The Community Diagnostics and Social Impact Toolkit: Development and Validation of a Reliable Measure

Kevan W. Lamm[1], Abigail Borron[2], and Keith Atkins[3]

Abstract

Although there are questions concerning the extent of the problems facing rural Americans, there is considerable evidence that many nonmetropolitan communities are facing a multitude of serious challenges. These issues do not exist as distinct and unrelated problems. For instance, one cannot focus exclusively on depopulation without also confronting economic decline and lack of employment opportunities, deteriorating social bonds, cultural atrophy, decaying infrastructure, and so on. Rural communities are systems in which each problem is linked, and managing these issues requires a holistic approach. Despite the need for robust diagnostic tools to support agricultural educators to work with communities there has been a notable gap in empirical tools to do so. The purpose of the study was to develop and validate an instrument to gauge community perceptions according to the Community Capitals Framework. The results of the study found the proposed instrument demonstrated content, response process, and internal structure validity based on a pilot of six counties in Georgia. Furthermore, the scale demonstrated initial consequential validity based on county level comparisons and statistically significant observed differences.

Keywords: community development; community capitals; community diagnostics; social impact

Introduction

The precarious state of rural America and the enduring challenges confronting residents in small communities are themes familiar to both journalists and researchers. Journalistic accounts of rural life throughout the country have contributed to the prevailing narrative that many nonmetropolitan areas are on the brink of socioeconomic collapse. Prominent columnists have asserted that rural communities are witnessing an intractable economic decline that has given rise to a declining and aging population, increased joblessness, and so-called "deaths of despair" due to drugs, alcohol, and suicide (Beck, 2015; Egan, 2002; Krugman, 2019). Other reports have detailed the considerable economic and demographic forces aligned against rural Americans and, perhaps more disconcerting, the paucity of feasible policy solutions directed at the underlying problems (Chinni, 2017; Porter, 2018; Shah, 2014; Simon & Jones, 2017; Truong, 2018). In a particularly terse appraisal, a 2017 Wall Street Journal headline declared that "Rural America is the New 'Inner City'" (Adamy & Overberg, 2017). An especially discouraging editorial assessment of rural communities asserted that "many towns with a rich history and strong community pride are already dead; their citizens just don't know it yet" (Leonard, 2017, para. 18).

---

[1] Kevan W. Lamm is an Assistant Professor in the Department of Agricultural Leadership, Education and Communication at the University of Georgia, 141 Four Towers, Athens, GA 30602, KL@uga.edu.

[2] Abigail Borron is an Associate Professor in the Department of Agricultural Leadership, Education and Communication at the University of Georgia, 143A Four Towers, Athens, GA 30602, aborron@uga.edu.

[3] Keith Atkins is a Postdoctoral Research Associate in the Department of Agricultural Leadership, Education and Communication at the University of Georgia, 140 Four Towers, Athens, GA 30602, katkins@uga.edu.

These portrayals suggest that rural regions of the country are experiencing a significant, and perhaps irreversible, decline in resources resulting from systemic challenges. Nonmetropolitan areas are thought to lack the necessary resources to adequately confront the existential challenges they face. There is also a considerable amount of empirical research supporting the notion that small communities throughout the country are in sustained economic and demographic decline (Carr & Kefalas, 2009; Johnson & Lichter, 2019; Thiede et al., 2018; Tickamyer & Duncan, 1990; Wuthnow, 2018). In the midst of such empirical conclusions is the loss of the "local school," which inevitably results in loss of local identity and a significant decline in the next generation (Roberts et al., 2016, p. 50).

Not all media or scholarly accounts of rural America are as uniformly pessimistic, however. Some reports have noted that misfortunes imputed to rural communities are due, at least in part, to urbanization processes and the manner in which rural areas are classified. When a rural county experiences significant population growth due to a positive change in local economic conditions (e.g., increased employment opportunities) or some other development, it ceases to be a rural county and is therefore not counted among the comparatively distressed areas that remain (Dam, 2019; Goetz et al., 2018; Johnson et al., 2018). This ensures that the least prosperous counties continue to be classified as rural, thus skewing the social and economic characterizations of nonmetropolitan areas. As Goetz et al. (2018, p. 100) point out, "the validity of the notion that rural America is in decline depends on the definition of rural." They note that much of rural America's poor performance relative to metropolitan areas is due to reclassification. Removing thriving communities from the rural classification seems to overemphasize the problems of those that remain.

Although there are questions concerning the extent of the problems facing rural Americans (Dam, 2019; Johnson et al., 2018; Teixeira, 1998), there is considerable evidence that many nonmetropolitan communities are facing a multitude of serious challenges (Bor, 2017; Monnat & Brown, 2017; Rigg et al., 2018). These issues do not exist as distinct and unrelated problems. For instance, one cannot focus exclusively on depopulation without also confronting economic decline and lack of employment opportunities, deteriorating social bonds, cultural atrophy, decaying infrastructure, and so on. As Fey et al. (2006) note, rural communities are systems in which each problem is linked, and managing these issues requires a holistic approach. Communities that recognize this are seeking solutions that address all aspects of local life (Fey et al., 2006). Towns and regions that focus on finding solutions to narrowly considered problems are likely to find that their efforts are merely palliative as they do not address the decidedly complex circumstances that precipitate many local challenges. A systems approach to problems facing rural communities allows for issue contextualization and the discovery of issue linkages, which serve to facilitate strategy diversification and more efficient mobilization of appropriate resources (Emery & Flora, 2006; Meadows, 2008).

Priority area six of the 2016-2020 American Association for Agricultural Education (AAAE) National Research Agenda (Roberts et al., 2016) focuses on the need of for vibrant, resilient communities. Despite the known challenges associated with communities, and rural communities in particular (e.g. Krugman, 2019), there remains a dearth of tools available to inform the question, "how do agricultural leadership, education, and communication teaching, research, and extension programs impact local communities?" (Roberts et al., 2016, p. 51). For example, McKim et al. (2019) maintain that the community is an important context for education and that educational interventions should acknowledge "changes within the community (e.g. community sustainability, community vitality, community-school relationship)" (p. 182). However, the ability to quantify and track impact is limited. The intent of the present work is to address this gap by providing a valid and reliable tool for agricultural leadership, education, communication and associated professionals to use to examine communities and the impact of the efforts accordingly.

