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Examining the Relationship between Geographic Groupings and Perspective of Critical Community Issues: An Audience Segmentation Analysis

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Abstract: The present study examined whether perception of critical community issues was dependent on respondents' rurality, geographic region, or extension district in the state of Georgia, located in the southeastern United States. A non-probability sampling procedure was employed. A total of 3,374 responses were collected. Five critical community issue themes were analyzed: (1) youth and family development, (2) civic engagement and community development, (3) agriculture and economic development, (4) nutrition education and food availability, and (5) water. Descriptive statistics were analyzed. A series of chi-squared tests of independence were used to test for significant relationships between perception of critical community issues and geographic grouping. Statistically significant differences were observed between all groups (rurality, region, and district). Specifically, significant relationships were observed between all groups and perception of youth and family development and agriculture and economic development. A significant relationship between region and perception of civic engagement and community leadership was observed. Additionally, there was a significant relationship between rurality and water observed. The results indicate that programming efforts should be informed both by proximal communities as well as non-proximal communities sharing common characteristics.

Keywords: geographic groupings; community perceptions; audience segmentation; critical community issues



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1. Introduction

“Geography determines destiny” [1] (p. 9). Due to varying cultures, values, resources, and environmental factors [2], the geographic region an individual lives in influences life outcomes, including poverty [3], access to healthcare services [4], and educational opportunities [3]. Throughout its history, the U.S. Cooperative Extension Service has provided outreach and educational services to a large, diverse population on behalf of the land-grant university system [5]. Initially, the U.S. Cooperative Extension Service was founded to deliver programs to rural communities and disseminate research-based technologies to agricultural workers [6–8]. As the U.S. population shifted toward urban areas, extension personnel expanded the definition of traditional programming and sought to include extension program applicability and impacts in urban contexts [7,9].

Extension within Georgia has developed in a similar manner to the national organization [8]. Initial outreach efforts were primarily intended for male agricultural workers and youth through farm demonstration work [8]. Programming was expanded to address demand for homemaking skills and environmental education. In response to local, national, and global trends, UGA Extension has demonstrated a commitment to dynamic change and adaptive programs, “dedicated to serving citizens with the latest information and programs while addressing needs and technologies as they change over time” [8] (para. 3).

As extension personnel within Georgia prepare for the next century of progress, a primary concern should be to ensure that agents are meeting stakeholder needs, by providing relevant and desired information and programming. The present study builds on the work of Powell et al. [10], who conceptualized five thematic categories of critical issues facing Georgia residents. For the purposes of the study, critical community issues used a working definition adapted from the American Geosciences Institute [11], specifically, natural- and human-influenced processes that require attention to manage adverse impacts on people and their communities. These five themes included (1) investment in youth and adults, (2) agricultural and rural economic development, (3) agriculture and food safety information, (4) resource access and availability, and (5) social and personal economic concerns. Furthermore, the study addresses a gap in the literature specifically calling for “interdisciplinary approaches, studies should explore innovative policy instruments” [12] (p. 20) as “such research can provide actionable insights into the development of integrated, context-specific strategies” (p. 20).

The present study extends this work by surveying Georgia residents state-wide and examining the distribution of critical issues according to geographic groupings. This study contributes to UGA Extension efforts by providing preliminary guidelines of how community issues are distributed across the state and provides practical recommendations for developing targeted programming to meet local needs. Examining these critical community issues highlights the benefits of situating community-level insights into achieving higher-level aims and goals at national or global scales. Therefore, agents may connect their work in local communities to global agriculture and community resiliency advancements. Additionally, this study extends the use of data visualizations within extension by illustrating the distribution of critical issue perception. This emerging field may be leveraged to effectively convey the value of extension programming to key stakeholders. Recommendations for expanded applications are included.

1.1. Conceptual Framework

1.1.1. Audience Segmentation

Audience segmentation separates individuals into different groups based on shared characteristics [13], which may include behavioral, psychological, socio-economic, geographical, or demographic attributes [14]. This technique is particularly useful when examining large diverse populations because it establishes subgroups with “shared characteristics relevant to the behavior to inform the design and delivery of more salient and targeted materials” [15] (p. 2). Moreover, audience segmentation tailors communication strategies toward specific groups based on their needs or interests, which may increase efficiency of resource use and information delivery [13,16,17]. Successful use of audience segmentation in extension applications has been well-documented (see [16,18–20]).

Geographic segmentation is a subset of audience segmentation, where individuals are grouped according to geographic characteristics. Separation of individuals by geographic characteristics can be useful in determining the needs or values of individuals in a certain area and tailoring information accordingly [2,21]. For example, Rentfrow et al. [22] identified distinct psychological profiles which clustered in different regions of the United States. The researchers used these geographical profiles to examine the connections between microlevel processes and macrolevel outcomes. Furthermore, Lamm et al. [23] utilized geographic segmentation to examine personality traits of agricultural leadership development program participants. The findings indicate there were significant differences observed between groups based on geography.

1.1.2. Rurality

The state of Georgia is home to 159 counties. According to the U.S. Rural Hospital Organization Assistance Act of 2017, counties with a population less than 50,000 are designated as rural. In total, 120 counties in Georgia are classified as rural, with the remaining thirty-nine counties designated as urban. The Distressed Communities Index

classifies most rural counties as at-risk or distressed, and most urban counties as prosperous or comfortable [24]. Economically, there are stark differences between rural and urban Georgia. According to data from 2019, rural Georgia had a poverty rate of 19.4%, while urban areas reported a poverty rate of 12.4% [25]. In 2014, urban areas accounted for 78% of all jobs, with 55% in the Atlanta area alone [26]. The unemployment rate, however, was higher within urban areas (6.7%) than rural areas (5.8%) [25]. From 2007–2014, 90% of Georgia’s population growth occurred within urban areas [26]. Conversely, rural Georgia has experienced a population decrease, losing 4% of its total population between 2010–2020 [27,28]. For this study, rurality was determined according to the guidelines published by the Georgia State Office of Rural Health [29], as seen in Figure 1.

