A CONCEPTUAL MODEL FOR COOPERATIVE EXTENSION PROFESSIONALS AS PUBLIC HEALTH CHANGE AGENTS: THREE ESSAYS ON THE COOPERATIVE EXTENSION PROGRAM, THE OPIOID EPIDEMIC, AND SUBSTANCE USE DISORDER NEEDS OF RURAL GEORGIA

by

MARIA BOWIE

(Under the Direction of Grace Bagwell Adams)

ABSTRACT

The purpose of this study is to present a conceptual framework for Cooperative Extension to effectively respond to the opioid crises through their widely recognized role as conduits for practical, evidence-based solutions. As part of the outputs required for a Rural Health and Safety Grant funded by the United States Department of Agriculture, the researcher collaborated with a transdisciplinary team to develop creative and innovative prevention and treatment strategies that are sensitive to the unique needs of rural communities, a critical aspect in addressing the opioid epidemic. Despite the well-documented disparity and daunting nature of composing realistic solutions to address the opioid crisis, there are existing resources that can be leveraged for public health. The study's design shares a conceptual model modified from Roger's Diffusion of Innovation theory to frame how Cooperative Extension can respond to their local opioid crises, by being informed community advocates for change, and presents the results of a mixed-methods community health needs assessment (CHNA) for four rural Georgia counties focusing on opioid misuse and behavioral health needs. The mixed methods study was conducted in two parts: 1) a quantitative analysis of existing secondary data sources, including time trend analyses; and 2) a qualitative analysis of data collected through in-depth focus groups with community public health stakeholders in the four rural counties included in the study. Major findings from the study show that rural extension agents have established rapport with decision makers and can be rapidly trained to help facilitate the development of suitable interventions to fight opioid misuse. Results from the CHNA suggest that despite recent reductions in the supply and prescribing habits of rural medical providers, significant increases in poly-substance use, particularly methamphetamines, are negating the potential benefits of the state's newly adopted prescription drug monitoring program. The role Extension continues to fill in bringing innovation and research-based solutions from institutions of higher education to communities across the state suggests how agents might better leverage partnerships and resources to be public health change agents in their communities.

INDEX WORDS: Cooperative Extension, Diffusion of Innovation, Opioid use disorder, Rural Georgia, Treatment providers, Polysubstance use, Prescription drug misuse, Substance misuse, Conceptual model, Mixed methods study

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DEDICATION

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INTRODUCTION

The United States (US) opioid crisis persists as inappropriate prescribing, opioid use disorder, and opioid overdose deaths span across society (Gladden, O'Donnell, Mattson, & Seth, 2019; Manchikanti et. al, 2012). Opioid misuse and death is a serious, recognized problem by states and the federal government—as evidenced by President Donald Trump's declaration in October 2017 that formally elevated the crisis to a public health state of emergency. Though initially fostered by inappropriate prescribing, greater use, and an over-supply of licit prescription opioids, a growing percentage of overdoses and deaths involve heroin and illicit fentanyl (Dasgupta, Beletsky, & Ciccarone, 2018).

Opioid use continues to evolve, demanding more rigorous evidence about what contributes to misuse, to inform prevention efforts, and to guide appropriate policy response from all levels of government. Empirical evidence has well documented the supply (via inappropriate prescribing) and use (of both licit and illicit) opioids as a severe threat to public health in the US. Many negative externalities of the crisis are seen, but the most drastic hallmarks are overdose deaths and increases in the disease state known as substance use disorder. Looking at these two metrics provides a striking picture of the magnitude of the opioid epidemic.

Ninety-one people in the US die each day from an opioid overdose; however, only half have ever used a prescription (Centers for Disease Control and Prevention [CDC]; 2016). According to the CDC, opioid-related overdose deaths quadrupled between 1999 and 2017 (National Institute on Drug Abuse, 2019). The CDC describes the increase as taking place in three noticeable waves, starting in the 1990s with prescription opioids. In 2010, overdose deaths increased dramatically due to a precipitous rise in heroin use. The most recent wave started in

2013, with many overdoses involving synthetic opioids – mostly illicit fentanyl and carfentanyl (Centers for Disease Control and Prevention, 2019).

Fentanyl deaths multiplied rapidly between 2013 and 2016, increasing by over 500%, and then increased another 45% in 2017, pushing fentanyl overdose death tolls higher than prescription opioids and heroin combined during 2016 and 2017 (Zibbell, Aldridge, Cauchon, DeFiore-Hyrmer, & Conway, 2019; Jones, Einstein, & Compton, 2018). Fentanyl is estimated at 50 to 100 times more potent than morphine, and is widely recognized as a causal mechanism in escalating deaths related to opioid misuse (Scholl, 2019; Vashishtha, Mittal, & Werb, 2017). Despite this recent trend toward synthetic sources, prescription opioids continue to make up almost a quarter of all drug overdose deaths in the US (Ford, Pomykacz, Szalewski, Esteban McCabe, & Schepis, 2019).

Deaths, however, are only one measure documenting the crisis. Another important indicator is incidence and prevalence of substance use disorder. Substance use disorder is defined as a medical condition where the use of one or more substances results in a clinically significant impairment or distress, affecting the user's health and wellbeing (Substance Abuse and Mental Health Services Administration [SAMHSA]; 2019). Prescription drug misuse is associated with higher mortality and morbidity among white Americans, in part due to better access to health insurance and prescription benefit coverage (Case & Deaton, 2015). Past research shows mental health problems coupled with substance misuse has contributed to more overdose and suicide deaths in white, middle-age adults (Ford & Lacerenza, 2011).

The public health challenges for addressing the opioid crisis are more intense in certain geographic areas than others. States with high concentrations of rural areas have significantly greater challenges in addressing the opioid epidemic than their metropolitan counterparts.

Focusing on Georgia specifically gives the opportunity to describe the problem for one state and examine the challenges of combatting the worst effects across large swaths of rural communities. An empirical examination of rural Georgia is critical to understand the geographic disparity present in many communities given that rural communities are suffering from the opioid epidemic at a much higher rate than their urban and suburban peers (Keyes, Cerdá, Brady, Havens, & Galea, 2014).

Georgia, in terms of land mass, is the largest state east of the Mississippi River. The state has an estimated 10.5 million people, with approximately 2 million residing in United States Department of Agriculture (USDA) classified rural areas (Rural Health Information Hub [RHIH]; 2019)[1]. In 2017 alone, Georgia experienced 1,014 opioid-related deaths. When adjusted for population size, this is lower than the national average; however, the time trend within the state has rapidly risen since 2013 (National Institute on Drug Abuse [NIDA]; 2019). Similar to national trends, the greatest increase was seen in synthetic opioids (predominately illicit fentanyl) and heroin.

Notably, prescription opioids represented the largest proportion of opioid-related deaths in Georgia in 2017 (National Institute on Drug Abuse, 2019). In that same year, Georgia medical providers wrote 70.9 opioid prescriptions per 100 people, significantly higher than the national average of 58.7 (NIDA, 2019). However, this is the lowest prescription rate Georgia has seen since 2006, when measurement and monitoring of opioid distribution initially began in the state.

Additional demographic and economic context help in fostering understanding of population health challenges, especially among rural residents. In 2017, 13% of Georgia

[1] USDA's Economic Research Services classifies rural as non-metropolitan counties including some combination of open countryside, rural towns with less than 2,500 people, and urban areas with populations between 2,500 and 49,999 (USDA, 2019).

residents lacked health insurance coverage (Kaiser Family Foundation, 2017). Georgia's average per capita income in 2017 was $44,145, though in rural areas per capita averaged $33,483 (Rural Health Information Hub, 2019). According to the USDA Economic Research Service data from 2017, Georgia's rural poverty rate was 20.3%, compared to 13.9% in urban areas and almost 20% of rural populations report not completing high school compared to 12% of urban Georgia (Rural Health Information Hub, 2019). Past research has established that these inequities contribute to poorer health outcomes and emphasize the need to engage rural communities to protect their future health and wellbeing. Transportation, lack of providers, extensive travel times to reach suitable treatment options and specialized care are challenges all rural areas face. Health problems in rural areas often become severe by the time of diagnosis, leading to a greater likelihood of complications and more intense treatment protocol or intervention (Warshaw, 2017).

The statistics on Georgia thus far only capture one side of the equation—the patient, or demand-side perspective. A look at the supply side is just as important and assists in describing the healthcare landscape and how disparity in outcomes—including those related to substance use disorder—are so significant. The state of Georgia has 159 counties. In 2018, nine Georgia counties had no medical provider, 64 had no pediatrician, and 79 had no obstetrician/gynecologist (Hart, 2018). Those practicing in rural areas are distributed across large geographic areas—most of rural Georgia is officially designated a Health Provider Shortage Area by the U.S. federal government. While primary care providers are in short supply, mental health and substance abuse treatment providers are typically even more rare in rural counties.

Evidence shows that effectively dealing with the opioid epidemic requires confronting the stigma surrounding opioid use disorder and treatment, increasing access to methadone and

buprenorphine, and minimizing deaths through the use of naloxone (Lyden & Binswanger, 2019; Vashishtha, Mittal, & Werb, 2017; McElrath & Joseph, 2018). Public health platforms are overwhelmed with treatment demands, creating a crisis of daunting magnitude for caregivers, providers and community leaders. Viable solutions must be innovative, collaborative, and transformative in nature. All sectors of those working to improve health outcomes are required to help create and implement localized interventions to combat opioid misuse that are practical in nature, and could be replicated in other communities.

Research shows that providing inclusive, accessible, evidence-based treatment options is a vital component in addressing the epidemic. However, the challenges posed to accessing this type of treatment and related resources in rural counties are complex and not well understood. Innovation in delivering treatment services and other supports to rural communities in behavioral health crisis is needed, with a special focus on how existing resources in these communities can be efficiently and effectively leveraged.

Thus, working in collaboration to develop creative and innovative prevention and treatment strategies that are sensitive to the unique needs of rural communities is a critical aspect in addressing the opioid crisis. The need for community health leaders to intervene and work together in addressing the opioid epidemic is crucial. Despite the well-documented disparity and daunting nature of composing realistic solutions to addressing the opioid crisis, there are existing resources that can be leveraged for public health. Cooperative Extension is one of the most valuable resources these communities have, and is widely recognized as being an avenue for practical, evidence-based solutions. Local extension agents have established rapport with decision makers and can be rapidly trained to prepare to help facilitate the development of suitable interventions to fight opioid misuse.

In this dissertation, I describe the role of Cooperative Extension in serving communities throughout Georgia with localized, data-driven solutions. I present a conceptual model to frame how Cooperative Extension and other community partners can more effectively respond to their local opioid crises by being informed community advocates for change. Based on Roger's Diffusion of Innovation Theory, the model presented builds on existing knowledge and understanding of Extension as a conduit for translating research into practical application and being responsive to local issues of concern. I also conduct a mixed-methods community health needs assessment (CHNA) for four rural Georgia counties focusing on opioid misuse and behavioral health needs in two parts: 1) a quantitative analysis of existing secondary data sources, including time trend analyses; and 2) a qualitative analysis of data collected through in-depth focus groups with community public health stakeholders in the four rural counties included in the study. By examining the supply side and demand side of the opioid situation, evidence is presented which further documents both economic and health disparities experienced in rural communities who are struggling to combat prescription drug misuse. The potential role of Extension agents in rural communities' response to the epidemic is explored by application of the theory of diffusion-derived conceptual model. Existing relationships with established community partners uniquely positions these county faculty to take an active part in local efforts to effectively intervene on the opioid crisis.

CHAPTER 1

A CONCEPTUAL MODEL FOR COOPERATIVE EXTENSION PROFESSIONALS AS PUBLIC CHANGE AGENTS[2]

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Abstract

This paper describes the suitability of University of Georgia Cooperative Extension to potentially intervene and help address the nation's opioid epidemic. The study examines the current capacity of Extension's infrastructure and expertise in mobilizing local prevention efforts required to effectively help mitigate worsening outcomes resulting from opioid and illicit substance misuse. Specifically, the advantages of the county delivery system, reliant on established county extension agents (county-based faculty) and other personnel, are explored as a primary mechanism for diffusing innovations throughout the organization's history. Roger's Diffusion of Innovations theory is used to describe Extension's culture, history, and capacity to successfully endure inherent seasons of change among an evolving society, persistent budget reductions, and the questioning of science's value to the common good. UGA Cooperative Extension's ability to rapidly pivot and their response to the Coronavirus (COVID-19) and other health-related crises are used to demonstrate its unique role across Georgia, most noticeable in rural communities.

INDEX WORDS: Agriculture, Cooperative Extension, Coronavirus (COVID-19), Diffusion, Diffusion of Innovations Theory, Family and Consumer Sciences, 4-H & youth development, Farmers, Extension Agent, Intervention, Opioid epidemic, Opioid misuse, Prevention, Rural, Georgia

Introduction

This paper outlines the ability and capacity of the University of Georgia Cooperative Extension organization to intervene in critical opioid use disorder prevention efforts. Using Roger's Diffusion of Innovation Theory, this work describes Extension's role in the rural application of research pioneered on U.S. land-grant campuses; its county-based program delivery system has maintained a service level rarely seen among state and federal agencies. A flexible issues-based program and corresponding training model allow for a coordinated, systemic response, grounded in applied research and rapidly implemented throughout the state.

Roger's Diffusion of Innovation Theory, which looks to explain how, why, and how quickly new ideas and technologies spread, can help navigate this broad institutional capacity and cultural history. "Since its inception," said Rogers, "the main purpose of the Cooperative Extension Service has been to change human behavior by teaching people how to apply the results of scientific research" (Harder, 2009). The question, however, is whether Extension is the most suitable entity to diffuse certain types of innovation, namely, prevention and response efforts related to the opioid epidemic. Extension's response to the 2020 Coronavirus pandemic helps make the case for its organizational capacity to respond to extensive health-related problems with practical, timely, and, typically, free- or low-cost solutions.

The United States Department of Agriculture (USDA) offers a grant program to support rural communities, and Extension is well-positioned to leverage these resources in rural Georgia. The Rural Health and Safety Education (RHSE) Competitive Grants program serves the needs of rural Americans by providing individual and family health education programs focused on the prevention and/or reduction of opioid misuse. In September of 2019, a UGA research team

received this two-year grant to collaborate with Extension to address the opioid crisis in four rural Georgia counties.

The project uses a multi-pronged approach to accomplish its aims: 1) building family strength and youth resiliency, to increase resistance to opioid misuse; 2) preparing medical providers, social service workers, and Extension professionals to identify those suffering from opioid-related health problems and refer them to appropriate treatment; and 3) growing community awareness of both the risk of opioid misuse and local-level countermeasures. Five key targets guide the study team through their research objectives: an assessment of community opioid misuse needs and resources in the four counties; Mental Health First Aid for Youth training for adults who work with youth; training for medical professionals on screening, brief intervention, and referral to treatment (SBIRT); a pilot project to build family communication through adult-youth activities and facilitated discussions; and a public education and awareness campaign to address opioid misuse prevention.

Rural populations, at a higher risk of opioid misuse and lacking sufficient treatment and prevention resources, require a multifaceted effort to address the crises. The UGA project team is utilizing primary prevention strategies, which foster resiliency and family strengths while increasing overall community awareness about opioid misuse; secondary prevention strategies, with extensive family programming aimed at higher-risk adults and youth; and tertiary prevention strategies, which prepare professionals to identify risky substance use and refer individuals to specialized treatment.

This dissertation will present a conceptual framework to illustrate the role of Extension agents in their communities' opioid response. The study, which fits within the aims of the USDA RHSE grant received by the UGA project team, is grounded in Social Cognitive Theory and an

ecological framework for prevention, allowing for intervention at individual, family, and community levels of influence, but primarily relies on the Diffusion of Innovations Theory.

Diffusion of Innovation Theory, developed by E.M. Rogers in the 1960s to describe how a new idea or product gains momentum and expands among certain populations, will best explain the capacity of Extension to address the opioid crisis. Rogers defines diffusion as a process by which innovation is communicated through specific channels over time among members of a social system (2003). "All Extension workers are change agents – professional persons who attempt to influence adoption decisions in a direction they feel is desirable" (Rogers, 1963a).

The Cooperative Extension program was formed in 1914, with the creation of the federal Smith-Lever Act, to deliver agricultural research and practical solutions to farmers and homemakers (U.S. Congressional Code, 2014). U.S. Senator Hoke Smith of Georgia and U.S. Representative A.F. Lever of South Carolina created the land-grant concept to help further vocational, agricultural, and home demonstration efforts across rural America, in response to widespread hunger, prolific food and water-borne diseases, and nutritional deficiencies. The program connected timely, accurate research with initiatives addressing critical societal needs, all while adopting new and evolving technologies. In addition to agricultural expertise, Cooperative Extension provides nutrition education, food safety training, and youth leadership development, primarily through the 4-H program.

While much of Extension's focus has been on agriculture, its infrastructure has proven adaptable to changing community needs over time. This model of community-based, research-driven solutions, refined and sustainable through the years, engages on challenging issues with innovation and collaboration to reach its stated mission: translating the science of everyday

living to foster a healthy and prosperous Georgia for families, farmers, and communities. Response to the opioid epidemic is a natural fit for Extension in Georgia, and may be generalizable to other states. In fact, several other state Extension programs are already heavily involved in opioid misuse intervention and prevention efforts.

To support the argument for Extension's role in the rural Georgia opioid epidemic, this paper will present a brief background on its part in transforming our nation's food and fiber production system. It will go on to explore Extension's history of transferring innovation and research-based solutions from institutions of higher education to communities. Finally, this work will introduce a conceptual framework to suggest how Extension agents leverage partnerships and resources to act as public health change agents in their communities. To demonstrate this potential, I present work funded by the USDA's National Institute of Food and Agriculture (NIFA) in four rural Georgia counties, as a pilot model expanding the idea of the CE agent beyond the traditional, historical role.

Background of Cooperative Extension

As early as 1810, agrarian clubs in the United States formed to share agricultural best practices and technology, and paving the way for the Cooperative Extension. The current Cooperative Extension model, implemented via the 1914 Smith-Lever Act, created a shared vision and funding agreement among federal, state, and county governments. Once adopted, Congressional appropriations secured financial commitments and resources essential to the system's establishment, long-term viability, and success. Between the late 1890s and early 1900s, the needs of rural residents became evident to faculty in agricultural schools and colleges, who helped organize educational trains to deliver research and scientific innovations from educational centers to thousands of people and hundreds of communities, in Georgia and beyond.

Cooperative Extension Across the United States

Land-grant colleges or universities are U.S. institutions of higher education designated by a state to receive the federal support arranged by the Morrill Acts of 1862, 1890, and 1994. The first Morrill Act gave each state grants of federal land. The state could then sell the land and use the proceeds to create public institutions to teach agriculture, military tactics, mechanical arts, and classical studies, making higher education credentials more available to the working class (Association of Public and Land-Grant Universities, 2020). The Hatch Act of 1887 introduced one of the most important results of the land-grant system—the agricultural experiment station, which reinforced the research/higher education paradigm of the Morrill Act. Later, the Smith-Lever Act of 1914 founded Cooperative Extension, as a conduit for the practical application of this new knowledge and its resulting long-term benefits to society.

Cooperative Extension (CE) is a nationwide network of over 100 land-grant institutions, designed to translate and transmit knowledge created in higher education environments. All 50 states have land-grant institutions and aligning CE infrastructure, personnel, and programs, and share the primary focus of transferring agricultural skills and evidence-based practices to the communities they serve. At the federal level, Cooperative Extension is institutionalized in the National Institute of Food and Agriculture (NIFA), housed in the United States Department of Agriculture (USDA) (National Institute for Food and Agriculture, 2020). NIFA facilitates the extension of evidence-based practices to farmers, consumers, and families across the country, ensuring that such resources are not siloed in the communities in the university area. According to NIFA, today's Extension strives to:

> 1) translate science for practical application; 2) identify emerging research questions, find answers and encourage application of science and technology to improve agricultural, economic, and social conditions; 3) prepare people to break the cycle of

> poverty, encourage healthful lifestyles, and prepare youth for responsible adulthood; 4) provide rapid response regarding disasters and emergencies; and 5) connect people to information and assistance available online through eXtension.org.
>
> NIFA, 2020

Over time, the CE model in the United States has served as a replicable, evidence-based solution in countries across the world, implemented to solve many social and economic challenges, including food insecurity, poverty, and access to healthcare. At home and abroad, CE has been used to create and implement expansive programming efforts that work to improve the overall quality of life and foster healthy, sustainable communities.

Cooperative Extension in Georgia

Since this study will model CE public health change agent roles specific to Georgia, the state's relevance, history, existing programming, and CE infrastructure must be shared. Since its inception, Georgia's rich agricultural history has been fundamental to its economy. With long growing seasons, weather conducive for cultivation, and over 9 million acres of production farmland, the state is ideally positioned for agricultural production. A progressive supply chain infrastructure—seaports in Savannah and Brunswick, the Atlanta airport, and railway and interstate system—allows Georgia to efficiently distribute its products across the world. According to the UGA Center for Agribusiness and Economic Development, in 2017, Georgia's food (peanuts, pecans, poultry, beef/dairy, soybeans, vegetables) and fiber (cotton, timber, and greenhouse plants) commodities added $13.75 billion to its economy (Kane, 2019).

While this prevalence means that one of every seven jobs in the state is agriculture-related (Patterson, 2013), less than 1% of those jobs are actually full-time farmers. The poultry industry, forestry and timber management, processing and distribution, agricultural marketing and sales, and commodity executives make up the majority of agricultural career options; many of these positions are only available to skilled laborers and those with post-secondary degrees. In

fact, USDA projects a severe shortage of graduates from university agricultural degree programs, many of whom will have their pick of jobs. The industry's strong history of job creation reinforces its importance to the statewide and national economy.

Brief History of Georgia Cooperative Extension

The year 1904 brought the first boys' "corn clubs," and 1906 saw the first "tomato club" for girls—both in Newton County, Georgia. In 1907, the USDA hired Georgia's first county extension agent, in Carroll County (only the second to be hired in the U.S.). By 1908, the College on Wheels educational train departed Athens to travel across the state with livestock and modern farm equipment, demonstrating best practices and innovative techniques to crowds estimated up to 5,000 (Scott, 1965).

In 1913, Mary E. Creswell, the first woman to graduate from the University of Georgia, became the first woman hired by the federal Extension Office in Washington, D.C. (Hargrett Rare Book and Manuscript Library, 1997). Notably, Creswell is credited with the conception of Extension's home demonstration program, now referred to as family and consumer sciences. During World War II, Extension taught citizens how to plan and plant "victory gardens," as practical ways to support the war effort. By 1943, when canned fruits and vegetables were rationed, victory gardens produced an estimated 40% of all vegetables consumed in the U.S. (Sundin, 2017).

Though farmers were initially hesitant to adopt the new techniques proffered by extension (research) specialists, those who did experienced vastly increased yields. Word spread quickly across rural communities. Extension agents were heralded as change agents who could modernize agricultural practices and save farm families time, money, and energy, all of which were in limited supply.

In Georgia, Cooperative Extension is administered by two land-grant universities—the University of Georgia (UGA) and Fort Valley State University. However, UGA, as the state flagship university, an R01 research institution, and the hub for the CE program, will be the primary focus of this chapter. The mission of UGA CE is to "deliver lifelong learning across the state through science-based programs and education in agriculture and the environment, family well-being, and 4-H youth" (UGA, 2020).

This mission is carried out in a variety of formats, including individual consultations, site visits, online trainings and seminars, workshops, publications, summer camps, environmental education, youth leadership/citizenship, webinars, and volunteer development. Extension programs reach every county in Georgia and provide support in topics spanning agriculture and the environment, child and family development, food safety and nutrition, health and wellbeing, and 4-H youth development.

UGA-CE boasts an impressive list of innovations and accomplishments, including multiplying peanut yields, establishing the National Center for Home Food Preservation, developing turfgrass cultivars used on sports fields and golf courses worldwide, deploying variable rate irrigation technology to drastically reduce water usage, and promoting conservation tillage practices that helped restore eroded farm lands across the Southeastern U.S. UGA-CE provides food service management training and certification through the ServeSafe ™ program, required for any establishment that sells food in Georgia. It also administers nutrition education programs, including USDA's Expanded Foods and Nutrition and Supplemental Nutrition Assistance Education Programs (EFNEP) and Supplemental Nutrition Assistance Program Education (SNAP-Ed), that teach practical ways to eat healthy on a very limited budget.

Rural Georgia extension agents manage programs and activities spanning various aspects of life and work, leaving them deeply connected, and reactive, to community issues. Recent examples have included farmer suicide, household repairs due to flooding, mold mitigation, well water quality and protection, septic tank maintenance, elevated levels of radon gas inside the home, and youth mental health first aid training for community educators. In 2018, Georgia extension agents coordinated disaster relief efforts resulting from the devastation of Hurricane Michael—besides its toll on lives and structures, the storm decimated cotton, vegetable, and pecan crop values as well as infrastructure. These specific examples, all of which, notably, relate to public health, illustrate the depth and breadth of the CE investment in the communities they serve.

Programming in Georgia Cooperative Extension

The three programming areas of Georgia Cooperative Extension—agricultural and natural resources, family and consumer sciences, and 4-H and youth development—are distinct. However, the essence of CE success is the interdisciplinary nature of the content and expertise of these programs. A team approach to problem solving and system support creates a symbiotic relationship among faculty across various subject matter. The agricultural and natural resources program depends heavily on expertise within family and consumer sciences, which helps coordinate responses to outbreaks of food borne illness; 4-H relies on animal scientists and nutrition experts to guide project achievement and judging teams. Collaboration is implicit in Extension's research and outreach efforts.

Agricultural and Natural Resources. The agricultural sector in Georgia is one of the most diverse in the nation. Animal scientists work to support aquaculture, beef and dairy cattle management, equine, poultry, small ruminants (goats and sheep), and swine production.

Environmental scientists address invasive species, pollution prevention, forestry, water and drought, weather and climate, and wildlife. Agronomists support corn, cotton, forages, hemp, peanuts, grains, soybeans, and turfgrass production. Horticulturalists work on apples, blueberries, commercial vegetables, wine grapes, ornamentals, onions, peaches, pecans, and watermelons. Entomologists address pollinator protection, pest management, fireants, termites, and exotics. All of these areas are vital to keeping Georgia's leading industry and state economy healthy and growing. In 2019, 138 ANR agents reported 482,376 in-person contacts, 42,798 on-site consultations, 103,318 diagnostic tests (soil/water/fertility), 3,806 programs, and 2,511 Master Gardener Extension volunteers.

Family and Consumer Sciences. The majority of Extension health-related programs, resources, and outreach are housed within family and consumer sciences (FACS), which helps improve the quality of life for individuals and families in the state. It provides training, disseminates research publications, and connects people and their communities to institutional expertise and capital. Topics FACS supports are extensive, and include food and nutrition, health of the home environment (water and energy conservation, waste reduction, purchasing or home rental, and indoor environmental quality and safety), family enrichment (helping children, couples, teens, adults, and families thrive), textile care, health and well-being, and financial management. In 2019, 53 FACS agents reported 193,350 direct in-person contacts, conducted 2,850 programs, issued 652 ServSafe ® certificates, served 9,746 nutrition education participants (EFNEP/SNAP Ed), and trained or supported 2,167 volunteers (UGA Extension Fact Sheet, 2020).

4H and Youth Development. By the late 1800s, scientists innovating agricultural technology were finding farmers to be less than receptive. Farmers' *children*, however, were a

different story. Youth were intrigued by these concepts and happy to explore and then explain them to their elders. This initial version of diffusion shared agricultural breakthroughs in rural areas. The desire to deliver both practical and "hands-on" lessons emerged from a need to bridge public institutional knowledge with rural lifestyles and social systems. In response, community clubs were formed to help address early agricultural problems by teaching young people how they could make a difference in improving conditions in their immediate environment. The first official youth clubs, called The Tomato Club or the Corn Growing Club, began in 1902 in Ohio (National 4-H Council, 2020). By 1912, these youth clubs were called 4-H clubs, and, with the adoption of the Smith-Lever Act in 1914, Cooperative Extension disseminated 4-H across the country.

