceeded the cut-off value 0.3 (Pallant, 2010). Next, factor loadings were examined. Since one factor solution was sustained, there were no cross loadings. As seen in Table 30, all three primary factors were loaded by the high order factor, showing factor loadings of 0.57, 0.84, and 0.84. Also, to assess the reliability, Cronbach’s alpha was employed. With regard to the second order factor ‘community well-being,’ Cronbach’s coefficient alpha based on 487 cases was 0.629, presenting above the lower limit of 0.6 in exploratory research (Hair et al, 1998). Thus, it was concluded that these primary factors correlated, and a general construct ‘community well-being’ could be extracted.

Table 30. Correlation of Primary Factors, Higher-order Factor Loadings, and Reliability

	Factor				Cronbach’s alpha
	Primary			Higher-order	
	IW	SW	EW		
Primary factor					
Individual well-being [IW]	1.00	0.25	0.26	0.57	.629
Social well-being [SW]	0.25	1.00	0.57	0.84	
Economic well-being [EW]	0.26	0.57	1.00	0.84	

Note. Extraction method: principal component analysis; 1 components extracted.

6.4 Summary

Principal component analysis (PCA) was conducted based on the various well-being variables, drawn from the County Health Rankings and Roadmaps (CHRR). As a result of PCA, individual well-being, social well-being, and economic well-being were identified. Using principal component extraction with promax ($k=4$) rotation, the results indicated the presence of three factors accounted for a total of 72.2% of the variance of the 14 variables—with ‘individual well-being’ contributing 43.3%, ‘social well-being’

contributing 20.4%, and ‘economic well-being’ contributing 8.5%. Furthermore, Cronbach’s alpha was calculated to assess the internal consistency and reliability for each of the three factors. Standardized Cronbach’s alpha of all three factors ranged from 0.78 to 0.90, falling into the acceptable range (DeVillis, 2003; Hair et al., 1998; Nunnally & Bernstein, 1994; Tavakol & Dennick, 2011).

Based on the result of the PCA, three composite scores were created in order to incorporate factor information as part of a regression analysis for the following chapter. Furthermore, It was expected that a community well-being factor as a second order factor could provide a more parsimonious explanation of the primary three factors. Thus, to enhance the interpretability of community well-being, a higher-order factor analysis was employed.

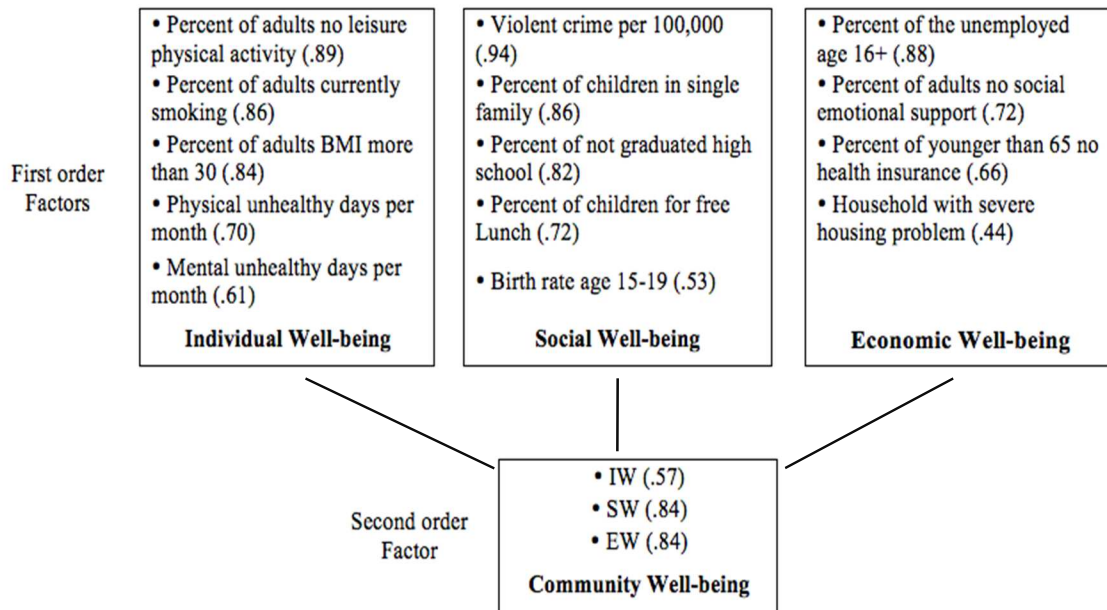


Figure 13. Structure and loading of community well-being items on first and second order factors

As shown in Figure 13, results supported one general factor, ‘community well-being,’ explaining 58.3% of total variance. Three primary factors were loaded by the higher-order factor, showing factor loadings of 0.57 (IW), 0.84 (SW), and 0.84 (EW). Also, Cronbach’s coefficient alpha based on 487 cases was 0.629, presenting above the lower limit of 0.60 for exploratory research (Hair et al, 1998). Thus, it was concluded that a general construct of ‘community well-being’ could be used for a parsimony explanation of ‘individual,’ ‘social,’ and ‘economic’ well-being.

The following chapter will focus more on explaining the relationship between arts and cultural dimensions (see chapter 4), and community well-being. The analysis turns to the central research question: whether the state of arts and cultural assets at the county level can be a consistent predictor of community well-being.

CHAPTER 7

ANALYSIS: ARTS IMPACT ON COMMUNITY WELL-BEING

This chapter presents the result of analyses using main data sets drawing on Local Arts Index and County Health Rankings and Roadmaps as described in previous chapters. This study was originally designed to examine whether arts and cultural assets within a community enhances various dimensions of community well-being. The results of the factor analyses employed in the preceding chapters helped develop the variables as basic constructs, and, in turn, combining these arts and community outcome variables allows this study to present a broad but detailed picture of arts and cultural impact on community well-being. Given that, the purpose of this chapter is to demonstrate the relationship between ABCN (i.e., arts business, consumption and nonprofit) and community well-being outcomes (i.e., individual, social and economic well-being). The statistical procedure applied in this chapter is a multiple regression analysis to examine the proposed model and propositions. Before conducting a multiple regression analysis, an overall sample description with regard to community demographic and economic data is explained. Also, the variables used for this study are briefly introduced for readers' convenience (see details in Chapter 4 and 6). Following these analyses, this chapter explains the result of hypothesized relationship among three dimensions of arts and cultural resources and individual, social, economic, and overall community well-being.

7.1 Data Preparation

7.1.1 Overall Sample Description

To get a full picture of community arts and cultural vitality, it is necessary to scan the overall context of counties that are selected as cases. It includes demographic and economic characteristics, and is listed in the table below. To precisely show the approximate size and population of the counties, the data are divided into seven groups from ‘less than 50,000 to ‘over 2 million.’ As shown in the Table 31, among 518 counties, 35 counties are in the range of less than 50,000 residents, and 94 counties are in the population between 50,000 to 100,000. In particular, 161 counties between 100,000 to 250,000 residents account for over one-third of the cases, while only 12 counties are in the range of over 2 million. Besides, Table 31 shows 101 counties in the population range of 250,000 to 500,000; 88 counties, between 500,000 to 1million; and 27 counties, between 1 million to 2 million.

Table 31. Distrubution of County Populations in 2010

Ranges	Frequency	Percent	Cumulative Percent
Less than 50,000	35	6.8	6.8
50,000 - 100,000	94	18.1	24.9
100,000 - 250,000	161	31.1	56.0
250,000 - 500,000	101	19.5	75.5
500,000 - 1 million	88	17.0	92.5
1 million - 2 million	27	5.2	97.7
Over 2 million	12	2.3	100.0
Total	518	100.0	

Source. Local Arts Index 2012 (Cohen, Cohen, & Kushner, 2012).

Additionally, median households income in this data set covers multiple years ranging from 2005 to 2009. Based on the LAI, household income was divided into ten decile groups from the smallest ten percent (low income) to the largest ten percent (high income). The lowest tenth of these cases were in the first decile group, while the highest ten percent of the cases were in the tenth decile group. Originally, since some counties had same value and were included in the boundaries between deciles, approximately 314 counties (uneven size of groups), which were 10 percent of total number of counties in the U.S, were included in each decile groups (Cohen, Cohen, & Kushner, 2012). The table below shows the median households income of counties based on the selected 518 counties among 3,143 counties in the U.S.

Table 32. Median Households Income 2005-2009

Decile Grouping	Frequency	Percent	Cumulative Percent
1	5	1.0	1.0
2	10	1.9	2.9
3	15	2.9	5.8
4	14	2.7	8.5
5	18	3.5	12.0
6	37	7.1	19.1
7	53	10.2	29.3
8	72	13.9	43.2
9	106	20.5	63.7
10	188	36.3	100.0
Total	518	100.0	

Note. Source from Local Arts Index 2012 (Cohen, Cohen, & Kushner, 2012); Decile grouping presents 10 percent of 3,143 counties in rank order; Decile group 1 means the lowest 10 percent of the median household income.

As shown in Table 32 above, the two high-income groups (group 9 and 10) account for over 50 percent of the counties. On the other hand, the number of counties in relatively low-income groups from 1 to 3 presents less than 10 percent of the data set. The result might be related to what the study is looking for. Through the first phase of the data screening process, the researcher removed counties which have a lot of missing values. Low-income counties might have insufficient arts and cultural resources and peoples' participation, so many arts-related data might not be available to collect in those regions. Therefore, missing data likely eliminates more relatively low economic level counties than high-income counties.

In this section, overall context of counties is presented. Communities can vary in their location, population, and income. Although the 518 counties selected were not distributed evenly across the country, it would not be a problem to conduct a further analysis since they represent more than 68% of the U.S. population (Cohen, Cohen, & Kushner, 2012). In the following section, ABCN variables as independent variables, and community well-being variables as dependent variables are briefly re-introduced.

7.1.2 Variable definition

To employ multiple regression analysis, a set of independent variables (IV) and dependent variables (DV) are constructed based on the result of factor analyses in the preceding chapters (See Table 33). Independent variables represent arts and cultural participation, nonprofit arts organization, arts and cultural programing and employment, and support of the arts, which measure a wide range of the vitality of arts and culture at the local level. On the other hand, community well-being factors that reflect a range of aspects affecting the state of a local community take a role as a dependent variable. Arts

and cultural assets and residents’ consumptions of these assets are embodied in community life, which in turn are linked to community well-being. Therefore, it is expected that this research demonstrates a comprehensive, as well as detailed, illustration of the relationship between community well-being and arts and cultural capacity.

Table 33. Independent Variables and Dependent Variables

ABCN Variables (IVs)	Community Well-being Variables (DVs)
<p>Arts Businesses</p> <ul style="list-style-type: none"> Arts/cultural share of all payroll Arts/cultural share of all employees Creative industry share of all employees Arts/cultural establishments Creative industry businesses Solo artists <p>Arts Consumption</p> <ul style="list-style-type: none"> Photographic equipment expenditures Entertainment admission fees Recorded media expenditures Online music purchase Attending live performance Musical instruments expenditures <p>Arts Nonprofits</p> <ul style="list-style-type: none"> Collections-based nonprofits Humanities/heritage nonprofits State arts agency grants Total nonprofit arts revenue Performing/events nonprofits 	<p>Individual Well-being</p> <ul style="list-style-type: none"> Percent of adults no leisure physical activity Percent of adults currently smoking Percent of adults BMI more than 30 Physical unhealthy days per month Mental unhealthy days per month Percent of adults no leisure physical activity <p>Social Well-being</p> <ul style="list-style-type: none"> Violent crime per 100,000 Percent of children in single family Percent of not graduated high school Percent of children for free Lunch Birth rate age 15-19 <p>Economic Well-being</p> <ul style="list-style-type: none"> Percent of the unemployed age 16+ Percent of adults no social emotional support Percent of younger than 65 no health insurance Household with severe housing problem

In the following section, these 518 counties are subjected to multiple regression analysis in order to investigate the relationship between ABCN and community well-being outcomes.

7.2 Multiple Regression Analysis

Multiple regression analysis, as a form of general linear modeling, reveals the relationship between a single dependent variable (DV) and a set of independent variables (IV). The degree and character of independent variables are objectively assessed in order to examine their individual contribution to the variation of the dependent variable. Also, in addition to producing the optimal prediction, multiple regression analysis provides the magnitude and positive or negative relationship of each independent variable toward the dependent variable. The simultaneous assessment of each independent variable and the dependent variable determines the relative importance of each independent variable (Hair et al., 2005).

Green (1991) suggested rules of thumbs for the size of the sample; $N \geq 50 + 8 \times IV$ (the number of independent variables) are required to test the multiple correlation, and $N \geq 104 + IV$ are necessary to test individual predictors. In applying to the current study, the maximum number of independent variables from all ABCN factors could be 17. Therefore, the size of sample for the multiple regression analysis needs at least 186. The sample of this study is over 500, so it satisfies the minimum requirement.

Also, in the previous chapter, regression diagnostics were tested to meet the practical issues in multiple regression analysis such as outliers, linearity, and multicollinearity (Hair et al., 1998; Tabachnick & Fidell, 2007) (see chapter 4 for details). More specifically, an examination of residual plots was performed to identify the possibility of non-linear relationships and heteroscedasticity, which indicates that the variance of errors differs at different values of the independent variables (Osborne & Waters, 2002). In multiple regression analysis, the variance of errors is expected to be the

same across all level of independent variables. Thus, residuals are expected to be randomly scattered, providing a relatively even distribution.

According to Tabachnick and Fidell (2007), slight heteroscedasticity has little impact on significance tests; however, it still might lead to serious distortion of findings and the possibility of a Type I error, which is the false rejection of a true null hypothesis (Osborne & Waters, 2002). As displayed in Figure 14, scatterplots of residuals examine plots of the standardized residuals by the regression standardized predicted value. Since there are no indications of particular patterns, the findings indicate linearity and homoscedasticity in the multivariate case.

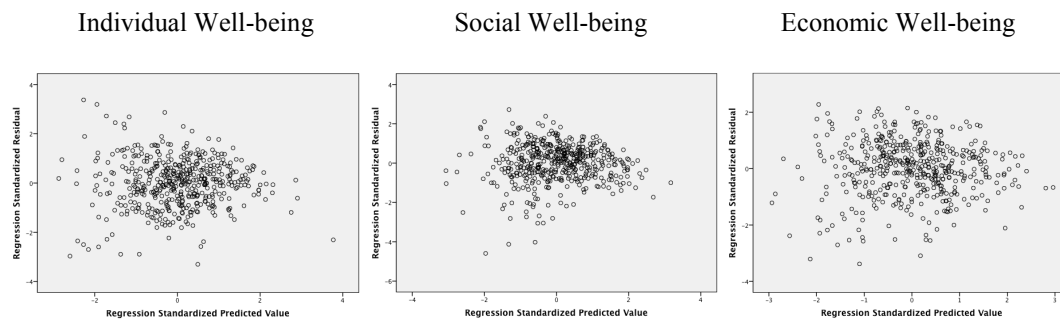


Figure 14. Analyses of Standardized Residuals

Multicollinearity occurs when any single independent variable is highly correlated with a set of other independent variables. In multiple regression analysis, multicollinearity influences larger portions of share variance, and the amount of unique variance for the independent variables is decreased. As multicollinearity increases, the total variance explained by the dependent variable decreases. Furthermore, it substantially affects the estimation of the regression coefficients, and results in regression

coefficients being incorrectly estimated (Hair et al., 1998). Thus, in chapter 4, variables having high correlations (generally 0.90 and above) were removed as the first indication of substantial collinearity.

Table 34 shows correlation values between the six arts business variables. Simkiss, Ebrahim, & Waterston (2009) note the possibility of collinearity should be considered when several variables' correlations exceeded 0.80. However, since these variables were derived from the result of the factor analysis in chapter 4, a certain degree of share variance is expected. Also, Tabachnick and Fidell (2007) stated that “The statistical problems created by singularity and multicollinearity occur at much higher correlations (0.90 and higher)” (p. 90). Given that all correlation values falls within acceptable levels of less than 0.90, there is limited concern of collinearity in the regression model at least among the arts business variables.

Table 34. Pearson Correlation among the Six Arts Business Variables

	1	2	3	4	5
1. Solo artists	1				
2. Arts/cultural share of all establishments	.84***	1			
3. Arts/cultural share of all employees	.62***	.72***	1		
4. Arts/cultural share of all payroll	.71***	.81***	.87***	1	
5. Creative industry share of all employees	.75***	.74***	.66***	.74***	1
6. Creative industry businesses	.85***	.87***	.63***	.70***	.78***

Note. Listwise N = 516; *p <.05; **p <.01; ***p <.001

Table 35. Pearson Correlation among the Six Arts Consumption Variables

	1	2	3	4	5
1. Attending live performance	1				
2. Online/music media purchase	.54***	1			
3. Entertainment admission fees	.64***	.52***	1		
4. Recorded media expenditures	.36***	.43***	.43***	1	
5. Musical instruments expenditures	.46***	.42***	.26***	.51***	1
6. Photographic equipment expenditures	.68***	.57***	.80***	.56***	.50***

Note. Listwise N = 518; *p <.05; **p <.01; ***p <.001

Table 36. Pearson Correlation among the Six Arts Nonprofit Variables

	1	2	3	4
1. Total nonprofit arts revenue	1			
2. State arts agency grants	.62***	1		
3. Collections-based nonprofits	.53***	.44***	1	
4. Humanities/heritage nonprofits	.52***	.43***	.55***	1
5. Performing/events nonprofits	.74***	.52***	.48***	.55***

Note. Listwise N = 514; *p <.05; **p <.01; ***p <.001

As shown in Table 35, although there is a little concern about the magnitude of association between entertainment admission fees and photographic equipment expenditures ($r = .80$), correlation values indicate acceptable levels of less than 0.90 (Simkiss, Ebrahim, & Waterston, 2009; Tabachnick & Fidell, 2007). Also, Table 36 shows that all correlation values are in the acceptable ranges. Thus, based on these correlation results, current analysis has no substantial collinearity among independent

variables in the regression model. Furthermore, as a result of the inspection of correlation values of all 17 variables, all correlation values are in the acceptable ranges.