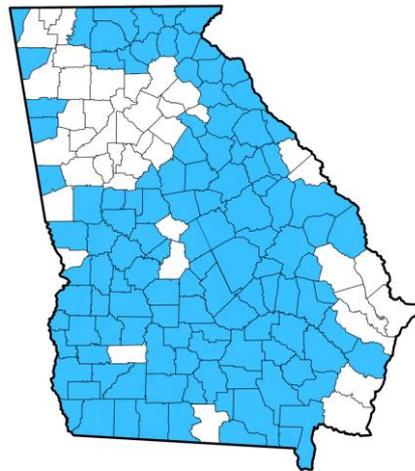


Figure 1. Georgia rural and urban counties (blue—rural, white—urban).

1.1.3. Geographic Region (Region)

The state of Georgia is home to five geographic regions: the Appalachian Plateau, the Blue Ridge Mountains, Ridge and Valley, Piedmont, and the Coastal Plain [30]. The Appalachian Plateau is the smallest geographic region, characterized by sandstone bluffs and abundant limestone deposits [31]. Primary economic industries in this region include tourism and forestry [32]. Neighboring the Appalachian Plateau is the Ridge and Valley region, which features long ridges separated by fertile valleys [33]. Economic activity in this region is divided between textiles, carpet manufacturing, and agricultural production [32,33].

The Blue Ridge Mountains region is home to the southernmost portion of the Appalachian Mountain range [34]. Rich in biological diversity [34], the Blue Ridge Mountains region is home to many of Georgia’s premiere natural attractions. Additionally, economic activity in this region is driven by tourism, mining, timber harvesting, and agriculture [32]. The Piedmont region comprises 30% of Georgia’s surface area and features rolling hills, major rivers, and red clay deposits [32,35]. Most of the state’s population resides in this region, within the metro Atlanta region [32]. Animal processing, carpet milling, and aircraft and automobile manufacturing are primary economic contributors [32].

Finally, the Coastal Plain accounts for 60% of the state’s surface area and is the state’s largest geographic region [36]. The Coastal Plain is subdivided into the Upper and Lower Coastal Plains [30]. The Upper Coastal Plain covers central and southwestern Georgia and is the center of the state’s agricultural industry [30]. Additionally, this region is home to many endangered species, including the gopher tortoise, longleaf pine, and wiregrass [37]. The Lower Coastal Plain is located across southeast Georgia and contains the coastal region and barrier islands [30]. Prominent economic industries include the pulp and paper industry, commercial fishing, seafood production, and tourism [32,38]. Barrier islands off the coast perform important ecological services such as providing estuaries for fish stocks and mitigating the effects of storms and tides on the mainland, while inland shipping ports

serve as a major hub for transportation and commerce [32,38]. For this study, geographic regions were determined according to county classification by the Georgia DNR [39], as seen in Figure 2. For clarity, throughout the study, geographic region is referred to as region.

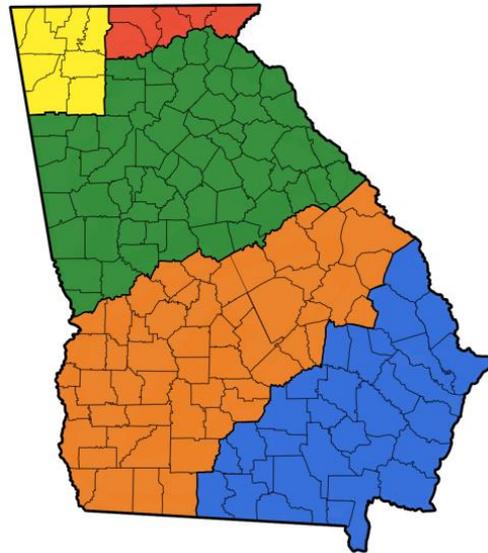


Figure 2. Georgia regions (yellow—Ridge and Valley region, red—Blue Ridge Mountains region, green—Piedmont region, orange—Upper Coastal Plain region, blue—Lower Coastal Plain region).

1.1.4. Extension District (District)

UGA Extension's county delivery system in Georgia is administratively organized into four geographical districts across the state: the Northeast District, Northwest District, Southeast District, and Southwest District [8]. Extension districts were determined according to the classification of UGA Extension [8], as seen in Figure 3. For clarity, throughout the study, extension district is referred to as district.

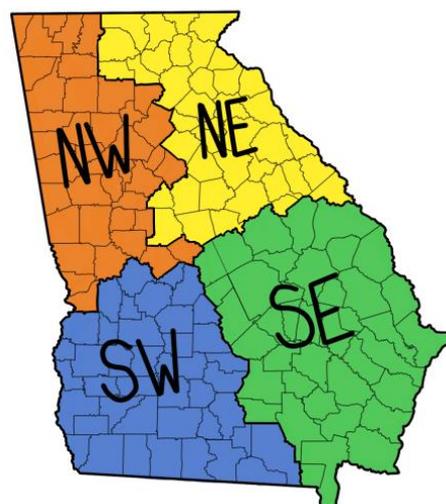


Figure 3. UGA Extension districts (orange—Northwest District, yellow—Northeast District, blue—Southwest District, green—Southeast District).

1.2. Study Purpose

The purpose of this study was to determine if there are significant differences in perceptions of critical community issues based on rurality, region, and district. The study was motivated by the following research objectives:

1. Describe critical community issues based on group;
2. Determine whether rurality is significantly associated with perception of critical community issues;
3. Determine whether region is significantly associated with perception of critical community issues;
4. Determine whether district is significantly associated with perception of critical community issues.

2. Materials and Methods

2.1. Research Design

A quantitative research design was employed. The population of interest was residents in the state of Georgia. A sampling frame was developed using a non-probability sampling approach designed by an online survey company as recommended within the literature (see [40]). Approval was obtained from the University of Georgia Institutional Review Board (IRB: STUDY00005642). Criteria for respondent inclusion were established based on corresponding data from the U.S. Census for each of the counties included in the study. Additionally, it is important to note that the data used within the present study were collected as part of a larger research study. We make these disclosures based on recommendations for clarity within the literature (see [41]).