Conceptual Framework

The Community Capitals Framework (CCF) is a methodical approach to organizing and evaluating information pertaining to community development initiatives, the implementation of related programs, and the resources used in these efforts (Pigg et al., 2013). Capitals refer simply to the resources belonging to a community and its residents (Gutierrez-Montes, Emery, et al., 2009). The CCF is based on the understanding that all communities can build capital and initiate positive change by investing in their existing assets (Anderson, 2014; Emery et al., 2006; Flora et al., 2016). The framework also implicitly acknowledges that each community draws upon a unique set of resources to maintain and create capital (Magis, 2010). Emery and Flora (2006) describe the CCF as "a way to analyze community and economic development efforts from a systems perspective by identifying the assets in each capital (stock), the types of capital invested (flow), the interaction among the capitals, and the resulting impacts across capitals" (p. 20).

The development of the CCF was heavily influenced by the Sustainable Livelihoods Approach (SLA), which emerged in the 1980s as an economic development and poverty reduction strategy (Gutierrez-Montes, Emery, et al., 2009). The SLA represents a systems method designed to appraise the conditions that impact households, the resources to which they have access, and the applications and outcomes of livelihood strategies (Gutierrez-Montes, Emery, et al., 2009). This approach "helps to organize the factors that constrain or enhance livelihood opportunities and shows how they relate to one another" (Serrat, 2017, p. 23). There are five household capitals associated with the SLA: human, social, natural, physical, and financial. These capitals are evaluated based on the extent to which they promote household and community objectives such as food security, better health, higher incomes, overall improvement in household and community well-being, and sustainable natural resource management (Gutierrez-Montes, Emery, et al., 2009; Serrat, 2017). The SLA perspective and its primary goals laid the essential groundwork for the Community Capitals Framework.

The CCF is comprised of seven capitals sorted into two classes: *human capitals* and *material capitals* (Emery & Flora, 2006; Flora et al., 2016; Gutierrez-Montes, Emery, et al., 2009). The human capitals consist of the following: social, human, cultural, and political. The material capitals include: natural, financial, and built. Each form of capital is linked to the others in fundamentally important ways (Flora et al., 2016). Because of these relationships, a spiraling-up process—assets strengthening and building upon other assets—may result when investments are made in one or more capitals (Emery & Flora, 2006). Spiraling-down may occur when one or more capitals experiences a significant decline, precipitating a depletion of other capital stocks (Emery & Flora, 2006; Stofferahn, 2012). Notwithstanding these close connections between the seven capitals, each can also be regarded as an individually separate and distinct concept. This allows for deconstructing the CCF, specifying the discrete framework components, and determining the dimensionality of each capital. Analyzing the community capitals in this way emphasizes the need for a valid tool capable of accurately measuring community resources and assets. Moreover, this type of analysis may facilitate the identification of entry points for relevant community and economic development programs and guide subsequent evaluation efforts.

Human Capitals

Social capital typically refers to the properties of a collective structure such as social networks, accepted norms, and reciprocated trust that promote a shared identity and cooperative behaviors that benefit members (Flora, 2004; Putnam, 1995a, 1995b, 2000; Putnam et al., 1993). In a community development context, it can be regarded as the collective views of involved group or community members attempting to initiate positive change that benefits all residents (Brown, 1996; Turner, 1999). Greater social capital among individuals within communities—identified as trust and trustworthiness—is associated with higher quality of life and other favorable community outcomes (Coleman, 1988; Putnam, 1995a).

Human capital is characterized by the intrinsic and acquired traits of community members, such as work-related skills, capacity for learning, general abilities, and health (Becker, 1962, 1993; Schultz, 1961). These qualities are determined by innate ability as well as social and environmental factors (Flint, 2010), and can have a significant impact on community development efforts. Without this form of capital, residents and other stakeholders could potentially fail to recognize and access critical resources existing within and outside the community (Emery et al., 2006; Emery & Flora, 2006; Flora et al., 2016).

Cultural capital can refer to a number of concepts, but the term is typically characterized by manifestations of intellectual and physical properties that enable participation in higher status activities (Bourdieu, 2018). For instance, higher cultural status has been linked to more positive life experiences such as educational and marital outcomes, which serve to reinforce and extend a higher cultural status (DiMaggio & Mohr, 1985; Sullivan, 2001). This status plays an important role in determining "what voices are heard and listened to, which voices have influence in what areas, and how creativity, innovation, and influence emerge and are nurtured" (Emery & Flora, 2006, p. 21).

Political capital is to some extent the result of combining social and financial capital, as it connects community development strategies with the financial assets of the private sector and governmental provision of services (Turner, 1999). It can also refer to a community's capacity for turning collective norms and values into formally enforced rules that govern resource distribution (Flint, 2010; Flora et al., 2016). Political capital affects community members' individual and collective ability to determine the issues that matter, and which policies and programs should be implemented to address concerns (Flint, 2010; Turner, 1999).

Material Capitals

Natural capital refers to both renewable and non-renewable natural resources and amenities that serve as the foundation for all other forms of capital (Costanza et al., 1997; Flora et al., 2016). Community attributes such as local climate, geography, natural beauty, soil condition, and air quality can create opportunities for communities and individual residents but may also limit the extent to which they can engage in certain activities (Emery & Flora, 2006; Flora et al., 2016). As Flint (2010) notes, stocks of natural capital can influence individual and community behavior but may also be positively or negatively altered as a result of human activities.

Financial capital is possibly the most familiar form of capital, and it is perhaps the least difficult among the capitals to evaluate in a community development context (Flint, 2010). This is likely because financial assets and their direct effects on development programs are often more easily quantified and measured. As a result, there is a tendency among some practitioners and researchers to describe other capitals in terms of their economic costs and benefits (Flint, 2010). Financial capital can be described as the potential availability of funding for investment in community development strategies related to infrastructure, business development, capacity-building, and securing economic prosperity for the community and residents (Emery & Flora, 2006; Turner, 1999). A community is more likely to sustain a thriving and diverse local economy if there is equitable distribution of wealth (Flint, 2010).