In addition to the correlation check, VIF (Variance Inflation Factor) and tolerance values were calculated to check potential multicollinearity between independent variables in the regression model based on the cut-off value of $VIF < 10.0$ (Chatterjee, Hadi, & Price, 2000; Hair et al., 1998). The VIF is a measure of the degree to which each independent variable is explained by the other independent variables in the analysis; it directly affects the variance of the regression coefficient related to the independent variable (Hair et al., 1998; O'Brien, 2007). On the other hand, tolerance (tolerance = $1/VIF$) is the amount of variability of the independent variable that is not explained by the other independent variables. Therefore, extremely small tolerance values indicate high collinearity. As a result of an evaluation of VIF and tolerance, all VIF are below 10 which corresponds to a tolerance value above 0.10 in the regression model.

7.3 Research Findings

The purpose of this section is to report the results of empirical tests of the propositions. After checking the above regression diagnostics, a standard multiple regression was conducted to test propositions and illustrate the degree to which each arts and cultural variable explains community well-being. The first analysis concerned Proposition 1: *With an abundant presence of arts and cultural assets within a community, community individual well-being will be positively enhanced* (see Figure 15).

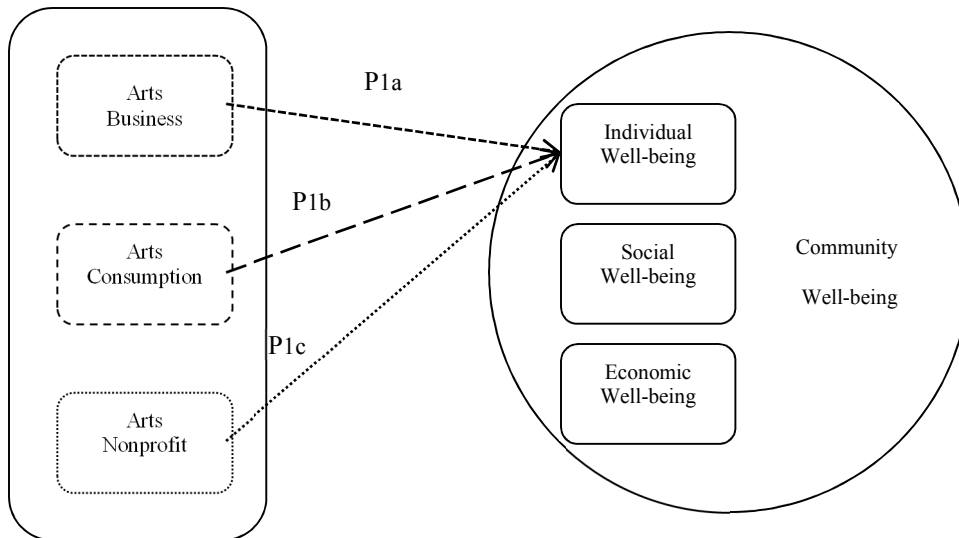


Figure 15. An expanded model of arts and community individual well-being

The three regression models proposed below were statistically significant, indicating that arts business, arts consumption, and arts nonprofit respectively influence community individual well-being. The following propositions further concern whether specific variables within these arts business, arts consumption, and arts nonprofit factors could explain community individual well-being.

Proposition 1a: With an abundant presence of arts and cultural business factors within a community, community individual well-being will be positively enhanced.

Concerning proposition 1a, a standard multiple regression was performed between community individual well-being as the dependent variable and solo artist, arts/cultural establishments, arts/cultural share of all employees, arts/cultural share of all payroll, creative industry share of all employees, and creative industry businesses as independent variables. The result indicates that the multiple correlation coefficient (R), using all the variables simultaneously is 0.73, and adjusted R^2 is 0.52 which means that 52% of the

variance in community individual well-being can be explained from six arts business-related variables. Also, the combination of these variables significantly predicts the community individual well-being, indicating $F(6,478) = 88.68, p < .001$. Furthermore, as presented in Table 37, solo artists, arts/cultural share of all employees, arts/cultural share of all payroll, and creative industry businesses are significantly contributing to the prediction when all variables are entered. More specifically, the analysis revealed that the number of solo artists variable ($\beta = 0.45, t = 6.75, p = 0.00$) and the number of creative industry businesses ($\beta = 0.37, t = 4.95, p = 0.00$) were the influential variables, showing a positive relationship with community individual well-being.

In addition, individual well-being outcomes are likely to increase when a portion of employees in the arts/cultural field is increased. However, the ratio of arts and cultural payroll to all payrolls shows a negative relationship with individual well-being outcomes. In spite of increasing arts employment, 34 percent of artists are self-employed (“NEA Announces”, 2011). Furthermore, according to the Bureau of Labor Statistics (BLS) 2014 data, even though arts-related occupations’ median wages (\$45,180) are higher than the median for the whole labor force (\$35,540), arts-related occupations as a whole earn far less than the median wage of the professional category such as educational, legal, and engineering-related occupations (\$70,487), to which they can belong. In this sense, larger arts and cultural share of all payroll might imply that a community has relatively smaller portion of payroll from other workforces, which might earn higher wage, or might be directly related to community individual well-being.

Calculating semipartial correlations (sr^2) provides insight in assessing the relative importance of independent variables (Nathans, Oswald, & Nimon, 2012). In a semipartial

correlation, the contribution of other independent variables is taken out of only the independent variable. Thus, it tells us a unique contribution of an independent variable to R^2 (Tabachnick & Fidell, 2007). Specifically, it indicates how much R^2 decreases if that variable is removed from the regression equation. This statistic is also termed ‘unique effects’ of commonality coefficients. Commonality coefficients explain how independent variables operate together in a given regression model. Furthermore, it helps identifying the relative importance of independent variables with regard to the dependent variable (Nathans, Oswald, & Nimon, 2012; Nimon & Oswald, 2013). Thus, rather than heavy reliance on beta weights to interpret regression results, semipartial correlations (sr^2) of significant variables are valuable to see the detailed picture about how independent variables uniquely contribute to the regression model.

As indicated by the squared semipartial correlations in Table 37, it is noted that the sum for the four significant IVs ($0.045 + 0.014 + 0.007 + 0.024 = 0.09$), which uniquely contribute to R^2 is 0.09, while shared variability represents 0.43, which means the variance that all variables jointly contribute to R^2 . Additionally, arts/cultural establishments ($r = 0.61$) and creative industry share of all employees ($r = 0.56$) show relatively high correlation with community individual well-being, but do not contribute significantly to county’s individual well-being. In this sense, the relationship might be mediated by the relationship between the dependent variable and other independent variables in the regression model, although the bivariate correlation between community individual well-being and the above two variables were statistically different from zero using a post hoc test suggested by Tabachnick and Fidell (2007), presenting $F(6,478) = 47.71, p < .01$, and $F(6,478) = 35.46, p < .01$.

Table 37. Model 1: Arts Business Variables on Community Individual Well-being

Arts Business Variable (N=485)	IW (<i>r</i>)	B	β	sr^2 (unique)
Solo artists	.70	.85	0.45***	.045
Arts/cultural share of all establishments	.61	-.16	-0.09	
Arts/cultural share of all employees	.50	2.65	0.25***	.014
Arts/cultural share of all payroll	.50	-2.41	-0.21**	.007
Creative industry share of all employees	.56	-.16	-0.01	
Creative industry businesses	.68	.92	0.37***	.024
Constant		-8.80		
Multiple R	.73			
R ²	.52			
Adjusted R ²	.52			
F test statistic, significance	$F(6,478) = 88.68$ $p < .001$			

Note: *r* denotes correlation coefficient between each IVs and DV; B denotes unstandardized coefficients; β (Beta) denotes standardized coefficients; sr^2 denotes unique contribution to the DV; * $p < .05$; ** $p < .01$; *** $p < .001$.

Proposition 1b: Peoples' arts and cultural consumptions and experiences have a positive impact on community individual well-being outcomes.

Concerning proposition 1b, a standard multiple regression was tested to illustrate the relationship between community individual well-being as the dependent variable and six independent variables with respect to peoples' arts consumption such as adult population share of attending live performing arts and expenditure on entertainment admission fees. Among independent variables, there were no interrelations in excess of .90, and all VIF were less than the cut-off value of 10. Thus, there is no evidence of multicollinearity. The result indicates that the multiple correlation coefficient (*R*), using all the variables simultaneously is 0.75, and adjusted R² is 0.56 with $F(6,480) = 104.80$,

$p < .001$. In other words, 56% of the variance in community individual well-being can be explained from six arts consumption-related variables when these are entered simultaneously in the regression model. This analysis summarizes that attending live performance, online music purchase, expenditure on entertainment admission fees and recorded media contribute significantly to predicting positive community individual well-being.

Table 38. Model 2: Arts Consumption Variables on Community Individual Well-being

Arts Consumption Variable (N=487)	IW (<i>r</i>)	B	β	sr^2 (unique)
Attending live performance	.66	5.08	0.43***	.086
Online/music media purchase	.51	3.02	0.12**	.009
Entertainment admission fees	.59	.05	0.24***	.018
Recorded media expenditures	.51	.03	0.28***	.048
Musical instruments expenditures	.37	.00	0.01	
Photographic equipment expenditures	.58	-.01	-0.11	
Constant		-3.74		
Multiple R	.75			
R ²	.57			
Adjusted R ²	.56			
F test statistic, significance	$F(6,480) = 104.80$ $p < .001$			

Note: *r* denotes correlation coefficient between each IVs and DV; B denotes unstandardized coefficients; β (Beta) denotes standardized coefficients; sr^2 denotes unique contribution to the DV; * $p < .05$; ** $p < .01$; *** $p < .001$.

More specifically, the beta weights, presented in Table 38, suggest that adults' population share of attending live performance contributes most to explaining community individual well-being, indicating $\beta = 0.43$, $t = 9.78$, $p = 0.00$, and that purchasing online

and music media, expenditures on entertainment admission fees, and recorded media expenditures also positively contribute to the prediction of community individual well-being. Also, it is noted that the sum for the four significant independent variables which uniquely contribute to R^2 is 0.16, while shared variability of the six independent variables in combination represents 0.41. Although expenditures on photographic equipment ($r = .58$) show relatively high correlation with community individual well-being, but do not present statistical significance when all other independent variables are held constant. The overall result provides a considerable support for the proposition 1b.

Proposition 1c: With an abundant presence of arts and cultural nonprofit factors within a community, community individual well-being will be positively enhanced.

The result reveals that this combination of arts nonprofit variables—total nonprofit arts revenue, state arts agency grants, collection-based nonprofits, humanities/heritage nonprofits, and performing/events nonprofits—significantly predict community individual well-being, $F(5,477) = 63.83, p < .001$, with four of five variables showing statistically significant contribution to regression. The multiple correlation coefficient (R), using all the variables simultaneously, is 0.63, and adjusted R^2 is 0.40. Thus, 40% of the variance in community individual well-being can be predicted from the five arts nonprofit variables when these are entered simultaneously.

Table 39. Model 3: Arts Nonprofit Variables on Community Individual Well-being

Arts Nonprofit Variable (N=483)	IW (<i>r</i>)	B	β	sr^2 (unique)
Total nonprofit arts revenue	.46	.21	0.28***	.027
State arts agency grants	.13	-.33	-0.31***	.056
Collections-based nonprofits	.18	-.28	-0.17***	.017
Humanities/heritage nonprofits	.31	.12	0.07	
Performing/events nonprofits	.57	.87	0.57***	.125
Constant		-1.30		
Multiple R	.63			
R ²	.40			
Adjusted R ²	.40			
F test statistic, significance	$F(5,477) = 63.83$ $p < .001$			

Note: *r* denotes correlation coefficient between each IVs and DV; B denotes unstandardized coefficients; β (Beta) denotes standardized coefficients; sr^2 denotes unique contribution to the DV; * $p < .05$; ** $p < .01$; *** $p < .001$.

As shown in Table 39, the analysis revealed that the number of performing/events nonprofits variable ($\beta = 0.57$, $t = 9.99$, $p = 0.00$) was the most influential variable, showing a positive relationship with community individual well-being. Also, as total nonprofit arts revenue increases ($\beta = 0.28$, $t = 4.64$, $p = 0.00$), community individual well-being increases. Between these two variables, however, the number of performing/events nonprofits is relatively important to increasing the community individual well-being outcome, as indicated by the squared semipartial correlations (sr^2). Contrary to my expectation, even though state arts agency grants and collection-based nonprofits variables are statistically influential as predictors in the regression model ($\beta = -0.31$, $t = -6.65$, $p = .00$, and $\beta = -0.17$, $t = -3.73$, $p = 0.00$.), they have a negative relationship with community individual well-being. However, these two variables exhibit

lower correlation ($r = .13$, and $r = .18$) with the community individual well-being than other variables. Given this low correlation with the dependent variable, it might be unlikely to contribute meaningfully to the result.

Next, concerning Proposition 2: *With an abundant presence of arts and cultural assets within a community, community social well-being will be positively enhanced* (see Figure 16), three regression models proposed below were statistically significant, indicating that arts business, arts consumption, and arts nonprofit respectively influence community social well-being. The following propositions further explain whether specific variables within these arts business, arts consumption, and arts nonprofit factors contribute to community social well-being.

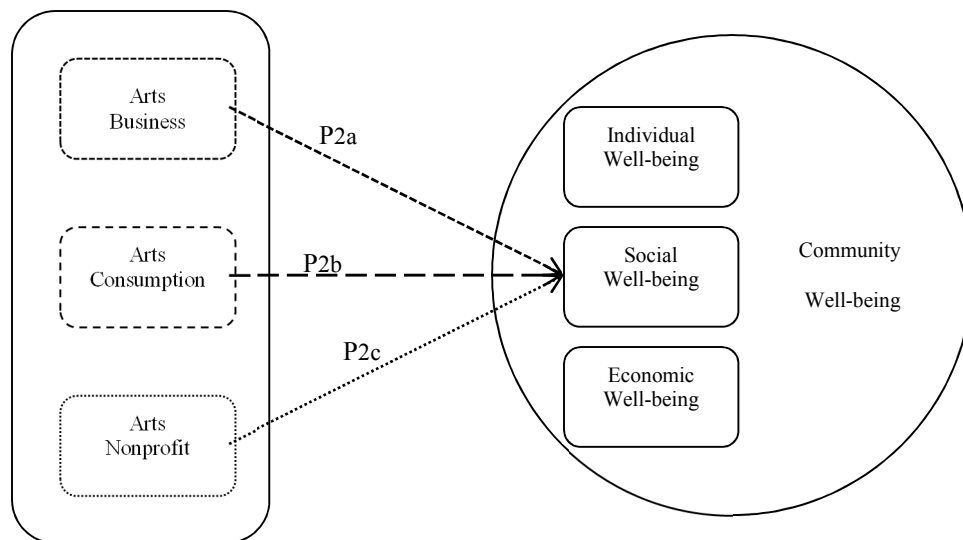


Figure 16. An expanded model of arts and community social well-being

Proposition 2a: *With an abundant presence of arts and cultural business factors within a community, community social well-being will be positively enhanced.*

The result reveals that this combination of the six arts business variables significantly predict community social well-being, $F(6,478) = 16.01$, $p < .001$, but only

three variables—arts/cultural establishments, arts/cultural share of all payroll, and creative industry share of all employees—show statistically significant contribution to regression respectively. The multiple correlation coefficient (R), using all the variables simultaneously, is 0.41, and adjusted R^2 is 0.16. In other words, 16% of the variance in community social well-being can be predicted from the six arts business related variables when entered simultaneously.

Table 40. Model 4: Arts Business Variables on Community Social Well-being

Arts Business Variable (N=485)	SW (r)	B	β	sr^2 (unique)
Solo artists	-.00	.05	0.03	
Arts/cultural share of all establishments	.01	.84	0.45***	.031
Arts/cultural share of all employees	-.14	1.67	0.15	
Arts/cultural share of all payroll	-.22	-8.15	-0.71***	.082
Creative industry share of all employees	-.13	-3.46	-0.19*	.011
Creative industry businesses	.04	.40	0.16	
Constant		-4.90		
Multiple R	.41			
R^2	.17			
Adjusted R^2	.16			
F test statistic, significance	$F(6,478) = 16.01$ $p < .001$			

Note: r denotes correlation coefficient between each IVs and DV; B denotes unstandardized coefficients; β (Beta) denotes standardized coefficients; sr^2 denotes unique contribution to the DV; * $p < .05$; ** $p < .01$; *** $p < .001$.

As shown in Table 40, the analysis reveals that the proportion of arts and cultural industries of all establishments in a county ($\beta = 0.45$, $t = 4.19$, $p = 0.00$) positively influences the community social well-being outcome. It means that if a community has relatively many arts and cultural industries, it would likely enhance community social

well-being. On the other hand, creative industry share of all employees ($\beta = -0.19$, $t = -2.54$, $p < 0.05$) and arts/cultural share of all payroll ($\beta = -0.71$, $t = -6.91$, $p = 0.00$) are statistically influential as predictors in the regression model, but showing a negative relationship with community social well-being.

Similar to the result of Model 1 (Arts businesses on community individual well-being), it can be understood that many people working in arts-centric businesses are self-employed with relatively low wages. Thus, a community with enhanced social well-being outcome might entail more portions of employees and payroll which are not related to arts and culture. Furthermore, contrary to the result of community individual well-being, the solo artists variable is barely contributing to community social well-being. As mentioned before, the squared semipartial correlation indicates how much variance an independent variable contributes to a regression equation that is not shared with other independent variables. As a result, it is noted that arts/cultural share of all payroll variable contributes the most uniquely to R^2 ($sr^2 = .08$), and the sum of unique effects on community social well-being of three significant independent variables is 0.12. Given that, it can be concluded that the findings do not support the proposition that arts and cultural businesses are associated positively with community social well-being.

Proposition 2b: Peoples' arts and cultural consumptions and experiences have a positive impact on community social well-being outcomes.