2.2. Instrument Development

The survey consisted of self-reported demographic-, perception-, and behavior-related items. The survey also included attention filters to ensure data quality as recommended within the literature [40]. The items within the instrument were informed by previous research undertaken by the team (see [10]). Specifically, in a previous study a Delphi study was conducted amongst a panel of experts from the UGA Extension administrative team to identify the most critical issues facing citizens in the state of Georgia. The results identified five primary critical community issues: (1) agriculture and economic development, (2) youth and family development, (3) water, (4) nutrition education and food availability, and (5) civic engagement and community development. Survey respondents were asked to “Please indicate whether you believe your community is struggling with any of the following issues (Select all that apply):”. Social science-based data collection has been established as appropriate within geographically framed areas of enquiry (e.g., [42,43]).

2.3. Data Collection

Data were collected using a non-probability opt-in sampling process using the Qualtrics platform. All data were collected using an online form from December 2018 through February 2019. Responses were sought from each county in the state, including both rural and urban counties, as well as counties in all regions and districts. A total of 3374 respondents completed the online questionnaire. Respondents represented 152 of the 159 counties in Georgia. The number of responses per county ranged from 1 to 308. Non-response bias was mitigated through the non-probability sampling procedure [40].

2.4. Data Analysis

Respondents self-reported demographic information, as well as their county of residence. The county of residence was used to determine rurality, region, and district. Responses to the critical community issue items were used to determine the perception of the issue among respondents. To accomplish research objective one, absolute frequency counts and associated percentages were computed. To accomplish research objectives two, three, and four, a series of chi-squared tests of independence were used to examine the relationships between critical issue response and geographic groupings. A significance level of $\alpha = 0.05$ was determined a priori.

2.5. Data Visualization

The use of data visualization to improve data utilization within extension work is a burgeoning field [44]. Previously, visualizations have been used in agricultural education and extension work to illustrate social networks (e.g., [45]) and analyze crop season trends [46]. More recently, the literature has recommended further use and application of data visualization among extension professionals to “effectively convey the value of Extension to stakeholders by demonstrating program relevance, quality, and accomplishments” [47] (p. 3). For the present study, geographic density heatmaps were created using Tableau Desktop version 2021 to supplement the statistical analysis from the study. Specifically, rurality, region, and district boundaries were transposed post-hoc using Procreate to illustrate differences in perception across geographic groupings.

3. Results

At the state level, the most critical issue identified by respondents, based on the highest percentage of ‘yes’ responses, was youth and family development. The least critical issue, based on the lowest percentage of ‘yes’ responses—at the state level—was water. Absolute frequency counts and associated percentages for the state-level data are displayed in Table 1. Visual representations of critical issue distributions are also provided in the following figures, specifically, Youth and Family Development (Figure 4), Civic Engagement and Community Development (Figure 5), Agricultural and Economic Development (Figure 6), Nutrition Education and Food Availability (Figure 7), and Water (Figure 8).

Table 1. Descriptive statistics for state-wide perceptions of critical community issues.

Issue	Yes		No		N
	<i>f</i>	%	<i>f</i>	%	
Youth and Family Development	1699	50.4%	1675	49.6%	3374
Civic Engagement and Community Development	1572	46.6%	1802	53.4%	3374
Agricultural and Economic Development	1152	34.1%	2222	65.9%	3374
Nutrition Education and Food Availability	852	25.3%	2522	74.7%	3374
Water	430	12.7%	2944	87.3%	3374

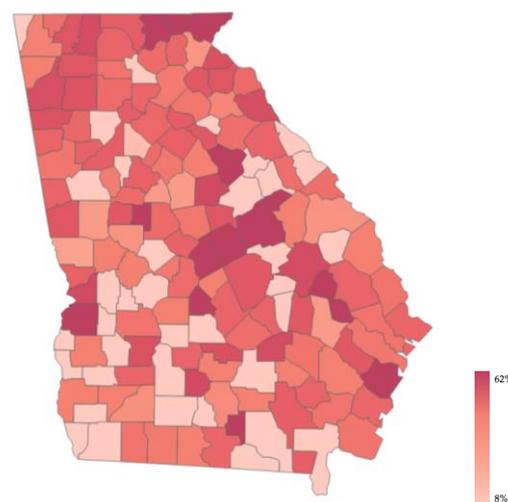


Figure 4. State-wide distribution of perception of youth and family development as a critical community issue.

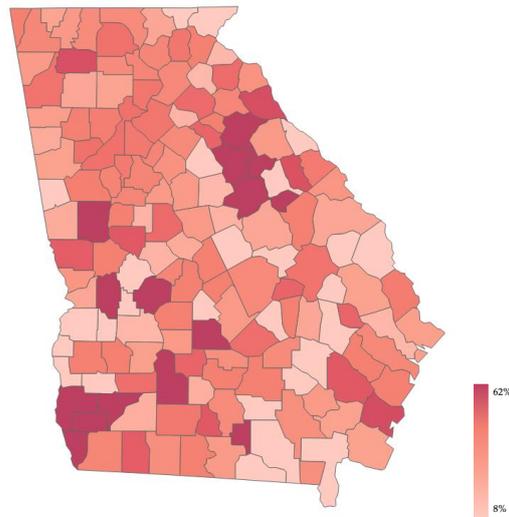


Figure 5. State-wide distribution of perception of civic engagement and community development as a critical community issue.

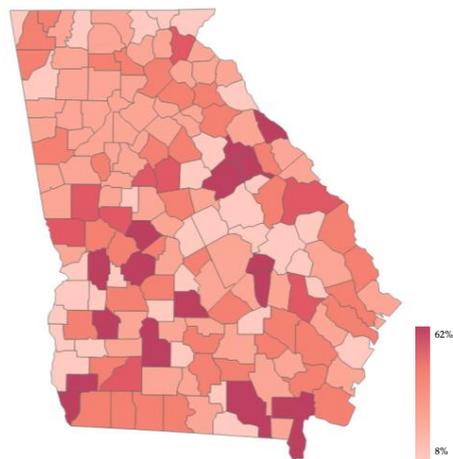


Figure 6. State-wide distribution of perception of agriculture and economic development as a critical community issue.