Built capital refers primarily to the infrastructure that underpins community pursuits in other capital areas (Emery & Flora, 2006; Flint, 2010). Roads, bridges, factories, and information technologies are just a few examples of built capital (Flora et al., 2016). Community development, like all endeavors, relies upon existing infrastructure and continued investments in the built environment. As a result, this form of capital is largely considered to be a positive force for community and economic development and other drivers of change. However, built capital can result in unintended and undesirable effects on other capitals when, for example, it takes on a principal role in development and crowds out potentially valuable resources such as those associated with natural capital (Flora et al., 2016).

Community Capitals Framework: Empirical and Theoretical Insights

As the CCF has become more established among community development professionals and researchers, the literature regarding applications of the framework has grown. Studies conducted in a variety of settings and across multiple disciplines have demonstrated the utility of employing the CCF in development settings and beyond. For instance, the framework has been used in conjunction with the Managed Landscapes Approach (MLA) to direct participatory land-use processes in Panama (Gutierrez-Montes, Siles, et al., 2009). It has also been employed in a study of childhood obesity (Flora & Gillespie, 2009) and rural business and entrepreneurship (Bosworth & Turner, 2018). Other researchers have used the framework to evaluate community response and recovery efforts following natural and man-made disasters (Himes-Cornell et al., 2018; Stofferahn, 2012). Conversely, the CCF has also been employed in a review of how community capitals are affected by the sudden and positive economic reorientation seen in boomtowns (Anderson, 2014). The framework has also been widely adopted among tourism researchers because of its comprehensive approach to impact evaluation. This holistic development perspective aids in identifying community assets and assessing the impacts of tourism activities in ways that account for the effects across all capitals (Duffy et al., 2017; Griffin, 2013; McGehee et al., 2010; Stone & Nyaupane, 2018; Zahra & McGehee, 2013).

The community capitals are interrelated in both obvious and unexpected ways. These inter-capital relationships represent either a positive or negative process, depending on the orientation of the initial effect, in which change in one capital—assets gained or lost—will reshape the other capitals in some way (Emery & Flora, 2006). This process of "cumulative causation" is known as spiraling up (or down), which refers to the process that is initiated when an investment is made (or lost) in one or more of the community capitals (Emery & Flora, 2006, p. 22). Researchers in some cases have found evidence of this effect. Duffy et al. (2017), for instance, found that when tourism was used as a community development tool, it caused a spiraling up effect that led to broad gains in capital stocks. While investigating a community's response to a devastating tornado, Stofferahn (2012) observed that acquiring some community capital assets induced a positive change among the other capitals, generating an upward spiral that promoted disaster recovery efforts.

Although the spiraling up process has been recognized by researchers in several cases, some have questioned whether it provides an accurate depiction of most development programs. In a review of several community development efforts, Pigg et al. (2013) found that instead of an upward spiral induced by gains in some capital assets, community leaders were more frequently observed simply identifying which capitals needed investment as they pursued their primary objectives. This finding suggests that a spiraling up effect is not necessarily and essential component of community development programs (Pigg et al., 2013).

One conspicuous omission in the CCF literature is the apparent absence of any study involving the design of a broadly applicable tool that can be used to examine CCF characteristics, both at the community and individual level. Further CCF development should include a study evaluating the design and efficacy of an empirical instrument that could quantify community perceptions within this framework. An investigation into the utility of an empirical tool to quantify community perceptions may ultimately provide agricultural educators and extension professionals with a powerful tool for identifying areas of concern and assessing appropriate community-oriented activities or interventions. This study represents an effort to examine, formalize, and standardize an evaluation instrument—the Community Diagnostics and Social Impact Toolkit, or CD+SI Toolkit[TM]—focused on measuring the capitals within the CCF through community perceptions.

Purpose and Objectives

The purpose of this research was to develop and validate a comprehensive scale based on the Community Capitals Framework. The following research objectives were addressed:
1. Establish preliminary internal structure validity for a CCF scale.
2. Establish whether any statistically significant differences were observable between pilot counties.

Methods

Following a thorough review of the community capital and scale development literature, a CCF scale was developed to quantitatively examine each capital at the county level. The scale, which was incorporated into a community perceptions survey, included a series of statements designed to represent aspects of each capital. All statements incorporated into the CCF-based scale were designed to capture perceptions of community residents as they relate to the community capitals. A sampling frame was developed using an online survey company employing a non-probability (or non-random sampling) purposive sampling technique (Lamm & Lamm, 2019). Data collection procedures were conducted in accordance with recommendations from the literature and included attention filters (Lamm & Lamm, 2019). In addition, only complete responses were retained and analyzed (Lamm & Lamm, 2019). The purposive sampling used in this study entailed selection criteria that represented the U.S. Census data for each county targeted. Respondents indicated their level of agreement with each of the items on a five-point Likert-type scale (5 – *Strongly agree* to 1 – *Strongly disagree*).

Designed as a pilot study in the fall of 2018, the research represented in this manuscript includes six counties in Georgia. Counties were selected based on University of Georgia programming and outreach efforts taking place within the counties, in addition to ensuring that the six counties equally represented the nature of being rural, urban, or metropolitan. Males accounted for 47.1% ($n = 57$) of the respondents, while 52.9% ($n = 64$) were female. The mean age of the respondents was 45 with a standard deviation of 17 years. The age range of the respondents was 18 to 79 years. The majority of the respondents were white (79.3%, $n = 96$), while 12.4% ($n = 15$) were Black or African American and 7.4% ($n = 9$) reported their race as "other." Eleven (9.1%) respondents identified as Hispanic, Latino, or Spanish. Given that the study used a non-probability sampling procedure, results cannot be generalized. A total of 123 responses were obtained with the number of responses per county ranging from 10 to 33. All collected data was download into SPSS v25 for analysis.