Today, 4-H (Head, Heart, Hands, and Health) is the nation's largest youth development organization, with almost six million active students administered by Cooperative Extension across 100 public universities. The 4-H motto is to "learn by doing," and the 4-H pledge states, "I pledge my head to clearer thinking, my heart to greater loyalty, my hands to larger service, and my health to better living, for my club, my community, my country, and my world" (National 4-H Council, 2020). This pledge, brought to life through fun, educational activities, help build lifelong skills, centered on service to others and building personal and community capacity for leadership, citizenship, and change. Through 4-H programs, students (primarily aged 10-18) take part in immersive projects, ranging from public speaking to natural resource management and civic engagement. Young adults are guided by adult mentors (both paid staff and unpaid, highly trained volunteer leaders) through in-school and after-school programs and activities, community or homeschool clubs, judging teams and livestock showing, and 4-H summer camps. According to the National 4-H Council, the U.S. has about 500,000 trained adult

volunteer leaders and 3,500 faculty and paraprofessional staff who work collaboratively to cultivate young minds into tomorrow's leaders (National 4-H Council, 2020).

Georgia has one of the largest state 4-H programs in the country, with over 240,000 active youth members. Students can participate in 4-H in all 159 Georgia counties, with in-school and after-school programs, community clubs, project work and judging teams, and summer camps. In Georgia, 4-H focus areas include agriculture and STEM (Science, Technology, Engineering, and Math), Healthy Living, and Civic Engagement.

Few states offer such extensive in-school 4-H program delivery. Local school systems and boards of education encourage the partnership, which provides enriching curriculum that meets state educational objectives while developing practical skills and abilities. The mission of Georgia 4-H is "to assist youth in acquiring knowledge, developing life skills, and forming attitudes that will enable them to become self-directing, productive, and contributing members of society. This mission is accomplished through "hands-on" learning experiences, focused on agricultural and environmental issues, agriculture awareness, leadership, communication skills, foods and nutrition, health, energy conservation, and citizenship" (Georgia 4-H, 2020).

Combining federal, state, and local expertise and resources helps 4-H students and alumni share knowledge and technology through personal and professional interactions. Since the early 2000s, Georgia 4-H alumni have 'rescued' the program from drastic budget cuts, some even testifying before state and federal Congress on its behalf. The impact of 4-H extends well beyond age 18, as alumni credit the program with instituting a lifelong love for learning and serving others and developing fundamental life skills. Students from rural areas, especially, herald the program's ability to expose them to new locations regardless of their economic means—from Rock Eagle for summer camp, to the state capitol, to Washington D.C. and beyond. As a former

4-H agent in a rural county, the researcher can attest to this common situation. Though these middle-school students lived 30 miles from the coast, some had never seen the ocean. The program can help bridge socioeconomic disparities, offering scholarships for college, summer camp, and event travel.

COVID-19 presents challenges for this model of in-school instruction, and are being addressed by state, district, and county faculty and staff. During the spring of 2020, thousands of teachers partnered with local Extension faculty to conduct online lessons on topics ranging from animal care to financial literacy to nutrition, and continue to rely on Extension faculty and resources for students who are distance learning. Georgia 4-H recently launched "Blast Off with Georgia 4-H," a series of virtual lessons customized by grade level. Extension and 4-H pivoted quickly to online instruction, demonstrating an ability to systemically respond to critical situations. During the H1N1 outbreak in 2009, Georgia 4-H teamed up with FACS faculty to develop the "Wash Your Paws" handwashing campaign for young children. These posters appeared at schools, libraries, and public venues across the state.

Interventions through the UGA team's USDA Rural Health and Safety grant are positioning 4-H programs in the pilot counties to help address the opioid epidemic. Researchers and staff are currently field-testing lessons about prescription drug misuse and safe disposal with middle school students in Elbert, Lumpkin, Tattnall, and Washington counties.

Diffusion of Innovation Theory

Diffusion is the process by which an innovation is communicated through certain channels over time among members of a social system (Rogers, 2003). Rogers explained diffusion as a specific type of communication, in which the messages center around the delivery of new or innovative ideas (an innovation). He describes communication as a process through

which individuals create and share information with others with the goal of mutual understanding. The newness, or even the perception of the newness, of this idea is what makes diffusion unique, involving some degree of uncertainty. Awareness and familiarity, peer opinions, and personal trials assist individuals with the adoption process through incremental gains in understanding—resulting in reductions in uncertainty affiliated with new concepts (Singer, 2016). When new ideas are invented, diffused, and adopted or rejected, leading to resulting outcomes, social change occurs (Rogers, 2003). The four primary components of diffusion defined by Rogers are innovation, communication channels, time, and the social system.

Innovation

An innovation is described as an idea, practice, or product that is considered new, a new way of thinking, or a new approach to doing something. The perceived newness of the innovation informs the individual's reaction, and may also manifest as knowledge, persuasion, or a decision to adopt or reject it. Previous research about diffusion examined how to distinguish early vs. late adopters, how perceived attributes impact adoption rate, and why diffusion rapidly increases at roughly 10-20% (or reaches critical mass) (Rogers, 2003). Technology is a means of uncertainty reduction, enabled by information showing the cause-effect relationship (Rogers, 2003). Technological innovations generally have some advantage for potential adopters, though it is often not obvious. Decision making involves gathering and processing information in order to reduce uncertainty about the innovation's potential benefit or drawback. Traits of innovations influence various levels of adoption, including relative advantage (degree to which an innovation is seen as superior to what it replaces), compatibility (alignment with existing values, previous experience, and needs), complexity (how difficult the innovation is to understand and use),

trialability (degree to which it may be experimented with), and observability (how visible is innovation to others) (Rogers, 2003). Innovations viewed as having greater relative advantage, compatibility, trialability, and observability, and less complexity, diffuse more rapidly.

An innovation may be modified by users through adoption, in a process called reinvention (Rogers, 2003). Adopters often seek to actively modify innovations in order to customize a solution that meets their specific needs. Rogers went on to outline how innovations which may be re-invented diffuse more rapidly and sustainably (2003).

Communication Channels

Diffusion centers on an information exchange, in which one person communicates a new idea to one or several others, via a communication channel (Rogers, 2003). The type of information exchange predicts the situation, in which a source may or may not inform the receiver of the innovation. Rogers explained two primary and distinct classes of communication channels—mass media and interpersonal. At one time, mass media, which transmit messages like news, entertainment, or instructional information from one sender to many recipients, was considered the most efficient way to inform people about an innovation. Interpersonal communication channels are formed among specific individuals and facilitates ongoing discussion. Though mass media may be initially critical in creating awareness of an innovation, interpersonal networks grow increasingly important as potential users seek peer feedback about new concepts. In fact, a 2019 study found that respondents viewed social media as an enabler and driver of innovation (Bhimani et al., 2019). Rogers found that interpersonal channels are more effective in persuading acceptance of new ideas, especially if the individuals are from similar socioeconomic conditions or education. This dependence on peer evaluation indicates that the diffusion process is grounded in modeling and peer imitation.

Communication occurs most often among the similar. When people share common meanings and cultural traits, new ideas are more readily embraced, leading to greater knowledge gains and attitude and behavior modifications. Participants in diffusion of innovation are generally very different. Change agents have expertise that clients do not, which often creates a communication gap. Preferably, participants will come from a similar socioeconomic and educational backgrounds, differing only with the status of innovation adoption. Extension uses this model with peer educators in the federally-funded EFNEP and SNAP Ed nutrition education programs. However, consistency across both background and innovation is rare, as knowledge and exposure are highly associated with socioeconomic status and education.

Time

Including time as a key variable in diffusion research lends an advantage over behavioral science research that does not account for time. Three components explain the importance of time to diffusion: 1) the innovation-decision process where one passes from initial exposure to an innovation, through adoption/rejection; 2) how early/late an innovation is adopted compared with a non-adopter; and 3) an innovation's rate of adoption in a system, typically assessed as the number of system adopters over a specific timeframe (Rogers, 2003). The innovation-decision process relies on time because the five steps typically take place in the following sequence: 1) knowledge, 2) persuasion, 3) decision, 4) implementation, and 5) confirmation (Rogers, 2003). The innovation-decision period is the length of time it takes to proceed through these five steps. Innovativeness refers to the extent to which individuals adopt relatively early when compared to other system members.

Innovation-Decision Process and Adopter Categories

The innovation-decision process explains how individuals, groups, or communities adopt or reject an innovation. Further study of these steps explains how decisions are made and provides some context. Knowledge, generally the first step in the innovation-decision process, is when one becomes aware of the innovation and begins to explore its use. Persuasion, typically the second step, begins when one forms a positive or negative attitude about an innovation. Decision, usually step three, follows after someone becomes aware of an innovation, develops an opinion towards it, and then takes part in activities that result in a choice to adopt or reject it. Implementation, most often step four, happens when one begins using the new concept, learning more about it, and overcoming potential problems to help reduce uncertainty. Confirmation, step five, occurs after implementation, when a user seeks additional information that serves to support the decision to adopt. However, if the new adopter finds contradictory information, they may reverse their initial decision to adopt and actually reject the innovation. Each stage in the innovation-decision process can be a point in which an individual or group chooses to discard the innovation, for reasons from forgetting about the new concept after stage one (knowledge) or just not taking action on their favorable attitude regarding the innovation (Singer, 2016).

The five primary adopter categories include innovators, early adopters, early majority, late majority, and laggards. Although most are considered either early or late majority, those trying to advance innovations must work diligently to truly understand the makeup of the target audience for those new ideas, concepts, or products. According to LaMorte (2019), specific strategies should be used to attract the various types of adopters.

Innovators desire to be the first to use the innovation. They are risk takers and frequently develop new ideas themselves: therefore, minimal effort is required to engage this audience.

Early adopters are usually opinion leaders and influencers who welcome opportunities for change, and are aware of conditions in need of potential improvement. They usually have the most influence in opinion leadership: prospective adopters seek their advice about innovations, and they are pursued by change agents who want to accelerate diffusion of an innovation. Early adopters are highly respected by their peers and validate new ideas by adopting them (Rogers, 2003).

Early majority adopters embrace new ideas prior to the average user but are not usually leaders within a system. Though they seek evidence and often deliberate at length before accepting an innovation, they are an essential link in the adoption process, making up about a third of most target audiences and enjoying significant peer rapport between those classified as very early and relatively late adopters. Late majority adopters are skeptical about new ideas and wait until the innovation has been tested by the majority; their decision hinges on peer pressure and the removal of uncertainty. For many late majority adopters, their decision may be tied to economic need, and proof of the successful adoption of others.

Laggards are the final users in a social system to adopt innovation. Traditional and conservative, laggards rarely contribute to opinion leadership, and can be isolated from social networks, making them the most difficult to reach. Their decision-making process is long, with adoption coming considerably later than awareness and knowledge of a new concept. Laggards' resources are usually quite limited and they need to be assured that an innovation will benefit and not harm their situations before they can embrace it. Ways to engage laggards may include statistics, fear appeals, and pressure from those in the other categories (innovators, early adopters, early majority, and late majority) (LaMorte, 2019). According to Rogers, Innovators make up 2.5 % of most potential innovation adoption audiences, Early Adopters are 13.5 %,

Early Majority and Late Majority both consist of 34%, and Laggards make up 16% (Rogers, 2003; LaMorte, 2019).

Social System

Rogers defines a social system as a set of interrelated units united in problem solving to achieve a shared goal (2003). He describes members of social systems as individuals, informal groups, organizations, and subsystems. The social system creates a boundary that defines where an innovation diffuses, and impacts the process through values, norms, roles of opinion leaders and change agents, and how communication flows throughout.

The organization of a particular social system may foster or prevent diffusion of innovations. Local, regional, or national level norms, which establish expected ranges of behavior, can be a barrier to change. Rogers considered opinion leadership to be the degree to which an individual is capable of influencing others' attitudes or behaviors in a desirable way with relative frequency (2003). Opinion leaders earn and maintain technical competence and social accessibility and adhere to norms, modeling innovation behavior for their cohorts. Since they sit at the center of interpersonal communication networks, opinion leaders may also be prone to overuse by change agents, so those relationships should be carefully maintained. In fact, asking opinion leaders to do too much may jeopardize their status in the system by formalizing their roles (Peters et al., 2003). In Extension, these opinion leaders are often county government officials and funders, school system leadership, and community partners like Chambers of Commerce and the Farm Bureau.

A change agent influences client decisions in a way considered desirable by a change agency. They may propose new ideas, work to delay diffusion, or block less healthy innovations. Change agents typically possess a post-secondary degree (and increasingly graduate degrees),

creating an immediate communication divide among themselves and their target clients. In Georgia, all county faculty are required to have a bachelor's degree, and those hired since 2015 either hold or agree to pursue a master's degree (UGA provides free tuition as part of FTE benefits) within six years of their hire date.

Rogers described three main types of innovation-decisions within social systems. These occur on a continuum, from optional decisions (in which an individual has virtually complete autonomy for whether to adopt), to collective decisions (when the individual has some input to the decision), to authority decisions (in which the individual has no role in the decision to adopt). Collective and authority decisions are more usual in large organizations like schools and government organizations, whereas optional innovation-decisions are typically employed by consumers or farmers (Rogers, 2003). Most rapidly-adopted innovations come from authority decisions, though members of a system may choose to work around them during implementation.

A fourth type of innovation-decision, Rogers continued, is a sequential combination of two or more of the three types outlined above. Contingent innovation-decisions involve choices to adopt or reject an innovation only after a previous innovation-decision. For example, due to municipal no-smoking laws, the percentage of smokers in the U.S. continues to decline, to a low of 13.7% in 2018 (CDC, 2019). Individuals had to adjust their behavior and avoid public smoking once the innovation (policy) was adopted by cities across the country.

Consequences of Innovations

Rogers defined consequences as the changes that affect an individual or social system in response to the adoption or rejection of an innovation. The three types of consequences are: 1) desirable vs. undesirable, signaled by whether the innovation is functional or dysfunctional; 2) direct vs. indirect, based on whether changes to a system occur in proximate response to an

innovation or as a secondary effect of its direct consequences; and 3) anticipated vs. unanticipated, depending on if the changes are visible and planned by members of a social system (Rogers, 2003). Most innovations introduced by change agents are expected to have positive and anticipated consequences. Though change agents can generally predict the form and function of an innovation, they cannot predict its meaning or their clients' perceptions of it.

To recap, an individual adopts innovation and diffusion through the following stages: 1) an awareness of the need for an innovation, 2) the decision to either adopt or reject it, 3) testing, and 4) sustained use. LaMorte summarized Roger's five main characteristics of an innovation influencing adoption as follows: 1) relative advantage—the extent to which an innovation is viewed as superior to what it replaces; 2) compatibility—the level of alignment with the values, experiences, and needs of the target audience; 3) complexity—how challenging it is to use and understand the innovation; 4) trialability—the degree to which the innovation may be tested prior to commitment; and 5) observability—how noticeable are the innovation's results (2019).

LaMorte also listed four primary limitations with regard to the application of Diffusion of Innovation Theory for public health study, as follows: 1) most of the evidence for Diffusion of Innovation theory, inclusive of the adopter categories described previously, did not emerge from public health and were not intended for describing new behaviors or health related innovations; 2) the DOI theory does not nurture a participatory approach to adoption of a public health program; 3) the theory is more applicable with adoption of behaviors versus prevention or cessation; 4) Diffusion of Innovation theory ignores an individual's social support and resources required to adopt innovation (or new behavior) (2019).

Diffusion of Innovation theory has been widely used across many fields of study, including agriculture, communication, public health, criminal justice, social work, and

marketing. In fact, DOI theory has been successfully used to hasten the implementation of critical public health efforts designed to modify behavior within a social system; the best of these outcomes feature an in-depth understanding of the intended target audience, including the complex dynamics guiding its rate of adoption.

Extension Agents as a Mechanism for Diffusing Innovations

Extension agents work with clients through in-person consultations, online workshops, email and phone calls, site visits, and web-based technologies, including smart phone applications. County-based faculty members, or extension agents, fall into three categories. Agricultural and natural resources extension agents (ANR agents) provide expertise on soil fertility and plant/animal nutrition, organic and sustainable agricultural production practices, soil and water conservation, school and community gardens, insect and weed identification, forages (pasture management), pesticide safety, weed control, and crop enterprise budgets. Family and consumer science extension agents (FACS agents) teach food safety and preservation, nutrition, health and wellness, childcare provider training, financial literacy, and chronic disease prevention and management. FACS agents also administer EFNEP and SNAP Ed, which provide peer educators to help families that receive federal food assistance benefits eat healthy on a limited budget. 4-H agents lead youth development and leadership programs focused on citizenship, life skills such as public speaking, environmental education, and STEM.

Scholarship on the CE model has focused on the thematic elements necessary for its success. Vines outlined three aspects of Extension work vital to creating a conceptual framework, with a focus on program delivery. These include educational approaches used by Extension, theories of change seen with Extension work, and normative traditions associated with the efforts of Extension professionals (Peters et al., 2010; Vines, 2018).

Existing theoretical work suggests three models of program delivery: the expert, engaged, and hybrid models. The expert model uses a one-way information flow, allowing for client interaction through discussion, questions, and feedback. The engaged model relies on community involvement in identifying issues, creating an implementation process and knowledge base, arranging funding, and conducting evaluations (a particular strength of Extension, via local leadership teams. The hybrid model, embracing the shared expertise of the university, partner organizations, and individuals, promotes ongoing collaboration among CE and the community for the duration of the program.

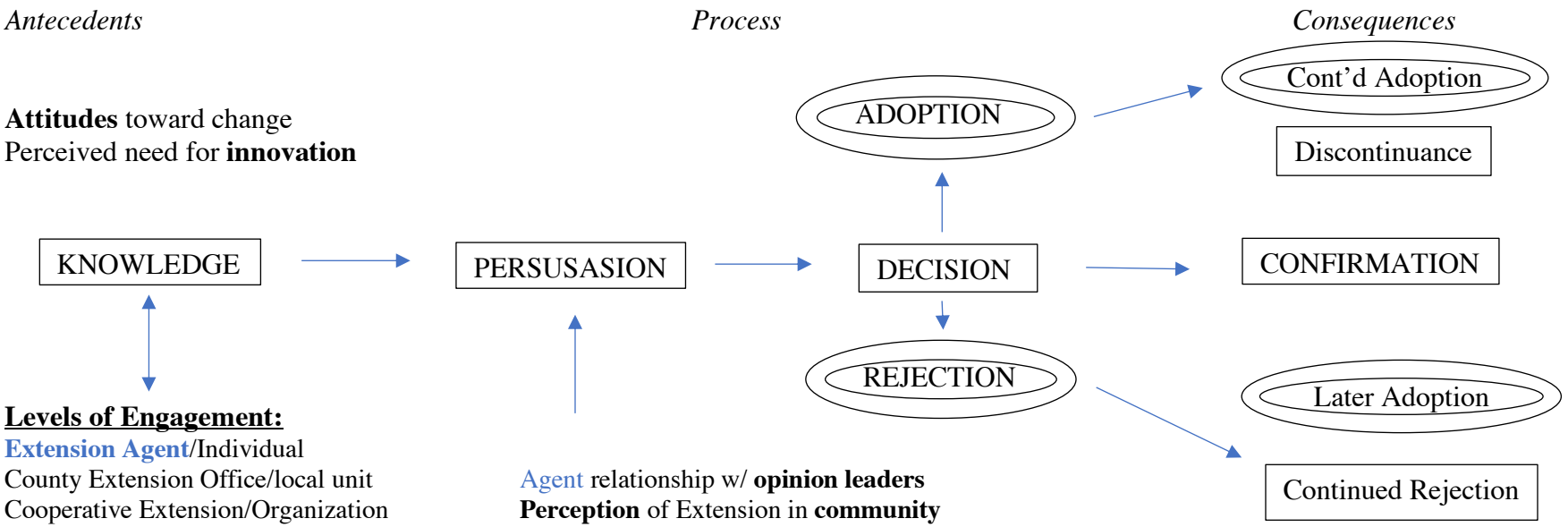
The conceptual model presented in this paper, on extension agents as embedded public health change agents, will build on the Diffusion of Innovation Theory. Using an inductive approach, with the opioid crisis as a case study, this chapter will describe the role of Extension professionals in responding to critical topics outside traditional issue areas, such as substance misuse, farmer suicide, and mental and financial wellbeing. The conceptual framework will outline how UGA-CE agents interact with their client base, including farmers, agribusiness leaders, homeowners, green industry leaders, teachers, students, Master Gardener volunteers, medical providers, Chambers of Commerce, County Managers, County Commissioners, Family Connections, and social service agencies to develop localized practical solutions. This base, connected by local issues, links with local Extension agent and partners, including county government, county commissioners, school systems, health departments, farm bureaus, and healthcare providers, all of whom enjoy a bi-directional relationship with the university's expertise and research. The outcome of diffusion from this informational network is the widespread adoption of a new concept, recommendation, or product.

For example, Michigan State Extension proposed a model of health extension to promote human health research, establishing a partnership between the MSU College of Human Medicine, academic health centers, and MSU Extension (Dwyer et al., 2017). The Health Extension toolkit is an online module designed to improve collaboration on a variety of health-related topics.

Ohio State University Extension has been working to address the opioid epidemic through health outreach and partnerships with institutions and local and state government. They received a grant (Community Assessment and Education to Promote Behavioral Health Planning and Evaluation) to conduct Mental Health First Aid training for Extension staff and community members. Ohio 4-H sponsors a display that travels to county fairs, educational events, and trade shows, created and presented by youth members, titled “What’s in your medicine cabinet?”. This program educates the public about prescription and opioid misuse, and explains the importance of medication safety. In 2015, Ohio led the nation in opioid-related deaths (American Addiction Centers, 2020).

Figure 1.1. Diagram of Conceptual Model Using DOI Theory.

A Conceptual Framework built on Diffusion of Innovations* for Extension Professionals as Public Health Change Agents



Social System Variables:

- Norms
- Tolerance of deviancy
- Communication integration
- Environmental context:
  - Geographical setting
  - Societal culture
  - Political conditions
  - Global uniformity

Perceived Characteristics of Innovations:

1. Relative advantage
2. Compatibility
3. Complexity
4. Triability
5. Observability

TIME →

*Modified from A Model of Five Stages in the Innovation-Decision Process (Source: Diffusion of Innovations, Fifth Edition, E.M. Rogers, 2003)

Figure 1.1. presents the conceptual framework, built on Diffusion of Innovation, for Extension professionals as public health changes agents. Existing conditions, such as attitudes toward change and the perceived need for innovation, underlie an individual or community's willingness to adopt innovation before behavior change takes place. In addition to these antecedents, six levels of engagement influence a system's ability to diffuse: the individual (Extension agent), the county office (local unit of decision-making authority), the University of Georgia (governing organization), part of the University System of Georgia (state authority), then tiers up the chain of command to NIFA (federal partner), and finally to the administrative cabinet of the USDA (federal oversight). All of the above are also governed by social system variables: norms, tolerance of deviancy, communication integration, and environmental content (geographical setting, societal culture, political conditions, and global uniformity). Knowledge is shared in both directions. While the bulk of new innovations come from the top down (federal/state/local/agent), this relationship inverts due to the continuous local needs' assessment and program development infrastructure of Extension. Agents' local level research informs state-developed interventions, which may be replicated throughout the nationwide Cooperative Extension network of land-grants.

As part of the process of diffusion of innovation, agents form or strengthen relationships with local opinion leaders (such as county managers, HR directors, commissioners, principals, 4-H donors, etc.) who are primely positioned to persuade various target populations. The local community's perception of Extension as a credible and reliable source of guidance and institutional support in the area also affects an individual/system's ability to be persuaded regarding an innovation. Extension agents often demonstrate the five perceived characteristics of innovations (relative advantage, compatibility, complexity, trialability, and observability) to

various target audiences. Potential adopters receive this information via agents and local opinion leaders, then decide whether to adopt or reject the innovation. If they choose to adopt, they will either make a permanent change in their behavior to use the new innovation, or discontinue using it (due to replacement or disenchantment). If they choose to reject the innovation, they may continue to reject or later decide to adopt the innovation. These are the consequences of diffusion over time.

Agents can remain part of the innovation-decision process after the choice is made, by offering continued support and information on the benefits of adoption, and helping adopters confirm their decision and maintain it over the long term. Appendix B, a 2019 snapshot of the far-reaching impacts of Georgia Cooperative Extension across the state, exhibits this critical role. During 2019, 312 county faculty, assisted by 12,500 trained volunteers, provided over two million face-to-face contacts, led 38,744 programs, and published over 900 peer-reviewed articles summarizing research on topics ranging from pollinator habitats to household water quality. In response to 2020's COVID-19 pandemic, administrators launched a new webinar series titled "Advice from UGA Extension Experts" on timely topics including stress and mental well-being, working remotely, home gardening, indoor air quality, meal planning, financial tips, and adjusting to new back-to-school routines in uncertain times. This series has featured more than 40 webinars, some of which attracted over 600 active participants. Extension could produce a series on opioid epidemic prevention and response as a statewide intervention effort.

How Does Cooperative Extension Diffuse Innovation?

Rogers' Description of Agricultural Extension Model

Rogers credited the agricultural extension model as the leading government agency for client adoption of its research, stating that "the extension service is probably the oldest diffusion

system in the U.S., and certainly the most successful" (2003). The three primary units of the extension system include 1) a research "subsystem," including academics jointly supported by 50+ state agricultural experiment stations and the USDA; 2) county extension agents, working as change agents with growers and rural residents at the community level; and 3) state extension specialists, who connect agricultural research findings to county faculty. Researchers and extension specialists, housed in land-grant universities, have aligned levels of expertise, and, usually, terminal degrees. The extension success story represents an integrated system for the innovation-development process (Rogers & Van de Ven, 1988; Rogers, 2003).

Rogers outlined several key reasons for this accomplishment, including joint funding from federal, state, and county governments equal to the annual agricultural research government allocation. He considered this matched funding model for diffusion activities in agriculture to be unique among federal agencies; no other government programs designate more than a small percentage of research dollars to diffusion, or outreach. Rogers also acknowledged that many other efforts have tried and failed to replicate the extension model, often due to a lack of direct client engagement by local change agents. The extension model, he continued, took many years to take root; furthermore, extension conducts very applied research, designed to be put to immediate use in helping address local issues and problems.

Extension Agents and Demonstration Techniques

Change agents often attempt to increase the observability of an innovation, with the goal of accelerating diffusion by arranging a demonstration. Extension has embraced this approach since the early 1900s, with in-field demonstrations of agricultural innovations to teach practical skills to virtually any audience, such as canning (food preservation), food safety, nutrition, sewing, gardening, pest management, animal husbandry, and engineering. In fact, the

demonstration method was so well received and effective that home economics agents became widely known as "home demonstration agents" (Rogers, 2003). These field educators, now referred to as family and consumer sciences agents, have expanded their expertise and demonstrations to fields beyond agriculture, including childcare provider training, financial literacy, healthy relationships, chronic disease prevention and management, substance use prevention, energy conservation, mass transit, environmental protection, indoor air quality/safety, and health and wellbeing (Rogers, 2003).

Rogers saw two very different purposes to these demonstrations: as 1) experimental, conducted to evaluate the effectiveness of an innovation under field conditions, and as 2) exemplary, or conducted to facilitate diffusion of an innovation (2003). Both types deliver information about an innovation's effectiveness. However, experimental demonstrations generally involve low public visibility; exemplary demonstrations, designed to diffuse an innovation, should have high visibility in order to persuade potential adopters. An effective demonstration combines both the perceived competence credibility of the change agent (Extension agent) with the perceived safety credibility of the demonstrator (Extension specialist or opinion leader) (Rogers, 2003). Extension specialists, who synthesize the most currently available research findings in their respective fields for county faculty, bridge the scientific, intellectual world of land-grant institutions with the practical needs of the local county agents, growers, and client base.

Knowledge Gained from Ag Extension Model Through Diffusion of Innovation

The strongest evidence supporting the effectiveness of the agricultural extension model hinges on the remarkable increase in U.S. farm productivity following World War II. According to Eveland (1986), "It is impossible for anyone to speak 10 words about diffusion without two of

them being ‘agricultural extension.’ In many ways, it constitutes the defining metaphor for all technology transfer efforts” (Eveland, 1986; Rogers, 2003).