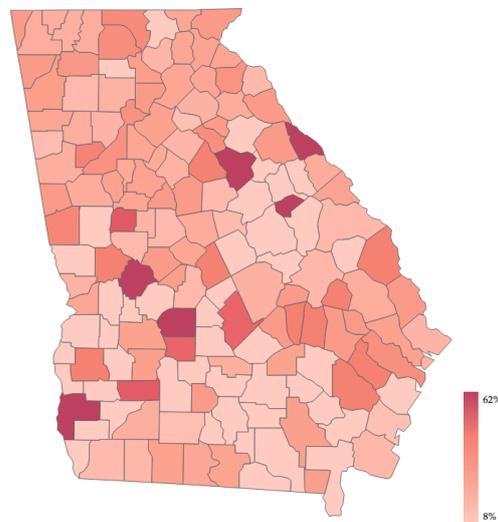


Figure 7. State-wide distribution of perception of nutrition education and food availability as a critical community issue.

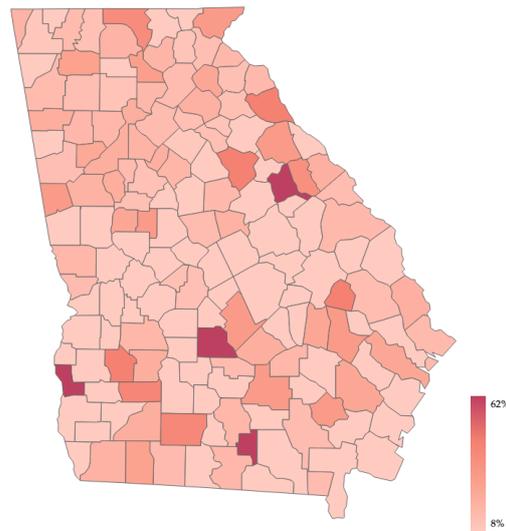


Figure 8. State-wide distribution of perception of water as a critical community issue.

A statistically significant relationship was observed between youth and family development and rurality. Most residents in rural areas agreed that youth and family development was a critical issue facing their community. Additionally, there was a significant relationship found between youth and family development and region. Residents in the Lower Coastal Plain region had the highest percentage of agreement that this was a critical issue facing their communities. Additionally, most residents in the Blue Ridge Mountains and Upper Coastal Plain regions agreed that this was a critical issue. Finally, there was a significant relationship between youth and family development and district. Residents in the Southwest District had the highest percentage of agreement that this was a critical issue in their communities. Furthermore, most residents in the Northeast and Southeast Districts agreed that youth and family development was a critical issue facing their communities. The effect size for each relationship was small [48]. The results are presented in Table 2. A visual representation of issue perception by grouping is presented in Figure 9.

Table 2. Critical community issues based on demographic characteristics—youth and family development.

Geographic Grouping	Yes		No		N	χ ²	Φ
	f	%	f	%			
Rurality						13.651 ***	0.06
Rural	396	56.6%	304	43.4%	700		
Urban	1303	48.7%	1371	51.3%	2674		
Region						34.330 ***	0.10
Blue Ridge Mountains	19	55.9%	15	44.1%	34		
Ridge and Valley	93	48.9%	97	51.1%	190		
Piedmont	1102	47.2%	1233	52.8%	2335		
Upper Coastal Plain	247	58.5%	175	41.5%	422		
Lower Coastal Plain	192	60.6%	125	39.4%	317		
District						33.408 ***	0.10
Northeast	324	53.9%	277	46.1%	601		
Northwest	1021	47.0%	1153	53.0%	2174		
Southeast	178	56.3%	138	43.7%	316		
Southwest	176	62.2%	107	37.8%	283		

Note. *** $p < 0.001$.

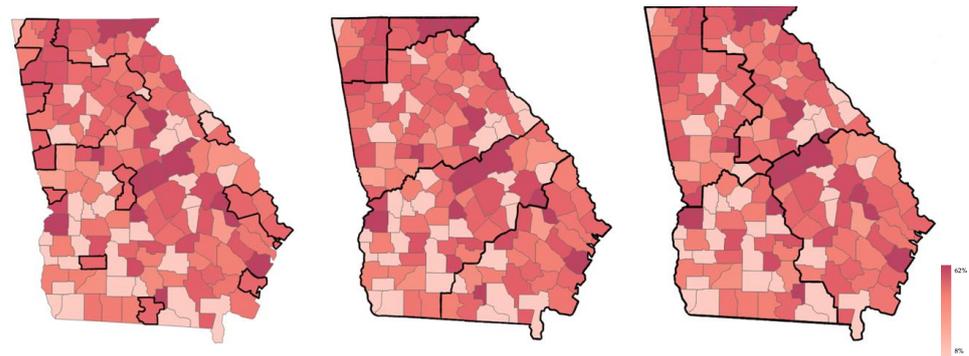


Figure 9. Distribution of perception of youth and family development as a critical community issue.

Regarding civic engagement and community development, a significant relationship with region was observed. Residents in the Upper Coastal Plain had the highest percentage of agreement that this was a critical issue in their community. The effect size of this relationship was small [48]. There was no significant relationship found between civic engagement and community development and rurality. Additionally, there was no significant relationship observed between civic engagement and community development and district. The results are presented in Table 3. A visual representation of issue perception by grouping is presented in Figure 10.

Table 3. Critical community issues based on demographic characteristics—civic engagement and community development.

Geographic Grouping	Yes		No		N	χ^2	Φ
	f	%	f	%			
Rurality						0.369	0.01
Rural	319	45.6%	381	54.4%	700		
Urban	1253	46.9%	1421	53.1%	2674		
Region						11.580 *	0.06
Blue Ridge Mountains	14	41.2%	20	58.8%	34		
Ridge and Valley	75	39.5%	115	60.5%	190		
Piedmont	1107	47.4%	1228	52.6%	2335		
Upper Coastal Plain	212	50.2%	210	49.8%	422		
Lower Coastal Plain	129	40.7%	188	59.3%	317		
District						5.423	0.04
Northeast	262	43.6%	339	56.4%	601		
Northwest	1045	48.1%	1129	51.9%	2174		
Southeast	139	44.0%	177	56.0%	316		
Southwest	126	44.5%	157	55.5%	283		