Content validity was established by employing several methods. First, a rigorous review of the community capital literature was conducted. A text-based analysis of common traits and themes, identification of proposed indicators, and development of specific items related to appropriate indicators were also used to ensure content validity (Crocker & Algina, 1986; DeVellis, 2017). Six scales representing each of the community capitals were developed as a result of this analysis. Due to the conceptual similarities and overlap between the built and financial capitals, these capitals were merged to form one scale. Lastly, a panel of experts knowledgeable in scale development and communication development reviewed the proposed scale items (DeVellis, 2017). A total of 36 items were included in the final instrument. Response process validity was established by having the proposed scale items examined by a group of experts that are familiar with the contextual domain but were not specifically involved in the scale development process (Crocker & Algina, 1986; DeVellis, 2017). The experts were asked to review the proposed questions and provide any feedback on interpretability or possible points of confusion. Researchers then debriefed the review experience with each reviewer to further investigate the nature of the feedback (Crocker & Algina, 1986; DeVellis, 2017). Only minor wording changes were suggested by the reviewers. Updates were made to specific scale items and scale directions accordingly (Crocker & Algina, 1986). Specific to the first objective, internal structure validity was established by examining: individual item response distributions, internal consistency of items (Cronbach's alpha), and exploratory factor analysis of hypothesized latent variables in

accordance with recommendations in the literature (Clark & Watson, 1995; Crocker & Algina, 1986; Messick, 1995). For objective two a one-way ANOVA was conducted between counties (Keith, 2014).

Results

To address objective one, several methods were used to validate the internal structure of the scales measuring the community capitals. The individual items comprising each of the scales were analyzed using descriptive statistics. Specifically, the skewness and kurtosis of the responses were examined to ensure that the distributions were approximately normal (Fabrigar et al., 1999; Ferguson & Cox, 1993; West et al., 1995). Results of the individual item analysis indicated that items received a sufficient distribution of responses across all five response options. Specifically, items had skewness values less than two and kurtosis values less than seven and were thus deemed to be acceptable given established thresholds (Fabrigar et al., 1999; West et al., 1995). Following the individual item analysis, each of the capital scales were factor analyzed (Crocker & Algina, 1986; DeVellis, 2017). Additionally, an overall index analysis including internal consistency and normality measures was also conducted. Based on established social science standards, an observed value of 0.70 or above should be considered acceptable (Cortina, 1993; Schmitt, 1996; Streiner, 2003). If values are observed below the acceptable range, additional individual item analysis may be required (DeVellis, 2017).

Factor Analyses

The social capital scale was comprised of seven items that related to (1) the value placed on other residents' concerns, (2) whether neighbors associate with one another, (3) trust among

neighbors, (4) whether people associate with local leaders, (5) trust between residents and local leaders, (6) perceived freedom to voice concerns, and (7) perceived ability to solve problems

through project involvement. A Kaiser-Meyer-Olkin (KMO) test value of 0.904 suggested that the scale variables warranted factor analysis, while a Bartlett's chi-square statistic ($x^2 = 658.496$) was significant ($p < .05$). When these items were factor analyzed, one factor explaining 71.7% of the total variance was extracted (see Table 1). The consistently high factor loadings across the seven scale items (all 7 loadings are above 0.8) and an eigenvalue over 5 indicate that the social capital scale items are all elements of the same construct.

Table 1

Factor Analysis: Social Components

Items	Factor 1	Communalities
Value concerns of other community members	0.856	0.732
Associate with their neighbors	0.840	0.706
Trust their neighbors	0.848	0.720
Associate with their local leaders	0.884	0.781
Trust their local leaders	0.850	0.723
Can voice their concerns	0.834	0.696
Can participate in projects to solve problems	0.814	0.662
Eigenvalues	5.020	⎯⎯
Cumulative Variance Explained (%)	71.717	⎯⎯

Note: Items are copyright protected and used and presented with permission.

The human capital scale included seven items concerning (1) meaningful employment for young people, (2) access to educational opportunities in primary and secondary schools, (3) access to strong higher education opportunities, (4) access to healthcare, (5) professional development opportunities, (6) personal development opportunities, and (7) whether leaders reflect community

diversity. A Kaiser-Meyer-Olkin (KMO) test value of 0.909 suggested that the scale variables could be factor analyzed, and a Bartlett's chi-square statistic (x^2 = 608.507) was significant ($p < .05$). As shown in Table 2, the factor analysis indicated that the individual items comprising the human capital scale were components of the same underlying construct, with the only extracted factor explaining 69.2 % of the total variance. The factor loadings were particularly high for the items concerning personal and professional development opportunities within a community.

Table 2

Factor Analysis: Human Components

Items	Factor 1	Communalities
Meaningful employment to attract young people	0.836	0.699
Access to strong educational opportunities (K-12)	0.775	0.601
Access to strong higher education opportunities	0.790	0.625
Access to a wide range of healthcare	0.820	0.673
Access to professional development opportunities	0.900	0.810
Access to personal development opportunities	0.887	0.787
Community diversity represented in leaders	0.805	0.649
Eigenvalues	4.843	___
Cumulative Variance Explained (%)	69.181	___

Note: Items are copyright protected and used and presented with permission.

The cultural capital scale consisted of five items related to community history and heritage: (1) diversity of individual values, (2) recognition of community heritage through relevant hosted events, (3) preservation of community history, (4) the presence of culturally relevant products in local retail stores, and (5) general cultural diversity. A Kaiser-Meyer-Olkin (KMO) test value of 0.840 suggested that the scale variables were suitable for factor analysis, while a Bartlett's chi-square statistic (x^2 = 302.257) was significant ($p < .05$). The results of a principal components factor analysis demonstrated that the scale was measuring one distinct construct that explained 67.0% of the total variance (see Table 3). Each of the scale items loads substantially onto the one extracted factor, resulting in an eigenvalue of 3.350.