Among Rogers’ ‘lessons learned’ from the agricultural extension model as it related to Diffusion of Innovations are the following: 1) the agricultural extension model has adapted in key ways since the early 1900s based on environmental changes, demanding an organization-wide fluidity Rogers credits for its success; 2) the model relies on client engagement to articulate local needs, create relevant and responsive programs, and gather input about their efficacy; 3) agricultural research is positioned for direct use of research findings; 4) extension specialists work in proximity with researchers and academic faculty of their subject matter expertise, fostering the connection between new knowledge and client problems; 5) the model is widely acknowledged to diffuse agricultural technology to farmers far more effectively than other content (such as nutrition education) to farm and nonfarm audiences; 6) the model embraces a systemic approach for diffusing innovations from institutions (researchers) to farmers while serving as a formal measure for positioning research interests in alignment with client needs—creating a complete innovation-development structure; 7) sustained growth in funding and personnel resulted from Extension’s capacity for continuous change and ongoing advocacy from special interest organizations, including the American Farm Bureau and influential farmers/land owners; and finally 8) Extension has been critiqued due to its heavy focus on agricultural production and its relative neglect of growing rural socioeconomic concerns, some of which can be attributed to Extension’s diffusion of agricultural innovations (Rogers, 2003).

How Are Extension Agents Positioned to Intervene on the Opioid Epidemic?

Cooperative Extension’s considerable infrastructure, knowledge base, and capacity to diffuse new concepts rapidly across the state leave many agents well-acquainted with the opioid

epidemic. Some have even conducted programs to promote prevention strategies and community partnerships targeting prescription drug misuse and substance abuse. Though county faculty lack appropriate training and expertise to focus on treatment, they are uniquely positioned to become advocates for leading local and regional prevention efforts. Initial efforts to capture critical feedback for the RHSE grant's local needs assessment made it clear that county agents are well-connected, highly respected, and considered extremely credible sources within their communities. These qualities extend throughout Georgia's 159 counties. Extension solves problems, bringing the latest research to the forefront of today's most pressing issues. The opioid epidemic is felt across the state; training county agents to respond assertively with proper tools aligns well with the organization's mission and purpose: "to translate the science of everyday living for farmers, families, and communities to foster a healthy and prosperous Georgia."

Program Development and Training Capacity

UGA Extension's program development and training system lends itself to emerging issues of concern, including, potentially, the opioid epidemic. These efforts are led by Extension's Office of Learning and Organizational Development, which works to strengthen scholarly work through program and staff development, leadership development, and evaluation capacity building. Each year, extension specialists are asked to submit training proposals in response to requests for assistance from county faculty and clients. This provides an opportunity for subject matter experts (specialists) to offer specialized training on various topics they see as 'trending,' from a national, local, or combined perspective. County faculty receive training and support from specialists, which qualifies them to quickly respond to local requests for assistance and/or conduct in-person or virtual workshops on the topic. Over 400 training proposals were submitted and reviewed for 2021; 75% of the approved trainings will take place online.

This reliance on continuous, in-depth subject matter training and professional development empowers trainees with the most up-to-date research and skill sets to address emerging issues on a local, regional, state, national, and even international level. A series of trainings and workshops dedicated to opioid prevention could be easily managed, and would attract support from key advocates within Extension. At times, administration will mandate certain trainings, such as the 2020 session on gender, diversity, and inclusion conducted through 4-H for faculty working directly in youth programming. A required a baseline training on the tools and resources available to help address the opioid crisis may be recommended, depending on the level of desired adoption within Extension.

Using Local Stakeholders to Identify Needs and Prioritize Programs

Extension agents also utilize local leadership systems to train advocates for county-level needs assessment, program evaluation, and budget needs. In Georgia this network is referred to as the Extension Leadership System (ELS), local advisory committees made up of volunteers who support and promote Extension programming at all levels. ELSs help focus UGA resources on a county's most urgent needs and opportunities. All county faculty are responsible for pulling together Program Development Teams (PDT) relevant to their assigned program area (agricultural and natural resources, family and consumer sciences, and/or 4-H youth development). These PDT groups inform overall direction and goals, review current programming efforts and evaluate their progress and efficacy, recognize volunteer efforts, link Extension programs with relevant partners and agencies, identify and target historically under-represented populations, and advertise Extension programs throughout their communities (UGA Cooperative Extension, 2020).

An overall county council ties these efforts together. Its members are selected for their expertise, skillsets, and level of engagement necessary for meeting local program goals and improving the quality of life for local residents. These members, asked to commit to a three-year term, meet three to five times a year. By presenting the opioid epidemic as a potential topic for local ELS, Extension can respond with a systemic, coordinated approach through the needs assessment Program Development Teams/county councils.

Cooperative Extension, with its demonstrated track record of improving chronic health issues and fluid programming dynamic, is uniquely positioned to intervene on the current opioid epidemic. The role of the Extension agent as a change agent embedded in communities helps to foster trust and reliance on their ability to access expertise from research institutions and apply it in an immediately useful way. Extension agents are highly trained conduits of innovation and well-prepared to address critical issues impacting their communities. They are truly there to translate the science of everyday living.

Conclusion

In summary, there is tremendous potential for UGA Extension to address the opioid epidemic in Georgia. Organizational capacity, existing expertise, and established local/state/federal partnerships position Extension as an effective community facilitator to help plan local prevention efforts targeting opioid misuse. Extension agents' credibility, especially in rural areas, bolsters their ability to bring stakeholders together to collaborate on what they view as their most pressing issues. Their ability to access and interpret the most recent and relevant research findings arms decisionmakers with the data to pinpoint the most critical topics.

Providing county faculty, staff and volunteers (trained advocates/ELSs/PDTs) with specialized training on the unfolding epidemic will bring awareness to local opioid fatalities and

serve as a call to action for their communities. Furthermore, such a coordinated, systemic approach to the problem requires buy-in from Extension leadership, shown above to be an essential requirement for sustained funding and support. Establishing an open, honest, and ongoing conversation with key CE leaders on opioid response and prospective programmatic engagement is paramount. The widespread community need surrounding the opioid epidemic must be matched by an organizational commitment to intervene.

Using diffusion theory in program development efforts could significantly further advance Cooperative Extension's effectiveness as a change organization (Harder, 2009). Helping Extension better understand innovation diffusion may impact program promotion, resulting in cost savings, higher profitability, and better alignment with local priorities. Adoption is a process with multiple steps; this lesson can enhance educational efforts and result in outcomes which are a better fit for client needs. Understanding opinion leadership and adopter categories will help target audiences more accurately and align suitable outreach mechanisms.

Few problems have impacted rural communities more than the opioid epidemic. Cooperative Extension has demonstrated its capacity to diffuse innovations throughout the land-grant network, showcasing its cultural propensity to embrace challenging societal issues. UGA Extension is a visible, highly regarded institution well-known for its ability to bring attention, resources, and, often, solutions to bear on problems. Tackling the opioid epidemic will require an acute administrative review of organizational commitment and integration of opioid-related prevention training within Extension's program development and training protocols. This study, by identifying opioid misuse prevention as a reasonable and optimal use of Extension resources, looks to help address this pressing national crisis.

References

American Addiction Centers. (2020, August 29). *Top 10 US States Drug Overdose Deaths*. https://americanaddictioncenters.org/overdose/top-10-us-states

Association of Public & Land-Grant Universities. (2020). *Land-Grant University FAQ*. What is a Land-Grant University? https://www.aplu.org/about-us/history-of-aplu/what-is-a-land-grant-university/

Bhimani, H., Mention, A.L., Barlatier, P.J. (2019). Social media and innovation: A systematic literature review and future research directions, *Technological Forecasting and Social Change*, Volume 144, 2019, Pages 251-269, ISSN 0040-1625. , https://doi.org/10.1016/j.techfore.2018.10.007.

Centers for Disease Control. (2019, November 18). Smoking and Tobacco Use. Data and Statistics, Fast Facts and Fact Sheets. https://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/index.htm

Centers for Disease Control. (2020, August 6). *National Diabetes Prevention Program*. https://www.cdc.gov/diabetes/prevention/index.html

Centers for Disease Control. (2020, August 6). *National Diabetes Prevention Program*. https://www.cdc.gov/diabetes/prevention/index.html

Dwyer, J.W., Contreras, D., Eschbach, C.L., Tiret, H. (2017). *Cooperative Extension as a Framework for Health Extension: The Michigan State University Model.* Academic Mmedicine: Journal of the Association of American Medical Colleges (92) 10. DOI: 10.1097/ACM.0000000000001640

Eveland, J. D. (1986). Diffusion, Technology Transfer, and Implementation: Thinking and Talking About Change. Knowledge, 8(2), 303–322. https://doi.org/10.1177/107554708600800214

Harder, A. (2009). *Planned behavior change: an overview of the Diffusion of Innovations*. Institute of Food and Agricultural Science, University of Florida. https://edis.ifas.ufl.edu/wc089

Hargrett Rare Book and Manuscript Library. (1997). Finding Aid for Mary Ethel Creswell Papers. *UGA 97- 105: 152*.

Kane, S. (2019, 2020*). Ag Snapshots*. The Center for Agribusiness and Economic Development, University of Georgia.

LaMorte, W.M. (2019, September 9). Diffusion of Innovation Theory, Behavioral Change Models. Boston University School of Public Health. https://sphweb.bumc.bu.edu/otlt/mph-modules/sb/behavioralchangetheories/behavioralchangetheories4.html

National 4-H Council. (2020, August 25). *4-H History*. About 4-H. https://4-h.org/about/history/

Patterson, H. (2013). An Overview of Georgia Agriculture Facts and Statistics. *Farm Flavor*, Georgia Agribusiness.

Peters, S. J., Alter, T. R., & Schwartzbach, N. (2010). *Democracy and higher education: Traditions and stories of civic engagement.* East Lansing, MI: Michigan State University Press.

Peters, S. J., Jordan, N. R., Alter, T. R., & Bridger, J. C. (2003). The craft of public scholarship in land-grant education. *Journal of Higher Education Outreach and Engagement*, *8*(1), 75–85.

Rogers, E.M. (1963a). The adoption process: Part I. *Journal of Cooperative Extension*, 1(1), 16-22.

Rogers, E.M. (1963b). The adoption process: Part II. *Journal of Cooperative Extension*, 1(2), 69-75.

Rogers, E.M. (2003). *Diffusion of Innovations*, 5th edition. New York, NY: Free Press.

Scott, R. V. (1965). American Railroads and Agricultural Extension, 1900-1914: A Study in Railway Developmental Techniques. The Business History Review, 39(1), 74-98. doi:10.2307/3112466

Singer, L. (2016, December). *On the Diffusion of Innovation: How New Ideas Spread*. https://leif.me/on-the-diffusion-of-innovations-how-new-ideas-spread/

Sundin, S. (2017, August 7). *Victory Gardens in World War II.* University of California Master Gardener Program of Sonoma County. http://sonomamg.ucanr.edu/History/Victory_Gardens_in_World_War_II/

United States Department of Agriculture. (2020, August 3). *Cooperative Extension System*. National Institute for Food and Agriculture website. https://nifa.usda.gov/cooperative-extension-system

University of Georgia Cooperative Extension (2020, August 6). *Eat Healthy, Be Active*. https://www.fcs.uga.edu/extension/eat-healthy-be-active

University of Georgia Cooperative Extension (2020, September 2). *Emergency Resources*. https://extension.uga.edu/topic-areas/timely-topics/emergencies.html

University of Georgia Cooperative Extension (2020, September 2). *Cooking for a Lifetime Cancer Prevention Cooking School*. https://extension.uga.edu/programs-

services/detail.html?id=10&name=Cooking%20for%20a%20Life%20Time%20Cancer%20Prevention%20Cooking%20School

University of Georgia Cooperative Extension. (2020, August 15). *Extension Fact Sheet*, 2019-2020. Extension website. https://extension.uga.edu/content/dam/extension/about/2019-20%20Extension%20Fact%20Sheet.pdf

University of Georgia Cooperative Extension. (2020, August 15). *Extension Leadership System*. Extension Intranet. https://intranet.caes.uga.edu/extension-resources/planning/extension-leadership-system/what-is-els/

University of Georgia Cooperative Extension. (2020, August 15). *Purpose statement*. Extension website. https://extension.uga.edu/about/our-impact.html

United States Congressional Code. (1914). Smith-Lever Act. *Chapter 79 of 63rd Congress*, 8.

Van de Ven, A.H. & Rogers, E.M. (1988). Innovations and Organizations: Critical Perspectives. *Communication Research*, 15(5), 632–651. https://doi.org/10.1177/009365088015005007

Vines, K. (2018). Exploration of Engaged Practice in Cooperative Extension and Implications for Higher Education. *Journal of Extension*, 56, 4. https://joe.org/joe/2018august/a1.php

Webster, G., & Bowman, J. (2008). Quantitatively Delineating the Black Belt Geographic Region. Southeastern Geographer, 48(1), 3-18. Retrieved October 10, 2020, from http://www.jstor.org/stable/26225503

Appendix 1A: Terms and Definitions

Land-grant institution: A land-grant college or university is defined by the Association of Public and Land-Grant Universities as an institution that has been designated by its state legislature or Congress to receive the benefits of the Morrill Acts of 1862, 1890, and 1994.

Morrill Act of 1862: The original mission of these institutions, as set forth in the first Morrill Act, was to teach agriculture, military tactics, and the mechanic arts as well as classical studies so members of the working classes could obtain a liberal, practical education.

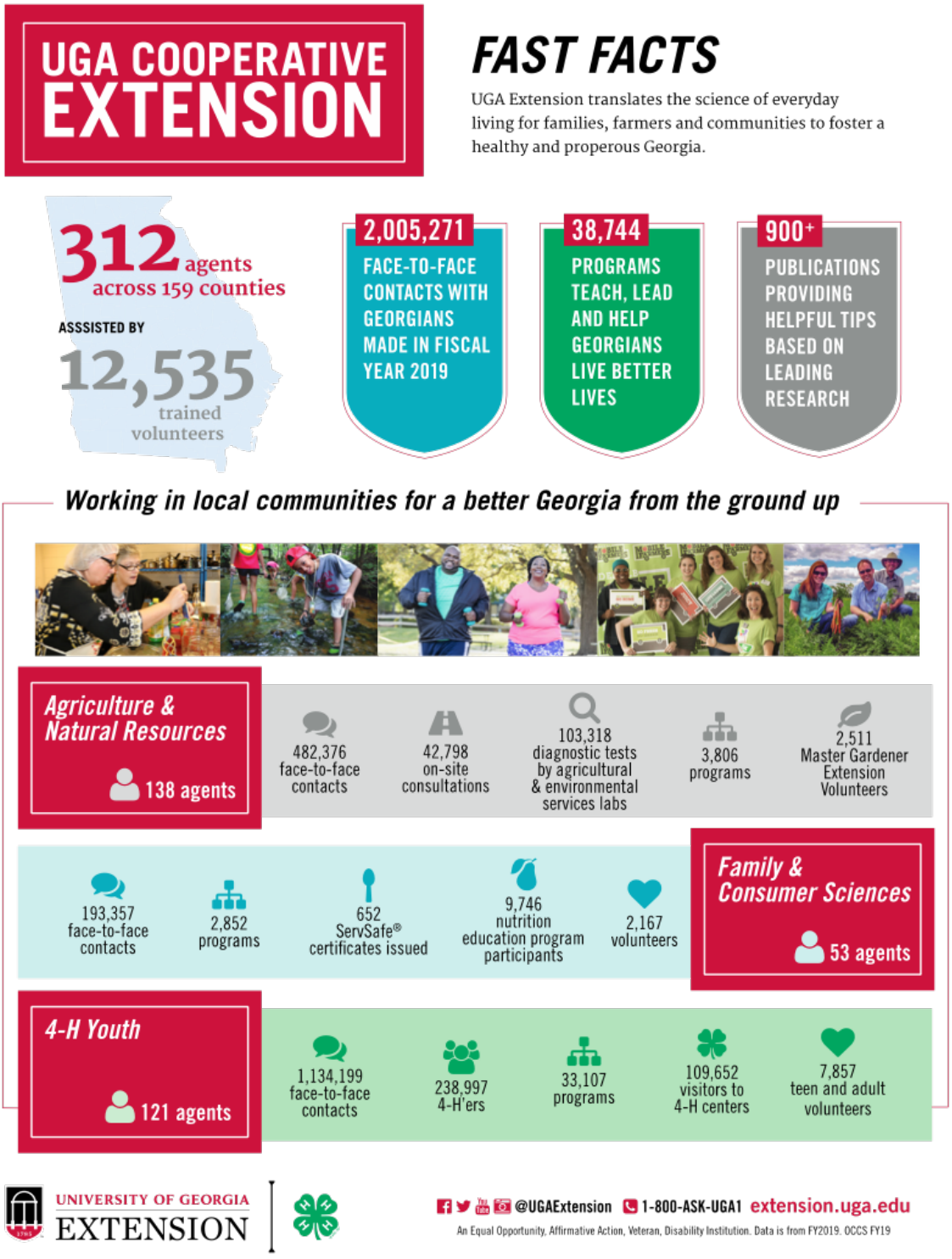
Hatch Act of 1887: The Hatch Act authorized direct payment of federal grant funds to each state to establish an agricultural experiment station in connection with the land-grant institution there.

Smith-Level Act 1914: To disseminate information gleaned from the experiment stations' research, the Smith-Lever Act of 1914 created a Cooperative Extension Service associated with each land-grant institution. This act authorized ongoing federal support for extension services, using a formula similar to the Hatch Act's to determine the amount of the appropriation.

Cooperative Extension: CES is operated through the nation's Land-Grant University System in partnership with the federal and state and local governments. It empowers farmers, ranchers, and communities of all sizes to meet the challenges they face, adapt to changing technology, improve nutrition and food safety, prepare for and respond to emergencies, and protect our environment.

NIFA (National Institute for Food and Agriculture): The federal partner to Cooperative Extension and the nation's land-grant university system, NIFA develops methods to address national priorities, funds and awards grants, and provides program leadership. The agency supports both the universities and local CES offices to bring science directly to the regional and county level.

Appendix 1B: Cooperative Extension Fast Facts Information Guide, 2019



CHAPTER 2

A QUALITATIVE STUDY OF COMMUNITY PRIORITIES, ATTITUDES, AND BELIEFS REGARDING OPIOID MISUSE IN RURAL GEORGIA[3]

[3] Bowie, M. To be submitted to *Journal of Rural Health*.

Abstract

The opioid epidemic continues to plague the United States, disproportionately affecting rural communities, with many recent improvements obliterated in the post-COVID19 landscape. Reasons for the rural disparity are not well understood, and solutions have proven complex and extremely challenging to implement effectively. Four rural Georgia counties were selected for this mixed methods study, with the goals of helping researchers better understand the ongoing reality these localities face and providing an in-depth perspective of their specific situations, in order to help inform customized interventions. Particular attention was given to the attitudes, perceptions, and beliefs about prescription medication misuse, and the availability of and barriers to seeking treatment for opioid use disorder. The findings of this study highlight the unique nature of effectively addressing the opioid epidemic and substance misuse in rural settings. Specifically, severely restricted access to prescription opioids appears to be fueling methamphetamine use and addictions in the four communities studied. The ability to customize interventions that recognize this new knowledge is imperative in helping reign in substance misuse and remake the surrounding systems required to facilitate successful recovery and treatment efforts.

INDEX WORDS: Opioid misuse, Substance misuse, Methamphetamine, Rural disparities, Treatment of opioid use disorder, Challenges to treatment, Cooperative Extension, Georgia

Introduction

Increasing mortality resulting from opioid misuse, particularly in rural areas, demands current, relevant data to inform prevention efforts. Knowledge of rural communities' priorities, needs, and beliefs surrounding opioid misuse are keys to understanding the complexity of the epidemic. Studying the geographic disparity experienced by rural areas, which are known to be affected more severely by the opioid crisis (Keyes et al., 2014), will provide essential evidence required for developing localized interventions. This qualitative study explores local attitudes around opioid use, substance misuse prevention efforts, treatment options, and barriers to seeking treatment in rural Georgia.

This study was funded in part by a grant from the United States Department of Agriculture (USDA), which supports the health and wellbeing of rural communities. The USDA's Rural Health and Safety Education Competitive Grants program addresses the needs of rural Americans by providing individual and family health education programs focused on the prevention and/or reduction of opioid misuse. University of Georgia Cooperative Extension (UGA-CE) is uniquely positioned to help disseminate these programs and resources in rural Georgia. In September 2019, a UGA research team was awarded a two-year grant to work in four rural Georgia counties, in collaboration with UGA-CE, to address the opioid crisis. The project involves 1) primary prevention strategies to build resiliency and family strengths while increasing community awareness of opioid misuse, 2) secondary prevention strategies targeting at-risk youth and adults, and 3) tertiary prevention efforts intended to mitigate unhealthy outcomes of those already suffering from opioid use disorder. Tertiary prevention involves training healthcare and social service providers to efficiently recognize hazardous substance use

and refer patients to appropriate substance use disorder treatment (referred to as SBIRT: Screening, Brief Intervention, and Referral to Treatment).

The first critical step of the project, currently underway, is the community needs assessment, or identifying local needs and existing resources that support intervention, prevention, or treatment of substance (primarily opioid) misuse. The qualitative focus groups examined in this paper are part of a mixed-methods approach to conducting the community needs assessments. The four rural counties, also known as the "study intervention sites," include Elbert, Lumpkin, Tattnall, and Washington Counties.

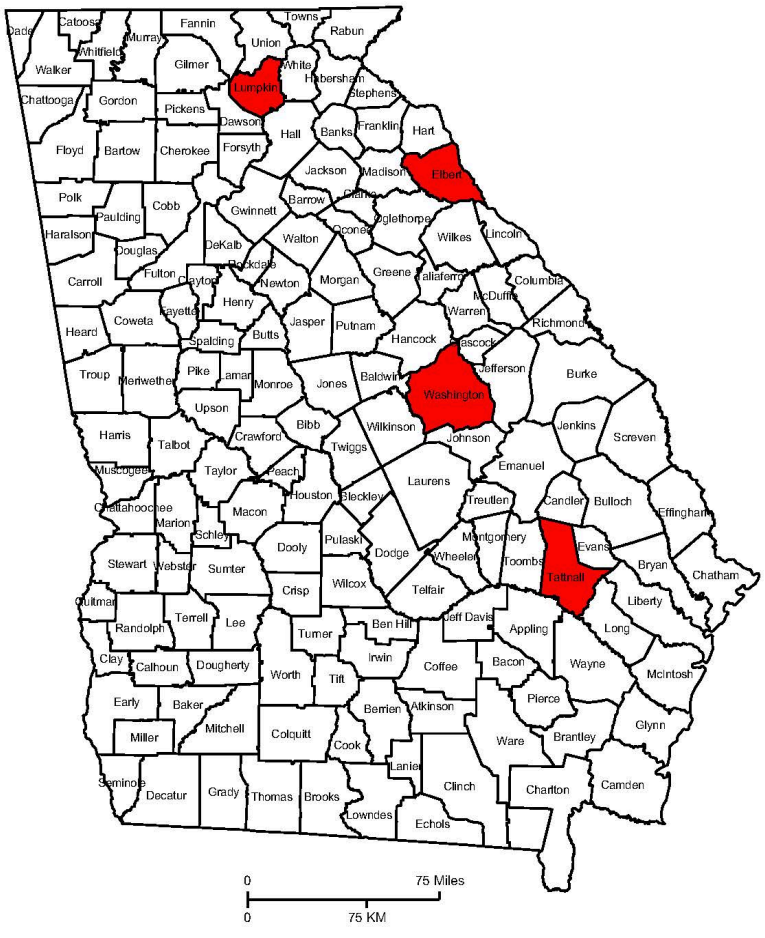


Figure 2.1 Map of Georgia with intervention sites

Literature Background

Rural Georgia suffers from behavioral health disparities largely informed by socioeconomic factors. Lower educational attainment and income levels and higher unemployment and poverty rates are known to contribute to the likelihood of substance use disorder. According to the U.S. National Library of Medicine, substance use disorder occurs when a person's use of alcohol or another substance (drug) leads to health issues or problems at home, school, or work (2020). The Centers for Disease Control (CDC) indicated that between 2014 and 2017, patients living in rural areas were 87% more likely to receive an opioid prescription from a primary care doctor than patients living in urban areas (2019). Between 2010 and 2017, Georgia's opioid-related death rate increased by 245%, with rural communities experiencing larger numbers of opioid emergency department visits and hospitalizations (Georgia Department of Public Health, 2019).

The standard of care for treating opioid use disorder is Food and Drug Administration (FDA)-approved medications (MOUD) combined with behavioral therapy, neither of which are commonly accessible in rural areas. Methadone, a long-acting full opioid agonist and schedule II-controlled medication, approved by the FDA to treat opioid use disorder and pain management, is highly regulated and typically restricted to metropolitan regions (USFDA, 2020). Methadone can only be dispensed in licensed opioid treatment programs. Buprenorphine, a partial agonist and schedule III-controlled medication, can only be prescribed by providers who obtain a waiver. Injectable naltrexone, an opioid antagonist, is not scheduled and does not require any special licensure or waiver to prescribe to patients with opioid use disorder. In rural settings, those with opioid use disorder (OUD) are more likely to overdose and die due to lack of access to MOUD and recovery options. In 2014, 60% of the Georgia counties with overdose rates

higher than the national average were classified as rural (Substance Abuse Research Alliance, 2017).

Ford et al. described the prevalence of accessing prescription medication through friends and relatives, and the importance of a prescribing physician (2019). Rural areas are especially prone to this problem: since many people know each other, the sense of familiarity and community may contribute to a level of comfort in sharing prescription medications. According to the National Survey on Drug Use and Health (2017), the most common source of prescription drugs, at 40%, was a friend or relative (for free); another 30% cited securing prescriptions from one doctor (Ford et al., 2019). Other studies confirm that sharing prescription medications is perceived as being socially acceptable (Goldsworthy, 2008). Ford suggests that drug users frequently spend time together and are known to freely share drugs among themselves. Females are more likely to get prescription opioids from friends or relatives compared to males; males are more prone to get prescription opioids from more than one medical provider (Cicero, 2011). Knowledge of the differing sources of each substance can influence the design and implementation of treatment and prevention efforts.

Limited Access to Care and Treatment

Studies have highlighted important differences in health care access between rural and urban areas. Rural residents, already more hesitant to seek needed care due to budget and cultural limitations, also face lower availability of physicians and services, a lack of public transportation, and restricted access to broadband internet connections (Douthit, 2015). Rural areas also struggle to attract and retain qualified medical providers. An aging rural physician workforce, coupled with the challenges of recruiting new talent and an older, less healthy rural population, are troubling realities (Skinner, 2019).

Lack of providers in rural Georgia is a growing problem (Miller, 2019), one that has been exacerbated by increasingly common rural hospital closures in the last decade. Shortages of mental health professionals and facilities providing treatment services compound the challenges of receiving adequate care. As many as 82% of rural residents lack access to detoxification treatment, provided to help minimize medical harm due to substance misuse, with law enforcement or emergency responders giving the initial detox services (Meit et al., 2014). Many patients require advanced treatment services, including inpatient, intensive outpatient, or residential care, rarely available in rural areas. Travel requirements can lead to lower completion rates for substance abuse treatment programs. Rural residents often do not have access to reliable transportation, making access to treatment and support groups even more difficult. Physicians must apply for a waiver to administer MOUD, another barrier for those in rural areas.

Existing Efforts Targeting Rural Georgia Opioid Crisis

Georgia's behavioral health challenges have prompted national attention. Federally-funded grants and supports address health disparities and opioid misuse in communities across the state. In addition to the USDA Rural Health and Safety Grant, Georgia teams have received five significant awards. Augusta University's Institute of Public and Preventive Health is partnering with the Georgia Council on Substance Abuse on a $1 million award from the Health Resources and Service Administration (HRSA). This initiative looks to establish recovery centers and provide MOUD training to rural primary care providers (including waivers to administer buprenorphine), while expanding access to treatment options in 22 rural Georgia counties, including two in the USDA study (Tattnall and Washington). It complements a previous $5 million Substance Abuse and Mental Health Services Administration (SAMHSA) grant, which funds a licensed clinical social worker in seven federally-qualified health centers located

between Augusta, Macon, and Savannah. The new funds will be used to expand prevention and recovery services into more rural counties located between these cities.