Note. * $p < 0.05$

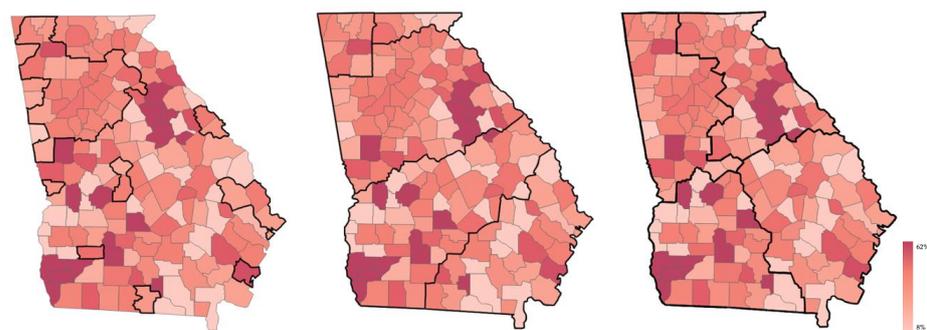


Figure 10. Distribution of perception of civic engagement and community development as a critical community issue.

Regarding agriculture and economic development, there were significant relationships with rurality, region, and district. When degrees of freedom were accounted for, the effect size of each relationship was small [48]. Rural residents had a higher percentage of agreement that agricultural and economic development was a critical issue within their community than urban residents. However, most residents in both rural and urban areas did not feel that this was a critical issue facing their community. The Blue Ridge Mountains region had the largest percentage of residents who agreed that agriculture and economic development was a critical issue facing their community. The results are displayed in Table 4. A visual representation of issue perception by grouping is presented in Figure 11.

Table 4. Critical community issues based on demographic characteristics—agriculture and economic development.

Geographic Grouping	Yes		No		N	χ^2	Φ
	f	%	f	%			
Rurality						42.715 ***	0.11
Rural	312	44.6%	388	55.4%	700		
Urban	840	31.4%	1834	68.6%	2674		
Region						39.058 ***	0.11
Blue Ridge Mountains	22	64.7%	12	35.3%	34		
Ridge and Valley	77	40.5%	113	59.5%	190		
Piedmont	737	31.6%	1598	68.4%	2335		
Upper Coastal Plain	180	42.7%	242	57.3%	422		
Lower Coastal Plain	100	31.5%	217	68.5%	317		
District						13.428 **	0.06
Northeast	237	39.4%	364	60.6%	601		
Northwest	696	32.0%	1478	68.0%	2174		
Southeast	115	36.4%	201	63.6%	316		
Southwest	104	36.7%	179	63.3%	283		

Note. ** $p < 0.01$, *** $p < 0.001$.

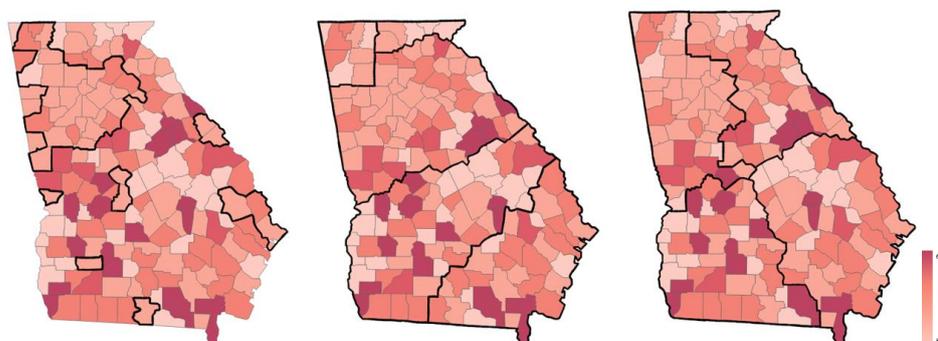


Figure 11. Distribution of perception of agriculture and economic development as a critical community issue.

Concerning nutrition education and food availability, there was a significant relationship with rurality. Rural residents had a higher percentage of agreement that this was a critical issue facing their community than urban residents. However, most residents in both rural and urban communities agreed that nutrition education and food availability was not a critical issue. Additionally, there was a significant relationship between nutrition education and food availability and region. Residents in the Upper Coastal Plain had the highest level of agreement that this is a critical issue facing their community. Finally, there was a significant relationship between nutrition education and food availability and district. Residents in the Southwest District had the highest percentage of agreement that this was a critical issue; however, most residents across the state agreed this was not a critical issue. The effect sizes for these relationships were small [48]. The results are presented in Table 5. A visual representation of issue perception by grouping is presented in Figure 12.

Table 5. Critical community issues based on demographic characteristics—nutrition education and food availability.

Geographic Grouping	Yes		No		N	χ^2	Φ
	<i>f</i>	%	<i>f</i>	%			
Rurality						7.084 **	0.05
Rural	204	29.1%	496	70.9%	700		
Urban	648	24.2%	2026	75.8%	2674		
Geographic Region						35.521 ***	0.10
Blue Ridge Mountains	10	29.4%	24	70.6%	34		
Ridge and Valley	39	20.5%	151	79.5%	190		
Piedmont	545	23.3%	1790	76.7%	2335		
Upper Coastal Plain	154	36.5%	268	63.5%	422		
Lower Coastal Plain	83	26.2%	234	73.8%	317		
Extension District						24.006 ***	0.08
Northeast	180	30.0%	421	70.0%	601		
Northwest	490	22.5%	1684	77.5%	2174		
Southeast	94	29.7%	222	70.3%	316		
Southwest	88	31.1%	195	68.9%	283		

Note. ** $p < 0.01$, *** $p < 0.001$.