Table 3

Factor Analysis: Cultural Components

Items	Factor 1	Communalities
Reflects potentially diverse community values	0.792	0.628
Events that recognize community heritage	0.855	0.731
Organizations that preserve community history	0.867	0.752
Local retail shops offer culturally relevant products	0.803	0.646
Culturally diverse	0.770	0.594
Eigenvalues	3.350	___
Cumulative Variance Explained (%)	66.992	___

Note: Items are copyright protected and used and presented with permission.

The political capital scale was made up of five related scale items concerning political leaders and other principals and groups. Specifically, respondents were asked to indicate whether their communities were perceived to have: (1) non-elected leaders who seek to bring about change, (2) non-elected leaders who listen to community groups, (3) elected officials

who attempt to initiate change, (4) elected officials who take into consideration the advice offered by community groups, and (5) community groups with the ability to mobilize resources in order to effect change. A Kaiser-Meyer-Olkin (KMO) test value of 0.881 suggested that the scale variables could be factor analyzed, while a Bartlett's chi-square statistic ($x^2 = 566.020$) was significant ($p < .05$). A factor analysis of the political capital scale determined that the constituent items were explaining the same latent construct. One factor responsible for 81.5% of the total variance explained was extracted (see Table 4). All factor loadings are above 0.88 and the eigenvalue is 4.077.

Table 4

Factor Analysis: Political Components

Items	Factor 1	Communalities
Non-elected leaders work to effect change	0.899	0.808
Non-elected leaders listen to community groups	0.912	0.832
Political leaders work to effect change	0.934	0.873
Political leaders listen to community groups	0.886	0.784
Groups can mobilize resources for community change	0.883	0.780
Eigenvalues	4.077	——
Cumulative Variance Explained (%)	81.544	——

Note: Items are copyright protected and used and presented with permission.

The five items comprising the natural capital scale covered residents' perceptions concerning communities (1) having valuable natural resources, (2) taking advantage of natural resources for community development, (3) taking advantage of natural resources for job creation, (4) having parks that are accessible to the public, and (5) working to preserve natural resources. A Kaiser-Meyer-Olkin (KMO) test value of 0.823 suggested that the scale variables warranted factor analysis, while a Bartlett's chi-square statistic ($x^2 = 292.714$) was significant ($p < .05$). As the results in Table 5 indicate, a factor analysis of the natural capital scale extracted one factor with an eigenvalue of 3.204. This factor explained 64.1% of the total variance. With the exception of the item concerning public park accessibility, the factor loadings were consistent.

Table 5

Factor Analysis: Natural Components

Items	Factor 1	Communalities
Has valuable natural resources	0.791	0.626
Utilizes natural resources for community development	0.892	0.796
Utilizes natural resources for job creation	0.851	0.725
Has parks accessible to the public	0.615	0.378
Preserves valuable natural resources	0.824	0.679
Eigenvalues	3.204	——
Cumulative Variance Explained (%)	64.076	——

Note: Items are copyright protected and used and presented with permission.

The combined built-financial capital scale was comprised of seven related perceptual items regarding community economics and infrastructure: (1) employer heterogeneity, (2) stable employment conditions, (3) attempts at seeking or attracting new business opportunities, (4) local investment by charitable organizations, (5) access to essential transportation, (6) the availability of communication services such as Internet and mobile phone services, and (7) a vision for the future. A Kaiser-Meyer-

Olkin (KMO) test value of 0.856 suggested that the scale variables warranted factor analysis, while a Bartlett's chi-square statistic ($x^2 = 349.848$) was significant ($p < .05$). The factor analysis detailed in Table 6 demonstrates that the built-financial scale measured two latent constructs that accounted for 68.5% of the explained variance.

The complete community capitals index (including each item from the constituent capital scales) was also analyzed. A Kaiser-Meyer-Olkin test value of 0.903 suggested that the scale variables warranted factor analysis, and a Bartlett's chi-square statistic ($x^2 = 4243.599$) was significant ($p < .05$). When the full index was factor analyzed, six components explaining 72.3% of the total variance were extracted.

Table 6

Factor Analysis: Built-Financial Components

Items	Factor 1	Factor 2	Communalities
Well-diversified in terms of multiple employers	0.713	-0.378	0.651
Has stable employment	0.765	-0.364	0.718
Seeks opportunities to bring in new businesses	0.846	-0.177	0.747
Charitable organizations invest in the community	0.709	0.143	0.523
Access to necessary transportation services	0.520	0.719	0.787
Access to necessary communication services	0.712	0.406	0.672
Vision for the future	0.832	-0.080	0.698
Eigenvalues	3.781	1.015	___
Cumulative Variance Explained (%)	54.011	68.517	___

Note: Items are copyright protected and used and presented with permission.

Scale Reliability, Correlations, and Analyses of Variance

The descriptive statistics presented in Table 7 demonstrate that the individual capital scales and the overall community capitals index were reliable, as evidenced by the observed alpha coefficients. The overall index, in particular, has a high level of internal consistency (Cronbach's alpha = 0.973). The validity of the internal structure was further confirmed by examining the indicators of normal response distribution.

Table 7

Community Perceptions: Descriptive Statistics and Scale Reliability

Capital Scales	N	Mean	SD	Skewness	Kurtosis	Cronbach's Alpha (α)
Built-Financial	123	3.533	0.802	-0.847	1.272	0.852
Cultural	123	3.585	0.841	-0.836	1.083	0.876
Human	123	3.405	0.968	-0.495	-0.178	0.924
Social	123	3.324	0.931	-0.263	-0.282	0.934
Political	123	3.387	0.992	-0.678	0.200	0.943
Natural	123	3.489	0.827	-0.381	0.017	0.858
Overall	123	3.449	0.783	___	___	0.973

Analysis of the individual capital scales suggested that the scales were closely related. All of the scales were significantly correlated ($p < 0.01$). Table 8 shows that all of the correlation coefficients

are above 0.6 and that some are notably higher. This is indicative of the interconnectedness between the scales and the various items (assets and resources) of which they are comprised.

To address research objective two a one-way analysis of variance (ANOVA) was performed in order to ascertain whether there were any differences in the responses between counties. As shown in the ANOVA output presented in Table 9, there are significant differences between at least some of the six Georgia pilot counties being analyzed ($p < 0.01$).