Concerning proposition 2b, the result illustrates the relationship between community social well-being as the dependent variable and six independent variables with respect to peoples' arts consumption. The multiple correlation coefficient (R), using all the variables simultaneously, is 0.63, and adjusted R^2 is 0.39 which indicates 39% of

the variance in community social well-being can be predicted from six arts consumption related variables when these are entered simultaneously in the regression. R for regression is significantly different from zero, showing $F(6,480) = 53.01, p < 0.001$. This analysis summarizes that expenditure on photographic equipment contributes significantly to predicting community social well-being (See Table 41).

More specifically, the beta weights, presented in Table 41, suggest that expenditures on photographic equipment contributes most to explaining community social well-being ($\beta = 0.94, t = 13.62, p = 0.00$), and indicate adults population share of attending live performance, and expenditures on entertainment admission negatively contribute to the prediction of community social well-being. However, as shown Table 41, it is noted that unique variances of adult population share of attending live performance, and expenditures on entertainment admission, are relatively small, while expenditures on photographic equipment uniquely explains 23% of the R-squared value. Thus, although it can be concluded that the result partially supports the proposition, expenditures on photographic equipment is the most influential variable, which shows a strongly positive association with community social well-being.

Table 41. Model 5: Arts Consumption Variables on Community Social Well-being

Arts Consumption Variable (N=487)	SW (<i>r</i>)	B	β	<i>sr</i> ² (unique)
Attending live performance	.25	-2.45	-0.21***	.020
Online/music media purchase	.27	.34	0.01	
Entertainment admission fees	.34	-.05	-0.24***	.019
Recorded media expenditures	.28	-.01	-0.06	
Musical instruments expenditures	.26	.00	-0.02	
Photographic equipment expenditures	.58	.12	0.94***	.232
Constant		-2.57		
Multiple R	.63			
R ²	.39			
Adjusted R ²	.39			
F test statistic, significance	$F(6,480) = 53.01$ $p < .001$			

Note: *r* denotes correlation coefficient between each IVs and DV; B denotes unstandardized coefficients; β (Beta) denotes standardized coefficients; *sr*² denotes unique contribution to the DV; * $p < .05$; ** $p < .01$; *** $p < .001$.

Proposition 2c: With an abundant presence of arts and cultural nonprofit factors within a community, community social well-being will be positively enhanced.

The result of the model 6 reveals that this combination of arts nonprofit variables significantly predict community social well-being, $F(5,477) = 32.70$, $p < 0.001$, with all five variables showing statistically significant contributions to the regression model. The multiple correlation coefficient (*R*), using all the variables simultaneously, is 0.51, and adjusted *R*² is 0.25. It means that 25% of the variance in community social well-being can be predicted from the five arts nonprofit variables when other variables are held constant. As presented in Table 42, the analysis revealed that as variables related to number of arts and culture-centric nonprofits increases, community social well-being

outcomes are positively enhanced. The number of humanities/heritage nonprofits ($\beta = 0.37$, $t = 7.04$, $p = 0.00$) is the relatively more important variable, which shows a positive relationship with community social well-being. Also, performing/events nonprofits ($\beta = 0.19$, $t = 3.02$, $p < 0.01$) and collections-based nonprofits ($\beta = 0.11$, $t = 2.20$, $p < 0.05$) are positively associated with community social well-being.

Table 42. Model 6: Arts Nonprofit Variables on Community Social Well-being

Arts Nonprofit Variable (N=483)	SW (<i>r</i>)	<i>B</i>	β	<i>sr</i> ² (unique)
Total nonprofit arts revenue	-.22	-.30	-0.39***	.052
State arts agency grants	-.29	-.39	-0.36***	.076
Collections-based nonprofits	.05	.18	0.11*	.008
Humanities/heritage nonprofits	.17	.66	0.37***	.077
Performing/events nonprofits	-.03	.30	0.19**	.014
Constant		.30		
Multiple R	.51			
R ²	.26			
Adjusted R ²	.25			
F test statistic, significance	<i>F</i> (5,477) = 32.70 <i>p</i> < .001			

Note: *r* denotes correlation coefficient between each IVs and DV; *B* denotes unstandardized coefficients; β (Beta) denotes standardized coefficients; *sr*² denotes unique contribution to the DV; **p* < .05; ***p* < .01; ****p* < .001.

However, contrary to my assumption that arts revenue and state arts agency grants will have a positive impact on community social well-being, these two variables indicate statistically significant negative relationship with community social well-being, presenting $\beta = -0.39$, $t = -5.76$, $p = 0.00$, and $\beta = -0.36$, $t = -6.95$, $p = 0.00$. It can be understood that even though abundant nonprofit organizations in a county help increase

community social well-being, arts revenue per capita is relatively low in a county that has a high level of social well-being. Also, state arts agency grants might be frequently allocated when a community has relatively low chance to find financial resources serving their residents. In this regard, arts revenue and grants, paradoxically, are not positively related to social community well-being in this model. Furthermore, the squared semipartial correlations in Table 42 show that the sum for the five significant independent variables, which uniquely contribute to R^2 is 0.23, while shared variability represents 0.03. It suggests that these variables contribute more to a regression effect when functioning independently rather than operating in combination with other variables.

Concerning Proposition 3: *With an abundant presence of arts and cultural assets within a community, community economic well-being will be positively enhanced* (see Figure 17), three regression models proposed below were statistically significant, indicating that arts business, arts consumption, and arts nonprofits respectively influence community economic well-being. The following propositions further explain how individual variables within these arts business, arts consumption, and arts nonprofit factors could predict community economic well-being.

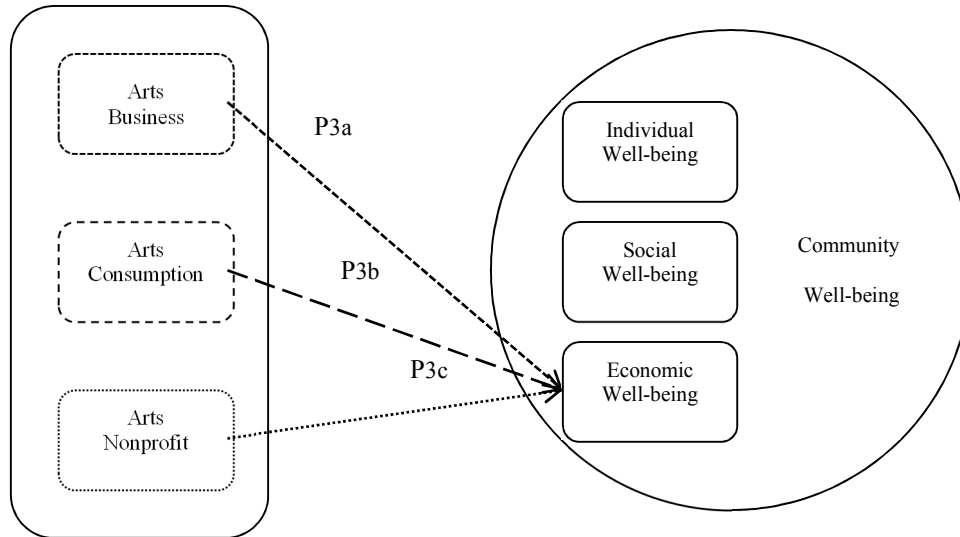


Figure 17. An expanded model of arts and community economic well-being

Proposition 3a: With an abundant presence of arts and cultural business factors within a community, community economic well-being will be positively enhanced.

Concerning proposition 3a, the result illustrates the relationship between community economic well-being as the dependent variable and six independent variables with respect to arts business. The multiple correlation coefficient (R), using all the variables simultaneously, is 0.45, and adjusted R^2 is 0.19 which indicates 19% of the variance in community economic well-being can be predicted from six arts business-related variables when these are entered simultaneously in the regression. R for regression is significantly different from zero, showing $F(6,478) = 19.85, p < 0.001$. Overall, this analysis summarizes that solo artists, arts/cultural establishments, and creative industries businesses contribute significantly to predicting positive community economic well-being. However, the variable arts/cultural share of all payroll shows the negative relationship with community economic well-being, while it is most influential as a predictor in the regression model (See Table 43).

Table 43. Model 7: Arts Business Variables on Community Economic Well-being

Arts Business Variable (N=485)	EW (<i>r</i>)	B	β	<i>sr</i> ² (unique)
Solo artists	.22	.36	0.19*	.008
Arts/cultural share of all establishments	.19	.72	0.38***	.022
Arts/cultural share of all employees	-.03	.11	0.01	
Arts/cultural share of all payroll	-.06	-6.72	-0.58***	.057
Creative industry share of all employees	.06	-2.43	-0.13	
Creative industry businesses	.24	.60	0.24*	.010
Constant		-6.22		
Multiple R	.45			
R ²	.20			
Adjusted R ²	.19			
F test statistic, significance	<i>F</i> (6,478) = 19.85 <i>p</i> < .001			

Note: *r* denotes correlation coefficient between each IVs and DV; B denotes unstandardized coefficients; β (Beta) denotes standardized coefficients; *sr*² denotes unique contribution to the DV; **p* < .05; ***p* < .01; ****p* < .001.

More specifically, the analysis revealed that arts/cultural share of all establishments ($\beta = 0.38$, *t* = 3.67, *p* = 0.00) is the most positive influential variable, followed by creative industry businesses ($\beta = 0.24$, *t* = 2.49, *p* < 0.05) and the number of solo artists ($\beta = 0.19$, *t* = 2.21, *p* < 0.05). Furthermore, arts/cultural share of all payroll is statistically influential as a predictor in the regression model, presenting $\beta = -0.58$, *t* = -5.81, *p* = 0.00, although its negative relationship with community economic well-being does not support the proposition. Similar to the proposition 1a (Arts businesses on individual well-being), it might be a reason that many people in arts and culture-centric businesses are self-employed and earn far less than the wage of other professional jobs. Furthermore, this variable seems to be the most influential variable in this model.

However, it shows very low correlation ($r = -0.06$) compared with the other community economic well-being variables. Given these low correlations with the dependent variable, it might be unlikely to contribute meaningfully to the result. In this regard, it can be concluded that the result mostly supports the proposition that community economic well-being is positively enhanced when arts and cultural business factors are abundant in a community.

Proposition 3b: Peoples' arts and cultural consumptions and experiences have a positive impact on community economic well-being outcomes.

Concerning proposition 3b, the regression model demonstrates the relationship between community economic well-being as the dependent variable and six independent variables with respect to peoples' arts consumption. The result indicates that the multiple correlation coefficient (R), using all the variables simultaneously, is 0.74, and adjusted R^2 is 0.54 with $F(6,480) = 95.86, p < 0.001$. In other words, 54% of the variance in community economic well-being can be explained from six arts consumption-related variables when these are entered simultaneously in the regression. This analysis summarizes that all the six variables contribute significantly to predicting community economic well-being (See Table 44).

More specifically, as shown in Table 44, the standardized coefficients indicate that expenditures on photographic equipment contributes most to explaining community economic well-being, presenting $\beta = 1.01, t = 16.78, p = 0.00$, and that purchasing online and music media ($\beta = 0.11, t = 2.88, p = 0.00$), and expenditures on musical instruments ($\beta = 0.17, t = 4.20, p = 0.00$) also positively contribute to the prediction of community economic well-being. On the other hand, adult population share of attending live

performances ($\beta = -0.21$, $t = -4.67$, $p = 0.00$), expenditures on entertainment admission ($\beta = -0.37$, $t = -6.75$, $p = 0.00$), as well as expenditures on recorded media ($\beta = -0.14$, $t = -3.60$, $p = 0.00$) are not positively associated with community economic well-being. An interesting point here is that all three variables that are positively related with community economic well-being may be viewed as hobbies that need at least more active involvement and engagement in arts and culture than buying tickets to theatres and other events. Given that, this model implies that if active involvements in arts and culture are associated with peoples' daily basic activities such as playing musical instruments and taking a picture, peoples' consumptions and expenditures on arts and culture can enhance community economic well-being.

Table 44. Model 8: Arts Consumption Variables on Community Economic Well-being

Arts Consumption Variable (N=487)	EW (<i>r</i>)	<i>B</i>	β	<i>sr</i> ² (unique)
Attending live performance	.31	-2.48	-0.21***	.021
Online/music media purchase	.37	2.71	0.11**	.008
Entertainment admission fees	.32	-.08	-0.37***	.043
Recorded media expenditures	.32	-.01	-0.14***	.012
Musical instruments expenditures	.45	.03	0.17***	.017
Photographic equipment expenditures	.65	.12	1.01***	.267
Constant		-2.57		
Multiple R	.74			
R ²	.55			
Adjusted R ²	.54			
F test statistic, significance	$F(6,480) = 95.86$ $p < .001$			

Note: *r* denotes correlation coefficient between each IVs and DV; *B* denotes unstandardized coefficients; β (Beta) denotes standardized coefficients; *sr*² denotes unique contribution to the DV; * $p < .05$; ** $p < .01$; *** $p < .001$.

In addition, the six significant independent variables which uniquely contribute to R^2 is 0.37, and among them expenditures on photographic equipment variable is the most important predictor, contributing uniquely to 27% of variance of the community economic well-being accounted for by R-squared. In sum, the result partially supports the proposition that community economic well-being is positively enhanced when arts and cultural business factors are abundant in a community.

Proposition 3c: With an abundant presence of arts and cultural nonprofit factors within a community, community economic well-being will be positively enhanced.

The result indicates that this combination of arts nonprofit variables significantly predicts community economic well-being, $F(5,477) = 11.56, p < 0.001$, showing similar patterns with proposition 1c (Arts nonprofits on individual well-being) and proposition 2c (Arts nonprofits on social well-being). The multiple correlation coefficient (R), using all the variables simultaneously, is 0.33, and adjusted R^2 is 0.10. In other words, 10% of the variance in community economic well-being can be predicted from the five arts nonprofit variables when these are entered simultaneously. Table 45 reveals that as variables related to the number of arts-centric nonprofits increases, community economic well-being outcomes are positively enhanced. The number of humanities/heritage nonprofits ($\beta = 0.29, t = 5.01, p = 0.00$) is more important, followed by performing/events nonprofits ($\beta = 0.25, t = 3.58, p = 0.00$).

Table 45. Model 9: Arts Nonprofit Variables on Community Economic Well-being

Arts Nonprofit Variable (N=483)	EW (<i>r</i>)	<i>B</i>	β	<i>sr</i> ² (unique)
Total nonprofit arts revenue	.03	-.14	-0.18*	.011
State arts agency grants	-.05	-.19	-0.18**	.018
Collections-based nonprofits	.08	-.06	-0.04	
Humanities/heritage nonprofits	.23	.66	0.29***	.027
Performing/events nonprofits	.16	.30	0.25***	.024
Constant		-.25		
Multiple R	.33			
R ²	.11			
Adjusted R ²	.10			
F test statistic, significance	<i>F</i> (5,477) = 11.56 <i>p</i> < .001			

Note: *r* denotes correlation coefficient between each IVs and DV; *B* denotes unstandardized coefficients; β (Beta) denotes standardized coefficients; *sr*² denotes unique contribution to the DV; **p* < .05; ***p* < .01; ****p* < .001.

Consistent with previous results, arts revenue and state arts agency grants indicate statistically significant negative relationship with the community economic well-being outcomes, presenting $\beta = -0.18$, $t = -2.48$, $p < 0.05$, and $\beta = -0.18$, $t = -3.08$, $p < 0.01$. However, it might be unlikely to contribute meaningfully to the result, since these two variables show virtually very low correlation ($r = 0.03$, and $r = -0.05$) with the community economic well-being. Furthermore, as presented in Table 45, the sum for the four significant independent variables, which uniquely contribute to R² is 0.10. Hence, this suggests that these variables contribute more to a regression effect when functioning independently rather than operating in combination with other variables.

The last analysis concerns Proposition 4: *With an abundant presence of arts and cultural assets within a community, overall community well-being will be positively enhanced* (see Figure 18). Overall, three regression models proposed below were statistically significant, indicating that arts business, arts consumption, and arts nonprofits respectively influence overall community well-being. The following propositions further explore whether specific variables within these arts business, arts consumption, and arts nonprofit factors explain overall community well-being.

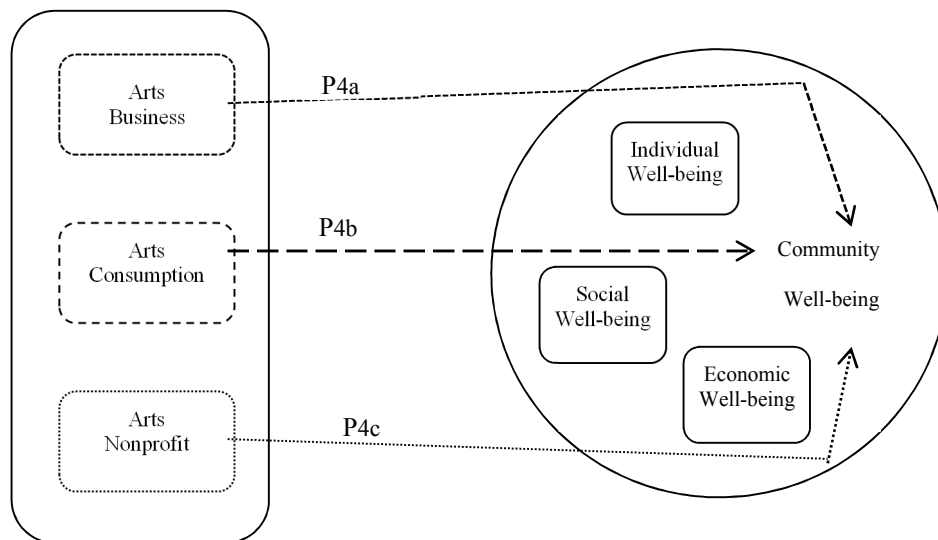


Figure 18. An expanded model of arts and overall community well-being

Proposition 4a: *With an abundant presence of arts and cultural business factors within a community, overall community well-being will be positively enhanced.*

Overall, the result reveal that this combination of arts business variables significantly predict overall community well-being, $F(6,478) = 30.60, p < 0.001$, with all six variables showing statistically significant contribution to the regression model. The multiple correlation coefficient (R), using all the variables simultaneously, is 0.53, and

adjusted R² is 0.27 which means 27% of the variance in overall community well-being can be predicted from the six arts business variables when these are entered simultaneously.