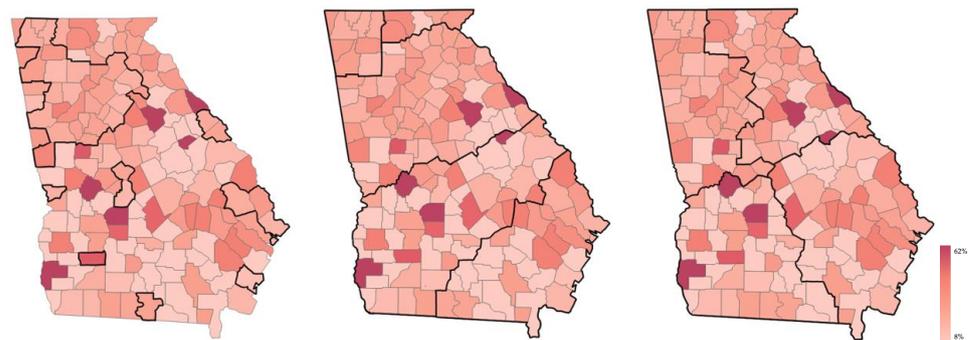


Figure 12. Distribution of perception of nutrition education and food availability as a critical community issue.

Regarding water, there was a significant relationship with rurality. The effect size of this relationship was small [48]. Rural residents had a higher percentage of agreement that water was a critical issue facing their communities than urban residents; however, most residents in both rural and urban areas agreed that this was not a critical issue. No significant relationships were found between water and region or water and district. Most residents across all regions and districts agreed water was not a critical issue facing their communities. The results are presented in Table 6. A visual representation of issue perception by grouping is presented in Figure 13.

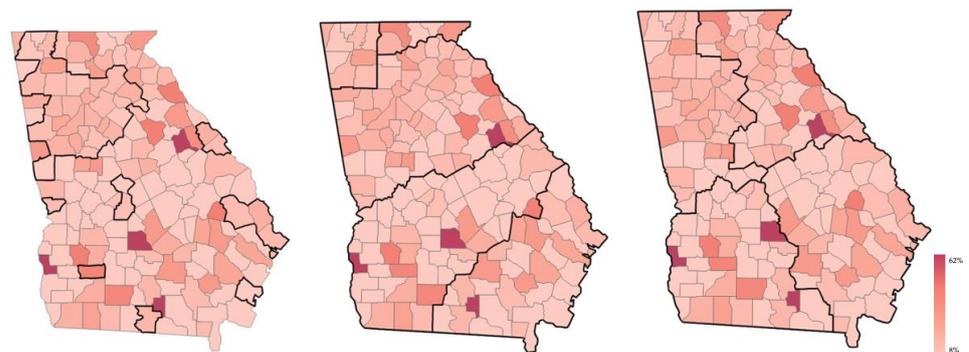


Figure 13. Distribution of perception of water as a critical community issue.

Table 6. Critical community issues based on demographic characteristics—water.

Geographic Grouping	Yes		No		N	χ ²	Φ
	f	%	f	%			
Rurality						7.005 **	0.05
Rural	110	15.7%	590	84.3%	700		
Urban	320	12.0%	2354	88.0%	2674		
Region						8.948	0.05
Blue Ridge Mountains	4	11.8%	30	88.2%	34		
Ridge and Valley	16	8.4%	174	91.6%	190		
Piedmont	291	12.5%	2044	87.5%	2335		
Upper Coastal Plain	58	13.7%	364	86.3%	422		
Lower Coastal Plain	54	17.0%	263	83.0%	317		
District						4.407	0.04
Northeast	77	12.8%	524	87.2%	601		
Northwest	262	12.1%	1912	87.9%	2174		
Southeast	50	15.8%	266	84.2%	316		
Southwest	41	14.5%	242	85.5%	283		

Note. ** $p < 0.01$.

To summarize the results presented above, a comprehensive summary matrix was developed (see Table 7). The percentages of ‘yes’ responses associated with each critical community issue are reported by geographic grouping.

Table 7. Summary of ‘yes’ responses associated with critical community issues.

Geographic Grouping	Issue				
	Youth and Family Development	Civic Engagement and Community Development	Agricultural and Economic Development	Nutrition Education and Availability	Water
Rurality					
Rural	56.6% ***	45.6%	44.6% ***	29.1% **	15.7% **
Urban	48.7% ***	46.9%	31.4% ***	24.2% **	12.0% **
Region					
Blue Ridge Mountains	55.9% ***	41.2% *	64.7% ***	29.4% ***	11.8%
Ridge and Valley	48.9% ***	39.5% *	40.5% ***	20.5% ***	8.4%
Piedmont	47.2% ***	47.4% *	31.6% ***	23.3% ***	12.5%
Upper Coastal Plain	58.5% ***	50.2% *	42.7% ***	36.5% ***	13.7%
Lower Coastal Plain	60.6% ***	40.7% *	31.5% ***	26.2% ***	17.0%
District					
Northeast	53.9% ***	43.6%	39.4% **	30.0% ***	12.8%
Northwest	47.0% ***	48.1%	32.0% **	22.5% ***	12.1%
Southeast	56.3% ***	44.0%	36.4% **	29.7% ***	15.8%
Southwest	62.2% ***	44.5%	36.7% **	31.1% ***	14.5%

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

4. Discussion

At a composite level, youth and family development received the highest percentage (50.4%) of individuals who agreed that this was a critical issue facing their communities. Civic engagement and community development received the second highest percentage of agreement (40.6%), followed by agriculture and economic development (34.1%), nutrition education and food availability (25.3%), and water (12.7%).

4.1. Youth and Family Development

Most individuals (56.6%) living in rural counties regarded youth and family development as a critical community issue. Additionally, most respondents in the Upper Coastal Plain (60.6%), Lower Coastal Plain (58.5%), and the Blue Ridge Mountains (55.9%) regions believed that youth and family development was a critical community issue. Furthermore,

most individuals living in the Southwest (66.2%), Southeast (56.3%), and Northeast (53.9%) Districts felt that youth and family development was a critical community issue. According to the Distressed Communities Index, almost every county within the Blue Ridge Mountains and Coastal Plain geographic regions is classified as distressed, at-risk, or mid-tier [24]. Most distressed and at-risk counties in Georgia are located within the Upper and Lower Coastal Plains [24]. These counties are characterized by increased poverty, increased rates of adults not working and adults without a high school diploma, and low median household incomes [24]. UGA Extension already provides many programs related to youth and family development, including 4-H, training on healthy relationships, teen and child development, and quality childcare and education [49]. While these programs are already in place, the results of the current study, as well as previous research (see [10]), underscore the importance of continuing these programs. An associated recommendation would be to increase the visibility of available programs and resources, particularly within rural areas of the Coastal Plain and Blue Ridge Mountains. An additional recommendation is for extension agents within these geographic regions to collaborate with community members to determine whether existing programs should be modified to better meet stakeholder needs [50].