Table 8

Pairwise Correlation Matrix of Community Capital Scales

	1	2	3	4	5	6
1. Built-Financial	-					
2. Cultural	.774*	-				
3. Human	.785*	.748*	-			
4. Social	.693*	.712*	.805*	-		
5. Political	.652*	.663*	.723*	.811*	-	
6. Natural	.681*	.659*	.738*	.641*	.642*	-

* $p < .01$

Table 9

One-Way Analysis of Variance (ANOVA) by County

DV: Overall Perceptions	SS	df	MS	F	P
Between Groups	9.559	5.000	1.912	3.427	0.006
Within Groups	65.274	117.000	0.558		
Total	74.833	122.000			

Table 10 indicates a difference between the overall mean responses in Dougherty County (low end) and those in Thomas County and Floyd County (high end). In order to determine if the mean responses in these counties were statistically significant, a *post hoc* Bonferroni test was performed. This test indicated that the differences observed in Table 10 were significant ($p < 0.05$) particularly between Dougherty County and Thomas County as well as Dougherty County and Floyd County.

Table 10

ANOVA: Overall Community Perceptions by County

County	N	Mean	SD	SE	95% CI Lower	95% CI Upper
Thomas	20	3.806	0.876	0.196	3.396	4.216
Floyd	23	3.722	0.521	0.109	3.497	3.948
Colquitt	15	3.563	0.848	0.219	3.093	4.033
Whitfield	33	3.365	0.749	0.130	3.100	3.631
Coffee	10	3.119	0.710	0.225	2.612	3.627
Dougherty	22	3.034	0.761	0.162	2.697	3.372
Overall	123	3.449	0.783	0.071	3.309	3.588

Conclusions, Recommendations, and Implications

The results of the study provide an initial analysis of a quantitative instrument that agricultural educators and affiliated professionals can use to more effectively measure the various capitals associated with a community. While previous research related to the Community Capitals Framework generally has been theoretical, this research focuses on the development of an empirical tool designed to identify and quantify the community capitals in order to establish entry points and evaluate programmatic impacts. Although the interpretation and generalizability of the results are limited the initial analysis shows promise for future investigation. An associated recommendation would be to continue to analyze the structural aspects of the scale with a larger sample size. Additional responses, and associated power, would allow for more rigorous analysis and more sophisticated investigation. For example, a confirmatory factor analysis is recommended to examine the relationship between the six factors as well as the overall latent factor.

Additionally, the results of the analysis indicate the scale was able to discern statistically significant differences among pilot counties. The observed difference provides a preliminary indication of consequential validity for the scale (Blanton & Jaccard, 2006; Messick, 1995). We recommend replicating the study in additional counties and establishing a larger and more robust dataset upon which to interpret observations. Additionally, analysis between observed index scores and other outcome variables of interest is recommended. Specifically, analysis of economic, health, and education metrics relative to scale scores may provide additional triangulation and interpretability of results. For example, examining the nature of the relationship between economic indicators and specific capital areas may infer relationships or causation that would lend to future interpretability.

While these results cannot inherently identify needed solutions to communities in decline, they can lead to the identification of critical entry points unique to the frame of a given community. This becomes critical in the argument that communities are not a one-size-fits-all approach when it comes to county-level programming and engagement efforts (Borron et al., 2019). In addition, it creates a space by which the capacity of existing longstanding programs, such as 4-H and FFA, can more effectively recruit, engage, and foster the development of essential volunteers and other leadership roles targeting today's youth to become more engaged in their communities (Roberts et al., 2016). Administering the instrument prior to Extension or educational programming can help to identify community characteristics while highlighting community strengths, as opposed to emphasizing inadequate capital stocks.

Lastly, valid instrumentation capable of providing consistent measurement and diagnostics at the community level may help to specifically identify the impact the agricultural educators are having on the communities in which they work (Roberts et al., 2016). In addition, consistent use of a standard instrument would allow for longitudinal tracking to better quantify the effects of programming efforts. Using a common measure to compare communities would also allow for easier analysis and trend observations. We recommend that professionals who are engaged in programming and capacity building at the community level consider administering an instrument capable of capturing the perceived capitals of a community, and to then use that data to inform particular interventions. Combined with public health data, for example, such an instrument can ensure that a community focuses on existing or accessible resources to address health-related issues such as opioid addiction. From an evaluation perspective, impact data can provide needed insights into the value of programmatic efforts (Lamm et al., 2011).

References

Adamy, J., & Overberg, P. (2017, May 27). Rural America is the new 'inner city.' *Wall Street Journal*.

Anderson, P. A. (2014). Preserving place: Williston, ND and the use of the community capitals framework for boomtown community development. *Housing and Society*, *41*(2), 297–314. https://doi.org/10.1080/08882746.2014.11430632

Beck, J. (2015, March 10). The growing risk of suicide in rural America. *The Atlantic*.

Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy*, *70*(5, Part 2), 9–49. https://doi.org/10.1086/258724

Becker, G. S. (1993). *Human capital: A theoretical and empirical analysis, with special reference to education* (3rd ed.). University of Chicago Press.

Blanton, H., & Jaccard, J. (2006). Arbitrary metrics in psychology. *American Psychologist*, *61*(1), 27–41. https://doi.org/10.1037/0003-066X.61.1.27

Bor, J. (2017). Diverging life expectancies and voting patterns in the 2016 US presidential election. *American Journal of Public Health*, *107*(10), 1560–1562. https://doi.org/10.2105/AJPH.2017.303945

Borron, A., Lamm, K., Darbisi, C., & Randall, N. (2019). Social impact assessment in the cooperative extension system: Revitalizing the community capitals framework in measurement and approach. *Journal of International Agricultural and Extension Education*, *26*(2), 75–88. https://doi.org/10.5191/jiaee.2019.26206

Bosworth, G., & Turner, R. (2018). Interrogating the meaning of a rural business through a rural capitals framework. *Journal of Rural Studies*, *60*, 1–10. https://doi.org/10.1016/j.jrurstud.2018.02.002

Bourdieu, P. (2018). The forms of capital. In M. Granovetter & R. Swedberg (Eds.), *The sociology of economic life* (3rd ed., pp. 78–92). Routledge.