In June 2019, Mercer University received $200,000 from HRSA to target opioid misuse in four north Georgia counties—Fannin, Gilmer, Gordon, and Polk. The grant will establish the North Georgia Opioid Prevention and Education Network (North Georgia OPEN), a multi-sector consortium focused on the prevention of opioid use disorder and opioid overdose. In August 2019, the University of Georgia (UGA) received a $1.4 million HRSA grant to train 100 social work, mental health counseling, and psychology graduate students to use MOUD, combined with behavioral therapy, cognitive processing therapy, interpersonal therapy, and motivational enhancement (Kao, 2019). Also in 2019, a second team of UGA researchers received a $3.5 million National Institutes of Health award to examine how legalized medical cannabis impacts those suffering from chronic pain, building on previous work that showed reductions in opioid use after states legalized medical cannabis (Paczkowski, 2019).

These Georgia-specific grant-funded projects can complement each other by leveraging local collaborations focused on fighting the opioid epidemic. Housed primarily in institutions of higher education, their work is happening at multiple levels and across disciplines, utilizing community connections to help build awareness and coordinate efforts. By conducting research and training college students and medical providers, efforts are well underway to update policies and infrastructures embedded in the prevention and treatment framework.

Community Priorities around Opioid Misuse in Rural Areas

The Surgeon General's (2016) report on Alcohol, Drugs and Health emphasized the importance of multisector, community-based coalitions to plan and implement effective prevention interventions, and cited the value of community-level risk and protective factors for

substance abuse. The American Public Health Association (APHA) affirmed the critical role of the community in fighting the opioid crisis, particularly in education and naloxone distribution, safe storage and disposal of prescription medications, and provider education regarding appropriate opioid prescribing practices (APHA, 2015).

Acknowledging that substance use treatment requires existing community resources, a collaborative team conducted a series of community forums on opioid and heroin abuse across rural Minnesota between 2015 and 2018. Surveys after the forums showed awareness and knowledge gains (Palombi et al., 2019), and their resulting solutions, still ongoing, help validate the lasting efficacy of localized community interventions that empower residents.

A study regarding substance use disorder treatment in one rural southern state identified four primary barriers to treatment: availability of services for those with substance use disorders, access to current technology for client services/agency operations, cost of services, and stigma (Browne et al., 2016). These problems persist widely in rural communities across the U.S. Some scholars have coined a focus on "diseases of despair," pointing to interwoven patterns in drug overdose, alcohol-related disease, and suicide. With worsening economic distress, mortality rates for these conditions increased in the Midwest, Appalachia, and New England, locations where heroin and synthetic substances such as fentanyl have been most prolific (Dasgupta et al., 2018).

In Georgia, a recent study of patients over the age of 50 in opioid treatment programs experienced discrimination, stigma, and misunderstanding from providers about MOUD (Bender et al., 2019). The authors suggest that providers are too likely to treat age-related health conditions with opioids: these providers cited a lack of training about aging in general and varied levels of confidence in treating age-related conditions. Rural health disparities require continuous reform, including 1) greater availability of services; 2) promoting recruitment,

training, and retention of rural health care providers; 3) increasing health insurance coverage; and 4) engaging rural residents and healthcare providers in health promotion (Douthit et al., 2015).

While scholars recognize the importance of community collaboration and partnerships in addressing the opioid epidemic, existing literature fails to explain how to leverage resources most effectively to derive sustained, localized solutions in rural areas. This qualitative study examines community-specific data from four rural Georgia counties to help address this void.

Data

Primary data for this qualitative study were collected as part of a community needs assessment for the USDA Rural Health and Safety Grant. Four in-depth focus groups were conducted at the intervention sites in Elbert, Lumpkin, Tattnall, and Washington Counties (Georgia) during November and December 2019. County extension agents recruited key public health stakeholders to participate, including a range of "front-line" workers, to allow for a variety of uniquely qualified perspectives. These individual extension agents, well known within their communities, have served their localities for at least eight years, and have established credibility through their careers of public service and informal educational programming.

An invitation letter and IRB-approved recruitment flyer were provided by the research team for local promotion about the focus groups. Extension agents who hosted the groups made site visits to recruit targeted community representatives, and used the materials to invite participation through email. These agents requested an attendance response, and instructed participants to call or email their local UGA Extension Office to register for the focus group or obtain more information. The email invitations went out between two and four weeks prior to the focus groups, with reminders to respondents two days before. In total, 36 participants,

representing education, mental health providers, social service agencies, law enforcement, healthcare (hospitals and health departments), and pharmacies attended the groups. None of the attendees were paid or otherwise compensated for their time. All of the groups began at ten o'clock AM and concluded with lunch, and were facilitated by a trained public health policy evaluator with expertise in opioid research and substance misuse. An IRB-approved consent form was read aloud by the facilitator prior to beginning the groups.

Site Description, Elbert County, Georgia

The first focus group was held in Elberton, the county seat of this northeast Georgia county, on November 22, 2019. The U.S. Census Bureau estimated the 2018 Elbert County population at about 19,000, with a median household income of $37,100 (U.S. Census Bureau). Demographic estimates for 2018 show that the population is 64% white, 28% African American, and 5% Latino (USCB). The granite industry is one of the area's major employers, producing an estimated one third of the nation's granite monuments. Other sources of economic impact include two state parks, a golf course, and two major reservoirs managed by the U.S. Army Corps of Engineers. Richard B. Russell Lake and Clarks Hill Lake attract thousands of annual visitors who boat, camp, and support local tourism, including major recreational fishing tournaments.

Between 2014-2018, an estimated 23% of county residents lived below poverty level, with those under 18 at 35% (USDA Economic Research Service, 2019b). High poverty rates are associated with increased likelihood of adverse childhood experiences, which can contribute to a higher risk of substance misuse (Dube, 2003). Among the four study sites, Elbert County had the lowest percentage of residents completing high school between 2014-2018, at 10.8% (Economic Research Service, 2019a).

Thirteen participants attended the hour-long group. Three law enforcement officers from the Elbert County Sheriff's Office provided input, including current and recent arrest patterns involving substance misuse. Two emergency medical technicians/first responders addressed EMS calls involving opioids. A school resource officer, school social worker, and school guidance counselor explained substance use related problems related to students and their parents, and also described prevention efforts. A caseworker from the Georgia Department of Juvenile Justice explained situations involving young adults who get reported for illicit substance use. A nursing supervisor from the local hospital described ER use and their management of pain cases. A representative from the local nonprofit Elbert Partners for Health Community Coalition (also the spouse of a local primary care physician) provided input at the community level. The local 4-H youth extension agent who hosted the meeting also contributed, speaking to the challenges young people face in a rural, tightknit community with few opportunities to escape multi-generational poverty's relentless grip.

Site Description, Lumpkin County, Georgia

The second focus group was held in Dahlonega, the Lumpkin County seat, on December 13, 2019. Dahlonega is located in the northeast Georgia mountains, with a county population of roughly 33,000 as of 2018 (U.S. Census Bureau). Lumpkin County suffers one of the highest rates of opioid-related hospitalizations and emergency department visits among rural counties in Georgia (Georgia Department of Public Health, 2016). Demographic estimates for 2019 indicate that the population is about 90% White, 5% Latino, 1.9% multiracial, and 1.7% African American (USCB). Primary area employers include tourism, the University of North Georgia, the local school system, and a local military installation, Frank D. Merrill Army Ranger training center. About 17% of the population live below the poverty level, with 15.5% of those under 18

living in poverty (USCB). Lumpkin County had the highest education level of the sites, with 26.2% completing high school (Economic Research Service, 2019b).

Six participants attended the one-hour session. A narcotics investigator from the Lumpkin County Sheriff's Office provided multiple examples of cases he personally worked involving substance misuse. A grandmother, raising her two grandchildren from birth (now 13 and 15) due to substance misuse, described her experience working through official channels to adopt and parent them. A counselor who provides local mental health/substance misuse/family court and prison counseling described his experience working with those populations. A behavioral health agency representative, who previously worked with the Department of Family and Children Services (DFACS), explained some of the local treatment options and challenges for those struggling with substance misuse. A school system counselor from a local elementary school shared about her experiences with students from difficult family situations and unhealthy home environments. The local 4-H youth development extension agent hosted the group.

Site Description, Tattnall County, Georgia

The third focus group was held in Reidsville, GA, on December 16, 2019. Reidsville is the county seat of Tattnall County, located in southeast Georgia, with a 2018 estimated population of 25,391, and median household income of $38,034 (USCB). Demographic estimates for 2018 calculate the population as 67.2% White, 29.5% African American, and 12.2% Latino. Area major employers include three state prisons, production agriculture (home of the Vidalia Onion), and manufacturing. Those living below poverty level measured 27.5% (35.7% of those under age 18) (Economic Research Service, 2019a). In 2018, the high school completion rate was 13.2% (Economic Research Service, 2019b).

Seven participants attended the focus group. Three law enforcement officers from the Tattnall County Sheriff's Office and one Georgia State Patrol Officer (female) provided descriptions of arrests and altercations involving substance misuse. A local health department nursing supervisor discussed common situations at the health department involving opioids and illicit substances. A local pharmacist explained recent and previous prescribing behaviors of area physicians and client requests. The local family and consumer sciences extension agent hosted the meeting and contributed her observations, emphasizing major concerns about the number of non-parental guardians, especially grandparents, raising children due to parental incarceration and/or termination of parental rights—often due to substance misuse and addiction issues.

Site Description, Washington County, Georgia

The fourth and final focus group was held in Sandersville, GA, located in central Georgia, on December 17, 2019. The U.S. Census Bureau estimated the 2018 population of Washington County to be 20,386, with a median income of $38,092, and population demographics of about 44% White, 54% Black, and 2.6% Latino (USCB). Primary local employers include the school system, manufacturing, and Kaolin mining operations. The rate of those living in poverty measured 26.7%, with 34% of those under 18 in poverty (Economic Research Service, 2019a). The 2018 high school completion rate measured 14% (Economic Research Service, 2019b).

Three law enforcement officers from the Washington County Sheriff's Office addressed current and past substance misuse patterns and concerns. A local pharmacist spoke about physician prescribing tendencies and client behavior. Three representatives from Family Connections, one of whom identified as a former illicit substance user, shared their perspectives on how the opioid epidemic, and substance misuse as a whole, affect the family units they serve.

An EMT/ER nurse/firefighter/first responder gave his outlook on prescribing, opioid misuse, and Narcan utilization. The local 4-H youth development agent addressed needs surrounding students. The local family and consumer sciences agent, previously a special needs teacher in the school system, hosted the meeting and provided health-related behavioral observations based on 28 years of experience as a local educator.

Table 2.1 provides participation details by location. The focus group recruitment flyer, script, and listing of questions are included as appendices. This data is being used to inform the USDA rural health and safety grant interventions and will be paired with the secondary data described in the quantitative chapter of this dissertation for that purpose.

Table 2.1. Focus Group Descriptive Variables

Location	Date	No. of Participants	Notes
Elbert County (Elberton, GA)	November 22, 2019	13	3 law enforcement, 1 Department of Juvenile Justice case manager, school social worker, 2 Emergency Medical Technicians, 1 school resource officer, 1 local non-profit/local physician's wife, 4-H agent
Lumpkin County (Dahlonega, GA)	December 13, 2019	6	1 narcotics investigator, 1 grandparent, 1 counselor, 1 DBHDD/former DFCS, 1 school social worker, 4-H agent
Tattnall County (Reidsville, GA)	December 16, 2019	7	3 sheriff's deputies, 1 GSP, 1 nurse supervisor/health dept., 1 pharmacist, 1 FACS agent
Washington County (Sandersville, GA)	December 17, 2019	10	3 sheriff's deputies, 1 pharmacist, 3 family connection, 1 EMS First Responder /Fire/ER nurse, 1 4-H/youth agent, 1 FACS agent

Methods

The researcher used interpretive description, a qualitative research method recognized for producing useful knowledge for applied health disciplines. Interpretive description is defined by Thorne et al. (1997) as "an inductive analytic approach designed to create ways of understanding (clinical phenomena) that yield application implications" (Hunt, 2009). This qualitative research approach was created from grounded theory, phenomenology, and ethnography, and roughly follows methodology standards of sociology, philosophy, and anthropology in analyzing applied health and clinical problems (Morse & Chung, 2003). Interpretive description demands a hyper

focus on the specific processes which take place when converting raw data into results, then forming an interpretation of what the themes imply (Sandelowski & Barrosso, 2002).

Most tangibly, this relatively new research approach can make newly-discovered knowledge available to practitioners, in alignment with the reasoning of authorities in the field who possess "a similar understanding acquired through extensive pattern recognition and reflective practice observations" (Hunt, 2009). Interpretive description demands a careful balance of skills to comprehend data, synthesize meanings, theorize relationships, and report data into results (Morse, 1994). Therefore, using the detailed steps of this method to analyze this type of qualitative data should provide high quality, relevant, and applicable outcomes.

The researcher manually transcribed audio recordings from each one-hour, location-specific focus group into word processing documents (Microsoft Word). The four documents were then analyzed by the researcher using Atlas.ti version 8.4.4 (1135) software for qualitative data processing, which was suggested by the study's principal investigator to help automate and streamline the coding process. Two cooperative extension faculty familiar with the tool guided the author in accessing the required license, available for free through the UGA College of Education, and provided training in how to use the software. Each transcript document was imported into Atlas.ti and carefully reviewed by location to identify key words and phrases that described attendee narrative. Themes were then identified by coding each of the transcripts' key words and phrases. Primary coding was completed by the researcher and secondary coding was completed by a master's level social science student relatively unfamiliar with the project. The keywords were compared for consistency and agreement between the two coders. New codes were added and some were removed or combined with other codes for clarity and thoroughness.

The data was initially analyzed by location, with 679 different participant quotations (212 for Elbert, 166 for Lumpkin, 102 for Tattnall, and 165 for Washington) grouped into 236 coded phrases, then condensed to 148 main phrases. The codes were sorted in alphabetical order, starting with 'ability to afford treatment,' which was mentioned 10 times, to 'work-related injuries,' mentioned three times. The query tool in Atlas.ti was used to review each code by location to compare trends. Coded quotes were analyzed by each of the 148 sets of keywords, a list of which appears as Appendix C. Items that were mentioned nine or more times were pulled from Atlas.ti into an Excel spreadsheet, resulting in 29 categories listed below in Table 2.3. The 29 categories were then summarized into eight primary themes. Items mentioned more than twice but less than nine times are included in Appendix D.

Results

Analysis of focus group data revealed eight primary themes, including education, access/availability, restricted access, physician prescribing behavior, environment, methamphetamine use, awareness, and intervention, identified as explained below. Table 2.2 below provides a summary of the themes that resulted from coding of the focus group transcripts. Table 2.3 gives additional trends identified in the focus group data analysis.

The eight primary themes were developed by combining closely related codes as follows. Access and availability was identified as a primary theme by combining codes for access to opioids (4), access to opioids or illicit substances through social media), access to illicit substances (15), Athens as access point for virtually any substance (4), Atlanta to access methamphetamines (4), availability of opioids (35), diversion of opioids (27), easy access to legal opioids (23), and online technology increasing access to opioids/illicit substances (9).

Physician prescribing behavior resulted from combining the codes for overprescribing of opioids (25) and physician prescribing behavior (40).

Methamphetamine use was created from codes for methamphetamine use (34), methamphetamines as the biggest problem/drug (6), methamphetamine-induced violence (5), methamphetamine access (5), and methamphetamine (4). Education resulted from combining codes for education suggested as solution to opioid or substance misuse (44) and educating parents (9). Environment resulted from combining codes for unhealthy home environment (14), environment promotes opioids/substance misuse (10), new environment needed for recovery (9), and cultural norms promote opioid/substance misuse (15). Awareness was created from awareness of the opioid problem (32).

Intervention resulted from combining codes for drug court (11), Narcan (10), Narcan prescription (6), Narcan becoming a crutch for users (5), and teen maze (10). Restricted access to opioids resulted from combining codes for restricted access of opioids from prescribers (29) and the Prescription Drug Monitoring Program (18).

Table 2.2. Eight Primary Themes Identified from Four Focus Groups

Theme Topic	**Number of times mentioned**	**Notes**
Access/Availability	126	Including online technology & social media
Physician Prescribing Behavior	65	Includes overprescribing
Methamphetamine Use	54	Includes use, methamphetamines as biggest problem, methamphetamine-induced violence, and methamphetamine access
Education	53	Includes education suggested as solution and educating parents

Environment	48	Includes unhealthy home environment, promotes use, new environment needed, and cultural norms promote use
Restricted Access	47	Includes outcomes resulting from Prescription Drug Monitoring Program
Intervention	42	Includes drug court, Narcan ™, Teen Maze
Awareness of the problem	32	Includes awareness of the opioid problem

Table 2.3. Other Trends Identified in Focus Group Analysis

Summary of Focus Group Statements	**Times Quoted**
Overprescribing	25
Diversion	22
Lack of local services	22
Solutions: community	22
Rural town	21
Treatment options	21
Parents Use	20
Exposure	18
Prescription Drug Monitoring Program	18
Vaping	17
Marijuana	16
Pharmacy Response	16
Grandparents raising grandchildren	15
Prescription Dropbox	14
Visibility of problem	14
Recovery challenges	13
Faith-based organizations	11

Fentanyl	11
Limited treatment options	11
Unwillingness to admit problem	10
Mental health issue/substance misuse	9
TOTAL CODED QUOTES:	**641**

Discussion

The findings from this study aligned with many well-understood aspects of the opioid epidemic's plague on rural communities. While many of the results followed our current understanding of the issue, these four rural Georgia communities delivered significant new knowledge on the complexity of substance misuse. Previously documented challenges for rural communities, such as the lack of local or nearby opioid use disorder treatment providers and stigma surrounding substance use, were evident across all study sites.

Study participants' familiarity with their settings provided intimate details on specific substance misuse situations. Data gathered from the focus groups explained how easy it is to access prescription opioids and illicit substances, particularly methamphetamines. Physician prescribing behavior and educational solutions and needs were primary areas of discussion. The importance of environmental factors in substance use, and the unique cultural norms rural users face during recovery, were explained at length. Details regarding existing interventions and local community awareness were explored, including restrictions put into place 18 months prior to the focus groups that dramatically lowered access to prescription opioids.

However, researchers did not anticipate that these decreases in opioid misuse, attributed to the efficacy and stringent enforcement of the state's prescription drug monitoring program, to result in increasing methamphetamine use. This inverse relationship among opioid misuse and

methamphetamines was suggested by multiple focus group participants, most notably and vocally by the ten attending law enforcement officers. This phenomenon is creating what group participants describe as an increasingly desperate situation, an endless cycle of addiction/incarceration/drug court/treatment/relapse. These users, relatively pliable when 'medicated out 'on opioids, become unpredictable and often volatile on methamphetamines. Co-use of opioids and other illicit substances, also referred to as poly-substance use, was another finding of concern. The severe lack of mental health resources often leads patients with undiagnosed underlying conditions, such as bipolar disorder and depression, to self-medicate.

The interconnectedness and importance of education and environmental factors in the opioid epidemic emerged repeatedly in all four conversations. Participants emphasized an urgent need for localized, enhanced substance misuse education as an integral part of prevention programs—beginning in elementary schools and persisting through the critical middle and high school years and into the community at large. Educating parents on appropriate strategies for encouraging a healthy and safe home environment, in which questions can be asked openly and answered honestly, helps foster ongoing family dialogue. It can also provide critical, factual guidance for teens and adolescents in the face of online/social media and peer-led misinformation, and teach parents and guardians the importance of establishing positive norms and expectations through their own behavior and lifestyle choices.

The electronic Prescription Drug Monitoring Program (PDMP) has achieved its purpose, vastly decreasing the supply of legally obtainable opioid medications. Providers write far fewer prescriptions, although the demand continues to persist. Those who are opioid dependent seek other solutions to meet this need. While heroin has reportedly filled this void in many areas, it does not appear to do so in these four rural Georgia counties: methamphetamines are viewed as

socially acceptable, while heroin is not. Multiple participants suggested that the comparatively low cost and high availability of methamphetamines feeds this pattern of addiction. Participants also proposed that the injection method, typically used for heroin, is considered undesirable and frightening, due to the increased risks associated with intravenous drug use, including exposure to disease (HIV and Hepatitis B), overdose, and death.

Each group voiced concern over the growing number of non-parental guardians resulting from substance misuse (grandparents raising their grandchildren, the termination of parental rights, and increased pressure on the foster system), which contributes to the troubling reality of the disintegration of the White middle-class family unit. The number of children in foster care in Georgia almost doubled between 2013 and 2017, from 7,607 to 13,146 (U.S. Department of Health and Human Services, 2020). A logical comparison could be made to the crack epidemic in the 1980s and 1990s and its devastating impact on African American middle-class families. Dunlap et al. described the victims of the crack cocaine crisis, many of whom also faced generational poverty, as sacrificing their lives and family commitments to support the habit (Dunlap, 2006).

Current judicial policies surrounding illicit substance use offenders are viewed as ineffective and outdated: incarceration is not a viable long-term solution for drug-related convictions. Substance misuse treatment and counseling represent a far better investment for individuals and society at large than serving jail time, often repeatedly. Some Georgia courts have developed programs specific to first-time offenders that ease the potential long-term consequences of drug-related arrests somewhat. Drug court and alternative sentencing programs can help individuals avoid a criminal conviction on their record, which can greatly hinder both employment and education (including access to government-issued school loans) opportunities.

However, participants expressed frustration, particularly with drug court, indicating that offenders quickly learn ways to manipulate the system and simply 'go through the motions' of court-issued mandates, without truly reforming their problematic behaviors. Holistic therapies need more attention, funding, and support, such as community support groups, faith-based treatment and recovery programs, workplace training, and systemic environmental changes, which create a 'new normal,' limiting exposure to previous negative influences, potentially through relocation. Counseling, MOUD, physical therapy, and practicing yoga have been proven to be effective opioid use disorder treatment strategies (Lander et al., 2017; Korownyk et al, 2019; Sun et al. 2018).

On the supply side of the epidemic, further analysis of the worldwide distribution mechanism of opioids reveals some interesting data points. A paper titled "Fentanyl and Geopolitics: Controlling Opioid Supply from China," published in 2020 by Felbab-Brown of the Brookings Institute, explained China's role as one of the primary U.S. suppliers of illicit opioids, including both fentanyl and fentanyl precursors shipped to Mexico. Long-term pressure from both the Obama and Trump administrations resulted in China banning the production, sale, and export of all fentanyl-class drugs, with a few exceptions, in 2019. Rapidly deteriorating diplomatic relations and limited enforcement capacity, in addition to China's strong influence from pharmaceutical and geopolitical interests, do not bode well for the new policy's ability to effectively stem the flow of opioids to the U.S. (Felbab-Brown, 2020). Without significant reductions in this international supply chain, to which China is the largest contributor, illicit opioid products diverted through Mexico will continue to find their way to the U.S. Felbab-Brown proposes several U.S. policies that could encourage China's enforcement, including

extensive international collaboration with the United Nations and European Union and required, transparent monitoring of production facilities by Chinese pharmaceutical manufacturers looking to legally sell fentanyl in the U.S.

Efforts to stem the flow of both licit and illicit opioids played out through U.S. government regulations, increasing their street value to a dollar per milligram strength. In 2018, one 40 mg oxycodone pill commonly sold for $40, leading to huge demand and the diversion of these highly desirable products. Insurance providers, including Medicare and Medicaid, covered most of the cost of opioid prescriptions: clients often paid only $.50/prescription. The temptation to sell prescriptions was overpowering for many. What may have started as necessary medication became an inescapable way of life. The persistence of established peer user networks in rural communities underlies distribution and hampers treatment efforts.

A description of each of the major themes, and quotes from participants that align with each theme, are outlined below. Access and availability of opioids, physician prescribing behavior, methamphetamine use, education, environment, awareness, intervention, and restricted access were the primary topics that emerged in the data.

Access and Availability of Opioids

Participants most frequently mentioned the high accessibility and availability of prescription opioids, as stated or suggested 126 times across the four groups. Access and availability were described in an array of situations. Many indicated that getting a prescription from a doctor was simply too easy, and that doctors may provide prescriptions just to get the patient out of their office. A hospital nursing supervisor stated, “They will just go ahead and write a prescription because they don’t want a scene in their office or they just don’t want to deal with the patient.” Some participants said that ER doctors were more likely to write opioid

prescriptions, but noted that trend seems to be headed downward. Participants implied that pill users know where to access both legal prescriptions and illegal drugs. Certain doctors are known as non-opioid prescribers; others are viewed as ready prescribers, regardless of true need or the nature of the related condition. Data from this study that supports this downward trend is included in the physician prescribing behavior section.

Access & Availability: Location

Athens, GA, is viewed as a major distribution hub, with northeast Georgia providing a key location to access illicit substances, given its proximity to Atlanta and major interstate highway systems. According to one police officer:

> In Athens, I think you've always had that; with the college there you have access to it a little more. But some of the kids there—I've worked a lot of drugs and in the last several years in the drug cases, a lot of the people we talk to—they can go and pick up just any amount they want, of whatever drug they want. It can be gotten [in Athens] very easily.

Atlanta was also listed as a major access point, with another police officer saying, "A lot of people are going to these pill mills in Atlanta. They will go there and pill shop all day long."

Access: Social Media

Access through social media is also described as an influential factor. Virtually anyone can tap into various social media outlets or online purchasing sites to procure prescriptions and illicit substances. The use of cell phones and social media sites has opened access in a way that never could have been predicted. A narcotics officer explained:

> And a 16-year-old was buying [THC] cards from this 40-year-old-male. And it's social media, so you get somebody who has a friend saying 'hey man, I met this guy on

Snapchat and he'll hook you up.' Drugs are that easy to get now, because of Snapchat.

The technology has improved so much that it is very easy now to get drugs.

The persistent relationships developed over social media can be very difficult to detach from, especially for those in recovery.

Access: Online Ordering

Participants also discussed the ease and anonymity of online ordering. One law enforcement officer shared, "The phones. You can look up anything. Kids can look up anything. They can buy anything. You can go to Amazon ™ and buy any drug you want or a website and buy any drug you want to. Online."

Access/Availability: Exposure Through Friends and Family

Friend/family exposure was ranked highly, with 18 mentions, especially children accessing their parents or grandparents 'medications. "What we see is parents using pills. And that's affecting the kids, the kid may get ahold of the pills and give them out in school. And then they get caught," said a school social worker. A police officer said, "In the last year or two, kids from each county would just go around and they would party at different locations. They'd go out and have these big "pharm" parties." A behavioral health and former DFACS employee considered 'just say no' campaigns inadequate: "I mean just say no—I don't think is necessarily really enough. Because they are going to go outside and probably run into someone that they used with before."

Access: Rurality

The role of rurality in recovery challenges was also discussed. The likelihood of running into past associates who tempt, or are associated with past negative behaviors, is increased in rural settings.

Access & Availability: Diversion

Police officers all recalled seeing an increase in reports of medication being stolen. According to a police officer:

> It was an epidemic at one time, where these people were getting 60/90/120 pills and in three days they were filing a report with the police department or sheriff's office, saying that someone had broken into their car [or] broken into their house, stolen all of their pills, and that they needed another prescription.

"Skittles parties" were described in one group by law enforcement officers, as well as problems they've seen with pill distribution. One LEO explained:

> For a long time, we had problems with younger kids that had created a pill press where they could go out and make these pills. You can buy it online—and buy the drugs illegally and press them, and it's making a lot of kids sick.

Two of the groups' law enforcement officers described seeing a number of pharmacy thefts related to the opioid crisis:

> We had a huge increase in the use of [opioids]. It was very widespread; at one point in time we were dealing with break-ins at pharmacies. There were reports of places where perpetrators cut a hole in the ceiling of the pharmacy to take the pills they wanted.

One pharmacist recalled a break-in. "Our pharmacy got broke into four years ago, twice. They took five bottles of hydrocodone and some non-controls, and took money from the register. Since

then we put in an alarm system." A police officer explained how users were able to obtain multiple prescriptions.