4.2. Civic Engagement and Community Development

For rural and urban areas, most respondents did not regard civic engagement and community development as a critical community issue. Similarly, across almost all regions, most respondents did not regard civic engagement and community development as a critical community issue. However, a slight majority of respondents in the Upper Coastal Plain (50.2%) believed that it was a critical community issue. Additionally, most respondents across all districts did not believe that civic engagement and community development was a critical community issue.

Based on the distribution of responses visualized in Figure 10, there are moderate to high levels of perception of civic engagement and community development as a critical community issue among the Ridge and Valley, Piedmont, and Upper Coastal Plain regions. Within the Upper Coastal Plain and Ridge and Valley regions, most counties are classified as distressed, with higher levels of poverty, housing vacancy, and unemployment [24]. There are many small towns across these regions, dependent on agriculture and manufacturing [51,52]. Additionally, among the Piedmont region, the counties that had higher perceptions of civic engagement and community development as a critical community issue were primarily rural counties. These results provide an empirical perspective conceptually similar to observations by Odeyemi and Skobba [53], who posited that small towns are typically rich in social capital but may lack the administrative capacity or human resources to possess strong stakeholder-led governance models.

To increase civic engagement and contribute to meaningful community development, communities require significant human and social capital [54,55]. The Cooperative Extension Service has four categories related to programming outreach: Agriculture and Natural Resources, 4-H Youth Development, Family and Consumer Sciences, and Community Development [56]. However, within Georgia, the extension system does not have personnel specifically designated to provide programs and outreach specifically related to Community Development [57]. Although UGA Extension does offer programming and outreach related to civic engagement and community development (see [58]), there are no Community Development personnel within UGA Extension. A recommendation from the current study would be for extension personnel to perform a needs assessment to determine the specific needs of clientele related to civic engagement and community development. Additionally, a further recommendation would be to consider the development of a Community Development programming domain within UGA Extension and create the necessary infrastructure to support such dedicated efforts.

4.3. Agriculture and Economic Development

Across almost all geographic groupings, the majority of respondents did not regard agriculture and economic development as a critical community issue. A notable exception was the Blue Ridge Mountains geographic region, where 64.7% of residents felt agriculture and economic development was a critical issue facing their communities.

Recent data from the U.S. Bureau of Economic Analysis indicates that every county in the Blue Ridge Mountains region, except for Union County, reported a decrease in gross domestic product from 2019–2020 [59]. The primary industries in this region include retail trade, manufacturing, hospitality, health care and social services, and private-sector companies [60]. On average, individuals in the Blue Ridge Mountains region earn \$680–827 per week [60]. While Georgia's unemployment rate has dropped in 2021 [61], much of the economic growth has been disproportionately concentrated in Atlanta and its suburbs [62]. Individuals living outside the metro Atlanta area, particularly in rural parts of the Northeast District, are disconnected from available job opportunities [62,63].

Based on the results for the current study, an associated recommendation would be for extension personnel to increase awareness of career preparation programming. Investing in human capital and reskilling workers with skills related to employer demands may contribute to increased economic development within this region [62]. Furthermore, the Blue Ridge Mountains region is rich in natural capital stock [34]. A recommendation is for extension personnel to leverage these resources and collaborate with local stakeholders to help support the development of an asset-based economic development plan for the region [64]. An economic development-based approach may contribute to long-term, sustained economic growth, job creation, and strengthening of regional networks [64].

4.4. Nutrition Education and Food Availability

Across all geographic groupings, most respondents did not perceive nutrition education and food availability as a critical community issue. These results are somewhat unexpected given Georgia's recent nutrition, physical activity, and obesity profile (see [65]). Among Georgia adults, 65.7% are considered overweight or obese [65]. Additionally, 43.2% of adults report consuming less than one serving of fruit per day, while 23.7% report consuming less than one serving of vegetables per day [65]. Only half of Georgia adults (50.8%) report achieving the recommended 150 min of moderate intensity physical activity per week [65]. Among adolescents in Georgia, 29.8% are considered overweight or obese [65]. Additionally, 43.1% of adolescents report consuming less than one serving of fruit per day, and 45.2% of adolescents report consuming less than one serving of vegetables per day [65]. Less than one-quarter of adolescents report being physically active for at least 60 min per day on all seven days in the past week [65].

The results of the current study would tend to indicate a potential disconnect between the perception of nutrition education as a critical issue and the empirical evidence regarding the state of this issue. Specifically, the existing literature would indicate nutrition education and physical activity are public health issues among many Georgia residents [66]. Therefore, an associated recommendation for extension personnel would be to examine why stakeholders and potential clientele do not consider nutrition education to be a critical community issue. The results of such an examination may help inform associated programming efforts and to increase the effectiveness of nutrition education programs offered by UGA Extension, such as the Supplemental Nutrition Assistance Program Education [67] and Expanded Food and Nutrition Education Program [68].

In terms of adolescent nutrition education, UGA Extension offers the Eat Healthy, Be Active program, which teaches nutrition and physical activity concepts to early childhood ages [69]. Additionally, UGA Extension provides school garden-based curricula that align nutrition education with education standards for K–8 students [70]. A recommendation is for extension personnel to conduct program evaluations of the Eat Healthy, Be Active and school garden programs to determine the effectiveness of improving adolescent nutrition and dietary behaviors. An additional recommendation would be to use the results of the

present study as a lens through which to contextualize observations. For example, do program evaluation results differ based on rural/urban grouping or geographic region? The results of an evaluation may aid extension agents in determining whether adolescents make unhealthy dietary choices because they lack nutritional knowledge or because they do not have access to fresh, nutrient-dense foods. Additionally, complementing these programs with tours to local farms and information on local food banks may bridge the gap between learning about nutrition and implementing healthy dietary behaviors. Using a place-based lens, such as rural/urban or geographic growing regions, may further enhance the utility and efficacy of such programming efforts.