As displayed in Table 46, the analysis reveals that four of six variables positively influence the overall community well-being outcome. More specifically, overall community well-being is enhanced as the four variables increase: the proportion of arts/cultural industries of all establishments ($\beta = 0.37$, $t = 3.74$, $p = 0.00$), creative industry businesses ($\beta = 0.32$, $t = 3.41$, $p < 0.01$), arts/cultural share of all employees ($\beta = 0.16$, $t = 2.04$, $p < 0.05$), and solo artists ($\beta = 0.25$, $t = 3.07$, $p < 0.01$).

Table 46. Model 10: Arts Business Variables on Overall Community Well-being

Arts Business Variable (N=485)	CW (<i>r</i>)	<i>B</i>	β	<i>sr</i> ² (unique)
Solo artists	.33	.48	0.25**	.014
Arts/cultural share of all establishments	.30	.70	0.37***	.021
Arts/cultural share of all employees	.09	1.73	0.16*	.006
Arts/cultural share of all payroll	.03	-7.96	-0.69***	.079
Creative industry share of all employees	.15	-2.89	-0.16*	.008
Creative industry businesses	.36	.78	0.32**	.018
Constant		-7.69		
Multiple R	.53			
R ²	.28			
Adjusted R ²	.27			
F test statistic, significance	$F(6,478) = 30.60$ $p < .001$			

Note: *r* denotes correlation coefficient between each IVs and DV; *B* denotes unstandardized coefficients; β (Beta) denotes standardized coefficients; *sr*² denotes unique contribution to the DV; * $p < .05$; ** $p < .01$; *** $p < .001$.

On the other hand, arts/cultural share of all payroll ($\beta = -0.69$, $t = -7.24$, $p = 0.00$), and creative industry share of all employees ($\beta = -0.16$, $t = -2.27$, $p < 0.05$) show negative relationships with overall community well-being. Even though arts/cultural share of all payroll variable is a statistically influential predictor in the regression model, this variable shows very low correlation ($r = 0.03$) with the overall community well-being. Given its low correlation with the dependent variable, it is unlikely to contribute meaningfully to the prediction of community well-being. All things considered, the result mostly supports the proposition that overall community well-being is positively enhanced with abundant arts businesses in a community.

Proposition 4b: Peoples' arts and cultural consumptions and experiences have a positive impact on overall community well-being outcomes.

Concerning proposition 4b, the regression model demonstrates the relationship between overall community well-being and six independent variables with respect to peoples' arts consumption. The result indicates that the multiple correlation coefficient (R), using all the variables simultaneously, is 0.81, and adjusted R^2 is 0.65 with $F(6,480) = 148.73$, $p < 0.001$. In other words, 65% of the variance in overall community well-being can be explained from six arts consumption related variables when variables are held constant in the regression.

As shown in Table 47, the standardized coefficients indicate that expenditures on photographic equipment contributes most to explaining overall community well-being, presenting $\beta = 0.91$, $t = 17.17$, $p = 0.00$, and that purchasing online and music media ($\beta = 0.10$, $t = 2.99$, $p < 0.01$), and expenditures on musical instruments ($\beta = 0.08$, $t = 2.11$, $p < 0.05$) also positively contribute to the prediction of overall community well-being. On

the other hand, expenditures on entertainment admission negatively contribute to the prediction of overall community well-being ($\beta = -0.22$, $t = -4.54$, $p = 0.00$). It can be understood that arts and cultural consumption related to people's daily basis such as purchases of music and photographic equipment help enhance overall community well-being.

Table 47. Model 11: Arts Consumption Variables on Overall Community Well-being

Arts Consumption Variable (N=487)	CW (<i>r</i>)	<i>B</i>	β	<i>sr</i> ² (unique)
Attending live performance	.49	-.71	-0.06	
Online/music media purchase	.47	2.47	0.10**	.007
Entertainment admission fees	.51	-.05	-0.22***	.015
Recorded media expenditures	.45	.00	-0.01	
Musical instruments expenditures	.46	.01	0.08*	.003
Photographic equipment expenditures	.78	.91	0.91***	.214
Constant		-3.70		
Multiple R	.81			
R ²	.65			
Adjusted R ²	.65			
F test statistic, significance	$F(6,480) = 148.73$ $p < .001$			

Note: *r* denotes correlation coefficient between each IVs and DV; *B* denotes unstandardized coefficients; β (Beta) denotes standardized coefficients; *sr*² denotes unique contribution to the DV; * $p < .05$; ** $p < .01$; *** $p < .001$.

Also, similar to the result of Proposition 3b (Model 8: Arts consumptions on community economic well-being), among the six variables, expenditures on photographic equipment variable is the most important predictor, contributing uniquely to 21 percent of variance of community economic well-being. Even though expenditures on the

entertainment admission variable show statistically significant difference from zero, its unique contribution to the overall community well-being is less than 2 percent. Given that, the relationship might be mediated by the relationship between community well-being and other variables in the regression model. Taken together, it can be concluded that the result mostly supports the proposition that community arts consumptions are positively related with overall community well-being.

Proposition 4c: With an abundant presence of arts and cultural nonprofit factors within a community, overall community well-being will be positively enhanced.

Lastly, proposition 4c explains how arts and cultural nonprofit resources in a community impact overall community well-being. Overall, the result reveals that this combination of arts nonprofit variables significantly predict overall community well-being, $F(5,477) = 28.86, p < 0.001$, showing similar patterns with Proposition 3c (Model 9: Arts nonprofits on community economic well-being). The multiple correlation coefficient (R), using all the variables simultaneously, is 0.48, and adjusted R^2 is 0.22 which indicates 22% of the variance in overall community well-being can be predicted from the five arts nonprofit variables when these are entered simultaneously.

As displayed in Table 48, the result indicates that as variables related to number of arts and culture-related nonprofits increases, overall community well-being is positively enhanced. Unlike the result of arts nonprofits on community economic well-being, in this output the number of performing/events nonprofits ($\beta = 0.40, t = 6.19, p = 0.00$) is more influential, followed by humanities/heritage nonprofits ($\beta = 0.34, t = 6.39, p = 0.00$). Arts revenue and state arts agency grants indicate statistically significant negative relationship with the overall community well-being ($\beta = -0.14,$

$t = -2.69$, $p < 0.01$, and $\beta = -0.39$, $t = -6.84$, $p < 0.001$). However, it might be unlikely to contribute meaningfully to the result, since these two variables show relatively very low correlation ($r = 0.06$, and $r = -0.12$) with the community well-being.

Table 48. Model 12: Arts Nonprofit Variables on Overall Community Well-being

Arts Nonprofit Variable (N=483)	EW (r)	B	β	sr^2 (unique)
Total nonprofit arts revenue	.06	-.14	-0.18**	.012
State arts agency grants	-.12	-.39	-0.36***	.075
Collections-based nonprofits	.12	-.03	-0.02	
Humanities/heritage nonprofits	.30	.60	0.34***	.066
Performing/events nonprofits	.25	.61	0.40***	.062
Constant		-.40		
Multiple R	.48			
R^2	.23			
Adjusted R^2	.22			
F test statistic, significance	$F(5,477) = 28.86$ $p < .001$			

Note: r denotes correlation coefficient between each IVs and DV; B denotes unstandardized coefficients; β (Beta) denotes standardized coefficients; sr^2 denotes unique contribution to the DV; * $p < .05$; ** $p < .01$; *** $p < .001$.

In sum, this pattern is shown steadily through the previous models (Model 6 and 9). It shows a clear relationship that abundant nonprofit organizations in a community are germane to enhancing community well-being. However, regardless of their abundance, overall community well-being might show not much differences depending on arts revenue per capita. Furthermore, state arts agency grants per capita could be relatively low if arts and cultural nonprofit organizations have or find fruitful financial resources to invest in arts and culture within a community. All things considered, it can be concluded

that overall community well-being is positively enhanced with an abundant presence of arts and cultural nonprofits, but is not much related to arts revenue and state arts agency grants that the community earns.

As a result of the above 12 multiple regression models, the current study reported the extent to which the given 17 independent variables related to arts business, arts consumption, and arts nonprofit factor vary with individual, social, economic, and overall community well-being. Additionally, the discussion of my research question suggested that abundant arts and cultural resources would be more likely to engage in the improvement of community well-being. Given that, it would be interesting to see relatively influential variables among arts and cultural resources in the data set when all 17 independent variables are considered at once. Thus, the following section examines the relationship between all 17 arts and cultural variables and each of individual, social, economic, and community well-being.

First, as presented in Table 49, this last analysis explores the overall relationship between arts and cultural capacity and community individual well-being. The first three models indicate results of previous regression models under propositions (Proposition 1a, 2a, and 3a). Additionally, Model 13 (M13) is introduced to show the result when all variables are entered simultaneously. Also, the section summarizes significant results which have consistency of effects across the models.

Model 1 (M1) presents results for the arts business variables tested for proposition 1a (Arts business on community individual well-being). Two of six variables in this factor show consistency of significant effect across the models. Number of solo artists is positively related to community individual well-being, presenting $\beta = 0.28$ with

significance level of $p = 0.00$ in Model 13. Creative industry businesses is positively related to community individual well-being, but the significance level drops to $p < 0.05$ when other variables are controlled in Model 13. Model 2 (M2) indicates results of proposition 1b, which considered the arts consumption variables. Two of six variables in this section show consistency of significant effect in Model 13. Attending live performance and expenditures on recorded media are likely to improve community individual well-being, showing $p < 0.001$ significant level.

Model 3 (M3) presents results for the arts nonprofit variables tested for proposition 1c (Arts nonprofits on community individual well-being). Two of six variables in this factor also present consistency of significant effects across the model. State arts agency grants per capita is also related to community individual well-being, presenting $\beta = -.19$ with significance level $p = 0.00$ in Model 13, when all independent variables are entered at once. As noted previously, state arts agency funding serving each county resident might be larger when a county has relative low individual well-being. Performing/events nonprofits is positively related to the community individual well-being, but significance level drops to $p < 0.05$ level when other variables are controlled in Model 13.

In sum, the result reveals that this combination of all the variables significantly predict community individual well-being, $F(17,463) = 50.93$, $p < 0.001$. The multiple correlation coefficient (R), using all the variables simultaneously, is 0.81, and adjusted R^2 is 0.64 which means 64% of the variance in community individual well-being can be predicted from the 17 arts and cultural variables when these are entered simultaneously. More specifically Model 13 suggests that community individual well-being is positively

influenced by solo artists, creative industry businesses, attending live performance, expenditures on recorded media, and performing/events nonprofits, while state arts agency funding maintains a negative relationship with community individual well-being.

Table 49. Multiple Regression Models Predicting Community Individual Well-being

	Individual Well-being				Summary
	M1	M2	M3	M13	
Arts business					
Solo artists	0.45***			0.28***	+
Arts/cultural share of all establishments	-0.09			-0.11	
Arts/cultural share of all employees	0.25***			0.10	
Arts/cultural share of all payroll	-0.21**			0.01	
Creative industry share of all employees	-0.01			-0.06	
Creative industry businesses	0.37***			0.16*	+
Arts consumption					
Attending live performance		0.43***		0.26***	+
Online/music media purchase		0.12**		0.05	
Entertainment admission fees		0.24***		0.09	
Recorded media expenditures		0.28***		0.15***	+
Musical instruments expenditures		0.01		-0.01	
Photographic equipment expenditures		-0.11		0.01	
Arts nonprofits					
Total nonprofit arts revenue			0.28***	0.08	
State arts agency grants			-0.31***	-0.19***	-
Collections-based nonprofits			-0.17***	0.00	
Humanities/heritage nonprofits			0.07	0.00	
Performing/events nonprofits			0.57***	0.11*	+
Constant	-8.80	-3.74	-1.30	-6.21	
Multiple R	0.73	0.75	0.63	0.81	
Adjusted R ²	0.52	0.56	0.40	0.64	
F test statistic, significance	$F(6,478) = 88.68$ $p < .001$	$F(6,480) = 104.80$ $p < .001$	$F(5,477) = 63.83$ $p < .001$	$F(17,463) = 50.93$ $p < .001$	

Note: * $p < .05$; ** $p < .01$; *** $p < .001$.

Next, Table 50 reveals the comprehensive results regarding arts and cultural capacity and community social well-being. Consistent with the previous table, the first three models indicate results of previous regression models for propositions 2a, 2b, and 2c. Model 14 (M14) shows how arts and cultural variables affect community social well-being when all 17 variables are entered simultaneously. The final summary suggests a direction of significant results if it has consistency of effects across the models. Overall, the result of Model 14 reveals that this combination of all the variables significantly predict community social well-being, $F(17,463) = 44.32, p < 0.001$. The multiple correlation coefficient (R), using all the variables simultaneously, is 0.79, and adjusted R^2 is 0.61 which means 61% of the variance in community social well-being can be predicted from the 17 arts and cultural variables when these are entered simultaneously.

More specifically, the result reveals that arts nonprofits play a strong role in community social well-being. As presented in Model 14, collection-based nonprofits such as museums and humanities/heritage nonprofits, including racial heritage organizations, are positively related to social well-being. Also, consistent with previous analyses across the models, nonprofit arts revenue and state arts agency grants are not positively associated with social well-being. In the arts business factor, two of six variables show consistency of significant effect, but Model 14 presents mixed results. The proportion of arts/cultural establishments in a county is positively related with social well-being, showing $\beta = 0.40$ with significant level $p < 0.001$. Also, the magnitude of the coefficient of arts/cultural share of all payroll drops markedly, presenting $\beta = -0.17$ with significance level $p < 0.05$. On the other hand, in Model 4 creative industry business was not initially

significant, but when controlling for the highly significant effect of arts nonprofits variables in model four, the direction and magnitude of the coefficient was changed, with $\beta = -0.27$ at $p < 0.01$ level. Furthermore, except one variable, photographic equipment expenditure, which still shows strong positive relationship with social well-being ($\beta = 0.65, p < .001$), most of variables in the arts consumption seem not to significantly impact social well-being when all the variables are considered together.

Table 50. Multiple Regression Models Predicting Community Social Well-being

	Social Well-being				Summary
	M4	M5	M6	M14	
Arts business					
Solo artists	0.03			-0.11	
Arts/cultural share of all establishments	0.45***			0.40***	+
Arts/cultural share of all employees	0.15			0.05	
Arts/cultural share of all payroll	-0.71***			-0.17*	-
Creative industry share of all employees	-0.19*			-0.10	
Creative industry businesses	0.16			-0.27***	
Arts consumption					
Attending live performance		-0.21***		0.02	
Online/music media purchase		0.01		0.04	
Entertainment admission fees		-0.24***		0.00	
Recorded media expenditures		-0.06		-0.02	
Musical instruments expenditures		-0.02		0.04	
Photographic equipment expenditures		0.94***		0.65***	+
Arts nonprofits					
Total nonprofit arts revenue			-0.39***	-0.32***	-
State arts agency grants			-0.36***	-0.24***	-
Collections-based nonprofits			0.11*	0.23***	+
Humanities/heritage nonprofits			0.37***	0.15***	+
Performing/events nonprofits			0.19**	-0.01	
Constant	-4.90	-2.57	0.30	-0.22	
Multiple R	0.41	0.63	0.51	0.79	
Adjusted R ²	0.16	0.39	0.25	0.61	
F test statistic, significance	F(6,478) = 16.01 p < .001	F(6,480) = 53.01 p < .001	F(5,477) = 32.70 p < .001	F(17,463) = 44.32 p < .001	

Note: * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 51 displays the relationship between arts and cultural variables and community economic well-being. The first three models indicate results of previous regression models under propositions 3a, 3b, and 3c. Model 15 shows the result when all variables are entered simultaneously. The final summary suggests a direction of significant results which have consistency of effects across the models. Overall, Model 15 reveals that this combination of all the variables significantly predicts community economic well-being, $F(17,463) = 38.29$, $p < 0.001$. The multiple correlation coefficient (R), using all the variables simultaneously, is 0.76, and adjusted R^2 is 0.57 which means 57% of the variance in community economic well-being can be predicted from the 17 arts and cultural variables when these are entered simultaneously. Consistent with proposition 3b (M8), the beta weight indicates that photographic equipment expenditure contributes most to explaining community economic well-being ($\beta = 0.93$, $p < .001$). Purchasing online and music media, and expenditures on musical instruments also positively contribute to the prediction of community economic well-being. On the other hand, adult population share of attending live performance, expenditures on entertainment admission, as well as expenditures on recorded media negatively contribute to the prediction of community economic well-being. It might be concluded that taking a picture, playing an instrument, or listening to music which might lead to continuous participation in arts and culture through peoples' everyday lives as pastime are positively related to community economic well-being.

When all the variables are considered simultaneously in Model 15, the proportion of arts/cultural payroll in all businesses still shows a negative impact on economic well-

being, although the magnitude and significance of the coefficient drop markedly, presenting $\beta = -0.19$ with significant level $p < 0.05$. Also, in Model 9, collection-based nonprofits such as museums was not initially significant, but when controlling for the highly significant effect of arts consumption variables in Model 8, the direction and magnitude of the coefficient was changed with $\beta = 0.09$ at 0.05 significance level.

Table 51. Multiple Regression Models Predicting Community Economic Well-being

	Economic Well-being				Summary
	M7	M8	M9	M15	
Arts business					
Solo artists	0.19*			0.05	
Arts/cultural share of all establishments	0.38***			0.15	
Arts/cultural share of all employees	0.01			-0.03	
Arts/cultural share of all payroll	-0.58***			-0.19*	-
Creative industry share of all employees	-0.13			-0.03	
Creative industry businesses	0.24*			-0.03	
Arts consumption					
Attending live performance		-0.21***		-0.21***	-
Online/music media purchase		0.11**		0.11**	+
Entertainment admission fees		-0.37***		-0.33***	-
Recorded media expenditures		-0.14***		-0.12**	-
Musical instruments expenditures		0.17***		0.17***	+
Photographic equipment expenditures		1.01***		0.93***	+
Arts nonprofits					
Total nonprofit arts revenue			-0.18*	-0.05	
State arts agency grants			-0.18**	-0.02	
Collections-based nonprofits			-0.04	0.09*	
Humanities/heritage nonprofits			0.29***	0.08	
Performing/events nonprofits			0.25***	0.04	
Constant	-6.22	-2.57	-0.25	-3.27	
Multiple R	0.45	0.74	0.33	0.76	
Adjusted R ²	0.19	0.54	0.10	0.57	
F test statistic, significance	F(6,478) = 19.85 p < .001	F(6,480) = 95.86 p < .001	F(5,477) = 11.56 p < .001	F(17,463) = 38.29 p < .001	

Note: * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 52 suggests the results of relationships between arts and cultural variables and overall community well-being which amalgamates with individual, social, and economic well-being. The result reveals that this combination of all the variables significantly predict overall community well-being, $F(17,463) = 73.26, p < 0.001$. The multiple correlation coefficient (R), using all the variables simultaneously, is 0.85, and adjusted R^2 is 0.72 which means 72 % of the variance in community well-being can be predicted when 17 arts and cultural variables are considered together in one model.