> That's what they were doing – going to these fly-by-night doctors and getting prescriptions where they were hauling them around in vans. From pharmacy to pharmacy to pharmacy. And getting all the pills and paying cash because they were selling the pills by milligram for cash.

The access and availability of medications being taken by hospice patients and those utilizing home healthcare was mentioned in two of the groups. A police officer stated:

> I think running a background check on home health care workers is important, because when people are referred/eligible for hospice they don't know what's going on. Nurses can tell that they have a substance abuse problem. Nine times out of ten they can't even speak for themselves, so disposal of that medication is kind of ridiculous. Within a month's time, the medication drop-off box at the sheriff's office is completely full."

A pharmacist addressed local law enforcement participants, saying:

> It might be good for us to sit down some day and just hash out some names . . . because we do have some people that we suspect might be selling. But we never know that for sure. I can think of one – he comes in and he gets Xanax ™ 2 mg, and he also gets oxycodone. And he's perfectly healthy. It's a physician who lives here that does not practice here that writes the prescription for him, which raises some issues for me. And he pays $.50 a prescription.

This pharmacist also described prescription misusers as less likely to use their locally-owned pharmacy. "I have a feeling that most of them don't want to go to somebody they are going to see every month, with the same pharmacist. They want to go somewhere where the pharmacist is

different [a chain], where they won't be recognized." This pharmacist also pointed out that doctors have become so cautious with prescribing narcotics, that they generally write no more than a 7-day supply. For some patients, such as those suffering with degenerative disks or cancer, or recovering from knee surgery, this is not adequate.

Physician Prescribing Behavior

All of the groups zeroed in on physician prescribing behavior (overprescribing) as a major factor in their local opioid problem, with 25 mentions. However, most also noted a definite decrease in overprescribing in the past two years, attributed primarily to federal and state restrictions, such as the Georgia prescription drug monitoring program (PDMP) rolling out in 2018, along with stringent policing by the Drug Enforcement Agency (DEA). Restricted access to opioids was indicated 29 times, usually in association with PDMP and its effects on prescribers. Several participants, notably the pharmacists, described physicians and dentists as now being perhaps overly cautious in writing opioid prescriptions, even after major surgeries or documented chronic pain situations. A school social worker stated, "You know they are dispensing some of those things, where it's in a certain age group, you see it. I don't think you see it in schools. I think it's more of a controlled situation." A police officer agreed:

> That's exactly right. I've interviewed people who have a pill addiction and it's amazing; it is a lot of work to find out that they use the same doctor to get [a] legal prescription. You know it's perfectly legal, and they really don't admit to any wrongdoing. You have to put a lot of investigation in and it's hard to get to the root of the problem.

A pharmacist discussed the advantages of living in a small town and knowing the doctors:

> When someone calls and asks if you are filling with a certain doctor, we get suspicious. It means they've already had a problem getting it filled. . .You can make a phone call. Like

> our drug inspector told us, if you fill a narcotic, you need to be able to put your hand on the Bible and be able to go to court and testify that the prescription is legitimate and necessary. And you can't always do that. If someone says they hurt their back, that's why I am taking it, there is not a lot of proof otherwise. But we certainly have seen doctors write for 180-200 of these tablets in a month. Those [prescribers] are the ones we want to stay away from.

A police officer summarized how the new restrictions have pushed prescription misusers to methamphetamine use. "And, all that being done is why we've got a meth problem. That's where they went to. It got harder there, so created a problem here. They didn't quit—they just targeted differently." All of the groups reported a downward trend in overprescribing, but noted an alarming increase in meth use. A police officer expressed concern about this pattern:

> We had a huge increase in opioid use, but I guess as things have become more stringent on opioids, there's been a trend towards methamphetamines because the ability to get opioids from the pharmacies, and everywhere else, has become increasingly more difficult. But it was very widespread—at one point we were dealing with some break-ins at pharmacies . . . I think the widespread prescription issue with the pain doctors is not as free it was . . . but it's pushed in a different direction. Now we have more of a methamphetamine problem.

The two pharmacists witnessed a full spectrum of behavior from prescribers. According to one:

> Some providers you could go to and say, 'oh I've got a splinter.' And they would give you 90 Percoset ™. I mean, I'm just being honest. And so, from the provider standpoint, I think you've got—and you [points to law enforcement] probably see who prescribes what

better—the spectrum. And I think the patients in our county know where to go to get those prescribed.

When asked about fentanyl, a pharmacist stated:

> I think one of the reasons that fentanyl isn't being used is because people were abusing it. They would either put multiple patches on or chew it. With Oxycontin ™ extended release, that's why that company has gotten into so much trouble. [Purdue was] the only company making extended release. So over time, you'd distribute 40 mg over a 12- hour period. But instead, because these people were chewing or crushing and snorting it – we've seen a big drop off in extended release prescriptions because doctors would rather give them something else. Of course, you don't know how people use it. Once they walk out the door they could take the whole bottle at once.

A sheriff's deputy described past problems with people reporting their medications stolen:

> It was an epidemic at one time where people were getting 60/90/120 pills and in three days they were filing a report with the police department or sheriff's office saying that someone had broken into their car or house, stolen all of their pills, and they needed another prescription. Through further narcotics investigations, we learned that people were selling these pills. So, they were paying $4.00 for a bottle of 120 pills and turned around and [sold] these pills for $ 4-5.00 apiece. They were making a killing. And one local doctor was helping them do this because they would take the police reports and go to this doctor and he would prescribe them, even telling them to use certain pharmacies to fill them.

The officer's unit visited the provider to address the issue. "We basically told him 'we are watching you.' That provider then closed his practice and left town." This was about four years ago. "He was a problem. I'm just going to be honest with you. Almost every house we went in with a bunch of pills, it was constantly his name as the doctor prescribing to the pharmacies around here."

He continued that their main issue currently is a pain clinic in a neighboring county. "A lot of our locals here go over there to get pain medication. To the pain clinic," he said. However, the pharmacist denied seeing prescriptions from that particular provider:

> I'm an independent pharmacy so my clientele, albeit all spectrums, [may not include] as many of the abusers. I get some that I am aware of that we know are. But most of our pain clinic doctors are in a different community.

A police officer asked if a methadone clinic in that municipality distributed on-site, and another officer responded, "I think they offer the liquid there; they provide and fill some prescriptions."

An emergency medical technician (EMT) who works the emergency room (ER) said, "The number one thing that people come into the ER complaining [of] is back pain. Either back pain or neck pain, because both of them are almost impossible to [rule out]." The pharmacist responded, "Right. But I will give them kudos, they have really cut back on prescribing opioids." She said they rarely see opioid prescriptions from the ER for more than a dozen analgesics for pain, just enough to get them through the next three days, when they likely see somebody else.

The EMT agreed:

> Different doctors are different. If Dr. X is in the ER, and they see his vehicle parked out front, they aren't coming to the ER. He's not going to give out a narcotic, unless he just

> really believes you need it. He's just not going to give it out. . . There are more doctors that—I won't say are worried about losing their license, but they'll give them something to keep them from repeatedly coming right back. Now, has it cut back? They've cut down a lot in the past year . . . Now they are writing a prescription for two pills, and referring to their family doctor.

This pattern of decreased opioid prescriptions resulting from ER visits was echoed in another group. A hospital nurse explained:

> Some people can easily get opioids prescribed—and people also [shop for doctors, ERs, and pharmacies]. And in response, when we start seeing these regulars in the ER, we come up with a care plan. But thankfully we currently have clinicians that write a 3-4-day supply at the most. They do not give a 30-day supply with refills.

Methamphetamine Use

All of the groups reported a noticeable recent uptick in methamphetamine use, which the law enforcement officers attributed to the increasing difficulty in obtaining opioids. Methamphetamine is cheaper and easier to access, they noted repeatedly. It and other illicit substances, including black tar heroin, come into the U.S. from Mexico. Atlanta is a known methamphetamine distribution hub for the Southeast. The officers also noted the recent scarcity of methamphetamine labs.

> Making methamphetamine is not as big of an issue as it used to be. It has dropped significantly because it's just easier and more economical to just go to Atlanta and purchase it there and bring it back. It's being brought in from Mexico and being transported – Atlanta is a hub.

Another officer said users would rather “be safe and go to Atlanta.” A narcotics officer from a different group confirmed that methamphetamine is a big problem in their community as well. “Methamphetamine is a problem. Opioids are a problem in breakups of families, but definitely methamphetamines is the bigger problem.” A grandmother raising her grandchildren due to their parents’ substance use (methamphetamine) agreed, saying “methamphetamine, in my opinion, is the biggest problem in our county.”

Another group confirmed methamphetamines as the new 'drug of choice’ for opioid users, saying, “Methamphetamine is cheap and easy. Where do you go when things get difficult and expensive? You turn to what is cheap and easy.” Another officer clarified that though preferences have changed, substance abuse rates have not decreased:

> I can tell you what we're dealing with on the side of the road every day. Where we were getting handfuls of pills and all this other stuff freely, now it's mostly methamphetamine. We still have other problems, but methamphetamine is definitely the biggest problem at the moment. New restrictions helped solve the opioid problem, but has created a much bigger problem. By far, methamphetamine is the number one issue and number one problem in our facility right now and the drug of choice that we are seeing.

The officers described distinctly different interactions with opioids vs. methamphetamine users. The narcotics officer said:

> When using opioids, typically they are lazy and they don’t do anything—they are in and out; with methamphetamine, they are what we call twitters. They are up 24/7 and a lot more prone to stealing, tearing stuff up, doing a lot of weird, weird stuff. Then when law enforcement intervenes, with people on methamphetamine . . . recently we had a guy that

was probably 160 pounds. He was lifting me and another officer up, so it definitely affects the body very differently between the two drugs (opioids vs. methamphetamine).

An officer in a separate group expressed concern about mental health clients and methamphetamine use:

> We have our normal mental health clientele that find some way to self-medicate and now they're self-medicating with methamphetamine. They're already difficult to deal with and then with this—it's all worse. Somehow [they get sent to] our facility . . . We are not a mental health facility, so when we bring them in and their mind's altered even more. . . .

This officer explained that years ago EMS would respond and handle calls, but now they wait until law enforcement arrives, to deal with increased meth-related volatility:

> There are probably mind-altered issues they are having to deal with. So, they wait for law enforcement to get on the scene because they can't deal with it by themselves. Back when it was just pills, they were medicated out, they were very easy to deal with. But now, with methamphetamine, they are not. They're more difficult to deal with so they wait for us to get there. That's the most recent issue.

All four groups reported major issues with methamphetamine use. One officer connected opioid-treated workplace injuries with this 'flip.' "They [are] taking opioids and all relaxed or zoned out, but then in order to go to work they pop methamphetamine. They do methamphetamine to wake up by putting it in their coffee." When the facilitator asked if this represented co-use, the officer responded, "Yes, because they are taking one while they are at home to take them down (opiates), then they take methamphetamine so they can get up." In another county, an officer responded that substance use issues in families is definitely geared

more towards methamphetamine abuse problems (compared to alcohol and other substances). “I work with DFACS a lot and get flooded with referrals. Ninety percent of the time these calls involve methamphetamine, because the price for methamphetamine has dramatically decreased.” When asked to elaborate on the decrease in cost, he explained:

> Mexico is sending the (methamphetamine) oil to the United States where we have conversion labs which convert mass quantities, resulting in flooding the U.S. black market. With methamphetamine, the prices are going down compared to five years ago, when you may have bought an ounce of meth for $800: I've seen it as low as $150.

When asked to describe the related crime, the officer said that they see a lot of petty theft, as people steal and sell everything to support their addiction.

> They lose sight of their family. It’s a very powerful drug and they’ll do anything to support the habit; they stop working and it completely takes over. Since it is so easy to access, it is hard for people to beat the addiction when it is literally in their face all day long. An endless cycle. I interview people and that's what they go after. They want to be as close to death as possible . . . You put that out there, the word that this dealer has three bodies linked to him, then the people who are using methamphetamine are going to go to him because they want the strongest stuff possible.

The grandmother agreed and stated, “I got my grandchildren that I adopted, my two boys, 15 years ago due to birth parents being addicted to methamphetamine.” The BHR (former DFACS employee) described methamphetamine as being very prevalent. “I mean, it is everywhere.” The narcotics officer agreed: "It’s just so easy to bump into people, when the county is so, so small, that it’s hard to actually get away from it. Not only with it being out there

on every corner, but anyplace, anywhere you go into, there's methamphetamine." The nursing supervisor expressed concern over the growing pattern of grandparents, and even great-grandparents, raising their grandchildren due to substance misuse.

> We are even seeing great-grandparents raising grandchildren. Parents are just out, not there, a lot of times on methamphetamine or something . . . So, the grandparents are getting kids in for their appointments and vaccinations to keep DFACS from taking [them].

Education

Education was identified 53 times among the four groups in a variety of ways. Educating children, parents, and the community at large were all emphasized as key components to address in prevention efforts. The Choosing Health Activities and Methods Promoting Safety (CHAMPS) program for 5th graders is offered in all four counties, and addresses substance use and a variety of prevention-related topics.

One police officer explained their prevention messaging:

> We do a lot of drug-free advertising with any kind of material that the Sheriff's Office puts out. The majority of it has some logo about not using drugs, 'living drug-free' print materials. I'd say that is probably the biggest. And then we have Red Ribbon Week . . . annually. We have 9th graders every year for the teen maze.

Red Ribbon Week is an alcohol, tobacco, and drug and violence prevention awareness campaign each October (Campaign, 2020). A teen maze is an interactive prevention program designed to help teens face choices and consequences of alcohol and drug use and other risky behaviors. The officer explained that people are often hesitant to seek education about substance misuse. "Sometimes they don't want to reach out and let us educate them. They are blinded until

something happens. By then, it is too late." When the facilitator asked the group if anyone had anything else to add about prevention efforts, a community organization staff member (younger African-American female) said:

> I have something to add about the programs at the high school. I feel like there should be a program for kids of that age because you see a lot more drug use by children that are in high school. And they're feeling like it is cool to use drugs—or drink, or pop pills, or whatever. So, I feel like that should be the number one thing on the list.

A state agency case worker (DJJ) described one situation that stood out for her:

> [A student at the high school] was a baseball player and he wanted to go to Clemson on scholarship. He was on probation. I usually ask kids, 'why do you do drugs?' Some of them will tell you 'It calms me down. It helps me get through the day.' He told me every kid in this city does drugs. And 'If I don't do marijuana, I'm not going to have any friends.'

Parental education was suggested nine times in the groups. A mental health counselor and parent educator offered his perspective:

> I really encourage parents to go back and study lifestyle-related problems as a model for discussion with their kids versus moral failing. Our laws and all are mostly based on moral failing. I hope that the opioid attitude can help us shift the moral failing attitude.

This participant emphasized how attitudes and understanding around opioid addiction have helped modify cultural response to substance misuse, by treating opioid addiction as a health problem versus a moral failing. He also explained his theory that children are being treated as adults—that their intelligence is confused with maturity.

> The intelligence of these children fools us into thinking they can handle more than they can. And we dump information on them. We assume they know what we are talking about. These are the cornerstones of my parenting class. We tell them too much. We don't really figure out what they are trying to ask us because they may ask,' what are you doing Saturday,' and they don't care what I am doing Saturday. They actually need something. The response to 'what are you doing Saturday' is 'what do you need?,' not explaining what I am doing Saturday, because no one cares.

Another group highlighted that parents are unaware or in denial that their children are involved in substance misuse. One of the police officers said, "It's amazing. People say, oh no, my child doesn't do it. But come ride with me from 12 midnight to 5 am and I will show you what your kid does." The mental health counselor/parent educator described adults treating children as adults. "We act as if they (children) are all grown up and they have zero tools to deal with the things that we dump on their heads." He explained the importance of teaching parents what is appropriate to share with children and was is not, helping them better grasp the difference between intelligence and maturity in adolescents and young adults.

A pharmacist expressed frustration with how best to explain the reality to those with means/influence to act on these issues, and how to mobilize them. "I don't know how to get the resources to them or how you let those families know and show it to them. In a way that makes them want to help." A juvenile justice case manager explained that she often sees parents who balk at addressing substance use problems, whether it is their children's use, or their own.

> I think the parents are resistant. We get kids who get supervision, and they are like, 'it's no big deal. It's a one-time thing.' And, sometimes it's no big deal because the parents are

> [abusing]. I mean, how are you going to get onto a kid for using marijuana when you are sitting there doing it in front of them?

Another participant who works with a local youth program stated, "They don't know what healthy is. They don't know what positive looks like." A social worker responded, "They don't hear it at home."

Parents are described as hesitant to seek help with childrens' substance use issues to avoid undesirable consequences. The grandmother explains:

> You'll find families who don't seek [because] they don't want law enforcement involved, don't want to ruin the child's life, [or] don't want them to go to jail. They don't realize that there are treatment options they can access without causing them legal issues.

One of the participants shared:

> I was a drug user years ago. I was a foster kid. I can tell you that a lot of times the drug use comes from not feeling good enough, coming from the homes of parents that don't care, so you use to numb yourself. Because I see all of these adults acting just like their kids, their kids acting just like their mom and dad, following the same suit.

Environment

The role of the environment, addressed 48 times during the course of the focus groups, is clearly thought to have tremendous influence on substance misuse, driving cultural norms and expectations. Some of the participants' statements on the importance of environment are summarized below. An unhealthy home environment, mentioned 14 times across the groups, was also a major contributing factor. Witnessing siblings, parents, and even grandparents making unhealthy choices ultimately convinces a child that substance misuse is the norm versus the

exception. Generational substance misuse, intergenerational poverty, and cultural norms which promote substance misuse were cited repeatedly as key factors affecting the home environment.

A narcotics officer said, “Methamphetamine reaches a huge circle and everyone does it.” The grandmother expressed concern over things her grandsons see and hear at school:

> They hear so much going on in the school system—syringes and needles laying all over the house. You go to school—you got things going on. Simple things like going to the bathroom—if it's going to go down, it's going down in the bathroom.

The marriage and family counselor discussed the environment affecting recovery efforts:

> We get them out of that environment. I do parenting classes with the jail, hundreds of people over the course of a few months. Part of the process when you are trying to get back with your kids is . . . to have a recovery plan. And if whoever picks them up from jail and they offer to use, I tell them to get out of the car and run. If you go back home [to] the same world that you walked out of, then you are living in the same world. I just think that, conceptually, there needs to be some kind of relocation piece.

When asked about barriers to treatment, the counselor emphasized the need for a new environment:

> I really do think that people do go to the familiar. When we are stressed, we seek what is familiar. [In my experience,] those who are really successful in their recovery usually go someplace else to get treated. They are in Florida, Texas, really separated from the network. We have to create a new familiar.

Another police officer described the view of prescription drugs as medicine.

> Like an aspirin back in the day, it’s just something we take—it’s only beneficial to us. There are no ill effects, so the more I take, it’s better for me. Rather than [taking more]

> can cause an issue. So, it's just popped like candy if it can be. And then it just progresses as times goes along.

The school system counselor referred to mainstream media's light treatment of substance abuse. "[Students] see the movies, and they see TV, and advertisements, and they see people drinking and smoking, just like the marijuana in the movies has just increased so much." A police officer agreed, saying, "TV. Every channel you turn on it's like it's OK to do drugs." The school system counselor also pointed out that pharmaceutical companies place advertisements. Vaping, juuling, and using marijuana-laced pods came up in each group." The school counselor stated, "So all of these things combined [have] lowered our kids' standards and their opinion. It feels to them like less drugs, even though they are drugs."

The behavior health counselor/former DFACS worker described broken homes resulting from substance misuse:

> We have had several children removed as well in the last two years due to substance abuse—and it's real hard on the children. They are not sheltered from what's going on in their homes. They're coming in and they're telling the guidance counselors and the teachers what they're seeing at home. For them it's just commonplace. It's generational so these kids are growing up with the grandparents. I worked for DFCS for two years before what I do now and we see that children are growing up and suffering from the parents' substance abuse. We're just seeing an increase in broken homes.

Awareness of the Problem

Participants reported a wide range of general awareness about the seriousness of the opioid problem. One DJJ employee, an older woman, indicated that she thinks realization is growing due to recent national attention, including lawsuits involving pharmaceutical companies

who manufacture and distribute opioids. Several participants said that some people do not realize they have an addiction, or may be unwilling to admit it. Another participant described herself as being completely naive, having heard about pharm parties and thinking they were 'farm parties.'

A school social worker described parents' unwillingness to admit to problems with opioids:

> As a school social worker, I've had lots of painful, very uncomfortable conversations with people about a variety of issues . . . including abuse, neglect, hygiene, the condition of the home, alcoholism, and addiction to marijuana. But I feel like I've never had an honest conversation with a parent about . . . an opioid addiction. I don't really know why. It's justified. I think they know they are addicted.

The DJJ employee agreed, saying, "We've had little kids tell us, I couldn't get mama to wake up to get us to school." The school social worker said, "Yes, we hear that." Another participant explained that she feels like the parent substance misuse is contributing to grandparents raising their grandchildren. "I think that is why we have grandparents stepping in. Parents are passed out on the couch because they've taken a handful of something." The DJJ representative agreed, saying, "And we as agencies are just struggling to find somebody who can provide some supervision for this youth."

Others described a sense of apathy or helplessness regarding prescription drug and substance misuse. One police officer said:

> It feels like everybody knows that we've got a problem. They just accept it. Everybody is doing it and they just don't consider it a drug. Let's take marijuana as an example. I told a guy, I found dope in your car. And he said there's just pot in there. He didn't look at marijuana as a drug. It's just pot. It's a plant. Well, it's the same thing with any kind of

opiates. It's not anything to anybody. It's not been made as something I need to be careful of when I take it. It's just like drinking water.

One county's participants described the 'invisibility' of opioid abuse. "Unless you have somebody OD, you don't really see or hear about it in this area," said a school counselor. A police officer indicated that "methamphetamine and pills are our two things here in this county—and marijuana. Crack and cocaine are very minimal these days. Marijuana, everybody smokes marijuana. But pills and meth, that's where it's at**.**"

A county health coalition member suggested speakers and education programs to help bring awareness to substance misuse. The DJJ official identified a lack of local treatment options: one local state-run office "provide[s] mental health [services], but with specific issues like substance abuse or sex offender counseling, they do not provide those types of services, so [they] usually refer clients needing those services to Athens." The grandmother indicated that information about the availability of resources was not very well known. A police officer described the treatment of substance misuse offenders in the judicial system:

> They can sometimes manipulate the state court system . . . if you are in on a misdemeanor charge and part of your bond is that you complete a six- to twelve-month drug program. But that is done through state court. It's almost at a 50/50, volunteer-type situation, compared to superior court where they are mandated. They put them down in Savannah, GA. Or one of the residential treatments where you've got to stay or you're going to come back and go to prison. But you look apart from state or superior court—nothing."

This officer and the pharmacist agreed that opioid addiction, overdose, and or treatment 'has not affected the right person yet,' indicating that the county's more influential residents have not yet experienced the problem firsthand.

Intervention

Among the many interventions addressed in the study, drug court came up most often among the groups. One participant stated that "Drug court is an extensive add-on to probation. [Judges] want to be as lenient as they possibly can to encourage success. [There are] incentives to do good and do right." The narcotics officer explained:

> People get put in drug court, and they take part for however long depending on if they get any sanctions, and they go through that program . . . People go to church, and play church, so they are just playing the system.

All of the law enforcement officers seemed skeptical of drug court's efficacy, saying individual outcomes depend on an individual's willingness to truly change and succeed. The family counselor seemed to agree with this general consensus, saying "I think that is part of drug court failure. I don't know if we are conspicuous enough in our descriptions of a new familiar." Financial hardship was also mentioned as a barrier to recovery. Participants explained that it requires a great deal of financial family support to attend required sessions and pay court fines.

The behavioral health counselor (former DFACS employee) addressed the importance of integrating a support system into recovery efforts:

> We try to build a healthy support system, so . . . if they run into someone or are triggered by something, they have someone to call. We have counselors that deal with overcoming addiction, and counselors they see on a weekly basis to help with depression or other conditions.

The school social worker articulated concern about the kinds of things students are routinely exposed to, especially those in urban areas. “If we go to inner city Atlanta, Fulton Co. Schools, those kids are so much more worldly more than me, and I am almost 50. Things that kids are faced with are things that we never could have imagined even understanding.”

The narcotics officer described the cycle he witnesses:

> They know it is like an endless cycle. Many go to drug court and there's a percentage of them that will succeed in it, but due to the fact of how illicit substances are so easy to access, it's hard for people to beat the addiction . . . Jobwise, you know they don't have the best of jobs, so they get a job and everybody on their job is using. I just interviewed a guy last night (he was clean for I think two years) saying the people he was working with were doing it every single day. They kept on telling on him to come use. Finally, he had a bad day and now he's back on the vicious cycle.

Another officer echoed this, saying, “Someone from here that goes to participate in the program here still has their same network of users when they are done.”

The narcotics officer emphasized the importance of peer groups and family support when entering recovery:

> A huge thing is that when people do get ready to quit, they get clean and back out on the streets. Their friend hits them up, and if they don’t stop hanging out with people they know then they’re not clean. If you are clean, you’ve got to stay with people who are clean. It is the same with families. If one gets on it, the other one then follows.

Restricted Access

The groups offered extensive feedback on recent restrictions impacting access to opioids, most notably since 2018. In response to a participant with chronic back pain told to take Advil ™

by her Athens doctor, one police officer said, "It's hard for you to get something that you need." Local hospital employees (nurse, EMT) described a more restrictive ER environment since PDMP implementation, with providers giving a two- to four-day supply, compared to the 30-day supply, with refills, common before. Another officer depicted the flip to methamphetamine:

> I think the prescription issue with the pain doctors is not as widespread as it was. It has been somewhat controlled, but it's pushed in a different direction. Now we have more of a methamphetamine problem. There're still pills here, but it is not as prevalent as the methamphetamine use.

Another officer agreed that doctors have improved opioid prescribing patterns. "I think they are being held accountable and it's trickling down," he said, but noted that users seem to have turned to methamphetamines. "There's still some abuse of medications [but] meth is probably the biggest drug we see abused here right now."

A pharmacist explained how DEA restriction on wholesalers impacted their local ability to distribute opioids:

> From a pharmacy standpoint, about five years ago the DEA cracked down on the wholesalers—on the company that we order the drugs from. They just basically capped how much Oxycodone ™ or hydrocodone that you could buy. Our wholesaler came to us and said we could only order, say, 9000 tablets a month. That has certainly limited us as far as who we fill for.

The law enforcement participants credited the PDMP with stemming the flow of opioids, saying, "That registry is what slowed them down." Both of the pharmacists agreed that the registry has

effectively decreased the volume of opioids and other controlled substances prescribed. One pharmacist said:

> We were seeing doctors write for 180-200 of these tablets in a month. Those are the ones we want to stay away from. And now, if we see a prescription for 120 pills, that is about the limit. That is when it is taken four times a day; [this is] atypical. Usually it is 60 to 90 tablets for 30 days. And, at least in our eyes, that is not a 'big' supply, particularly if they are coming every 30 days for refills.

One pharmacist acknowledged seeing "a lot of pressure put on the providers to not prescribe— and I think it was coming down from the DEA."

This pharmacist also addressed impacts on local providers:

> Regarding the crackdown from the DEA and how it affects the truly needy patient . . .the restrictions have been difficult. We have a provider in town who technically could have been overprescribing a little bit but [was] not grossly negligent. He's a dentist. And he was so afraid recently from the crackdown that he's backed off from giving [a tooth extraction patient] 12 pills to giving them four pills. He came to me and said, 'oh my gosh. I've got to do something,' and I said 'well, you know this is probably a good thing.'

She elaborated that this dentist's patients "would come from all over and get a tooth pulled just to get 12 hydrocodone. They end up with no teeth to get less than 100 pills." The pharmacist also mentioned people with chronic conditions, like degenerative disk disease, or patients just out of knee surgery, who may get an opioid prescription requiring prior approval, which takes up to 48 hours. A pharmacist said:

> We all understand the rules. And the physicians, while aggravated, I think they also understand. The PDMP website has been very beneficial . . . Before, the only way we

> could track people was . . . if it came up too early, then their insurance provider would alert us. With this new website, which is for Georgia, the physicians are supposed to check it before they write the prescription. And we have some that are very, very good at doing that. And they'll write 'PDMP checked' on the actual prescription. So, we know they've looked at it . . . And it shows every narcotic, every drug store they've been to, and [law enforcement] look at it too.