Brown, P. (1996). Comprehensive neighborhood-based initiatives. *Cityscape*, *2*(2), 161–176.

Carr, P. J., & Kefalas, M. J. (2009). *Hollowing out the middle: The rural brain drain and what it means for America*. Beacon Press.

Chinni, D. (2017, June 26). Rural youth chase big-city dreams. *Wall Street Journal*.

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, *7*(3), 309–319. https://doi.org/10.1037/1040-3590.7.3.309

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, *94*, S95–S120. https://doi.org/10.1086/228943

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*, *78*(1), 98–104. https://doi.org/10.1037/0021-9010.78.1.98

Costanza, R., d'Arge, R., De Groot, R., Farber, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S., O'neill, R. V., & Paruelo, J. (1997). The value of the world's ecosystem services and natural capital. *Nature*, *387*(6630), 253–260. https://doi.org/10.1038/387253a0

Crocker, L., & Algina, J. (1986). *Introduction to classical and modern test theory*. Cengage Learning.

Dam, A. V. (2019, May 24). The real (surprisingly comforting) reason rural America is doomed to decline. *Washington Post*.

DeVellis, R. F. (2017). *Scale development: Theory and applications* (4th ed.). Sage.

DiMaggio, P., & Mohr, J. (1985). Cultural capital, educational attainment, and marital selection. *American Journal of Sociology*, *90*(6), 1231–1261. https://doi.org/10.1086/228209

Duffy, L. N., Kline, C., Swanson, J. R., Best, M., & McKinnon, H. (2017). Community development through agroecotourism in Cuba: An application of the community capitals framework. *Journal of Ecotourism*, *16*(3), 203–221. https://doi.org/10.1080/14724049.2016.1218498

Egan, T. (2002, December 8). Pastoral poverty: The seeds of decline. *New York Times*.

Emery, M., Fey, S., & Flora, C. B. (2006). Using community capitals to develop assets for positive community change. *CD Practice*, *13*, 1–19. https://doi.org/10.1080/15575330609490152

Emery, M., & Flora, C. B. (2006). Spiraling-up: Mapping community transformation with community capitals framework. *Community Development*, *37*(1), 19–35. https://doi.org/10.1080/15575330609490152

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, *4*(3), 272. https://doi.org/10.1037/1082-989X.4.3.272

Ferguson, E., & Cox, T. (1993). Exploratory factor analysis: A users' guide. *International Journal of Selection and Assessment*, *1*(2), 84–94. https://doi.org/10.1111/j.1468-2389.1993.tb00092.x

Fey, S., Bregendahl, C., & Flora, C. B. (2006). The measurement of community capitals through research. *Online Journal of Rural Research & Policy*, *1*(1), 329–346. https://doi.org/10.4148/ojrrp.v1i1.29

Flint, R. W. (2010). Seeking resiliency in the development of sustainable communities. *Human Ecology Review*, *17*(1), 44–57.

Flora, C. B. (2004). Social aspects of small water systems. *Journal of Contemporary Water Research & Education*, *128*(1), 6–12. https://doi.org/10.1111/j.1936-704X.2004.mp128001002.x

Flora, C. B., Flora, J. L., & Gasteyer, S. P. (2016). *Rural communities: Legacy and change* (5th ed.). Routledge.

Flora, C. B., & Gillespie, A. H. (2009). Making healthy choices to reduce childhood obesity: Community capitals and food and fitness. *Community Development*, *40*(2), 114–122. https://doi.org/10.1080/15575330903001430

Goetz, S. J., Partridge, M. D., & Stephens, H. M. (2018). The economic status of rural america in the President Trump era and beyond. *Applied Economic Perspectives and Policy*, *40*(1), 97–118. https://doi.org/10.1093/aepp/ppx061

Griffin, T. (2013). Visiting friends and relatives tourism and implications for community capital. *Journal of Policy Research in Tourism, Leisure and Events*, *5*(3), 233–251. https://doi.org/10.1080/19407963.2013.776370

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. *Community Development*, *40*(2), 106–113. https://doi.org/10.1080/15575330903011785

Gutierrez-Montes, I., Siles, J., Bartol, P., & Imbach, A. C. (2009). Merging a landscape management planning approach with the community capitals framework: Empowering local groups in land management processes in Bocas del Toro, Panama. *Community Development*, *40*(2), 220–230. https://doi.org/10.1080/15575330903004418

Himes-Cornell, A., Ormond, C., Hoelting, K., Ban, N. C., Zachary Koehn, J., Allison, E. H., Larson, E. C., Monson, D. H., Huntington, H. P., & Okey, T. A. (2018). Factors affecting disaster preparedness, response, and recovery using the community capitals framework. *Coastal Management*, *46*(5), 335–358. https://doi.org/10.1080/08920753.2018.1498709

Johnson, K. M., & Lichter, D. T. (2019). Rural depopulation: Growth and decline processes over the past century. *Rural Sociology*, *84*(1), 3–27. https://doi.org/10.1111/ruso.12266

Johnson, K. M., Lichter, D. T., & Cromartie, J. (2018, July 28). *The impact of metropolitan reclassification on population change in rural and urban America, 1970-2016*. 2018 Annual Meeting of the Rural Sociological Society, Portland, Oregon.

Keith, T. Z. (2014). *Multiple regression and beyond: An introduction to multiple regression and structural equation modeling*. Routledge.

Krugman, P. (2019, March 18). Getting real about rural America. *New York Times*.

Lamm, A. J., Israel, G. D., & Harder, A. (2011). Getting to the bottom line: How using evaluation results to enhance extension programs can lead to greater levels of accountability. *Journal of Agricultural Education*, *52*(4), 44–55. https://doi.org/10.5032/jae.2011.04044

Lamm, A. J., & Lamm, K. W. (2019). Using non-probability sampling methods in agricultural and extension education research. *Journal of International Agricultural and Extension Education*, *26*(1), 52–59. https://doi.org/10.5191/jiaee.2019.26105

Leonard, R. (2017, January 5). Why rural America voted for Trump. *New York Times*.