As presented in Model 16 of Table 52, total 10 variables in 17 display statistically significant impacts on community well-being. The photographic equipment expenditure variable is the most influential one ($\beta = 0.77, p < 0.001$), followed by arts/cultural share of all establishments ($\beta = 0.23, p < 0.001$). Unlike the result of Model 12 that evaluates proposition 4c, the magnitude and significance of coefficient of the performing/events nonprofits drops markedly. On the other hand, consistent with the results of economic well-being in Table 51, although collection-based nonprofits was not initially significant in Model 12, the direction and magnitude of the coefficient was changed to $\beta = 0.15$ at the 0.001 significance level when controlling for arts business and consumption variables in Model 16. It shows that collection-based nonprofits such as museums are an important part of arts businesses, and in turn, lead to enhanced community well-being.

Also, consistent with proposition 4c (Model 12 in this table), arts revenue and state arts agency grants statistically indicate significant negative relationships with overall community well-being, presenting $\beta = -0.16, t = -3.40, p < 0.01$, and $\beta = -0.19, t = -5.20, p < 0.001$. It might imply that arts revenue per capita and state arts agency

grants per capita is relatively low in community with high overall well-being, although abundant nonprofit organizations in a community are germane to enhancing community well-being.

Table 52. Multiple Regression Models Predicting Overall Community Well-being

	Community Well-being				Summary
	M10	M11	M12	M16	
Arts business					
Solo artists	0.25**			0.06	
Arts/cultural share of all establishments	0.37***			0.23**	+
Arts/cultural share of all employees	0.16*			0.04	
Arts/cultural share of all payroll	-0.69***			-0.17**	-
Creative industry share of all employees	-0.16*			-0.08	
Creative industry businesses	0.32**			-0.10	
Arts consumption					
Attending live performance		-0.06		-0.01	
Online/music media purchase		0.10**		0.09**	+
Entertainment admission fees		-0.22***		-0.13**	-
Recorded media expenditures		-0.01		-0.02	
Musical instruments expenditures		0.08*		0.10**	+
Photographic equipment expenditures		0.91***		0.77***	+
Arts nonprofits					
Total nonprofit arts revenue			-0.18**	-0.16**	-
State arts agency grants			-0.36***	-0.19***	-
Collections-based nonprofits			-0.02	0.15***	
Humanities/heritage nonprofits			0.34***	0.11**	+
Performing/events nonprofits			0.40***	0.05	
Constant	-7.69	-3.70	-0.40	-3.72	
Multiple R	0.53	0.81	0.48	0.85	
Adjusted R ²	0.27	0.65	0.22	0.72	
F test statistic, significance	F(6,478) = 30.60 p < .001	F(6,480) = 148.73 p < .001	F(5,477) = 28.86 p < .001	F(17,463) = 73.26 p < .001	

Note: * $p < .05$; ** $p < .01$; *** $p < .001$.

Across the models, arts and cultural impacts on community well-being is dynamic and complicated. In this vein, the current study illustrates broad phenomena focusing on

how arts and cultural variables are associated with community individual, social, and economic well-being rather than simple yes and no conclusions. Especially, the full models (Model 13 to 16) embrace the characteristics of the original individuals models (Models 1 to 12) to demonstrate how arts and cultural capacity are related to community well-being, although the magnitude of the coefficients differ across models. The following chapter includes a summary of the findings and observations emerging from the analyses, along with discussion and implications of the study.

CHAPTER 8

CONCLUSION & DISCUSSION

When considering community health and well-being, arts and cultural facilities and activities play essential roles in providing promising opportunities for improving the quality of life for residents and communities. A number of studies focus on documenting the empirical evidence for the impacts and values of arts and culture (Grodach & Loukautou-Sideris, 2007; Michalos & Kahlke, 2010; Packer & Ballantyne, 2011; South, 2006). However, methodological challenges emerged as an issue in that existing data is somewhat limited since it relies heavily on self-reported evidence and idiosyncratic case studies (Galloway, 2009; Guetzkow, 2002; Hoynes, 2003). Despite the emergence of arts and culture within the broader concept of well-being, relatively little systematic research has been conducted to explore the relationships between arts and cultural resources and community well-being.

In order to better understand how arts and cultural resources influence community, this study identified crucial factors of arts and cultural resources in a community and examined the relationship between these resources and overall community well-being outcomes. Using the How Arts Works System Map (Iyengar et., 2012) as a theoretical framework, this study developed an arts-community measurement system drawing on meaningful variables among a wide range of existing data, and explained findings emerging from these variables and the relationship between the arts and community at the county level. The following sections provide detailed discussion of the findings. Also, the contribution of the study along with limitations and avenues for future study are discussed.

8.1 Conclusion

This research expands on collective as well as complex traits of arts and cultural resources that are related to community well-being at the county level. To study the dimensions of arts and cultural resources and community well-being, and in turn, to present the relationship between them in a community, this dissertation was based on three subsequent studies. Study I identified the critical dimensions of arts and culture which employed by an exploratory factor analysis. Study II parsed community well-being components related to arts and cultural dimensions by a principal component analyses. Study III drew on the previous two studies, and investigated what arts and cultural factors and subsequent variables affect community individual, social, and economic well-being, and, by extension, overall community well-being.

First, Study I explored the dimensions of arts and cultural assets, drawing on the Local Arts Index (LAI), using a factor analysis. Conceptually, LAI indicators were originally categorized in four factors based on the Community Arts Vitality Model (Cohen, Cohen, & Kushner, 2012). However, this model is not derived from evidence-driven approaches, and indicators overlap each other. Thus, to present a parsimonious number of arts and cultural variables that can be clearly interpreted in a community, an exploratory factor analysis was conducted. Using principal axis factoring extraction with promax ($k=2$) rotation, the results indicated that the presence of three independent factors accounted for a total of 65.9 percent of the variance of the 17 variables--with 'arts business' contributing 47.7 percent, 'arts consumption' contributing 12.2 percent, and 'arts nonprofit' contributing 6.1 percent.

The first factor covered arts business-related activities, including six variables with respect to arts and cultural businesses, employees, payroll, and number of artists. Next, six arts and cultural participations and expenditures variables accounted for an ‘arts consumption’ dimension as a result of the factor analysis. Lastly, ‘arts nonprofits’ factor with five variables encompassed overall scope of the nonprofit arts sector, and indicated their prosperity in a community. Furthermore, the standardized Cronbach’s alpha of all three factors was ranged from 0.85 to 0.95, falling into the acceptable range (Hair et al., 1998). In sum, the three-factor solution successfully implemented a process of data reduction, identifying the meaningful underlying factors. Also, simplification of the original CAVM into a more interpretable, smaller number of factors added to our understanding of the use of ABCN (Arts businesses, consumptions, and nonprofits) in examining their influence on community well-being.

Study II explored the dimensions of community well-being, which are especially germane to arts and cultural resources in community-based studies. In particular, Study II focused on presenting how the study simplifies community well-being data, and develops the measurement and statistical analysis. Variables and data, drawing on the County Health Rankings and Roadmaps (CHRR) were used to construct arts and culture-related community well-being dimensions. A principal component analysis (PCA) with promax rotation was performed to uncover a set of variables that are correlated with each other as factors, and created composite scores in order to incorporate factor information as part of a regression analysis in Study III.

The results indicated the presence of three factors accounting for a total of 72.2 percent of the variance of the 14 variables: ‘individual well-being’ (43.3 percent), ‘social

well-being' (20.4 percent), and 'economic well-being' (8.5 percent). Also, the standardized Cronbach's alpha of all three factors ranged from 0.78 to 0.90, falling into the acceptable range (Hair et al., 1998). Furthermore, higher-order factor analysis determined that the primary three factors are explained by a broader construct called 'community well-being.' It enhanced the interpretability of community well-being in explaining the relationship between arts and cultural dimensions, and community well-being in Study III.

Study III extended existing literature, examining the relationship between arts and various well-being components of a community (Besleme, Maser, Silverstein, 1999; Catterall, 2012; Cox et al., 2010; Daykin et al., 2012; Davern et al., 2011; Grodach, 2011; Hayter & Pierce, 2009; Michalos & Kahlke, 2010; Rogers & Anastasiadou, 2011) by employing multiple regression analysis. In general, the results revealed the positive impact of arts and cultural resources on community well-being. Each arts and cultural domain also has critical relationships with community individual, social, and economic well-being. When considering each of the arts and cultural domains specifically, the 'arts business' domain was considerably associated with community individual well-being and comprehensive community well-being. Contrary to the diagram (Figure 6), the 'solo artists' variable was the most influential variable predicting community individual well-being, but was not associated with community social well-being. Also, the 'arts/cultural employees' variable followed a similar pattern with the 'solo artists' variable. On the other hand, just as Grodach and Loukaitou-Sideris (2007) argued that cities nurture the economic potential of the arts by developing creative industries, 'arts/cultural establishment' and 'creative industry businesses' had a strong positive relationship with

community economic well-being rather than community individual well-being, showing beta weights of 0.38 and 0.24 respectively. As aforementioned, an interesting point addressed in this domain is that regardless of the increase of arts and cultural employees in a county, the 'arts/cultural payroll' variable shows a constant negative relationship with community individual, social, and economic well-being. Even though the physical density of cultural and creative assets promotes the economic prosperity for the local area, this supported the claim that a high wage structure is not a function of arts-related occupational density in a city (Hoyman & Faricy, 2009).

Overall, the 'arts consumption' domain showed synthetically significant associations with community individual and economic well-being, and by extension, influenced comprehensive community well-being. As with many of the previous studies (Michalos & Kahlke, 2010; Packer & Ballantyne, 2011), overall arts and cultural participation (e.g., attending live performances, entertainment expenditure, recorded and/or online music purchases) were positively related to community individual well-being. However, contrary to the argument that attendance can contribute to personal and social well-being (Michalos & Kahlke, 2010; Packer & Ballantyne, 2011), in this study, attending live performances and entertainment did not contribute to community social well-being outcomes. The results of community economic well-being presented more interesting aspects, in that they showed a different facet depending on the characteristics of consumption. Michalos and Kahlke (2010) mentioned that arts-related activity could be divided into producing arts and consuming arts. They also highlighted that producing arts such as playing a musical instrument is more highly correlated with peoples' satisfaction with perceived quality of life. Similarly, in an attempt to better understand

peoples' arts and cultural consumption, some studies classified arts and cultural activities depending on their characteristics such as cultural activity in venues and artistic activity ("How the arts", n.d.), out-of-home events, and in-home consumption (DiMaggio & Mukhtar, 2004). Consistent with empirical evidence in previous studies, this study demonstrated that only variables that require continuous participation such as purchase, rental, and repair of musical instruments and photographic equipment (i.e., artistic activity, or in-home consumption) were positively associated with community economic well-being, whereas attending live performance, and expenditures on entertainment and recorded media (i.e., cultural activity in venues, or out-of-home events) showed negative relationships with community economic well-being. In particular, 'photographic equipment expenditure' was the most positively influential variable to explain community social, economic, and comprehensive community well-being.

Lastly, the 'arts nonprofits' domain was related to all components of community well-being across-the-board. It was not surprising that performing events nonprofits are a positive enhancer of community well-being followed by humanities/heritage nonprofits. Also, collection-based nonprofits such as museums and libraries especially show a significant positive association with community social well-being. However, contrary to the diagram (Figure 6) which explained the positive impact of arts revenue and government support on community economic well-being, the results indicated that the 'arts revenue' and 'state arts grants' variables constantly had a negative relationship with community well-being. This can be explained that arts revenue is more likely to rely on nonprofits performance. Even though revenue can be boosted by peoples' attendance and/or levels of artists living in the community ("What drives", n.d.), Matarasso (1999)

argues that ‘the level of inputs does not automatically reflect levels of quality or impact’ (p. 9). Furthermore, arts and cultural nonprofits are sometimes built by its existence and altruistic value rather than focusing on its revenue. In this sense, the results answer the call that their existence in a community is more important for enhancing community well-being than an emphasis on creating more profits. Also, with the belief that cultural facilities play a significant role in developing communities, most facilities were annually funded by local and state governments (Grodach & Loukaitou-Sideris, 2007). However, even though they are important supporters of arts and culture, state arts funding is related to the economy. According to the National Arts Index (Kushner & Cohen, 2014), state support dropped remarkably through 2004, which is a 23 percent decline compared to 2003, and fell to below \$1.00 per capita in 2010. Thus, state arts agency grants per capita might show little difference across counties, and if it differs, state arts agency grants per capita could be relatively low when the community has fruitful resources to invest in arts and culture.

In consideration of the observations emerging from the analyses, a new diagram is suggested to present arts and cultural contributions to community well-being (See Figure 19). Given that, accordance with the ABCN and community well-being components, and overall community well-being, Figure 19 illustrates how arts and cultural resources are synthesized in the context of community well-being, drawing on the result of multiple regression analysis. For example, the ‘solo artists’ variable influences community individual, economic, and overall community well-being, but is not related to community social well-being. This diagram reveals how diverse arts and cultural resources are related to, and have potential to make a contribution to community well-being.

ABCN \ CWB	CWB			
	Individual WB	Social WB	Economic WB	Community WB
Arts Business	Solo artists		Solo artists	
	Arts and cultural/ creative industry establishment			
	Employment			
Arts Consumption	Overall arts and cultural participation	Arts and culture-related activities		
Arts Nonprofit	Arts revenue			
	Arts nonprofits			

Figure 19. Diagram of arts and cultural contribution to CWB

In addition, taking together the variables from the regression models (Model 13, 14, 15, and 16), this study illustrates a more comprehensive picture of how arts and cultural resources are associated with community individual, social, and economic well-being. It also addresses some critical observations emerging from data-driven evidence. From the community individual well-being perspective, findings in this study echo previous research that argues that producing arts or participating in arts activities makes people feel better or healthier, and has a positive effect on wellness and healing

(Matarasso, 1997; Michalos & Kahlke, 2010; Stuckey & Novel, 2010). For example, leaving the issue of state arts agency grants (which constantly shows a negative relationship with components of community well-being) aside, the abundant presence of solo artists who identify as independent performers and artists, active arts participation (i.e., attending live performances), and thriving performing events nonprofits faithfully carry out their duties to enhance community individual well-being. In this regard, the representative appearances that affect community individual well-being could be connected to arts performance-centered settings.

On the other hand, social well-being encompasses the phenomena of community engagement and cooperation with others, reflecting social capital in the community. As noted earlier, arts work and programs help people share their common interest so as to challenge community problems such as social deprivation and crime, and in turn, induce social change (Bailey, Miles, & Stark, 2004; Lavanga, 2006; Quinn, 2005; Stuiver et al., 2012). Given that, if a community has plentiful arts and cultural establishments, this helps people access arts projects and programs more easily. Also, museums and libraries, including heritage ethnic organizations, usually provide arts programs and they are open to the public. In this sense, the result that abundant presence of museums and libraries are strongly associated with community social well-being confirms the previous literature. Supportively, as an aggregated domain, 'arts nonprofits' was the most influential to envisage community social well-being.

In incorporating cultural capital into economic value, Florida (2002b) and Lavanga (2006) stress cultural consumption as an essential economic resource for local development. In other words, as people consume these goods and services, cultural value

facilitates economic value, and in turn, boosted economic value could affect community economic well-being. Following the argument above, the result of this study demonstrated that arts consumption-related variables take roles as predictors of community economic well-being. However, as aforementioned, only variables that require continuous consumptions such as purchase, rental, and repair of musical instruments, and purchase of photographic equipment and supplies have a positive contribution to community economic well-being. Meanwhile, in this study, buying tickets to attend live performances and other entertainments shows a negative relationship with community economic well-being. However, a report by the National Endowment for the Arts (NEA) (2010) indicates that most outdoor arts festival are free of charge (59 %) or charge less than \$15 per ticket. So these populations might not likely be reflected in the original data set. Furthermore, although Hayter and Pierce (2009) highlighted that arts nonprofit took a role as productive economic contributors, when all arts and cultural variables are considered at once, the current study found that only collections-based nonprofits (i.e., museum, and library) support their argument, presenting a positive relationship between arts nonprofits and community economic well-being.

From the overall community well-being point of view, the result notes that a large ratio of arts and cultural establishments to all establishments has a positive value and impact on community well-being. Also, community well-being is strongly influenced by peoples' vigorous and constant arts consumptions to spend their time such as buying musical instruments and photographic equipment. The current study found that arts consumption and nonprofits play more significant roles as proxies of overall community well-being compared to arts businesses in a community. In other words, it can be said

that communities that invigorate vibrant arts and cultural institutions with active consumers would be more likely to improve their community well-being outcomes.

Table 53 displays the directions of significant variables, predicting community well-being components. For instance, the sign ‘+’ indicates a significant positive relationship with each of community well-being components. Conversely, the sign ‘-’ indicates that the variable is not positively associated with a community well-being outcome. It provides a more effective graphic for visualizing these relationships at a glance. Using this table, the pattern of arts and cultural resources is clearly shown, as well as helps detect several interesting observations which are explained next.