This pharmacist continued that they now see very few prescriptions for more than a dozen pain pills (from ER docs), just enough to get the patient through the next three days until they can see their family doctor.

Limitations

There are a number of limitations to this qualitative study of rural Georgia's opioid crisis. Coronavirus arrived in the U.S. just after the focus groups were held, affecting the project's timeline and creating unique challenges in analyzing the data. Related to this, the data represent the pre-COVID19 reality in these communities. Many of the challenges presented here have likely been exacerbated due to the pandemic.

Additionally, there are methodological limitations to the focus group approach. Groupthink can result when people in a group conform to one another's opinions. Selection error may also be a source of bias, as these participants were invited based on their perspective and area of expertise. Study results may be difficult to generalize to the larger population: participants were self-selected, and qualitative research generally has the challenge of low external validity. However, the internal validity is high, and, when used in conjunction with secondary data, a robust understanding of the challenges and barriers to addressing the opioid epidemic should emerge.

Conclusion

This study provided an in-depth investigation of the current reality surrounding the opioid epidemic in four rural Georgia counties. The findings suggest an array of challenges that must be addressed in order to effectively combat this health and societal crisis. Georgia's electronic prescription drug monitoring program has been effective in decreasing opioid prescribing and making it more difficult for individuals to obtain prescription opioids. However, the negative externality, or unintended consequence, appears to be substitution to illicit substance use—particularly heroin and methamphetamine. These substances, including fentanyl, carfentanyl, and "meth," are often more deadly than prescription opioids, and are linked to significant increases in deaths and drug overdoses across the country in the last four years.

While access to and availability of opioid prescriptions have significantly decreased due to improved physician prescribing behaviors and PDMP implementation, the direct increase in methamphetamine use suggested across all four counties is distressing. The increase in the supply of illicit substances, and the decreasing cost of these black-market drugs, seem to have offset the decrease in supply of prescription opioids, effectively eliminating any community health gains achieved by the current policy and medical practice landscape.

Education-based substance use prevention efforts need to start early and engage the whole family, especially parents and guardians. Interventions must address the shortcomings of judicial system policies and focus more directly on providing mental health support and other resources lacking in rural communities. For those in recovery, lasting environmental change is essential, including a geographic separation from past influences as well as a break from social media applications and platforms such as Facebook, often a nexus for users and their dealers

after rehabilitation. Environmental factors are critical—communities of support and peer coaches can provide the needed socialization and support to remain in recovery.

Future research is needed to better understand the evolving opioid epidemic and substance misuse in rural communities across the United States, especially given the stark increase in stress, isolation, and behavioral health challenges directly resulting from the pandemic. The empirical impact of COVID-19 isolation and quarantine measures on substance misuse remains to be seen. The National Institute of Drug Abuse has already provided evidence showing that the effects of the pandemic have erased many of the recent gains in U.S. behavioral health outcomes, including, but not limited to, drug-related deaths and drug overdoses. One testable hypothesis poses that heightened anxiety, depression, and uncertainty will compound the stress faced by everyone, creating additional burdens for those in need of treatment. These effects will be exacerbated by the worst economic crisis and job loss rate that our country has ever seen. Strong support systems are essential for all individuals and families, but especially for those with substance use disorder. The pandemic demands that much of this support be delivered virtually or in a changed environment, relative to the norms of face-to-face interactions and large group gatherings. Policymakers and treatment providers must continuously examine the latest evidence available and mindfully consider the most suitable path forward, while relying on community input in order to leverage culturally-appropriate local, state, and federal resources for rural settings. Innovative, relevant, and flexible interventions which recognize the complex nature of substance misuse are essential to effectively combat the opioid epidemic.

References

American Public Health Association. (2015). Prevention and intervention strategies to decrease misuse of prescription pain medication. Accessed November 11, 2019. https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2015/12/08/15/11/prevention-and-intervention-strategies-to-decrease-misuse-of-prescription-pain-medication

Bender, A., Robert, M., Quan, N. S., Klein, E. M., & Perkins, M. M. (2019). Barriers to care for older adults in medication-assisted treatment for opioid use disorder. *Innovation in Aging, 3*(Supplement_1), S141-S141. doi:10.1093/geroni/igz038.509 %J Innovation in Aging

Browne, T., Priester, M. A., Clone, S., Iachini, A., DeHart, D., & Hock, R. (2016). Barriers and facilitators to substance use treatment in the rural south: a qualitative study. *32*(1), 92-101. doi:10.1111/jrh.12129

Cicero, T. J., Kurtz, S.P., Surratt, H.L., et al. (2011). Multiple determinants of specific modes of prescription opioid diversion. *Journal Drug Issues, 41*, 283-304. doi: 10.1177/002204261104100207

Dasgupta, N., Beletsky, L., & Ciccarone, D. (2018). Opioid crisis: no easy fix to its social and economic determinants. *Am J Public Health, 108*(2), 182-186. doi:10.2105/ajph.2017.304187

Douthit, N., Kiv, S., Dwolatzky, T., Biswas, S. (2015). Exposing some important barriers to health care access in the rural USA. *Public Health, 129*(6), 611-620. doi:https://doi.org/10.1016/j.puhe.2015.04.001

Dube, S. R., Felitti, V. J., Dong, M., Chapman, D. P., Giles, W. H., & Anda, R. F. (2003). Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: the

adverse childhood experiences study. *Pediatrics, 111*(3), 564-572. doi:10.1542/peds.111.3.564

Dunlap, E., Golub, A., & Johnson, B.D. (2006). The severely-distressed African-American family in the crack era: empowerment is not enough. *Journal of Sociology and Social Welfare*. 33 (1), 115-139. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2565489/

Economic Research Service, United States Department of Agriculture. (2019a). County level data sets; poverty. Accessed August 22, 2020. http://data.ers.usda.gov/reports.aspx?ID=17826

Economic Research Service, United States Department of Agriculture. (2019b). County level data sets; completing high school only. Accessed August 22, 2020. https://data.ers.usda.gov/reports.aspx?ID=17829

Felbab-Brown, V. (2020). Fentanyl and geopolitics: controlling opioid supply from China, The opioid crisis in America: Domestic and international dimensions. Brookings Institution Foreign Policy and Global Economy & Development programs, Washington, D.C. Accessed July 6, 2020. https://www.brookings.edu/research/fentanyl-and-geopolitics-controlling-opioid-supply-from-china/

Ford, J. A., Pomykacz, C., Szalewski, A., Esteban McCabe, S., & Schepis, T. S. (2019). Friends and relatives as sources of prescription opioids for misuse among young adults: The significance of physician source and race/ethnic differences. *Subst Abus*, 1-8. doi:10.1080/08897077.2019.1635955

Garcia, M.C., Heilig, C.M., Lee, S.H. et al. (2019). Opioid prescribing rates in nonmetropolitan and metropolitan counties among primary care providers using an electronic health record system – United States, 2014 – 2017. *Morbidity Mortality Weekly Report*, 2019

(68). Accessed November 15, 2019. http://dx.doi.org/10.15585/mmwr.mm6802a1external

Georgia Department of Public Health. (2019). Opioid overdose surveillance 2018 preliminary report; 2017 overdose data.

Goldsworthy, R., Schwartz, N., & Mayhorn, C. (2008). Beyond abuse and exposure: framing the impact of prescription medication sharing. *Am J Public Health, 98*, 1115-1121. doi:https://doi.org/10.2105/AJPH.2007.123257 https://dph.georgia.gov/search?search=245%25&sm_site_name=dph

Hunt, M.R. (2009). Strengths and challenges in the use of interpretive description: reflections arising from a study of the moral experience of health professionals in humanitarian work. *Qualitative Health Research.* 19 (9), 1284-1292. doi:10.1177/1049732309344612

Kao, K. (2019). Researchers get 1.4 million to combat opioid crisis, University of Georgia Newswire. https://news.uga.edu/researchers-grant-combat-opioid-crisis/

Keyes, K. M., Cerdá, M., Brady, J. E., Havens, J. R., & Galea, S. (2014). Understanding the rural-urban differences in nonmedical prescription opioid use and abuse in the United States. *Am J Public Health, 104*(2), e52-e59. doi:10.2105/AJPH.2013.301709

Korownyk, C., Perry, D., Ton, J., Kolber, M., Garrison, S., Thomas, B., Allan, G.M., Dugré, N., Finley, C., Ting, R., Yang, P.R., Vandermeer, B. & Lindblad, A. (2019). Opioid use disorder in primary care. *Canadian Family Physician*, May 2019, 65(5), e194-e206.

Lander L., Chiasson-Downs K., Andrew M., Rader G., Dohar S., & Waibogha, K. (2018). Yoga as an Adjunctive Intervention to Medication-Assisted Treatment with Buprenorphine+Naloxone. *Journal of Addiction Research & Therapy*, 9(1): 354. doi: 10.4172/2155-6105.1000354

Meit, M., Knudson, A., Gilbert, T., Yu, A., Tanenbaum, E., Ormson, E., . . . Popat, S. (2014). The 2014 Update of the Rural-Urban Chartbook. *Rural Health Reform Policy Research Center*, 153.

Miller, A. (2019). Fighting the doctor shortage in rural Georgia. Georgia Health News. December 2, 2019. Accessed August 27, 2020. http://www.georgiahealthnews.com/2019/12/fighting-doctor-shortage-rural-georgia/

Morse, J.M. & Chung, S.E. (2003). Toward holism: the significance of methodological pluralism. *International Journal of Qualitative Methods.* 13-20. Accessed July 30, 2020. https://doi.org/10.1177/160940690300200302

Morse, J.M. (1994). *Designing funded qualitative research*. Handbook of qualitative research, 2nd edition. Thousand Oaks, CA. Sage, 2. Accessed July 30, 2020

National Institute on Drug Abuse. (2019). Georgia Opioid Summary, National Institute on Drug Abuse. *Opioid Summaries by State, Georgia*. Access date: October 21, 2019. doi:https://www.drugabuse.gov/drugs-abuse/opioids/opioid-summaries-by-state/georgia-opioid-summary

Paczkowski, C. (2019). Researchers to study medical cannabis and chronic pain, UGA Today. Accessed November 22, 2019. https://news.uga.edu/researchers-to-study-medical-cannabis-and-chronic-pain/

Palombi, L., Olivarez, M., Bennett, L., & Hawthorne, A. N. (2019). Community Forums to Address the Opioid Crisis: An Effective Grassroots Approach to Rural Community Engagement. *Substance Abuse: Research and Treatment, 13*. doi:doi:10.1177/1178221819827595

Sandelowski, M. & Barroso, J. (2002). Finding the findings in qualitative studies. *Journal of nursing scholarship.* 34 (3), 213-219. Accessed July 29, 2020. https://doi.org/10.1111/j.1547-5069.2002.00213.x

Skinner, L., Staiger, D., Auerbach, D. I., Buerhaus, P.I. (2019). Implications of an Aging Rural Physician Workforce. *New England Journal of Medicine*. 381 (4), 299 – 301. DOI: 10.1056/NEJMp1900808

Substance Abuse and Mental Health Services Administration. (2020). Methadone. Access Date: August 22, 2020 https://www.samhsa.gov/medication-assisted-treatment/medications-counseling-related-conditions/methadone

Substance Abuse Research Alliance. (2017). Prescription Opioids and Heroin Epidemic in Georgia, White Paper, Georgia Prevention Project. Access Date: November 18, 2019. https://static1.squarespace.com/static/5a57a723bce1767362f84141/t/5b6b0e02758d46fd95897194/1533742624569/SARA_WP_Complete_v3_revEM.pdf

Sun E., Moshfegh J., Rishel, C.A., Cook, C.E., Goode A.P., & George, S.Z. (2018). Association of Early Physical Therapy With Long-term Opioid Use Among Opioid-Naive Patients With Musculoskeletal Pain. *JAMA Netw Open.* 2018;1(8):e185909. doi:10.1001/jamanetworkopen.2018.5909

Thorne, S., Reimer, K.S., MacDonald-Emes, J. (1997). Interpretive description: A non-categorical qualitative alternative for developing nursing knowledge. *Research in Nursing and Health,* 2, 169-177. Accessed July 30, 3030. https://onlinelibrary.wiley.com/doi/abs/10.1002/(SICI)1098-240X(199704)20:2%3C169::AID-NUR9%3E3.0.CO;2-I

United States Census Bureau (2020). Quick Facts, Elbert County, Georgia. Accessed July 30, 2020. https://www.census.gov/quickfacts/elbertcountygeorgia

United States Census Bureau (2020). Quick Facts, Lumpkin County, Georgia. Accessed July 30, 2020. https://www.census.gov/quickfacts/lumpkincountygeorgia

United States Census Bureau (2020). Quick Facts, Tattnall County, Georgia. Accessed July 30, 2020. https://www.census.gov/quickfacts/tattnallcountygeorgia

United States Census Bureau (2020). Quick Facts, Washington County, Georgia. Accessed July 30, 2020. https://www.census.gov/quickfacts/washingtoncountygeorgia

United States Department of Health and Human Services (2016). Facing addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health. Accessed November 25, 2019. https://addiction.surgeongeneral.gov/sites/default/files/surgeon-generals-report.pdf

United States Department of Health and Human Services Administration for Children and Families. (2020). Children's Bureau Child Welfare Outcomes State Data – Georgia. Accessed August 23, 2020. https://cwoutcomes.acf.hhs.gov

United States National Library of Medicine. (2020). Substance Use Disorder. *Medline Plus*. Accessed October 22, 2020. https://medlineplus.gov/ency/article/001522.htm

Appendix 2A: Focus Group Recruitment Flyer

Are you concerned about opioid misuse in your county?

We need volunteers for a research study to learn more about opioid misuse and local resources in your county. The study will be conducted by researchers at the University of Georgia. The principal investigator is Dr. Diane Bales, Associate Professor of Human Development and Family Science.

What is involved?

- You will take part in a focus group meeting.
- The focus group will take approximately 45 to 60 minutes.
- You will not be paid.

You may be eligible if you work in Elbert County as a:

- Medical professional (doctor, nurse, pharmacist, EMT, etc.)
- Education professional (teacher, school counselor, principal, etc.)
- Community outreach professional (Family Connection member, nonprofit leader, etc.)
- Public services professional (First Responder, police officer, fire fighter, commissioner, etc.)
- Social services professional (counselor, therapist, social worker, DFCS employee, etc.)

Please call 706-283-2037 or email uge1105@uga.edu to get more information or to register.

Appendix 2B: Focus Group Interview Guide and Script

Rural Health and Safety Grant Focus Group

Semi-structured Interview Guide/Script

Introduction: Thank you for taking the time to meet with me today. My name is name is _____, and I am researcher involved with this study. We are talking with physicians, pharmacists, social workers, educators, EMTs/first responders, and law enforcement personnel about community attitudes, needs and priorities concerning opioid misuse. We are doing this so we can gain information that can help inform future interventions. I also want to make it clear that even though we are recording this conversation, everything we talk about today will remain completely confidential.

Purpose of the Study: We are asking you to take part in a research study. The purpose of this study is to explore issues concerning opioid use and misuse in your county, and to identify resources within and close to your county that could help residents struggling with opioid misuse. I am asking you to participate in this research because you are a health care professional, social service professional, or other community leader in your county.

Study Procedures: The focus group will last about 45 to 60 minutes, and will be audio-recorded. During the focus group, you will be asked questions about your perceptions of opioid misuse in your county, substance abuse prevention efforts, treatment options and resources, and barriers to accessing substance abuse treatment in your county.

Risks and discomforts: We do not anticipate any risks from participating in this research. There is a possibility that some participants might feel uncomfortable with some of the issues discussed during the focus group.

Benefits: There will be no direct benefits to you for participating in this study. However, the information obtained from this study may help to develop interventions to help prevent opioid misuse, and to help people struggling with substance abuse find resources for treatment and support.

Incentives for participation: There is no direct cost to you for participating in this study. There is no compensation available for completing this study.

Audio/Video Recording: The focus group session will be audio recorded. Transcripts will be produced from the audio recording. The focus group is being audio recorded in order to capture information shared during the session. This information will be analyzed by the study team. Only members of the study team will have access to the audio recording and transcript. The audio recording will be destroyed after the transcripts are created.

Privacy/Confidentiality: Every effort will be taken to protect your identity. We will not ask for your name or address during the audio recording of the focus group. All study material (including audio recordings and transcripts) will be secured in a locked filing cabinet or computer, which can only be accessed by a study researcher. Participants will be identified in the transcript only by a pseudonym. Even though the investigator will emphasize to all participants that comments made during the focus group session should be kept confidential, it is possible that participants may repeat comments outside of the group at some time in the future. Researchers will not release identifiable results of the study to anyone other than individuals

working on the project without your written consent, unless required by law. Results of this study will be reported as summaries in which you cannot be identified.

Taking part is voluntary: Your participation in this research study is voluntary. You can refuse to participate or stop taking part at any time without giving any reason. If you decide to stop or withdraw from the study, the information and data collected from you up to the point of your withdrawal will be kept as part of the study and may continue to be analyzed.

Funding Source: This study is funded by a two-year federal grant from the United States Department of Agriculture through the Rural Health and Safety Grant Program awarded to the University of Georgia Cooperative Extension to help address the opioid epidemic.

If you have questions: The main researcher conducting this study is Dr. Diane W. Bales, an Associate Professor at the University of Georgia. Please ask any questions you have now. If you have questions later, you may contact Dr. Bales. If you have any questions or concerns regarding your rights as a research participant in this study, you may contact the Institutional Review Board (IRB) Chairperson at 706.542.3199 or irb@uga.edu.

Questions

Ok, to get started I am going to ask you some general questions about the prescription opioid "epidemic."

1. What are the attitudes around opioid use?
    - Probe: Consider stigmas and stereotypes associated with opioid misuse – do you know of colleagues, friends or family members who have struggled with this issue?

Follow up: How open are communitymembers to talking about opioid misuse – including legal prescription use/misuse/illegal distribution/fentanyl (synthetic opioid/heroin), etc.

Next, I would like to ask you some questions about current strategies used to reduce problems associated with prescription opioid use.

2. Describe existing substance use prevention efforts in your community.
    - Probe: Describe those targeting youth ages 10 – 18.

3. Describe the substance use disorder treatment options currently available in your community.
    - Probe: What are the barriers around accessing resources and treatment for substance use disorder?

4. What are the biggest barriers that keep people in the community from accessing treatment? (e.g. Insurance, availability of providers, transportation, cost, language/cultural barriers, accessibility, awareness of services)

5. (Optional: If time allows) Is there anything we haven't covered in this discussion that you think is important?

We really appreciate you taking time out of your busy schedule to do this. It means a lot to us and to the success of this project. If you think of any additional things that you would like to tell us, please feel free to contact us. Thank you. The information you have given us has been very valuable.

Appendix 2C: Codes

Listing of 148 Coded Keywords/phrases generated in Atlas.ti and exported into Microsoft Excel.

Groundedness refers to the number of quotations associated with code name.

Code Name	Groundedness
Ability to afford treatment	10
Access	4
Access through social media	5
Access to illicit substances	15
Alcohol Use	9
Athens as access point for virtually any substance	4
Atlanta to access meth	4
Attitudes toward Opioid use/misuse	23
Availability of Opioids	35
Awareness of the problem	32
Awareness of treatment options	8
CHAMPS	3
Children accessing parent's medications	2
Client administer narcan at pharmacy to someone OD'ing	2
Co-occuring: mental health issues and substance use	6
Co-Use: Alcohol and other susbtances	3
Co-Use: Opioids and other substances	6
Community leaders restless with inaction	3
County economic status	4
Cultural norms promote substance use	15
Cultural norms treat children as adults	5
DEA restrictions	12
Death certificates not showing drug-related cause of death	3
Decrease in opioid misuse	3
DFACS referrals due to substance use	7
Disposal of medications	3
Distance to long term mental health treatment providers	4
Distance to treatment providers	7
Diversion	2
Diversion of opioids	25
Don't know how to mobilize those with means to act on issue	3
Easy Access to legal opioid prescriptions	23
economic opportunity	3
Educating parents	9
Education	3

Code Name	Groundedness
EMS Dispensing Narcan during OD calls	5
Environment promotes use	10
ER Case Management	4
ER Patients	7
Escape from current situation	5
Exposure through friends/others	18
Fentanyl	11
Free narcan	3
Frequency of intergenerational substance use	8
Grandparents raising grandchildren due to substance misuse and/c	15
Hard labor jobs resulting in injuries/chronic pain	3
Heroin availability and cost	8
Incentive to sell drugs: need for income	4
Increase in meth access, decrease in cost	7
Increase in meth imports from Mexico	4
Increase in reports of medication being stolen	4
Input from medical providers needed	2
Insurance limitations	5
Intelligence confused with maturity	8
Intergenerational poverty	4
Intervention: Drug Court	11
Kids measure self worth through social media	3
Kids Stress	5
Lack of activities for youth	3
Lack of local resources	5
Lack of mental health services	11
Lack of transportation	10
Law Enforcement	6
Law enforcement - detox for drug abusers	6
Law enforcement - people hesitant to connect/get educated	1
Law enforcement - positive/helpful	3
Law enforcement - respond to mental health crisis calls	2
Law enforcement: prosecution difficult for opioid diversion	4
Limited treatment options	11
Mainstream media normalize substance use	4
Making meth	5
Marijuana	16
MAT	7
Medication and seniors: home healthcare and hospice	4

Code Name	Groundedness
Medication misuse- ADHD	2
Mental Health Issue: substance misuse	9
mental health service distribution	13
Meth	4
Meth access	5
Meth induced violence/altercations	5
Meth is currently the biggest problem/drug being seen	6
Meth Use	34
Narcan	10
Narcan prescription	6
Narcan. becoming a crutch for users	5
Not affecting affluent	4
Not considered a drug	7
Not taking opioids seriously	5
Online technology increasing access	9
Opioid addicition viewed as health problem	3
Opioid Addiction	7
Opioid induced pharmacy theft	4
opioid related deaths	3
Opioid-induced pharmacy theft	1
Overprescribing	25
pain clinic	5
Pain Management	3
Parents	7
Parents setting bad example	11
Parents taking their child's medication	2
Parents' drug use - opioids or other drug use	14
PDMP	18
PDMP Not Effective	6
Pharmacy client diverting prescriptions	5
Pharmacy hopping	4
Pharmacy response to restrictions	16
Physician Prescribing Behavior	40
Poverty	7
Prescriber Prospective (lacking)	1
Prescription Drop Boxes (proper disposal)	15
Prevalence of meth use	14
Prevention	6
Recovery challenges	13

Code Name	Groundedness
Recovery challenges: financial hardship	5
Red Ribbon Week	1
Relapse: stress response	6
Restricted access of opioids	29
Rural town	22
Self-motivated to stop using illicit substances	6
social media leading to overexposure	7
Social Services Difficult to Access and Navigate	3
Solution: medication take back days	4
Solutions: communication	6
Solutions: community	22
Solutions: education	42
Solutions: new environment	9
Stigma around substance use	3
Stigma in seeking treatment	8
Substance use due to moral failing	4
Support group	5
Teen Maze	10
Transportation for mental health stabilization	3
Treatment challenges: need for after hours access	6
Treatment challenges: parental permission	2
Treatment options	12
Treatment through jail	4
Treatment: counseling	9
Treatment: narcan	3
Unable to pass drug screening for employment	3
Unhealthy home environment	14
Unwillingness to admit to opioid addiction	10
Unwillingness to admit to susbtance use problem	6
Use safe due to rX	6
Vaping	17
Vaping leads to THC	2
Visibility of substance misuse	14
Voluntarily check-in for substance misuse treatment	6
Work-related injuries	3

Appendix 2D: Codes 3-8

Items coded more than two and less than nine times generated in Atlas.ti and exported into Microsoft Excel. Groundedness refers to the number of quotations associated with code name.

Code Name	Groundedness
CHAMPS	3
Co-Use: Alcohol and other susbtances	3
Community leaders restless with inaction	3
Death certificates not showing drug-related cause of death	3
Decrease in opioid misuse	3
Disposal of medications	3
Don't know how to mobilize those with means to act on issue	3
economic opportunity	3
Education	3
Free narcan	3
Hard labor jobs resulting in injuries/chronic pain	3
Kids measure self worth through social media	3
Lack of activities for youth	3
Law enforcement - positive/helpful	3
Opioid addicition viewed as health problem	3
opioid related deaths	3
Pain Management	3
Social Services Difficult to Access and Navigate	3
Stigma around substance use	3
Transportation for mental health stabilization	3
Treatment: narcan	3
Unable to pass drug screening for employment	3
Work-related injuries	3
Access	4
Athens as access point for virtually any substance	4
Atlanta to access meth	4
County economic status	4
Distance to long term mental health treatment providers	4
ER Case Management	4
Incentive to sell drugs: need for income	4
Increase in meth imports from Mexico	4
Increase in reports of medication being stolen	4
Intergenerational poverty	4
Law enforcement: prosecution difficult for opioid diversion	4

Code Name	Groundedness
Mainstream media normalize substance use	4
Medication and seniors: home healthcare and hospice	4
Meth	4
Not affecting affluent	4
Opioid induced pharmacy theft	4
Pharmacy hopping	4
Solution: medication take back days	4
Substance use due to moral failing	4
Treatment through jail	4
Access through social media	5
Cultural norms treat children as adults	5
EMS Dispensing Narcan during OD calls	5
Escape from current situation	5
Insurance limitations	5
Kids Stress	5
Lack of local resources	5
Making meth	5
Meth access	5
Meth induced violence/altercations	5
Narcan. becoming a crutch for users	5
Not taking opioids seriously	5
pain clinic	5
Pharmacy client diverting prescriptions	5
Recovery challenges: financial hardship	5
Support group	5
Co-occuring: mental health issues and substance use	6
Co-Use: Opioids and other substances	6
Law Enforcement	6
Law enforcement - detox for drug abusers	6
Meth is currently the biggest problem/drug being seen	6
Narcan prescription	6
PDMP Not Effective	6
Prevention	6
Relapse: stress response	6
Self-motivated to stop using illicit substances	6
Solutions: communication	6
Treatment challenges: need for after hours access	6
Unwillingness to admit to susbtance use problem	6

Code Name	Groundedness
Use safe due to rX	6
Voluntarily check-in for substance misuse treatment	6
DFACS referrals due to substance use	7
Distance to treatment providers	7
ER Patients	7
Increase in meth access, decrease in cost	7
MAT	7
Not considered a drug	7
Opioid Addiction	7
Parents	7
Poverty	7
social media leading to overexposure	7
Awareness of treatment options	8
Frequency of intergenerational substance use	8
Heroin availability and cost	8
Intelligence confused with maturity	8
Stigma in seeking treatment	8

CHAPTER 3

UNDERSTANDING HEALTH NEEDS & THE OPIOID CRISIS IN RURAL GEORGIA: A QUANTITATIVE COMMUNITY HEALTH NEEDS ASSESSMENT ON OPIOID MISUSE AND BEHAVIORAL HEALTH NEEDS IN FOUR RURAL GEORGIA COUNTIES[4]

[4] Bowie, M. To be submitted to *Journal of Substance Abuse Treatment*.

Abstract

This chapter presents a quantitative analysis of secondary data in order to better understand each intervention site demographics, economies, health conditions, and rates of substance misuse. The supply side of the situation is described by outlining the volume of prescription opioids distributed by pharmacies in Elbert, Lumpkin, Tattnall, and Washington Counties between 2006 and 2014. The presence of treatment providers located within the four counties indexed by the Substance Abuse and Mental Health Services Administration and the Georgia Department of Behavioral Health and Developmental Disabilities is summarized for the time period of 2003 to 2018 in order to describe local residents' availability and access to care. Demand for opioids is explained with an analysis of deaths, overdoses, and hospital discharge rates for 2002 to 2018 for a variety of conditions. Findings show a staggering volume of prescription opioids being distributed during the timeframe studied, and an overall pattern of increases in drug-related deaths, with notable peaks between 2010 and 2017. Potential intervention strategies for Cooperative Extension and community partners to consider are presented in efforts to help address the epidemic.