Magis, K. (2010). Community resilience: An indicator of social sustainability. *Society & Natural Resources*, *23*(5), 401–416. https://doi.org/10.1080/08941920903305674

McGehee, N. G., Lee, S., O'Bannon, T. L., & Perdue, R. R. (2010). Tourism-related social capital and its relationship with other forms of capital: An exploratory study. *Journal of Travel Research*, *49*(4), 486–500. https://doi.org/10.1177/0047287509349271

McKim, A. J., Raven, M. R., Palmer, A., & McFarland, A. (2019). Community as context and content: A land-based learning primer for agriculture, food, and natural resources education. *Journal of Agricultural Education*, *60*(1), 172–185. https://doi.org/10.5032/jae.2019.01172

Meadows, D. H. (2008). *Thinking in systems: A primer* (D. Wright, Ed.). Chelsea Green Publishing.

Messick, S. (1995). Validity of psychological assessment: Validation of inferences from persons' responses and performances as scientific inquiry into score meaning. *American Psychologist*, *50*(9), 741. https://doi.org/10.1037/0003-066X.50.9.741

Monnat, S. M., & Brown, D. L. (2017). More than a rural revolt: Landscapes of despair and the 2016 presidential election. *Journal of Rural Studies*, *55*, 227–236. https://doi.org/10.1016/j.jrurstud.2017.08.010

Pigg, K., Gasteyer, S. P., Martin, K. E., Keating, K., & Apaliyah, G. P. (2013). The community capitals framework: An empirical examination of internal relationships. *Community Development*, *44*(4), 492–502. https://doi.org/10.1080/15575330.2013.814698

Porter, E. (2018, December 14). The hard truths of trying to 'save' the rural economy. *New York Times*.

Putnam, R. D. (1995a). Bowling alone: America's declining social capital. *Journal of Democracy*, *6*(1), 65–78. https://doi.org/10.1353/jod.1995.0002

Putnam, R. D. (1995b). Tuning in, tuning out: The strange disappearance of social capital in America. *PS: Political Science and Politics*, *28*(4), 664–683. https://doi.org/10.2307/420517

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

Putnam, R. D., Leonardi, R., & Nanetti, R. Y. (1993). *Making democracy work: Civic traditions in modern Italy*. Princeton University Press.

Rigg, K. K., Monnat, S. M., & Chavez, M. N. (2018). Opioid-related mortality in rural America: Geographic heterogeneity and intervention strategies. *International Journal of Drug Policy*, *57*(2018), 119–129. https://doi.org/10.1016/j.drugpo.2018.04.011

Roberts, T. G., Harder, A., & Brashears, M. T. (Eds.). (2016). *American Association for Agricultural Education national research agenda: 2016-2020*. Department of Agricultural Education and Communication (Gainesville, FL). http://aaaeonline.org/resources/Documents/AAAE_National_Research_Agenda_2016-2020.pdf

Schmitt, N. (1996). Uses and abuses of coefficient alpha. *Psychological Assessment*, *8*(4), 350.

Schultz, T. W. (1961). Investment in human capital. *The American Economic Review*, *51*(1), 1–17.

Serrat, O. (2017). The sustainable livelihoods approach. In *Knowledge solutions: Tools, methods, and approaches to drive organizational performance* (pp. 21–26). Springer.

Shah, N. (2014, March 27). Smallville, USA, fades further. *Wall Street Journal*.

Simon, R., & Jones, C. (2017, December 25). Goodbye, George Bailey: Decline of rural lending crimps small-town business. *Wall Street Journal*.

Stofferahn, C. W. (2012). Community capitals and disaster recovery: Northwood ND recovers from an EF 4 tornado. *Community Development*, *43*(5), 581–598. https://doi.org/10.1080/15575330.2012.732591

Stone, M. T., & Nyaupane, G. P. (2018). Protected areas, wildlife-based community tourism and community livelihoods dynamics: Spiraling up and down of community capitals. *Journal of Sustainable Tourism*, *26*(2), 307–324. https://doi.org/10.1080/09669582.2017.1349774

Streiner, D. L. (2003). Starting at the beginning: An introduction to coefficient alpha and internal consistency. *Journal of Personality Assessment*, *80*(1), 99–103. https://doi.org/10.1207/S15327752JPA8001_18

Sullivan, A. (2001). Cultural capital and educational attainment. *Sociology*, *35*(4), 893–912. https://doi.org/10.1177/0038038501035004006

Teixeira, R. (1998). *Rural and urban manufacturing workers: Similar problems, similar challenges* (Agriculture Information Bulletin No. 736–02). United States Department of Agriculture.

Thiede, B. C., Lichter, D. T., & Slack, T. (2018). Working, but poor: The good life in rural America? *Journal of Rural Studies*, *59*(2018), 183–193. https://doi.org/10.1016/j.jrurstud.2016.02.007

Tickamyer, A. R., & Duncan, C. M. (1990). Poverty and opportunity structure in rural America. *Annual Review of Sociology*, *16*(1), 67–86. https://doi.org/10.1146/annurev.so.16.080190.000435

Truong, D. (2018, October 20). When 'the heartbeat' stops: Rural schools close as opportunity and residents flee. *Washington Post*.

Turner, R. S. (1999). Entrepreneurial neighborhood initiatives: Political capital in community development. *Economic Development Quarterly*, *13*(1), 15–22. https://doi.org/10.1177/089124249901300103

West, S. G., Finch, J. F., & Curran, P. J. (1995). Structural equation models with nonnormal variables: Problems and remedies. In R. H. Hoyle (Ed.), *Structural Equation Modeling: Concepts, Issues, and Applications*. Sage.

Wuthnow, R. (2018). *The left behind: Decline and rage in small-town America*. Princeton University Press.

Zahra, A., & McGehee, N. G. (2013). Volunteer tourism: A host community capital perspective. *Annals of Tourism Research*, *42*, 22–45. https://doi.org/10.1016/j.annals.2013.01.008