4.5. Water

Across all geographic groupings, most respondents did not perceive water to be a critical community issue. These results contradict previous research conducted by Evans et al. [71] who found forty percent of respondents reported a low likelihood that their local water supply would be able to meet all water resource needs in ten years. Additionally, 35% of respondents had a positive perception of groundwater quality in Georgia, while only 27% of respondents had a positive perception of surface water quality [71]. The two principal water supplies for Georgia are groundwater, including the Floridian aquifer [72], and surface water, including bodies of water such as Lake Lanier [73]. Population increases and finite water resources indicate water quantity and consumption are poised to represent potential issues for Georgia and neighboring states [73–75].

Following a severe drought from 2007–2008, UGA Extension launched a water conservation program, which promotes indoor/outdoor water conservation through Every Drop Counts and WaterSmart [76]. Additionally, a Drought in Georgia curriculum was created for formal education settings and 4-H programming [76]. Furthermore, the Environmental Protection Division of Georgia's DNR released a best management practices report for water use in agricultural irrigation, golf courses and landscaping, industrial and commercial facilities, and domestic operations [77]. A potential interpretation of the current results indicates that existing resources and focus on water conservation may have decreased the perception of water as a critical community issue.

Although respondents in this study did not perceive water as a critical community issue, a recommendation would be to continue raising awareness about the work UGA Extension has done to increase water conservation practices within state. Additionally, it is important for Georgia residents to be aware of how their water use affects water supplies for residents in neighboring states. The headwaters of two major river basins (the Apalachicola-Chattahoochee-Flint and Alabama-Coosa-Tallapoosa) are in Georgia [78]. A recommendation is for extension personnel to highlight the interrelations between fungible water supplies, although it is likely such conversations are already happening; however, the results of this study demonstrate that continuing these efforts is warranted.

4.6. Limitations

There are several limitations associated with the study design that must be addressed. First, the data were collected using a non-probability sampling procedure and distributed via an online survey platform. Although larger scale quantitative data collection has been recommended to extend upon smaller-scale qualitative studies examining perspectives from specific demographic groups (e.g., [79]), the resulting sample may not necessarily be representative of the entire population of the state of Georgia. For example, the online nature of the survey limited the respondent pool to those who had access to internet-based applications. Furthermore, the variation in responses per county should be acknowledged. Some counties had as few as one response whereas some had over 300. Counties with fewer responses were typically rural and therefore represented a more challenging audience to engage. Future studies should proactively plan for response disparities and seek alternative means, such as in-person data collection, to supplement any counties with lower responses [40].

Additionally, the data collected are representative of a single point in time. Since the data collection occurred prior to the COVID-19 pandemic, the needs of extension clientele may have changed and the applicability of the results in the present study may be limited. Under ideal conditions, data would have been collected prior to the pandemic, during the pandemic, and following the pandemic. However, due to resource limitations, data collection at multiple points in time was not possible.

Furthermore, the variable of interest was binary, which limited analysis options. There is limited literature regarding appropriate post-hoc tests for significant chi-squared omnibus results. Therefore, identification of significant between-groups or within-groups differences were also limited. Interpretation of observed results, and associated recommendations, were also limited to the data available. As a recommendation for future research, a continuous variable of interest may provide more statistical power, which should enable more robust analysis and interpretation.

4.7. Implications for Research and Practice

A significant implication of this study is the initial development of a decision support tool that gives extension practitioners insight into critical issues as deemed by local clientele. The results of the present study will aid extension professionals in developing programming and focusing resource use to meet the needs of the communities they support. For example, extension agents serving rural areas of the Upper Coastal Plain may want to focus programming and resources toward addressing issues related to youth and family development or civic engagement and community development. While the results of the present study provide a starting point for program development, a practical recommendation would be for extension personnel to work collaboratively with local clientele and stakeholders to determine the best solutions to address issues within these larger content areas. The validation of this approach is particularly relevant given the global COVID-19 pandemic and the potential for such events to have a variable effect across local communities and regional groupings. Replicating the approach on a more consistent, longitudinal basis may be valuable for extension professionals to monitor and track trends, and needs, over time. A recommendation is to consider the current study as a methodological validation (comparing across geographic groupings) rather than a static mandate for future interventions and efforts. Dynamic, timely, and longitudinal data collection and analysis may help to improve community needs and associated service provision.

Additionally, the results provide a set of empirical insights which may be worth further enquiry. For example, an investigation into specific counties and existing programming efforts may yield interesting explanations for observations. Although beyond the scope of the current study, this approach could serve as a pragmatic model of linking efforts with community-level effects. The layering of additional data, such as health, economics, and education, available at the county level, may also serve as relevant contributors to intercounty differences.

The use of data visualizations to report state-wide and county-level findings has important implications for agriculture and extension educators. Relative to this study, the geographic heatmap visualizations offer a simple method for identifying where areas of high perception occur. These visualizations may be leveraged to heuristically determine programmatic needs and resource allocation. A practical recommendation would be to extend the use of data visualization in extension evaluation and reporting [44]. Additionally, visualizations can be leveraged to evaluate longitudinal program outcomes or strategic planning trends. We recommend geographic heatmaps be used to locate analog or structurally equivalent communities for developmental interventions. For example, extension personnel may be able to use the data to ask the following question: is there a community whose current profile resembles what I can expect in my community in the future? This may enable extension personnel to efficiently develop strategic action plans for community development.

5. Conclusions

In this study, we sought to examine whether the use of geographic or other (rural/urban and administrative district) groupings may yield differential results, particularly as they relate to perceptions of critical community issues. The study results indicate a more nuanced approach to extension programming based on geography, and appropriate community characteristics may provide more fine-grained community insights. For example, identifying analogue counties/communities which are not geographically proximal may provide more insights than simply looking at those which are closest. This research insight should add a unique perspective to the literature, particularly as it relates to future community-based programming and analysis. From an applied perspective, the present study provides a preliminary set of recommendations for program development and resource allocation within UGA Extension. Specifically, a recommendation is for extension personnel to use these results as a starting point for continuing needs assessments and engaging collaboratively with the communities they serve. In doing so, UGA Extension may be well positioned to continue to contribute to the increased resilience of communities and help Georgia residents thrive throughout the 21st century.

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