INDEX WORDS: Opioid epidemic, Substance misuse, Access to care, Shortage of primary care, Rural communities, Cooperative Extension, Intervention, Treatment needs, Mental health

Introduction

The United States is made up of a complex rural-urban interface, with, at times, very subtle transitions from one classification to another. The Oxford dictionary defines rural as "in, relating to, or characteristic of the countryside rather than the town"; Merriam-Webster defines rural as "of or relating to the country, country people or life, or agriculture." Policymakers and researchers often struggle to accurately apply the rural classification due to shifting definitions and program eligibility parameters, such as population density or geographic remoteness, usually set forth by Congress.

However we define the word, rural disparity undergirds many critical public health problems, and in order to intervene effectively, we must understand these communities. A University of Georgia team, working with multiple partners to administer a Rural Health and Safety Grant project, is developing an in-depth community needs assessment around opioid misuse for four rural Georgia counties.

Rural Americans face many health disparities, including greater mortality due to heart disease, cancer, unintentional injury, chronic lower respiratory disease, and stroke (Moy et al., 2017). Rural populations report poorer physical and mental health and have a higher prevalence of smoking, obesity, and physical inactivity, and are statistically less likely to wear seat belts (Meit et al., 2014). In addition, rural residents tend to be older on average, and exhibit more incidences of chronic pain and injury (Hyer et al., 2007).

Rates of substance use are shown to be higher in rural areas, partially due to socioeconomic problems, and past research shows that rural youth view substance use as less risky than do urban adolescents (Keyes et al., 2014). Haffajee et al. conducted a study from 2015-2017 exploring the features of counties with 1) high opioid overdose mortality and 2) a

reduced ability to provide medications for opioid use disorder. Among roughly 3,000 counties reviewed, 24% exhibited high rates of opioid mortality; almost half of these counties (and 71% of rural counties) offered no opioid use disorder (OUD) medication provider (2019).

Death rates and opioid use disorder-related injuries are three times higher in rural versus urban counties, and drug use and depression are associated with nonmedical opioid use in rural areas (Keyes et al., 2014). Keyes et al. propose four factors to help describe increases in prescription opioid misuse (POM) in rural as compared to urban areas: 1) increased sales of opioids in rural areas contribute to increased supply for nonmedical use through diversion; 2) out-migration of upwardly mobile young people from rural areas furthers economic hardship and may leave their peers at a higher risk for drug use; 3) kinship and robust social networks facilitate rapid distribution of opioids; and 4) growing economic hardship and unemployment rates contribute to stressful environments that put people at risk (Keyes et al., 2014).

Between 2010 and 2018, the number of annual opioid-related deaths in Georgia increased by 70%, from 514 to 876 people (Georgia Department of Public Health [DPH], 2019). However, all categories except heroin deaths saw a decrease in 2018, including fentanyl. Georgia adults between the ages of 25 and 34 are most likely to visit an emergency department due to opioid overdose, and those between ages 65 and 74 are most likely to be hospitalized (DPH, 2016). Males were 1.9 times more likely to die from an overdose, and 3.1 times more likely to die from heroin use, when compared to females (Georgia Department of Public Health, 2019).

This paper examines the unique health needs of rural communities and describes the resources currently available to address the opioid epidemic in four rural Georgia counties. Historical health records data are summarized to help explain the current status of the crisis and inform the existing demand for critical services. The needs assessment consists of extensive

quantitative analyses of secondary data sources, outlined below, to determine local and regional resources available for adult and youth treatment for opioid use disorder, and to measure the prevalence of the epidemic across time at the county level. These results will improve awareness of the opioid issue and inform strategies for response.

Study Design

The four rural Georgia counties involved in the intervention funded by the USDA Rural Health and Safety Grant are Elbert, Lumpkin, Tattnall, and Washington counties. This study, descriptive in nature, will use population health data and time trend analyses to show community health need. Rationale for county selection included demographic and socioeconomic characteristics, in addition to existing robust University of Georgia-Cooperative Extension infrastructure. Lumpkin County was selected because it had one of the highest rates of opioid-related hospitalizations and emergency department visits in Georgia in 2016 (DPH, 2016). Elbert, Tattnall, and Washington Counties were chosen in part due to high overall and child poverty rates, associated with a high risk of childhood adverse events, which is in turn associated with higher risk of substance use (Dube et al., 2003).

These counties also feature key resources to help address the opioid epidemic, including seasoned Extension professionals and established adult and youth community programming through Family and Consumer Sciences and 4-H curricula. Elbert and Lumpkin Counties are also involved with the "Two Georgias" initiative, which aims to decrease health inequity in rural Georgia and has committed to reducing alcohol and substance use. Extension agents in Elbert, Lumpkin, Tattnall, and Washington Counties lead programs on healthy family relationships, positive decision-making, nutrition education, community leadership development, and youth and worksite wellness.

Data and Methods

This paper used quantitative, secondary data to assess the current status of the opioid crisis in four rural Georgia counties. The unit of analysis was the county-year, and all analyses were conducted for the four intervention counties—Elbert, Lumpkin, Tattnall, and Washington. All data are free and publicly available. Wherever possible, the observation timeframe spanned from 1999 to the latest available data, to ensure pre- and post-measurements that occur before, during, and after the opioid crisis reached each of the counties in the study. All datasets are described below. Measurements evaluated health outcomes, health use, and healthcare access, analysis of treatment providers and healthcare infrastructure.

Data

On the supply side, the study identified treatment providers by using the Substance Abuse and Mental Health Services Administration (SAMHSA) online behavioral health treatment services locator, a database of U.S. treatment facilities. This database, searchable by county, city or zip code, provides results organized by proximity to searched location. The search can be specialized for type of care, age groups, service setting, funding accepted and type of opioid treatment specifications.

The study also utilized Georgia's Department of Behavioral Health and Developmental Disabilities (DBHDD) listing of over 600 treatment providers, maintained by the Georgia Collaborative Administrative Services Organization website. DBHDD searches for mental health and addictive health treatment providers can also be expanded to include developmental disabilities. The Area Health Resources Files (AHRF), managed by the Health Resources and Services Administration, leverages 50 data sources to identify programs that provide care to the geographically isolated or economically or medically vulnerable. In addition, the Automation of

Reports and Consolidated Orders System (ARCOS) data, collected by the Drug Enforcement Agency (DEA), provided information on the supply of opioids distributed into each county.

To assess patient-side factors, data collection and analysis focused on health outcomes, overdose deaths, healthcare utilization, and healthcare access measures. All county-level opioid-related death data were obtained from GDPH and the CDC; hospital emergency department hospitalization records came from GDPH. The U.S. Census Bureau provided county-level demographics. See Table 3.1 for a summary of measures and data sources.

Table 3.1: Summary of Secondary Data Sources

Measure	**Source**	**Notes**
List of treatment providers	Substance Abuse and Mental Health Services Administration	Searchable by location, type of care, age groups, service setting, funding accepted
List of treatment providers	Georgia Department of Behavioral Health and Dev. Disabilities	Can include co-treatment of dev. disabilities
Provider search	Area Health Resources File	Managed by the Health Resources and Services Administration; over 50 data sources
Opioid supply by county	Automation of Reports and Consolidated Orders System; Drug Enforcement Agency	
County deaths	Georgia Department of Public Health; Centers for Disease Control	
Hospital emergency room discharge records; in-patient hospitalization records	Georgia Department of Public Health	

County demographics	U.S. Census Bureau	

Secondary Data Analysis Results

Table 3.2. County- vs. State-Level Demographic Profiles, 2019 American Community Survey.

Fact	Elbert County	Lumpkin County	Tattnall County	Washington County	Georgia
Population					
Population estimates 2019	19,194	33,610	25,286	20,374	10,617,423
Population percent change 2010-2019	-4.8%	12.2%	-0.9%	-3.8%	9.6%
Age & Sex					
Persons under 5 years	5.8%	4.4%	5.0%	5.6%	6.2%
Persons under 18 years	21.7%	17.2%	20.4%	21.6%	23.6%
Persons 65 years and over	21.3%	17.8%	15.0%	17.8%	14.3%
Female persons	52.4%	50.4%	42.7%	48.9%	51.4%
Race & Hispanic Origin					
White alone	68.2%	94.7%	67.2%	44.1%	60.2%
Black or African American alone	29.0%	1.7%	29.5%	53.8%	32.6%
Other	6.0%	6.2%	14.1%	4.7%	17.1%
Internet Access					
Households broadband Internet subscription 2014-2018	57.1%	77.7%	69.5%	60.7%	79.0%
Education					
High school graduate or higher persons age 25 years+	77.4%	83.7%	75.4%	80.2%	86.7%
Bachelor's degree or higher persons age 25 years+	10.8%	26.2%	13.2%	14.0%	30.7%
Health					
Persons without health insurance under age 65 years	18.0%	18.9%	19.7%	15.0%	15.5%
Income & Poverty					

Median household income 2018	$37,943.00	$47,488.00	$38,034.00	$38,092.00	$55,679.00
Per capita income in past 12 months 2018	$22,593.00	$24,790.00	$17,553.00	$19,579.00	$29,523.00
In civilian labor force population age 16 years+	53.0%	61.1%	39.0%	49.3%	62.4%
Total employment percent change 2017-2018	-4.6%	3.4%	8.3%	-0.7%	2.2%
Persons in poverty	18.5%	14.9%	25.6%	25.9%	13.3%
Rurality (Geography)					
Population per square mile 2010	57.4	105.9	53.2	31.2	168.4

Source: US Census Bureau, 2020.

Population and Race

While all four counties fit the USDA definition of "rural," based on the above demographic characteristics, these communities differ in several ways. Elbert, Tattnall, and Washington County lost population between 2010 and 2019, while Lumpkin County grew by more than 12% (USCB). During this period, Tattnall lost just under 1% of its county population base, Washington lost 3.8%, and Elbert lost 4.8%. This aligns with the long-term pattern of rural migration to urban areas, where employment, education, and healthcare are more accessible. Lumpkin County (located in the northeast Georgia mountain region) has become an increasingly popular retirement and vacation destination, contributing to the publicly-funded tax base and elevating income levels. Lumpkin County is also the least racially diverse ((White (95%), Other (6.2%; primarily Latino at 5.1%), Black or African American (1.7%)); its population primarily supports local tourism (service jobs) and agricultural (primarily wine grapes, apples, and poultry) industries. Statewide, Georgia's population grew by 9.6% between 2010 and 2019.

Elbert and Tattnall have a similar racial composition, with a majority White population (68.2% and 67.2% White, respectively), followed by Black or African American (29% and 29.5%), and then Other (6% and 14.1% (primarily Latino at 12.2%)). Both communities are

agricultural and industry strongholds. Tattnall, home to the world-famous Vidalia Onion, depends on vegetable and row crops (cotton, peanuts, soybeans) and poultry production; Elbert supports some of the world's largest granite quarries and stone monuments creation and distribution systems. Washington County, by contrast, is roughly 44% White, 54% Black or African American, and 4.7% Other, and supports large agricultural and manufacturing industries. Overall, Georgia's 2019 population was estimated to be 60.2% White, 32.6% Black or African American, and 17.1% Other.

Age and Sex

Elbert, Tattnall, and Washington County feature similar age distributions: about 5% of their populations are under 5 years of age and 20-22% are under 18. However, those figures diverge beyond age 65: Elbert seniors make up 21.3% of the population, Washington 17.8%, and Tattnall only 15%. Tattnall also stood out in the category of sex, with a female population of only 42.7%, likely attributable to its three state correctional facilities, also some of the area's largest employers. Elbert appears to be aging the most rapidly, and Tattnall the least rapidly. From a statewide perspective, Georgia's 2019 population had a higher percentage of persons under 5 years (6.2%) and under 18 years (23.6%), a lower percentage of seniors (14.3%), and a 51.4% female population base.

Education

Lumpkin County led the group in educational attainment: 83.7% of the population 25 years or older had a high school degree and 26.2% had a bachelor's degree or higher. This can most likely be explained by the presence of the University of North Georgia and the growing number of retirees. Washington County ranked second of the four sites: 80.2% had a high school degree and 14% were college-educated. In Elbert County, 77.4% had a high school degree but

only 10.8% had a bachelor's degree), almost three points behind Tattnall (13.2%). Tattnall County ranked last in the percentage of those having a high school degree (75.4%), most likely due to the prison population.

Georgia's 2019 educational attainment rates were significantly higher in both categories. The high school graduation rate was 86.7%, and the college graduation rate was 30.7%. Rural residents can find it particularly challenging to attain secondary and post-secondary degrees. Lumpkin County is the only study area containing a campus for higher education. However, a growing number of technical college satellite campuses are appearing in rural Georgia communities, including one in Washington County (Oconee Fall Line Technical College, tcsg.edu). Many rural families lack the financial means to cover the cost of tuition plus relocation to a primary campus community. While Georgia's HOPE grant has helped to close this gap since 1994, the cost of tuition, housing, and living expenses has outpaced inflation, contributing to (more often than not) oppressive student loan debt. For 2018 Georgia college graduates, 69% had student loans, averaging almost $30,000 (consumer.georgia.gov).

Income, Poverty, and Employment

Lumpkin County, with its higher educational levels, expectedly leads the group on income, with a 2018 median household income of $47,488 and a per capita income of $24,799. Elbert County was a distance second, at $37,943 and $22,593 respectively. Taken with the low education rates, this indicator is higher than expected, indicating employment opportunities for skilled tradespeople (granite industry). Washington County ranked third income-wise, with a 2018 median household income of $38,092 and $19,579 per capita. Tattnall County followed with a median household income of $38,034 and a per capita of $17,553 (2018). Georgia showed significantly higher averages, with 2018 median household income of $55,679 and per capita

income of $29,523. Poverty rates were very high in both Washington (25.9%) and Tattnall (25.6%), and a good bit lower in Elbert (18.5%) and Lumpkin (14.9%), but all out-ranked the 2018 state average of 13.3%.

Employment variables included the percentage of the population age 16 and older in the civilian labor force and the percentage change in employment rates from 2017 to 2018. Lumpkin County led the sites in labor force participation at 61.1%, close to the state average of 62.4%, with a 3.4% increase between 2017 and 2018. Elbert County ranked second at 53%, though they also saw a notable decrease of 4.6% between 2017 and 2018. Washington County ranked third in labor force participation, at 49.3%, and a 0.7% decrease between 2017 and 2018. Tattnall County featured just 39.0% participation in the civilian labor force, though that number increased significantly (by 8.3%) between 2017 and 2018. Statewide averages for these two employment measures were 62.4% and a 2.2% increase between 2017 and 2018.

Health Insurance Coverage

A primary measure of health status used by the USCB is the percentage of people under age 65 without health insurance. The highest rate of uninsured was Tattnall County at 19.7%, followed by Lumpkin County at 18.9%, then Elbert at 18%, and Washington County with the lowest, almost equal to the statewide average (15.5%) at 15%.

Internet Access

Households with a broadband internet subscription in 2018 measured the highest in Lumpkin County at 77.7%, followed by Tattnall at 69.5%, then Washington at 60.7%, and then Elbert at 57.1%. All of these were lower than the state average of 79%. Reliable internet (and mobile phone) access has become increasingly vital, especially with the COVID concerns that began in March 2020. Virtual learning and online healthcare visits, a new model for service

delivery, and depends heavily on reliable, consistent, high speed (broadband) internet service. Areas of Georgia without broadband internet and mobile phone service availability are increasingly removed from these systemic norms, and suffer disadvantages when compared to counterparts who have broadband availability (and can also afford it).

Rurality

The final demographic characteristic this study included was rurality, measured by population per square mile. In 2010, of the four sites, Lumpkin County was by far the most densely populated, averaging 105.9 people per square mile, followed by Elbert County with 57.4 people per square mile, then Tattnall County at 53.2, and lastly Washington County at 31.2. For Georgia as a whole, the 2010 average was 168.4 people per square mile. The four study sites, designated rural by the USDA and USCB, present unique advantages and challenges in regard to social services and programming. Their remote natures contribute to problems with transportation, access to healthcare and critical services, and geographic and social isolation.

Supply-Side Results

Introduction

The following results describe the recent history and current supply-side data on opioid prescriptions, the influx of prescription opioid pills, and treatment provider availability for the Rural Health and Safety Grant community health needs assessment intervention sites located in Elbert, Lumpkin, Tattnall, and Washington Counties. This analysis provides a detailed overview of the licit opioid prescription supply chain and availability through pharmacies located within these four counties between 2006 and 2014. A per capita pill ratio is provided to help illustrate the volume of prescribing compared to the local population density. Next, the number of behavioral health treatment providers is described by county to help demonstrate the availability

of service provision in the four-county area. Sources for this data include the national SAMSHA treatment provider directory from 2003 to 2019 and the 2020 Georgia DBHDD listing of providers by intervention county.

A listing of 2018-2019 primary care providers for the intervention sites is also included, to help show general access to healthcare. Access to Medications for Opioid Use Disorder (MOUD), the preferred standard of care for opioid use disorder, is also described. Finally, an analysis of the coverage of care for Medicaid clients is provided, to help researchers better understand how low- income populations access behavioral health treatment and resources within their communities. A grasp of the overall supply situation can better inform educators, researchers, and policymakers in the design and implementation of policy, intervention, and prevention efforts.

Table 3.3: Opioid Prescription Pill Distribution 2006 to 2014 per county

County	Number of Pharmacies	Total Number of Pills	Per Capita Pill Ratio
Elbert	7	11,892,010	603.84
Lumpkin	4	6,286,360	204.64
Tattnall	5	7,886,040	311.01
Washington	3	3,819,810	183.12

(Data Source: Washington Post Pill Count Database)

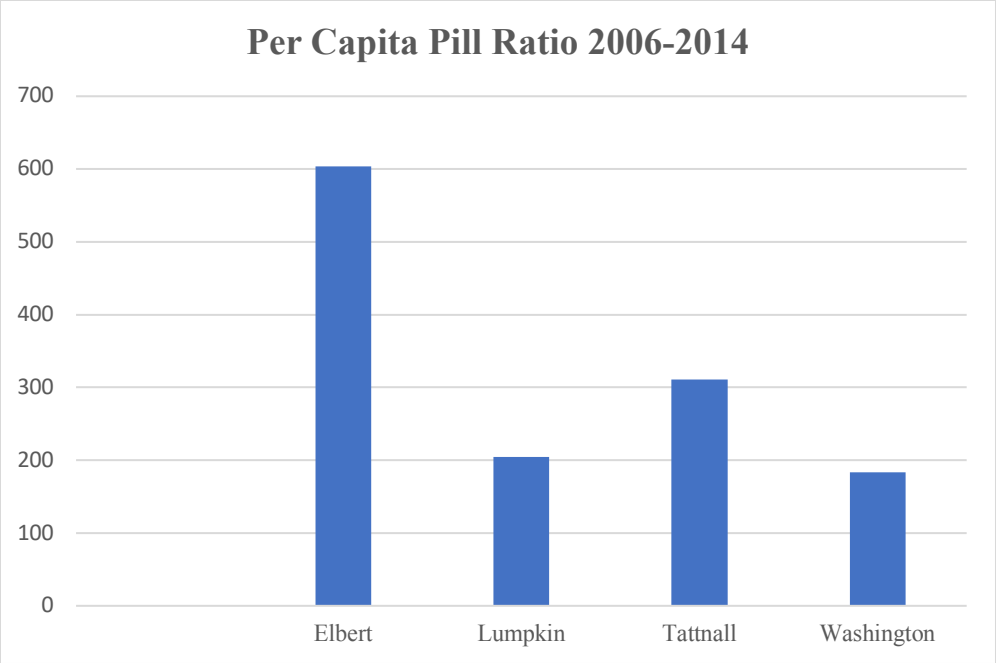


Figure 3.1: Opioid Prescription Distribution per County per Capita 2006 - 2014

Description of Opioid Prescription Supply Data

Between 2006 and 2014, a staggering volume of prescription opioids, almost 30 million pills, were distributed through 19 pharmacies in Elbert, Lumpkin, Tattnall, and Washington Counties (see Figure 3.1). Leading the group was Elbert County, in which the smallest population (19,694 people in 2014) distributed by far the most pills (almost 12 million), for a per capita average of 603.84 pills per person over the full period and 75 pills per person per year.

Tattnall County distributed over 7.8 million prescription opioids between 2006 and 2014, among a population of roughly 25,000, for a per capita average of 311 pills per person, or 39 pills per person per year. Lumpkin County followed with over 6 million pills distributed among the 2014 population of 30,719 people, for a per capita average of 204.64 pills per person, and 26 pills per person per year. Washington County showed the most conservative prescription opioid distribution of the counties studied, with 3.8 million pills distributed among 20,800 residents

(population as of 2014) for a per capita average of 183.12 pills per person over the full timeframe, or 23 pills per person per year.

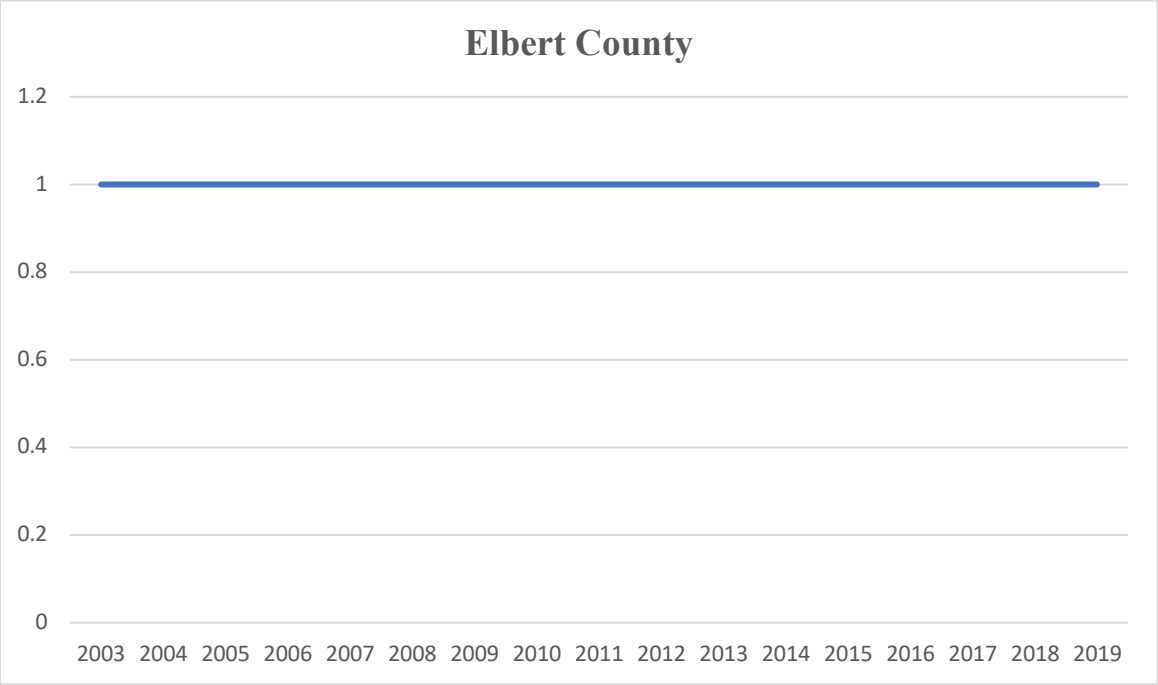


Figure 3.2: Elbert County SAMSHA Behavioral Treatment Providers 2003 – 2019

(Data Source: Substance Abuse and Mental Health Services Administration, 2020)

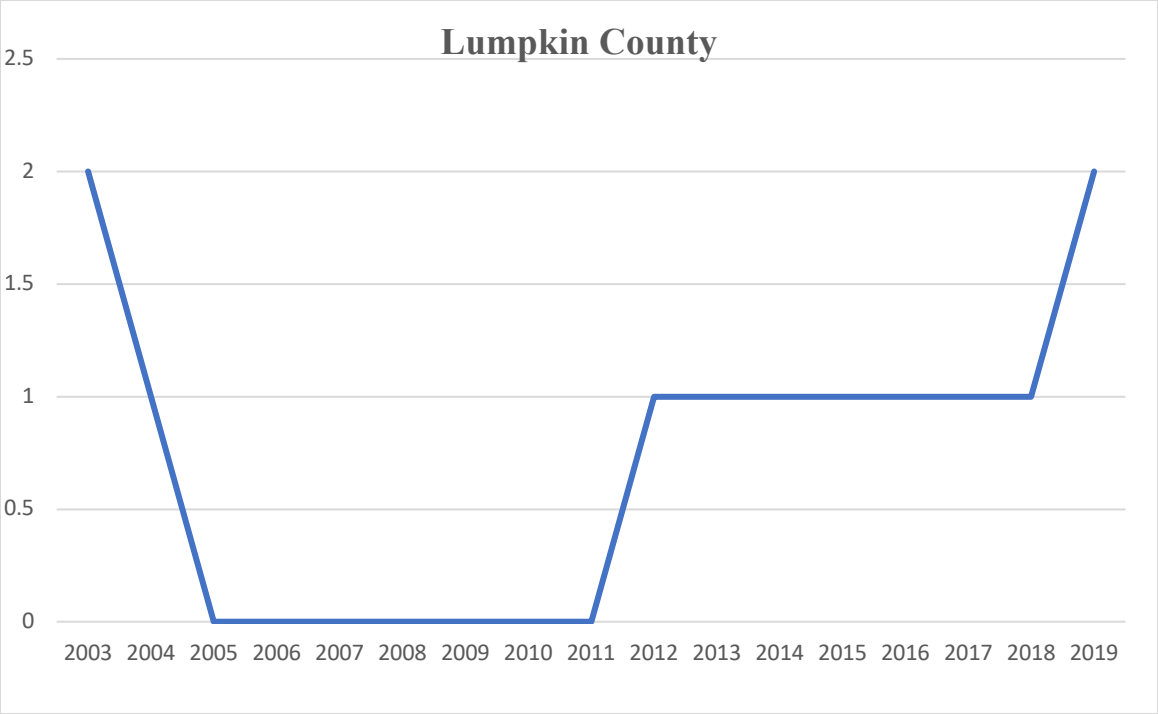


Figure 3.3: Lumpkin County SAMSHA Behavioral Treatment Providers 2003 - 2019
(Data Source: Substance Abuse and Mental Health Services Administration, 2020)

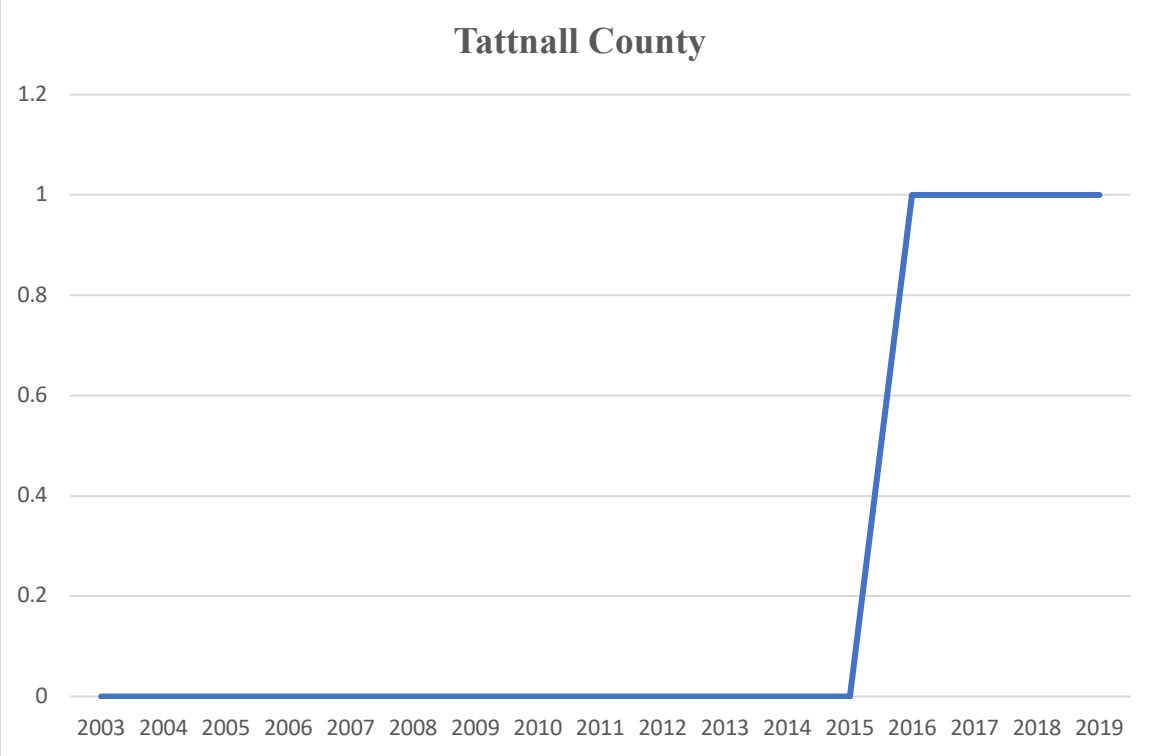


Figure 3.4: Tattnall County SAMSHA Behavioral Treatment Providers 2003 - 2019

(Data Source: Substance Abuse and Mental Health Services Administration, 2020)

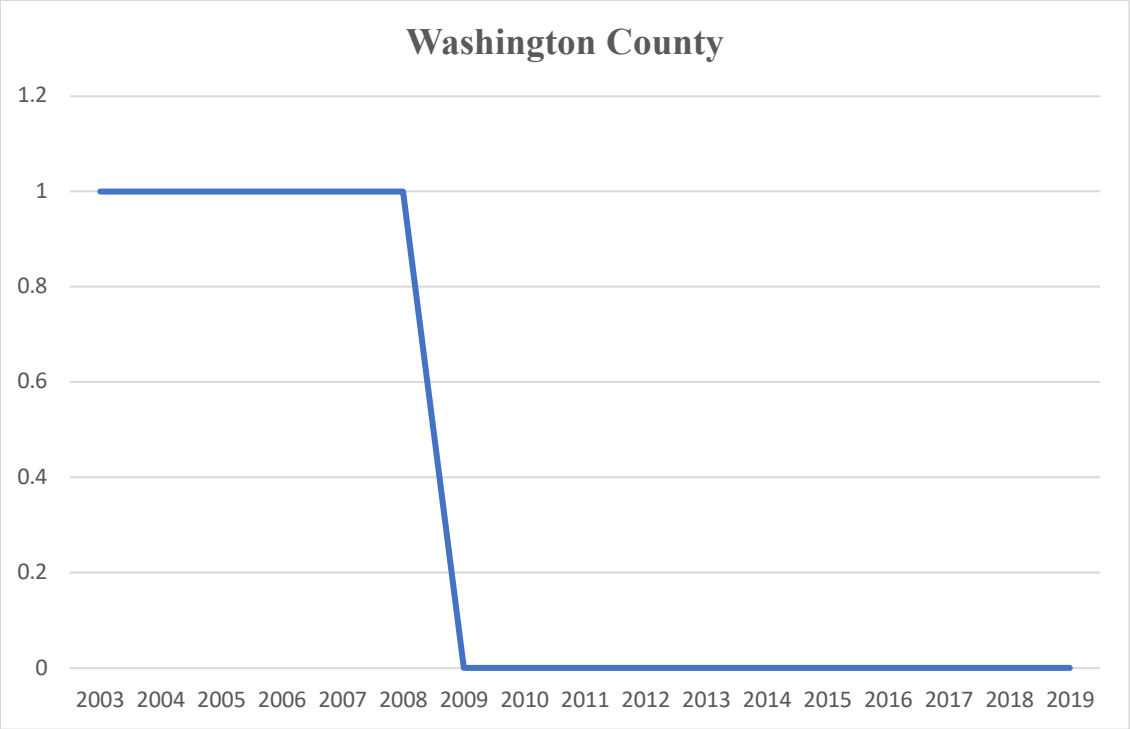


Figure 3.5: Washington County SAMSHA Behavioral Treatment Providers 2003 - 2019
(Data Source: Substance Abuse and Mental Health Services Administration, 2020)

The treatment provider data collected and summarized from SAHMSA show that the timeframe between 2003 and 2019 showed little to no growth in the number of facilities available to local residents for substance misuse. In 2003, Elbert and Washington had one provider and Lumpkin had two, while Tattnall showed no providers based within the county.