Table 53. Summary of Constant Significant Variables Across Models

	IW	SW	EW	CW
Arts business				
Solo artists	+			
Arts/cultural establishments		+	+	+
Arts/cultural share of all employees				
Arts/cultural share of all payroll		-	-	-
Creative industry share of all employees				
Creative industry businesses	+			
Arts consumption				
Attending live performance	+		-	
Online/music media purchase			+	+
Entertainment admission fees			-	-
Recorded media expenditures	+		-	
Musical instruments expenditures			+	+
Photographic equipment expenditures		+	+	+
Arts nonprofits				
Total nonprofit arts revenue		-		-
State arts agency grants	-	-		-
Collections-based nonprofits		+		
Humanities/heritage nonprofits		+	+	+
Performing/events nonprofits	+			

Lastly, as discussed above, some critical observations emerge from the study.

I. Arts/cultural share of all payroll was not positively related to individual, social, economic, or overall community well-being.

This observation was constantly revealed across the models discussed earlier. The following points could be a key to better understand the circumstance. As noted earlier, 34 percent of artists are self-employed among arts employees (“NEA Announces”, 2011) with relatively lower wages than other professionals (The Bureau of Labor Statistics (BLS), 2014). Thus, following Hoyman and Faricy (2009), capturing a large arts and cultural share of all payroll does not account for high wages; conversely, it implies that the average wage of a community is not competitive against other communities. Unlikely a portion of arts and culture-related payroll, arts/cultural and creative industry establishments have positive values and impacts on community well-being components. A report by Arts Council England (2013) pointed out that expenditure on the arts and culture causes the arts and cultural industry’s increases. Furthermore, in providing their services, the arts and cultural industries generate an increase in employment and profit, which impact household income throughout the economy. Although the causal relationships between individual variables were not considered in this study, when it comes to community well-being, the current study is consistent with the report above, showing that arts and cultural consumptions, art and cultural establishment, and arts nonprofits have a positive influence on community well-being. Given that, rather than focusing on the portion of arts and cultural payroll, the volume of arts and cultural businesses—both commercial and nonprofits—and people’s arts and cultural consumption in a community are more applicable to examining community well-being.

II. Producing arts is distinct from consuming arts in examining the impact on community economic well-being.

This study shows a clear distinction depending on the pattern of consumption. Variables that are positively related to community economic well-being may be viewed as hobbies that need at least more active involvement and engagement in arts and culture than buying tickets to performing arts, and other events. Given that, this study implies that if active involvements in arts and culture are associated with peoples' daily basic activities such as playing musical instruments and taking a picture, people's consumptions and expenditures on arts and culture can enhance community economic well-being. It might be concluded that taking a picture, playing an instrument, or listening to music which might lead to continuous participation in arts and culture through people's everyday lives as pastime are positively related to community economic well-being.

III. Nonprofit arts revenue and state arts agency grants are not positively related to social, economic, or overall community well-being.

As discussed before, even though abundant nonprofit organizations in a community help increase the state of community well-being, this does not always account for the higher return on investment (Matarasso, 1999) because they value more its existence or altruistic purpose than making a profit. In addition, arts revenue is more likely to rely on nonprofits' yearly performance; moreover, total arts revenue per capita might be more sensitive to the population of a community rather than showing a measurable standard of how much nonprofits earn for a fiscal year. Thus, even though the 'arts revenue' variable was identified as a reliable variable for explaining arts nonprofits

in a community, it was hard to find its positive association with community well-being outcomes. Also, in accordance with a report by the National Assembly of State Arts Agencies (NASAA) (2014), overall state arts agency grants rely heavily on their legislative appropriations, constituting 75.8 percent of aggregate income in fiscal year 2014. Furthermore, legislative appropriations to state arts agencies are controlled by states, and it is related to the economy. Since the economic recession in 2007, state arts funding steadily declined with state budget cuts, and have not fully recovered yet.

According to the National Assembly of State Arts Agencies (NASAA) (2014), state arts funding per capita, which is projected in fiscal year 2015, is \$1.15, while the District of Columbia alone shows an exceptional performance (\$25.46). Thus, state arts agency grants per capita might show little difference across counties except Washington, D. C.

Also, state arts agency grants per capita could be relatively low when a community has fruitful resources to invest in arts and culture. For example, in 2010, the State of California ranked the lowest in state arts funding per capita (\$0.12) (State Ranked, n.d). Since then, California increased their funding every year, and in 2015 the state planed to spend almost \$9 million. However, even though one in ten (approximately 1,447,100) jobs is related to the creative industry (Kleinhenz et al., 2015), state arts funding per capita is still much lower than average (\$0.23), and ranked 44th place among 50 states in the United States (NASAA, 2014). Moreover, since state arts agencies are controlled by states, it might be hard to see a clear comparison across the county-level. In this regard, arts revenue and grants, ironically, are not positively related to community well-being outcomes from this data-driven perspective. However, the LAI data used in this analysis were gathered when the economic recession had hit across the country.

Therefore, multi-year average of data will be necessary to present the validity of the research findings and interpretations in the future.

8.2 Contribution

The results of this study underpin previous arts and cultural impact on community studies in developing a framework of arts and community well-being (Figure 10). The framework includes multiple facets of influence of arts and cultural resources on community well-being. Thus, this study focuses on gaining an understanding of broad arts and cultural phenomena in a community and explaining their ecological relationship with well-being, rather than placing an emphasis on statistical tests of propositions. Furthermore, a strength of this study is the presentation of a more realistic vision of how arts and cultural resources are associated with community well-being components.

The first two studies (see chapter 4 and chapter 6) contribute to its methodological analysis. These two studies approach attempt to develop the measurement of arts and cultural capacity, as a way to help predict community well-being. The aggregation method that simplifies a large set of data into a smaller number of factors, retaining their original character, supports the conceptual framework used in this study. First, Study I contributes a parsimonious list of LAI indicators covering the arts and cultural resources in a community and their constituent categories (arts business, consumption, and nonprofits) as broadly as possible, while minimizing the number of indicators retained. Even though the original LAI model was not derived from evidence-driven approaches, this study, integrating LAI's four dimensions of the Community Arts Vitality Model, successfully identified the meaningful underlying factors based on a factor analysis along

with a parsimonious number of arts and cultural variables that can be clearly interpreted in a community. It is evidenced by Study I, which successfully validated the measurement, that arts business, arts consumption, and arts nonprofit domains embrace the essential attributes of arts and culture in the context of community environments.

Study II contributes to exploring dimensions of community well-being, which are especially related to arts and cultural resources in community-based studies (see Chapter 5). Based on previous studies, thematic aggregation could group a set of community well-being indicators; however, few studies have so far developed a community well-being structure related to arts and culture. Given that, confirming the findings of previous studies that arts and cultural resources are crucial elements for individual, social, and economic well-being, this study contributes to identifying individual, social and economic well-being dimensions based on a data-driven approach. Based on a factor analysis, it attests to the validity and reliability of these dimensions.

Particularly, Study II simplifies well-being-related variables and data, drawing on the County Health Rankings and Roadmaps (CHRR) so as to construct arts and culture-related community well-being dimensions along with a parsimonious number of community well-being variables, but with broad coverage. To explain how the primary three factors are a part of one broader ‘community well-being’ concept, higher-order factor analysis was performed. The result of higher-order factor analysis contributes to demonstrating that the individual, social, and economic well-being factors, which are determined by the factor analysis, can build a county-level well-being construct (see Figure 13).

In addition, Study III is the first known attempt to examine how the presence of arts and culture within a community is associated with community individual, social, and economic well-being forces by analyzing county-level data, drawing on publicly available secondary sources. Much previous research discussed in the literature review has been carried using case studies, ad-hoc, and/or small-scale way in order to advocate the positive impact of arts and culture on peoples' lives and community. However, these are sometimes not sufficient evidence to generalize the arts and cultural impacts on community. In contrast, this study into the community well-being impact of arts and cultural resources provides a chance to look over the relatively objective arts and cultural phenomena through county-level data, and discovers substantial evidence, explaining their relationships with community well-being.

Iyengar and colleagues (2012) emphasize that arts participation and creation give economic, individual, and community benefits; however, even though they developed measurement structure and a research agenda based on the theory-based system, they did not actually measure their claims. Hence, this study represents the first study to theoretically and empirically examine the constructs. The result as substantial evidence satisfies the 'How art works' framework illustrated by Iyengar and colleagues (2012) (see Figure 1). Furthermore, using 'how art works' as a platform, this study generates and tests specific measurement models related to arts and community well-being (see Figure 9). The results generally support the proposed hypotheses. In all three areas of arts and cultural resources observed here, there are clear indications that community arts and cultural capacity are significantly associated with community individual, social, and economic well-being. Specifically, vivid evidence through multiple regression analyses

reveals that the abundant presence of arts and cultural establishments, including nonprofits, and peoples' active engagement in arts and cultural activities can be influential predictors of positive community individual, social, and economic well-being.

In addition, separate from the investigation of each hypotheses suggested in this study, the body of work helps open my eyes to the current status of arts and culture in a community and face up to the details. Also, it provides important insight into how policymakers, practitioners, and arts advocates approach issues related to arts and community. For example, findings in this study indicate that arts revenue and state arts funding are less associated with community well-being outcome than the conventional wisdom pictures them. On the other hand, residents' arts consumption and the existence of arts and cultural/creative industries, including arts nonprofits, are constantly suggested as key points for improving county-level community well-being. However, this is not to say that arts revenue and state arts funding are not important to community well-being. Rather, this study encourages multidisciplinary research collaboration among policymakers, practitioners, and researchers to figure out complex resource allocation requirements.

This study has committed to secondary data sources in studying arts and cultural impact and value. The advent of available public datasets helps researchers inspect a broader circumstance, and leads to a greater reflection beyond the studies based on self-referential, and anecdotal evidence. Furthermore, the data usually have a stack of a series of years, so long-term measurement is possible to not only trace the change or sustained impacts, but also induce more generalized conclusions throughout the years. In this regard, the findings help inform health and arts practitioners, marketers, and

policymakers in exploring the possibilities of arts and cultural resources and in developing management strategies.

8.3 Limitations and Future Research

Following the recommendation by Newman et al. (2003) that the evidence of arts and cultural impacts needs to not only be considered at the individual level, but also reflect on the communities in which individuals live, the current study discovered that arts and cultural resources positively embodied with individual, social, and economic well-being, thereby resulting in enhancing overall community well-being. However, several limitations to this study exist. First, some methodological problems are inherent as independent variables are highly correlated. When employing the multiple regression analysis in Study III, arts and cultural variables, which were derived from the result of the factor analysis in Study I, were used as independent variables. Thus, there is some concern about the magnitude of association ($r \geq 0.80$) between several variables within a same factor, although all the relationships were less than 0.90 and had no multicollinearity problem (c.f., Tabachinick & Fidell, 2007). This might also influence the decrease of the total variance explained by the dependent variable. Taken these concerns together, future research is needed to resolve multicollinearity by combining the highly correlated variables through principal component analysis, or omitting a variable from the analysis. More rigorous measurement that can avoid highly correlated variables should be developed.

More specifically, in the dataset, per capita and per 100,000 populations were used as a unit of measurement. Per capita or per 100,000 populations represent per unit of

population (i.e., the total divided by the county total population/100,000 county residents) (NASAA, 2014). Use of per capita variables might cloud comparison across the county-level based on their demographic characteristics. Alternatively, instead of per capita variables, future study can use total number of arts nonprofits, or total number of arts and culture establishments in each county. Subsequently, demographic variables can be used as control variables. This will allow researchers to examine more robust models in multiple regression in that the study examines the influence of arts and cultural resources on community well-being, adjusting for the impact of county population (e.g., size of the county). This study chose 518 counties among over 3,000 counties in the U.S based on statistical screening processes. Thus, the results are not necessarily representative of the entire counties, but reflect some notable features across the county. Future study could develop substitute measurement models to enhance the external validity of the study. Particularly, the LAI provides various county-focused demographic variables such as racial and language diversity. If these variations in demographic characteristics are considered as control variables, it will lead people to understand how their community arts scenes differ depending on the various local demographic diversity, and help develop more practical strategies to improve the arts-community well-being relationship.

In addition, since Study I and Study II simplify a large set of data into a more parsimonious number of variables, this study has some limitations to indicate the relationship between arts and cultural variables and specific well-being characteristics. Especially, in this study, individual, social, and economic well-being were created as composite variables, retaining the characteristics of variables included in each factor. Thus, it is empirically challenging to support previous literature, although the current

study covers the part of the claims of previous literature. For example, McClinchey (2008) posited that arts and cultural participation increases social identity in communities. Based on his claim, the current study analyzed the relationship between arts and cultural participation and social well-being. However, the result showed that photographic equipment expenditures increase community social well-being; it is somewhat unclear whether this supports the claim by McClinchey (2008), even though photographic equipment expenditure belongs in the arts consumption factor in this study. This problem of uncertainty rather suggests the need for refinement of measurement with more relevant and meaningful secondary or primary data sources.

Similarly, among the LAI, some arts and cultural variables, which did not meet the criteria of factor analysis, were excluded for further EFA processes. For example, the ‘millennial’-related indicators might show a distinctive community character in arts and cultural scene (Cohen, Cohen, & Kushner, 2012; Kushner, 2014). In the LAI, these variables are used as proxies for the concentration of the arts market environment of each county. However, the ‘millennial’-related indicators were excluded in this study because, from a statistical point of view, the correlation matrix did not reflect sufficient correlation coefficients among the variables. Thus, it did not meet the assumption of factorability. However, it should not be overlooked that these variables could still reflect important local cultural character, and it does not mean these variables are less important to examine the relationship between arts and cultural resources, and community well-being. This study was the first step in examining the use of county-level secondary data to explore the relationship between arts and community well-being. Future study could construct substitute measurement models to support and strengthen this line of research.

Although the proposed model was developed based on a deliberative review of literature and with a sound conceptual foundation, the cross-sectional data still limit strong causal inferences to explain the influence and role of arts on community well-being. Furthermore, the specific findings of this study signify that the relationship between arts and culture and community well-being does not easily lead to a simple acceptance or rejection of propositions. Even though the primary goal was to illustrate a detailed picture of what each regression model demonstrates, this limitation might potentially restrain the interpretation of hypotheses. Notwithstanding some limitations, various regression models in this study verified its greatest ability to describe how combinations of arts and cultural resources, as they might be configured in real community lives, reflect community individual, social, and economic well-being.

A recent report from Tom Fleming (2015) captures spillover effects of the arts, culture, and creative industries to the economy and society in Europe. Based on research documents from 17 European countries, the report demonstrates three broad types of spillovers such as knowledge spillover (i.e., impact of creativity), industry spillover (i.e., culture-led generation), and network spillover (i.e., cultural activity and perceived life satisfaction, and social cohesion) (Fleming, 2015). Likewise, greater awareness of arts and cultural resources in society and understanding of how to encourage and facilitate them are a global issue. Future study is necessary to continue measuring the impact of arts and culture, and examining how they are adapted and related to community well-being.

The current study centers on quantitative methods used to certify the relationship between arts and culture and community well-being. However, quantitative evidence

alone will not deliver a robust inference representing the real world. Developing methodologies enables future researchers to better understand the value of arts and culture in community. Thus, future study that is to relate the quantitative approaches to qualitative aspects around arts and culture will provide more vivid understanding, as a way to help interpret arts and community well-being. This study seems to be a very beginning of the game that requires an effort to put the complicated pieces of puzzle together in one board. However, along with that, continued research via a longitudinal data-driven approach is likely to resolve the limitations of this study and to continue push forward thinking on the relationships of arts, culture, and community well-being.

REFERENCES

- Abdi, H. (2003). Factor rotations in factor analyses. In Lewis-Beck, M., A. Bryman, & T. Futing (Eds.), *Encyclopedia of social sciences research methods*. Thousand Oaks: Sage.
- Americans for the Arts. (2013). *Arts & Economic Prosperity IV*. Washington, DC: Americans for the Arts.
- Arts Council England (2013). *Contribution of the arts and culture industry to the national economy*. London, UK: Arts Council England.
- Arts Council England (2015a). *The value of arts and culture to people and society: An evidence review*. London, UK: Arts Council England.
- Arts Council England (2015b). *Contribution of the arts and culture industry to the national economy*. London, UK: Arts Council England.
- Ashforth, B. E., & Mael, F. (1989). Social identity theory and the organization. *Academy of management review*, 14(1), 20-39.
- Bailey, C., Miles, S., & Stark, P. (2004). Culture-led urban regeneration and the revitalisation of identities in Newcastle, Gateshead and the North East of England. *International journal of cultural policy*, 10(1), 47-65.
- Bandalos, D. L., & Finney, S. J. (2006). Factor analysis. In Hancock, G. R., & R. O. Mueller (Eds.), *The review's guide to quantitative methods in the social science* (pp. 93-114). NY: Routledge.
- Barraket, J. (2005). Putting people in the picture? The role of the arts in social inclusion. *Social Policy Working Paper No. 4*. Melbourne: Brotherhood of St Laurence and University of Melbourne Centre for Public Policy.
- Belfiore, E. (2006). The social impacts of the arts--myth or reality? In M. Mirza (Ed.), *Culture vultures: Is UK arts policy damaging the arts?* (pp. 20-37). London, UK: Policy Exchange.
- Belsley, D. A., Kuh, E., & Welsch, R. E. (1980). *Regression diagnostics: Identifying influential data and sources of collinearity*. New York: John Wiley & Sons.
- Berkes, F., & Folke, C. (1992). A systems perspective on the interrelations between natural, human-made and cultural capital. *Ecological Economics*, 5, 1-8.

- Berkes, F., & Folke, C. (1994). Investing in cultural capital for sustainable use of natural capital. In Jansson, A. (Ed.), *Investing in natural capital: the ecological economics approach to sustainability* (pp. 128-150). Washington DC: Island Press.
- Besleme, K., Maser, E., & Silverstein, J. (1999). *A community indicators case study: Addressing the quality of life in two communities*. San Francisco, CA: Redefining Progress.
- Blessi, G. T., Tremblay, D., Sandri, M., & Pilati, T. (2012). New trajectories in urban regeneration processes: Cultural capital as source of human and social capital accumulation - Evidence from the case of Tohu in Montreal. *Cities*, 29, 397-409.
- Borgonovi, F. (2004). Performing arts attendance: an economic approach. *Applied Economics*, 36(17), 1871-1885.
- Borrupt, T. (2006). *The creative community builder's handbook: How to transform communities using local assets, art, and culture*. Saint Paul, MN: Fieldstone Alliance.
- Bourdieu, P. (1986). The forms of capital. In Richardson, J. (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241-258). Westport, CT: Greenwood press.
- Braveman, p., Dekker, M., Egerter, S., & Sadegh-Nobari, t. (2011). Housing and health. *Exploring the Social Determinants of Health Issue Brief No. 7*. Princeton: Robert Wood Johnson Foundation (RWJF). Retrieved from http://www.rwjf.org/content/dam/farm/reports/issue_briefs/2011/rwjf70451
- Bureau of Labor Statistics (2014). *Occupational employment statistics*. [Data file]. Retrieved from <http://www.bls.gov/oes/#data>
- Buch, T., Milne, S., & Dickson, G. (2011). Multiple stakeholder perspectives on cultural events: Auckland's Pasifika festival. *Journal of Hospitality Marketing & Management*, 20(3-4), 311-328.
- Catterall, J. S. (2012). *The arts and achievement in at-risk youth: Findings from four longitudinal studies Research Report# 55*. Washington, DC: National Endowment for the Arts.
- Centers for Disease Control and Prevention (2014). *Smoking & Tobacco*. Retrieved from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/index.htm#toll.

- Chatterjee, S., Hadi, A., & Price, B. (2000). *The use of regression analysis by example*. New York, NY: John Wiley & Sons.
- Christakopoulou, S., Dawson, J., & Gari, A. (2001). The community well-being questionnaire: Theoretical context and initial assessment of its reliability and validity. *Social Indicators Research*, 56, 321-351.
- Cohen, M., Cohen, R., & Kushner, R. J. (2012). *Local Arts Index: A project of Americans for the Arts*. Arlington, VA: Americans for the Arts.
- Cohen, R., Schaffer, W., & Davidson, B. (2003) Arts and economic prosperity: The economic impact of nonprofit arts organizations and their audiences. *The Journal of Arts Management, Law, and Society*, 33(1), 17-31.
- Costello, A. B., & Osborne, J. W. (2005). Best practice in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*, 10(7), 1-9.
- County Health Rankings and Roadmaps. (n.d.). *County health rankings and roadmaps*. Retrieved from <http://www.countyhealthrankings.org/about-project>
- County Health Rankings & Roadmaps. (2014). *2014 county health rankings national data* [Data file]. Retrieved from <http://www.countyhealthrankings.org/rankings/data>.
- Cox, D., Frere, M., West, S., & Wiseman, J. (2010). Developing and using local community wellbeing indicators: Learning from the experience of community indicators Victoria. *Australian Journal of Social Issues*, 45(1), 71-88.
- Crespi-Vallbona, M., & Richards, G. (2007). The meaning of cultural festivals: Stakeholder perspectives in Catalunya. *International Journal of Cultural Policy*, 13(1), 103-122.
- Cuthill, M. (2004). Community well-being: The ultimate goal of democratic governance. *Queensland Planner*, 44(2), 8-11
- Davern, M. T., West, S., Bodenham, S., & Wiseman, J. (2011). Community indicators in Action: Using indicators as a tool for planning and evaluating the health and wellbeing of a community. In M.J. Sirgy, R. Phillips, and D. Rahtz (Eds.), *Community quality-of-life indicators; Best cases V* (pp. 319-338). New York: Springer Science+Business Media.

- Daykin, N., Orme, J., Evans, D., Salmon, D., McEachran, M., & Brain, S. (2008). The impact of participation in performing arts on adolescent health and behaviour a systematic review of the literature. *Journal of health psychology, 13*(2), 251-264.
- Daykin, N., Viggiani, N. D., Pilkington, P., & Moriatry, Y. (2013). Music making for health, well-being and behavior change in youth justice settings: A systematic review. *Health Promotion International, 28*(2), 197-210.
- De Bres, K., & Davis, J. (2001). Celebrating group and place identity: A case study of a new regional festival. *Tourism Geographies, 3*(3), 326-337.
- Derrett, R. (2003). Festivals and regional destinations: How festivals demonstrate a sense of community and place. *Rural Society, 13*(1), 35-53.
- Dewey, J. (1934). *Art as experience*. New York, NY: Minton, Balch & Company.
- DeVellis, R. (2003). Scale development: theory and applications. In Bickman, L & D. J. Rog (Eds.). *Applied social research methods*. Thousand Oaks: Sage.
- DiMaggio, P., & Mukhtar, T. (2004). Arts participation as cultural capital in the United States, 1982–2002: Signs of decline?. *Poetics, 32*(2), 169-194.
- DiMaggio, P., & Useem, M. (1982). The arts in class reproduction. In Apple, M. C. (Ed.), *Cultural and economic reproduction in education: Essays on class, ideology and the State* (pp. 181-201). London, UK: Routledge & Kegan Paul Ltd.
- DiStefano, C., Zhu, M., Mîndrilă, D. (2009), Understanding and using factor scores: Considerations for the applied research, *Practical Assessment Research & Evaluation, 14*(20),1-11.
- Dooris, M. (2005). A qualitative review of Walsall arts into health partnership. *Health Education. 105*(5), 355-373.
- Eckersley, R., Wierenga, A., & Wyn, J. (2005). *Flashpoints & signposts: Pathways to success and wellbeing for Australia's young people*. Retrieved from <https://www.vichealth.vic.gov.au/media-and-resources/publications/flashpoints-and-signposts>
- Egerter S, Barclay C, Grossman-Kahn R, & Braveman P. (2011). Violence, social disadvantage and health. *Exploring the Social Determinants of Health Issue Brief, 10*, 1-19.
- Emery, M., & Flora, C. (2006). Spiraling-up: Mapping community transformation with community capitals framework. *Community Development, 37*(1), 19-35.

- Evans, G. (2005). Measure for measure: Evaluating the evidence of culture's contribution to regeneration. *Urban studies*, 42(5-6), 959-983.
- Eversole, R. (2005). Challenging the creative class: Innovation, 'creative regions' and community development. *Australasian Journal of Regional Studies*, 11(3), 351-360.
- Falk, C. F., & Savalei, V. (2011). The relationship between unstandardized and standardized alpha, true reliability, and the underlying measurement model. *Journal of Personality Assessment*, 93(5), 445-453.
- FBI's Uniform Crime Report (2013). *Violent crime*. Retrieved from http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2013/crime-in-the-u.s.-2013/violent-crime/violent-crime-topic-page/violentcrimemain_final.
- Finch, H. (2006). Comparison of the performance of varimax and promax rotations: Factor structure recovery for dichotomous items. *Journal of Educational Measurement*, 43(1), 39-52.
- Finlay, J., Hardy, M., Morris, D., & Nagy, A. (2010). Mamow Ki-ken-da-ma-win: A partnership approach to Child, Youth, Family and Community wellbeing. *International Journal of Mental Health Addiction*, 8, 245-257.
- Fleming, T. (2015). *Cultural and creative spillovers in Europe: Report on a preliminary evidence review*. Retrieved from <http://ccspillovers.wikispaces.com/Results+and+report>.
- Flora, C., Flora, J., & Fey, S. (2007). Community capitals framework. *Biosecurity Bilingual Monograph, Learning Communities: International Journal of Learning in Social Contexts (Australia)*, & *Kritis: Journal of interdisciplinary development studies (Indonesia)*. 30-39.
- Flora, C., Flora J., Spears, J. D., Swanson, L. E., Lapping, M. B., & Weinberg, M. L. (1992). Community and Culture. In *Rural Communities: Legacy & change* (pp.57-78). Boulder, CO: Westview Press.
- Florida, R. L. (2002a). Bohemia and economic geography. *Journal of Economic Geography*, 2(1), 55-71.
- Florida, R. L. (2002b). *The rise of the creative class: and how it's transforming work, leisure, community and everyday life*. New York, NY: Basic Books.

- Forjaz, M. J., Prieto-Flores, M. E., Ayala, A., Rodriguez-Blazquez, C., Fernandez-Mayoralas, G., Rojo-perez, F., & Martinez-Martin, P. (2011). Measurement properties of the community wellbeing index in older adults. *Quality Life Research, 20*, 733-743.
- Foster, D. (2009). The value of the arts and creativity. *Cultural Trends, 18*(3), 257-261.
- Galloway, S. (2006). Cultural participation and individual quality of life: A review of research findings. *Applied Research in Quality of Life, 1*(3-4), 323-342.
- Galloway, S. (2009). Theory-based evaluations and the social impact of the arts. *Cultural Trends, 18*, 125-148.
- Gänswein, W. (2011). *Effectiveness Of Information Use For Strategic Decision Making*. Wiesbaden, Germany: Gabler Verlag.
- Ginsburgh, V. A., & Throsby, D. (2006). *Handbook of the economics of art and culture*. Amsterdam, The Netherlands: North-Holland.
- Goodlad, R., Hamilton, C., & Taylor, P. (2002b). Not just a treat: Issues in evaluating arts programmes to secure social inclusion. In *UK Evaluation Society Conference: The Art of Evaluation: artistry, discipline and delivery*. London.
- Goodlad, R., Hamilton, C., & Taylor, P. (2002a). Not just a treat: Arts and social inclusion. Glasgow, UK: the Scottish Arts Council.
- Gorsuch, R. L. (1983). *Factor analysis (2nd ed.)*. Hillsdale, NJ: Erlbaum.
- Gorsuch, R. L. (1997). Exploratory factor analysis: Its role in item analysis. *Journal of Personality Assessment, 68*(3), 532-560.
- Greaves, C. J., & Farbus, L. (2006). Effects of creative and social activity on the health and well-being of socially isolated older people: outcomes from a multi-method observational study. *The Journal of the Royal Society for the Promotion of Health, 126*(3), 134-142.
- Green, G. P., & Haines, A. (2007). *Asset building and community development (2nd ed.)*. Thousand Oaks, CA: Sage Publications.
- Green, S. B. (1991). How many subjects does it take to do a regression analysis. *Multivariate behavioral research, 26*(3), 499-510.
- Grodach, C. (2010). Art spaces, public space, and the link to community development. *Community Development Journal, 45*(4), 474-493.

- Grodach, C. (2011). Art spaces in community and economic development: Connections to neighborhoods, artists, and the cultural economy. *Journal of Planning Education and Research*, 31(1), 74-85.
- Grodach, C., & Loukaitou-Sideris, A. (2007). Cultural development strategies and urban revitalization: A survey of US cities. *International journal of cultural policy*, 13(4), 349-370.
- Guetzkow, J. (2002). *How the arts impact communities: An introduction to the literature in arts impact studies*. Princeton, NJ: Princeton University Center for Arts and Cultural Policy Studies.
- Gutierrez-Montes, I., Emery, M., & Fernandez-Baca, E. (2009). The sustainable livelihoods approach and the community capitals framework: The importance of system-level approaches to community change efforts, *Journal of the Community Development Society*, 40(2), 106-113.
- Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate Data Analysis* (5th ed.) New Jersey: Prentice Hall.
- Hall, T., & Robertson, I. (2001). Public art and urban regeneration: Advocacy, claims and critical debates. *Landscape Research*, 26(1), 5-26.
- Hayter, C., & Pierce, S. C. (2009). Arts & the economy: Using arts and culture to stimulate state economic development. Washington D.C: NGA Center for Best Practices.
- Henson, R. K., & Roberts, J. K. (2006). Use of exploratory factor analysis in published research common errors and some comment on improved practice. *Educational and Psychological Measurement*, 66(3), 393-416.
- Hendrickson, A. E., & White, P. O. (1964). Promax: A quick method for rotation to oblique simple structure. *British Journal of Statistical Psychology*, 17(1), 65-70.
- Henry J. Kaiser Family Foundation (2014). *Key facts about the uninsured population*. Retrieved from <http://kff.org/uninsured/fact-sheet/key-facts-about-the-uninsured-population/>
- How the arts. (n.d.). *How the arts and culture sector catalyzes economic vitality*. American Planning Association. Retrieved from <https://www.planning.org/research/arts/briefingpapers/vitality.htm>
- Hoyman, M., & Faricy, C. (2009). It takes a village a test of the creative class, social capital, and human capital theories. *Urban Affairs Review*, 44(3), 311-333.

- Hoynes, W. (2003). The Arts, Social Health, and the Development of Cultural Indicators. *International Journal of Public Administration*, 26(7), 773-788.
- Insch, A., & Florek, M. (2008). A great place to live, work and play: Conceptualising place satisfaction in the case of a city's residents. *Journal of Place Management and Development*, 1(2), 138-149.
- Iyengar, S., Grantham, E., Heeman, R., Ivanchenko, R., Nichols, B., Shingler, T., Shewfelt, S., & Woronkiewicz, J. (2012). *How art works: The National Endowment for the Arts' five-year research agenda, with a system map and measurement model*. Washington, DC: National Endowment for the Arts.
- Jackson, J., Houghton, M., Russell, R., & Triandos, P. (2005). Innovations in measuring economic impacts of regional festivals: A do-it-yourself kit. *Journal of Travel Research*, 43(4), 360-367.
- Jacobs, C. (2007). Measuring success in communities: Understanding the community capitals framework. *Extension Extra: Community Capitals Series # 1*. Retrieved from <http://pascalobservatory.org/sites/default/files/CapitalsExtension%20>
- Jeannotte, M. S. (2003). Singing alone? The contribution of cultural capital to social cohesion and sustainable communities. *The International Journal of Cultural Policy*, 9(1), 35-49.
- Johns, B. (1988). The community artist as a community development catalyst: An evaluation of a pilot project. *Journal of the Community Development Society of America*, 19(1), 37-50.
- Johnson, V., & Stanley, J. (2007). Capturing the contribution of community arts to health and well-being. *International Journal of Mental Health Promotion*, 9(2), 28-35.
- Joliffe, I. T., & Morgan, B. J. T. (1992). Principal component analysis and exploratory factor analysis. *Statistical Methods in Medical Research*, 1(1), 69-95.
- Kaiser, H. F. (1970). A second-generation Little Jiffy. *Psychometrika*, 35, 401-415.
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39, 31-36.
- Kay, A. (2000). Art and community development: the role the arts have in regenerating communities. *Community Development Journal*, 35(4), 414-424.
- Keating, C. (2002). Evaluating community arts and community well-being: An evaluation guide for community arts practitioners. Retrieved from <http://www.effectivechange.com.au/Documents/PDFGuide.pdf>

- Kim, H. Y. (2013). Statistical notes for clinical researchers: assessing normal distribution (2) using skewness and kurtosis. *Restorative Dentistry & Endodontics*, 38(1), 52-54.
- Kinder, K. & Harland, J. (2004). The arts and social inclusion: What's the evidence? *Support for Learning*, 19(2), 52-56.
- Kirk, R. E. (2013). *Experimental Design - Procedures for the Behavioral Sciences* (4th ed.). Los Angeles: Sage. ISBN 978-1-4129-7445-5
- Kleinhenz, R. A., Ritter-Martinez, K., Entis, G., & Cooper, C. (2015). 2014 Otis report on the creative economy of California. Retrieved from http://www.otis.edu/sites/default/files/2015_Otis_Report_on_the_Creative_Economy_CA.pdf
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York: Guilford Press.
- Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York: Guilford Press.
- Kopczynski, M., & Hager, M. (2004). *The value of the performing arts in five communities 2*. Washington, DC: Performing Arts Research Coalition.
- Kushner, R. J. (2014). Cultural enterprise formation and cultural participation in America's counties. In Rushton, M. (Ed.), *Creative communities* (pp. 144-165). Washington, D. C: Brookings Institution Press.
- Kushner, R. J., & Cohen, R. (2014). *National Arts Index 2014: An annual measure of the vitality of arts and culture in the United States*. Washington, D. C: American for the Arts.
- Lavanga, M. (2006). The contribution of cultural and creative industries to a more sustainable urban development: The case studies of Rotterdam and Tampere. Paper for the ACEI: *Association of cultural Economics International conference*. Vienna, Austria, July 6-9, 2006.
- Lee, C. W., & Lingo, E. L. (2011). The "Got Art?" paradox: Questioning the value of art in collective action. *Poetics*, 39(4), 316-335.
- Lobo, Y. B., & Winsler, A. (2006). The effects of a creative dance and movement program on the social competence of Head Start preschoolers. *Social Development*, 15(3), 501-519.
- Local arts index (n.d.). *Local arts index - where I live*. Retrieved from <http://www.artsindexusa.org/where-i-live>.

- Lowe, S. S. (2000). Creating community: Art for community development. *Journal of Contemporary Ethnography*, 29(3), 357-386.
- Macnaughton, J., White, M., & Stacy, R. (2005). Researching the benefits of arts in health. *Health Education*, 105(5), 332-339.
- Mark, M. L., & Charles, L. G. (1992). *A history of American music education*. New York, NY: Schirmer Books.
- Markusen, A. (2006). Urban development and the politics of a creative class: Evidence from a study of artists. *Environment and Planning A*, 38(10), 1921-1940.
- Markusen, A., & Gadwa, A. (2010a). *Creative placemaking*. Washington DC: National Endowment for the Arts.
- Markusen, A., & Gadwa, A. (2010b). Arts and culture in urban or regional planning: A review and research agenda. *Journal of Planning Education and Research*, 29(3), 379-391.
- Markusen, A., & King, D. (2003). *The artistic dividend: The arts' hidden contributions to regional development*. Minneapolis, MN: University of Minnesota.
- Markusen, A., & Schrock, G. (2006). The artistic dividend: Urban artistic specialisation and economic development implications. *Urban Studies*, 43(10), 1661-1686.
- Markusen, A., Schrock, G., & Cameron, M. (2004). *The artistic dividend revisited*. Minneapolis, MN: University of Minnesota.
- Matarasso, F. (1997). *Use or ornament? The social impact of participation in the arts*. Gloucester, UK: Comedia
- Matarasso, F. (1999). *Towards a local culture index: Measuring the cultural vitality of communities*. Gloucester, UK: Comedia.
- Matarasso, F., & Chell, J. (1998). *Vital Signs: mapping community arts in Belfast*. Gloucester, UK: Comedia.
- Maybery, D., Pope, R., Hodgins, G., Hitchenor, Y., & Shepherd, A. (2009). Resilience and well-being of small inland communities: community assets as key determinants. *Rural Society*, 19(4), 326-339
- McCarthy, J. (2006). Regeneration of cultural quarters: public art for place image or place identity? *Journal of Urban Design*, 11(2), 243-262.

- McClinchey, K. A. (2008). Urban ethnic festivals, neighborhoods, and the multiple realities of marketing place. *Journal of travel & tourism marketing*, 25(3-4), 251-264.
- Mcdonald, M., Ctalani, C., & Minkler, M. (2012). Using the arts and new media in community organizing and community building: An overview and case study from post-Katrina New Orleans. In Meredith Minkler (Ed.), *Community organizing and community building for health and welfare*. NY: Rutgers University Press.
- Meloun, M., Militký, J., Hill, M., & Brereton, R. G. (2002). Crucial problems in regression modelling and their solutions. *Analyst*, 127(4), 433-450.
- Merli, P. (2002). Evaluating the social impact of participation in arts activities: A critical review of Francois Matarasso's *Use or Ornament?* *The International Journal of Cultural Policy*, 8(1), 107-118.
- Michalos, A. C. (2005). Arts and the quality of life: An exploratory study. In *the International Conference on Quality of Life in Global World* (pp. 11-59). The Netherlands: Springer..
- Michalos, A. C., & Kahlke, P. M. (2010). Arts and the perceived quality of life in British Columbia. *Social Indicators Research*, 96,1-39.
- Michalos, A.C., Smale, B., Labonté, R., Muharjarine, N., Scott, K., Moore, K., Swystun, L., Holden, B., Bernardin, H., Dunning, B., Graham, P., Guhn, M., Gadermann, A.M., Zumbo, B.D., Morgan, A., Brooker, A.-S., & Hyman, I. (2011). *The Canadian Index of Wellbeing*. Technical Report 1.0. Waterloo, ON: Canadian Index of Wellbeing and University of Waterloo.
- Miles, R. L., Greer, L., Kraatz, D., Kinnear, S. (2008). Measuring community wellbeing: A central Queensland case study. *Australasian Journal of Regional Studies*, 14(1), 73-93.
- Moore, M. H., & Moore, G. W. (2005). *Creating public value through state arts agencies*. Minneapolis, MN: Arts Midwest.
- Mulligan, M., Humphery, K., James, P., Scanlon, C., Smith, P., & Welch, N. (2006). *Creating community: Celebrations, arts and wellbeing within and across local communities*. Melbourne, Australia: Globalism Institute.
- Nathans, L. L., Oswald, F. L., & Nimon, K. (2012). Interpreting multiple linear regression: A guidebook of variable importance. *Practical Assessment, Research & Evaluation*, 17(9), 1-19.

- National Assembly of State Arts Agencies (2014). *State arts agency legislative appropriations preview fiscal year 2015*. Retrieved from <http://www.nasaa-arts.org/Research/Funding/NASAAFY2015SAALegAppropPreview.pdf>
- National arts index (n.d.). *2014 National arts index*. Retrieved from <http://www.artsindexusa.org/2014-national-arts-index>.
- National Endowment for the Arts (NEA) (2006). *The arts and civic engagement: Involved in arts, involved in life*. Retrieved from <http://arts.gov/publications/arts-and-civic-engagement-involved-arts-involved-life-0>
- National Endowment for the Arts (NEA) (2010). *Live from your neighborhood: A national study of outdoor arts festival*. Retrieved from <https://www.arts.gov/sites/default/files/Festivals-Executive-Summary.pdf>
- National Center for Charitable Statistics. (n.d.). *National taxonomy of exempt entities*. Retrieved from <http://www.nccs.urban.org/classification/NTEE.cfm>
- NEA Announces, (2011). *NEA announces new research note on artists in the workforce*. Retrieved from <http://arts.gov/news/2011/nea-announces-new-research-note-artists-workforce>
- Newman, T., Curtis, K., & Stephens, J. (2003). Do community-based arts projects result in social gains? A review of the literature. *Community Development Journal*, 38(4), 310-322.
- Ng, A. S., & Kaye, K. (2012). *Why It Matters: Teen Childbearing, Education, and Economic Wellbeing*. Washington, D. C: The National Campaign to Prevent Teen and Unplanned Pregnancy.
- Nicholson, R. E., & Pearce, D. G. (2001). Why do people attend events: A comparative analysis of visitor motivations at four South Island events. *Journal of Travel Research*, 39(4), 449-460.
- Nimon, K. F., & Oswald, F. L. (2013). Understanding the results of multiple linear regression beyond standardized regression coefficients. *Organizational Research Methods*, 16(4), 650-674.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill.
- O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity*, 41(5), 673-690.

- Osborne, J. (2002). Notes on the use of data transformations. *Practical Assessment, Research & Evaluation, 8*(6). Retrieved November 12, 2014 from <http://PAREonline.net/getvn.asp?v=8&n=6>.
- Osborne, J. W., & Waters, E. (2002). *Multiple Regression Assumptions*. ERIC Digest. Retrieved from <http://files.eric.ed.gov/fulltext/ED470205.pdf>
- Packer, J., & Ballantyne, J. (2011). The impact of music festival attendance on young people's psychological and social well-being. *Psychology of Music, 39*(2), 164-181.
- Pallant, J. (2010). *SPSS survival manual: A step by step guide to data analysis using SPSS*. UK: Open University Press.
- Phillips, R. (2004). Artful business: Using the arts for community economic development. *Community Development Journal, 39*(2), 112-122.
- Phillips, R., & Shockley, G. (2010). Linking cultural capital conceptions to asset-based community development. In Green, G. P. & A. Goetting (Eds.), *Mobilizing communities: Asset building as a community development strategy (pp. 92-111)*. Philadelphia, PA: Temple University Press.
- Pickernell, D., O'Sullivan, D., Senyard, J. M., & Keast, R. L. (2007). Social Capital and Network Building for Enterprise in Rural Areas: Can Festivals and Special Events Contribute? In *Proceedings 30th Institute for Small Business and Entrepreneurship Conference (pp. 1-18)*, Glasgow, Scotland, United Kingdom
- Pratt, A. C. (2010). Creative cities: Tensions within and between social, cultural and economic development: A critical reading of the UK experience. *City, Culture and Society, 1*(1), 13-20.
- Prebensen, N. K. (2010). Value creation through stakeholder participation: A case study of an event in the High North. *Event Management, 14*(1), 37-52.
- Prilleltensky, I., & Prilleltensky, O. (2012). Webs of well-being: The interdependence of personal, relational, organizational and community well-being. In J. Haworth & G. Hart (Eds.), *Well-being: individual, community and social perspectives*. New York, NY: Palgrave Macmillan.
- Quinn, B. (2005). Arts festivals and the city. *Urban studies, 42*(5-6), 927-943.
- Rapp-Paglicci, L. A., Ersing, R., & Rowe, W. (2007). The effects of cultural arts programs on at-risk youth: Are there more than anecdotes and promises? *Journal of Social Service Research, 33*(2), 51-56.

- Rapp-Paglicci, L., Stewart, C., & Rowe, W. (2011). Can a Self-Regulation Skills and Cultural Arts Program Promote Positive Outcomes in Mental Health Symptoms and Academic Achievement for At-Risk Youth?. *Journal of Social Service Research*, 37(3), 309-319.
- Reeves, M. (2002). *Measuring the economic and social impact of the arts: A review*. London, UK: Arts Council England.
- Reid, S. (2007). Identifying social consequences of rural events. *Event Management*, 11(1-2), 89-98.
- Respress, T., & Lutfi, G. (2006). Whole brain learning: The fine arts with students at risk. *Reclaiming children and youth*, 15(1), 24-31.
- Richards, G. (2011). Creativity and tourism: The state of the art. *Annals of Tourism Research*, 38(4), 1225-1253.
- Rogers, P., & Anastasiadou, C. (2011). Community involvement in festivals: Exploring ways of increasing local participation. *Event Management*, 15(4), 387-399.
- Ruppert, S. S. (2006). *Critical evidence: How the arts benefit student achievement*. Washington, D. C: National Assembly of State Arts Agencies.
- Saleh, F., & Wood, C. (1998). Motives of volunteers in multicultural events: The case of Saskatoon Folkfest. *Festival Management and Event Tourism*, 5(1-2), 59-70.
- Schmitt, N. (1996). Uses and abuses of coefficient alpha. *Psychological Assessment*, 8(4), 350-353.
- Schwarz, E. C., & Tait, R. (2007). Recreation, arts, events and festivals: Their contribution to a sense of community in the Colac-Otway Shire of country Victoria. *Rural Society*, 17(2), 125-138.
- Sharp, J., Pollock, V., & Paddison, R. (2005). Just art for a just city: public art and social inclusion in urban regeneration. *Urban Studies*, 42(5-6), 1001-1023.
- Shaw, P. (2003). *What's art got to do with it? Briefing paper on the role of the arts in neighborhood renewal*. UK: arts council of England.
- Simkiss, D., Ebrahim, G.J., & Waterston, A.J.R. (2011). *Chapter 5: Regression diagnostics*. Retrieved from http://www.oxfordjournals.org.ezproxy1.lib.asu.edu/our_journals/tropej/online/ma_chap5.pdf

- Sirgy, M. J., Widgery, R. N., Lee, D., & Yu, G. B. (2010). Developing a measure of community well-being based on perceptions of impact in various life domains. *Social Indicators Research, 96*(2), 295-311.
- Small, K. (2007). Social dimensions of community festivals: An application of factor analysis in the development of the social impact perception scale. *Event Management, 11*, 45-55.
- South, J. (2006). Community arts for health: An evaluation of a district programme. *Health Education, 106*(2), 155-168.
- Spandler, H., Secker, J., Kent, L., Hacking, S., & Shenton, J. (2007). Catching life: the contribution of arts initiatives to recovery approaches in mental health. *Journal of Psychiatric and Mental Health Nursing, 14*(8), 791-799.
- Spiropoulos, S., Gargalianos, D., & Sotiriadou, K. (2006). The 20th Greek Festival of Sydney: A stakeholder analysis. *Event Management, 9*, 169-183.
- States Ranked. (n.d.). States ranked by funding for the arts. Retrieved from <http://artbistro.monster.com/careers/articles/9960-states-ranked-by-funding-for-the-arts?page=5>
- Stern, M. J., & Seifert, S. C. (2010). Cultural clusters: The implications of cultural assets agglomeration for neighborhood revitalization. *Journal of Planning Education and Research 29*(3), 262-279.
- Stevens, J. P. (2002). *Applied multivariate statistics for the social sciences* (4th ed.). New Jersey: Lawrence Erlbaum Associates, Publishers.
- Strom, E. (1999). Let's put on a show! Performing arts and urban revitalization in Newark, New Jersey. *Journal of Urban Affairs, 21*(4), 423-435.
- Stuckey, H. L., & Nobel, J. (2010). The connection between art, healing, and public health: A review of current literature. *American Journal of Public Health, 100*(2), 254-263.
- Stuiver, M., van der Jagt, P., van Erven, E., & Hoving, I. (2013). The potentials of art to involve citizens in regional transitions: exploring a site-specific performance in Haarzuilens, the Netherlands. *Community Development Journal, 48*(2), 298-312.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, NJ: Pearson Education.
- Tataryn, D. J., Wood, J. M., & Gorsuch, R. L. (1999). Setting the value of k in promax: A Monte Carlo study. *Educational and Psychological Measurement, 59*(3), 384-391.

- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education, 2*, 53-55.
- Throsby, D. (1994). The production and consumption of the arts: A view of cultural economics. *Journal of Economic Literature, 32*(1), 1-29.
- Trends data (2014). *2014 Trends data documentation*. Retrieved from <http://www.countyhealthrankings.org/sites/default/files/2014%20CHR%20trends%20data%20documentation.pdf>.
- Tuck, F., & Dickinson, S. (2015). *The economic impact of museums in England*. London, UK: Arts Council England.
- Van Assche, J., Block, T., & Reynaert, H. (2010). Can community indicators live up to their expectations? The case of the Flemish city monitor for livable and sustainable urban development. *Applied Research in Quality of Life, 5*(4), 341-352.
- Van Zyl, C., & Botha, C. (2004). Motivational factors of local residents to attend the Aardklop National Arts Festival. *Event Management, 8*(4), 213-222.
- Victorian Health Promotion Foundation (2006). *Creating community: Celebrations, arts and wellbeing, within & across local communities*. Melbourne, Victoria: VicHealth and the Global Institute, RMIT.
- Victorian Health Promotion Foundation (2013). *Making art with communities: A work guide*. Retrieved from <https://www.vichealth.vic.gov.au/media-and-resources/publications/making-art-with-communities-a-work-guide>
- Walker, D. M. (1995). *Connecting right and left brain: Increasing academic performance of African American students through the arts* ED 390 857.
- Welch, N., Plosila, W., & Clarke, M. (2004). *Vibrant culture-thriving economy: Arts , culture, and prosperity in Arizona's valley of the sun*. AZ: Morrison Institute for Public Policy.
- What Drives. (n.d.). *What drives performance? A look into community characteristics*. National Center for Arts Research. Retrieved from <http://mcs.smu.edu/artsresearch2014/reports/what-drives-performance-look-community-characteristics-2>
- White, M. (2006). Establishing common ground in community-based arts in health. *The Journal of the Royal Society for the Promotion of Health, 126*(3), 128-133.

- White, S. C. (2010). Analysing wellbeing: A framework for developing practice. *Development in Practice, 20*(2), 158-172.
- Whorton, J. W., & Moore, A. B. (1984). Summative scales for measuring community satisfaction. *Social Indicators Research, 15*(3), 297-307.
- Williams, D. (1997). How the arts measure up: Australian research into the social impact of the arts, *Social Impact of the Arts Working Paper 8*, Stroud, UK: Comedia.
- Wills, J. (2001). Measuring community well being: A framework for the development of community indicators. *Local Government Community Services Association of Australia (LGCSAA) 8th Biennial National Conference*, Perth, Australia.
- Wind, Y., Green, P. E., & Jain, A. K. (1973). Higher order factor analysis in the classification of psychographic variables. *Journal of the Market Research Society, 15*(4), 105-109.
- Wiseman, J. & Brasher, K. (2008). Community wellbeing in an unwell world: Trends, challenges, and possibilities. *Journal of Public Health Policy, 29*, 353-366.
- Wiseman, J., Heine, W., Langworthy, A., McLean, N., Pyke, J., Raysmith, H., & Salvaris, M. (2006). *Measuring wellbeing: Engaging communities*. Victoria, Australia: VicHealth.
- Wolff, H. G., & Preising, K. (2005). Exploring item and higher order factor structure with the Schmid-Leiman solution: Syntax codes for SPSS and SAS. *Behavior Research Methods, 37*(1), 48-58.
- Wood, E.H. (2005). Measuring the economic and social impacts of local authority events, *International Journal of Public Sector Management, 18* (1) 37-53

APPENDIX A

NTEE CODES FOR ARTS NONPROFIT ORGANIZATIONS IN THE LAI

The National Taxonomy of Exempt Entities (NTEE) system is used to classify the organizations based on descriptive data in the organizations' applications for recognition of tax-exempt status (Forms 1023 and 1024). The NTEE classification system divides nonprofit organizations into 10 broad categories with 26 major groups. Among 10 categories, arts and culture-related nonprofits are included in the group A in category 1. The LAI use 43 codes to gather nonprofit data, and some codes are drawn from education (e.g., libraries), environmental and animals (e.g., botanical gardens and arboreta, zoos and aquariums), human services (e.g., arts fair and festivals). The 43 codes used in this study as follows:

Code	Type of Nonprofit Organizations	Code	Type of Nonprofit Organizations
A01	Alliance/Advocacy Organizations	A57	Science & Technology Museum
A02	Management & Technical Assistance	A60	Performing Arts
A03	Professional Societies & Associations	A61	Performing Arts Centers
A05	Professional Institute/Public policy Analysis	A62	Dance
A11	Single Organization Support	A63	Ballet
A12	Fundraising /Fund Distribution	A65	Theater
A19	Nonmonetary Support (not elsewhere classified)	A68	Music
A20	Arts, Cultural Organizations	A69	Symphony Orchestras
A23	Cultural/Ethnic Awareness	A6A	Opera
A25	Arts Education/Schools	A6B	Singing Choral
A26	Arts Council/Agency	A6C	Music Groups, Bands, Ensembles
A30	Media, Communications Organizations	A6E	Performing Arts Schools
A31	Film, Video	A70	Humanities Organizations
A32	Television	A80	Historical Societies and Related Activities
A33	Printing, Publishing	A84	Commemorative Events
A34	Radio	A90	Arts Service Activities/Organizations
A40	Visual Arts Organizations	A99	Other Arts, Culture, Humanities Organizations (not elsewhere classified)
A50	Museums & Museum Activities	B70	Libraries
A51	Art Museums	C41	Botanical Gardens and Arboreta
A52	Children's Museums	D50	Zoos and Aquariums
A54	History Museums	N52	County/Street/Civic/Multi-Arts Fairs and Festivals
A56	Natural History, Natural Science Museums		

APPENDIX B
THE LAI VARIABLES EXCLUDED FOR AN EXPLORATORY FACTOR
ANALYSIS

Total nonprofit arts expenditures [LnSNEXPPC] AC share of all establishments [TSCBETSH] Creative industry share of all businesses [SCIBUSSH]	High correlation coefficient
Reading materials expenditures [SCALBOK]	High squared multiple correlation
Arts education nonprofits [LnSNPOEDU] Other arts nonprofits [LnSNPOOTH]	A poor fit of the factor to the analysis
Attending movies [SSCAMOV] Attending popular entertainment [SSCAPOP] Visiting zoos [SSCAZOO] Visual/performing arts degrees [LnSVPADeg] Visual arts nonprofits [LnSNPOVIS]	Communality less than 0.3
Donation to arts and culture/pubic broadcasting [SSCADON] Media arts nonprofits [LnSNPOMED] Visiting art museums [SSCAMUS] Attending movies [SSCAMOV] Field service arts nonprofits [LnSNPOSRV]	A severe cross-loading pattern