In 2003 and 2004, Elbert, Lumpkin, and Washington listed at least one provider (Lumpkin showed two during 2003). However, in 2005, while Elbert and Washington listed one provider, Lumpkin had no providers between 2005 and 2012, a significant lapse in service for the Dahlonega, GA (northeast Georgia mountains) area. Elbert County showed the most consistent access to treatment providers, with one provider in all years studied (2003-2019).

In rural southeast Georgia, Tattnall County listed no treatment providers between 2003 and 2015, showing an extremely limited ability to provide behavioral services treatment; it listed one provider each year 2016-2019. Interventions in the most rural areas often lag significantly

behind their more urban/suburban counterparts, creating additional burdens on an already stressed health services infrastructure. Conversely, Washington County, one of the more populous counties in the area, showed one treatment provider each year 2003-2008, but none afterwards, indicating a severe lack of access to treatment services in the region.

Overall, these four counties averaged a total of about two SAMSHA treatment providers between 2003 and 2019; in 2009, 2010, and 2011, there was only one provider across all four sites. Between 2016 and 2018, three treatment providers operated within the four-county study area, rising to four in 2019, with the addition of a second provider in Lumpkin County.

Table 3.4: Georgia DBHDD Treatment Providers 2020

County	**Number of Facilities 2020**
Elbert	2
Lumpkin	3
Tattnall	3
Washington	2
Total	10

(Source: Georgia DBHDD, 2020)

The Georgia Department of Behavioral Health and Developmental Disabilities (DBHDD) offers an online provider locator, with a current directory of more than 600 state treatment providers. This database, managed through The Georgia Collaborative Administrative Services Organization, helps Georgia residents find state agencies and programs available near them. The system is searchable by location, agency name, ages and populations served, accessibility (both within the facility and by transportation), and types of services provided, such as behavioral/mental/addictive health and/or intellectual developmental disabilities.

In 2020, this database showed a total of 10 treatment providers located within the four-county study area, a notable increase (six in one year) compared to the SAMSHA 2019 provider listing. As of October 2020, Elbert County showed two providers, Lumpkin and Tattnall Counties both had three providers, and Washington County showed two providers. This encouraging sign suggests that access to care may have improved over the past year; however it could also be potentially attributed to SAMSHA's more stringent inclusion criteria. The DBHDD database also included sites such as group and transitional homes, which may not typically be included with the SAMSHA directory.

Table 3.5: Availability of Primary Care Providers 2018-2019

2018-2019	Total Primary Care (count)	Population (2018 USCB)	Ratio of PCPs to population	Healthcare Provider Shortage Area
Elbert	**10**	**19,120**	**1912**	**Yes**
Lumpkin	**12**	**32,955**	**2746**	**Yes**
Tattnall	**7**	**25,391**	**3627**	**Yes**
Washington	**15**	**20,386**	**1359**	**Yes**

(Source: Area Health Resource File, 2020)

According to the Area Health Resource File federal database, between October 2018 and September 2019 a total of 44 primary care physicians were registered and in active practice in Elbert, Lumpkin, Tattnall, and Washington Counties. The population figures below are based on an estimated total population of almost 98,000 (USCB, 2018).

During the 2018-2019 period, Elbert County showed 10 total primary care providers for a population of 19,120, or one PCP for every 1912 people. Lumpkin County had 12 PCPs covering

32,955 people, or 2746 per provider. Tattnall County showed seven PCPs for a county of 25,391, or 3,627 per provider, the lowest of the group. Washington County had 15 PCPs for 20,386 people, or 1359 per provider. All four counties are designated as healthcare provider shortage area, in both mental and primary care.

Medications for Opioid Use Disorder

None of the providers analyzed provided any type of medications for opioid use disorder (MOUD), according to SAMSHA. This recommended standard of care for those seeking treatment was found to be completely inaccessible in all four counties between the years of 2003 and 2019, representing another significant barrier to treatment for opioid use disorder in these rural areas.

Medicaid

The treatment providers described above accept Medicaid, or did for the majority of the 2003–2019 timeframe, except for Elbert County in 2008, in Lumpkin County from 2005-2011, Tattnall County from 2003-2015, and Washington County from 2009-2019. Overall, the acceptance rate for Medicaid was higher than expected, given recent changes and challenges to providers resulting from the Affordable Care Act.

Demand-Side Results

An in-depth review of the demand side of the equation helps illuminate the supply-side situation. The data below outlines the most recently available facts and history related to the demand for opioid prescription medications, as part of the Rural Health and Safety Grant project's community health needs assessment. Data from the Georgia Department of Public Health was accessed from the OASIS system from 2002 – 2018 for the number of deaths and hospitalizations by residence attributed to alcoholic liver disease, all opioids, drug use, drug

overdose, blood poisoning, and heroin. These data points were analyzed for Elbert, Lumpkin, Tattnall, and Washington Counties and help inform the extent to which these sites have been experiencing deaths related to opioid misuse. EMS and naloxone use data also are shared in order to describe local efforts to reverse or treat opioid overdoses and help prevent deaths.

A better understanding of these patterns can help researchers, program planners, and policymakers make informed decisions related to prevention and intervention efforts in the face of ominous trends. Evidence of the severity of the crisis is essential to spur effective collaborations among decision makers, providers, public health, and community educators.

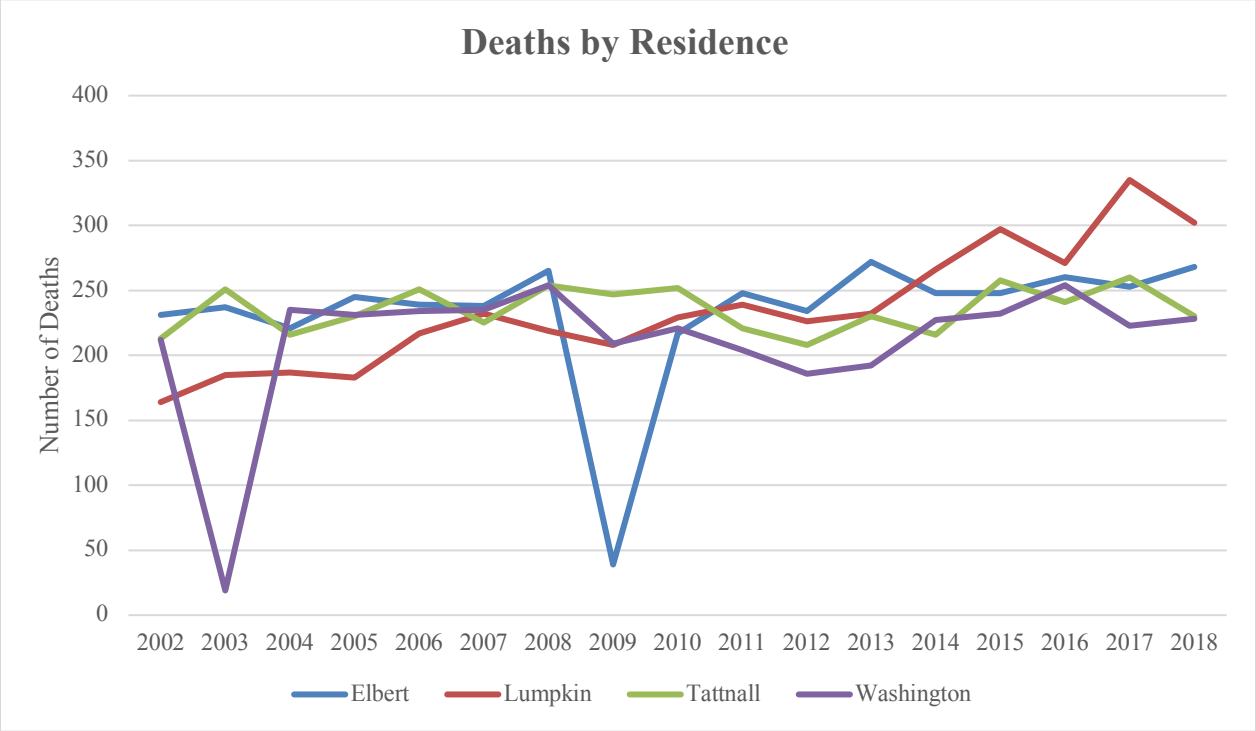


Figure 3.6: Deaths by Residence

(Source: OASIS, Georgia Department of Public Health, 2020)

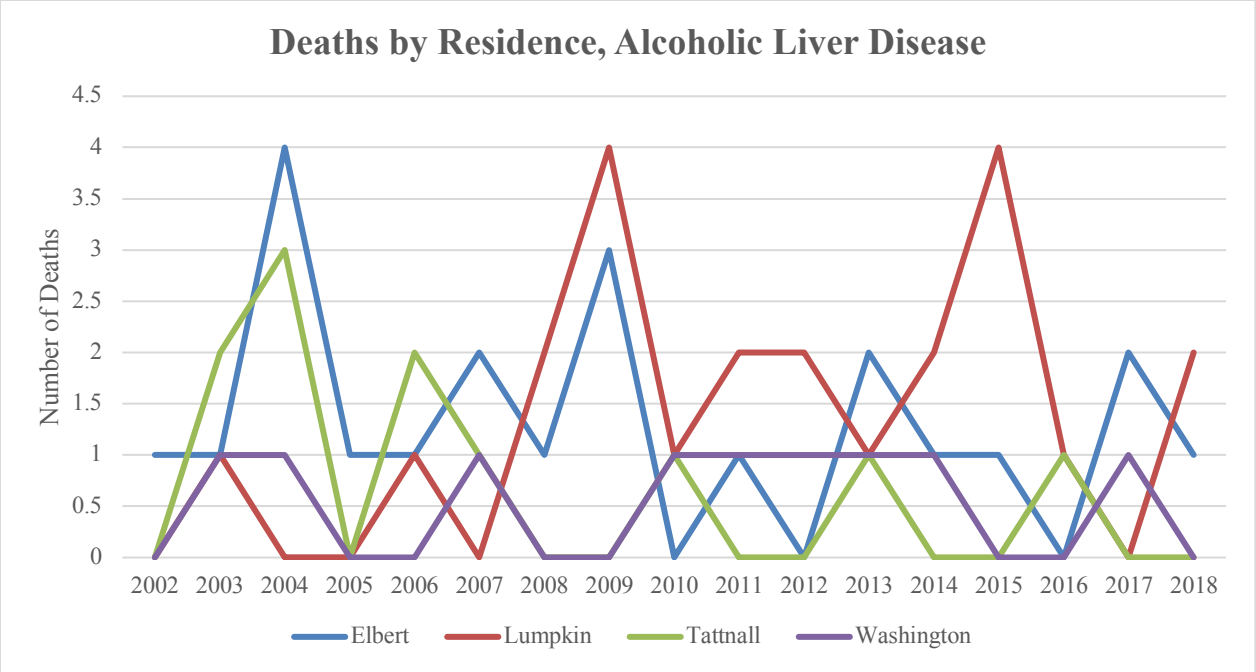


Figure 3.7 Deaths by Residence, Alcoholic Liver Disease

(Source: OASIS, Georgia Department of Public Health, 2020)

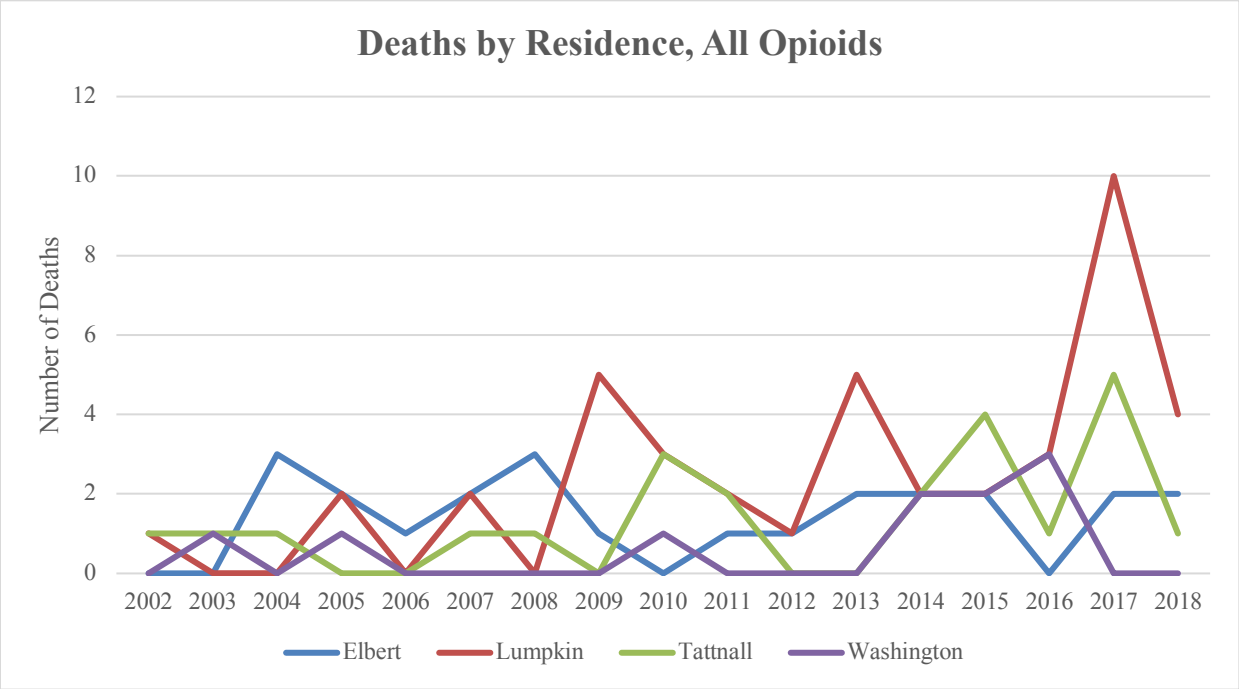


Figure 3.8: Death by Residence, All Opioids

(Source: OASIS, Georgia Department of Public Health, 2020)

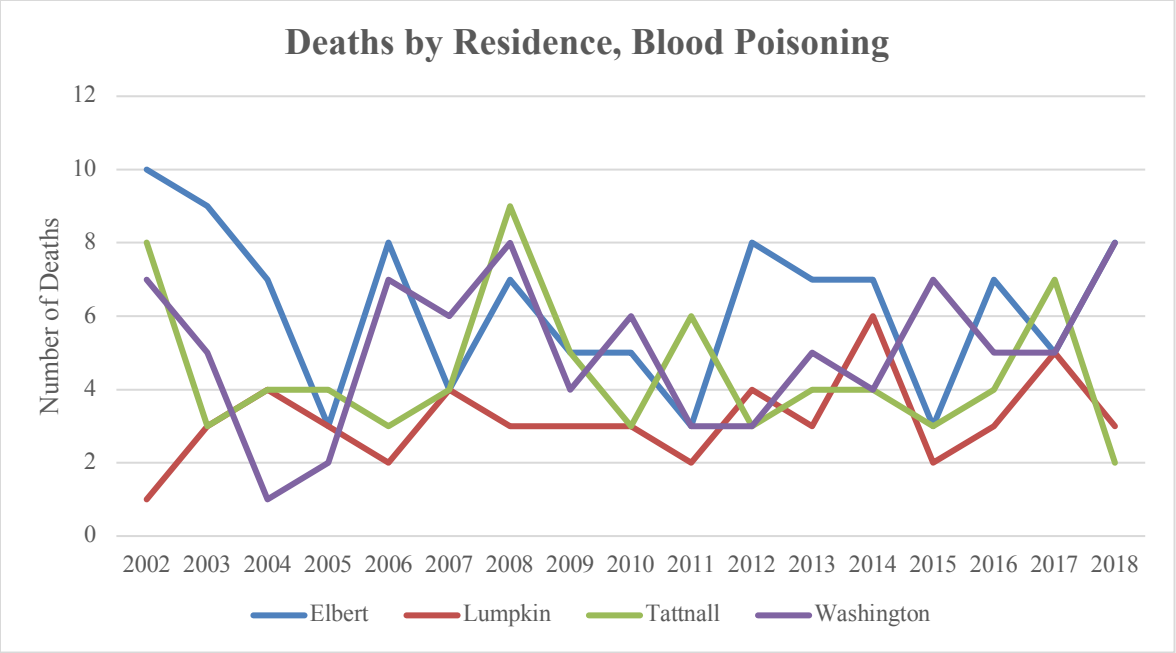


Figure 3.9: Deaths by Residence, Blood Poisoning

(Source: OASIS, Georgia Department of Public Health, 2020)

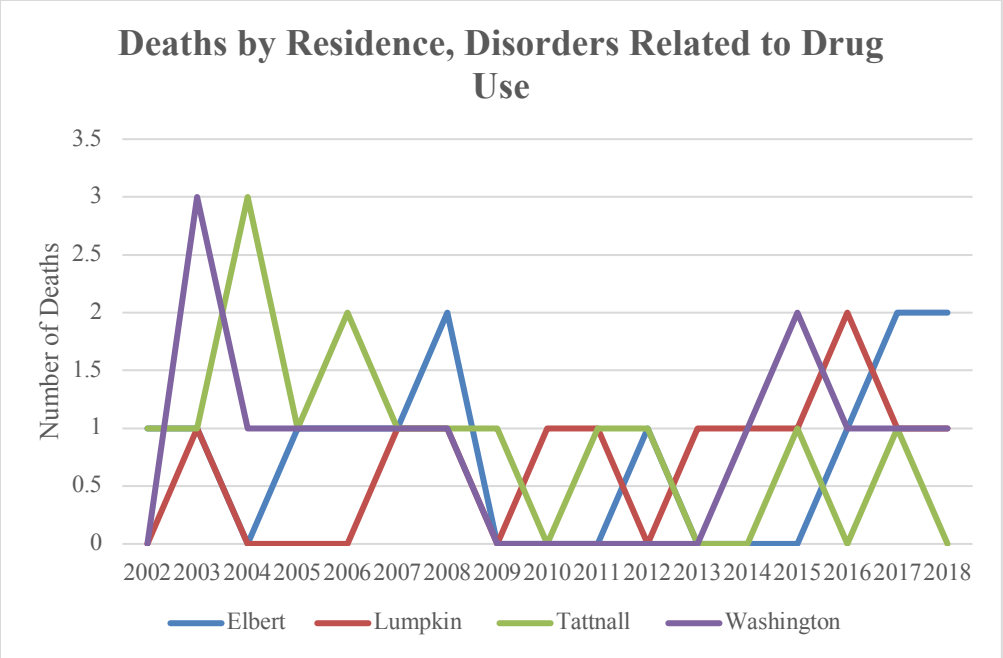


Figure 3.10: Deaths by Residence, Disorders Related to Drug Use

(Source: OASIS, Georgia Department of Public Health, 2020)

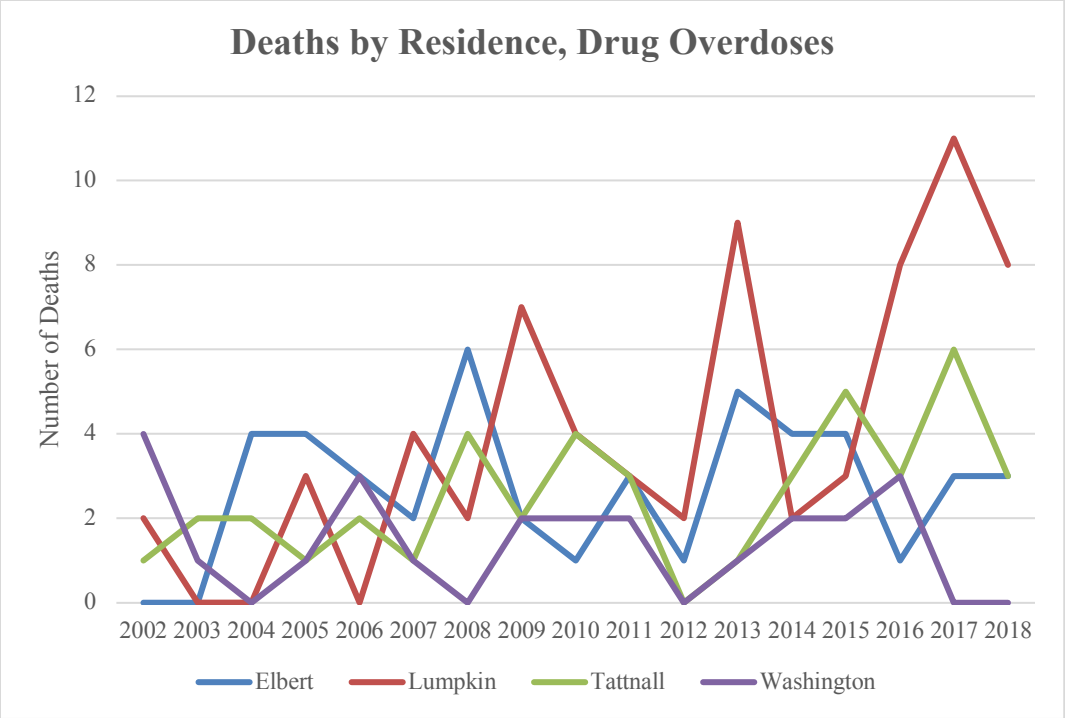


Figure 3.11: Deaths by Residence, Drug Overdoses

(Source: OASIS, Georgia Department of Public Health, 2020)

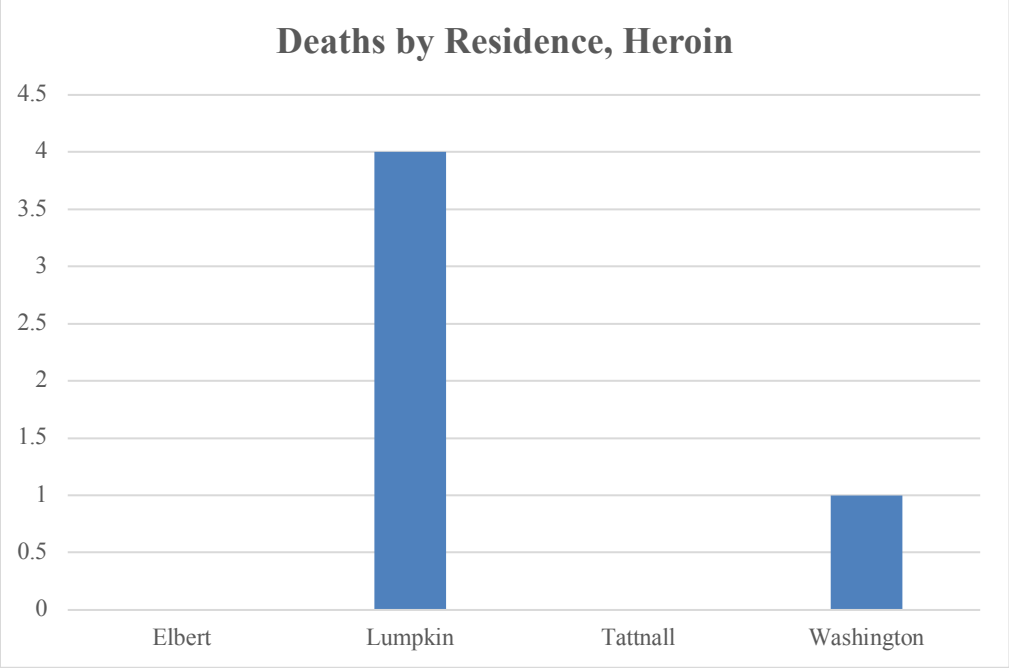


Figure 3.12: Deaths by Residence, Heroin

(Source: OASIS, Georgia Department of Public Health, 2020)

The Georgia Department of Public Health maintains a database tracking county-level death records. A summary of the four counties' death rates from 2002-2018, across 10 categories of causation, appears below. Examining these data can help researchers and policymakers identify possible patterns and epidemiological trends in need of public health attention.

Deaths by Residence shows an upward trend at all of the intervention sites, with Lumpkin in particular almost doubling from 164 in 2002 to 302 in 2018. Lumpkin was also the only county with a growth in population (between 2010 and 2019), but that alone was not great enough to account for such a sharp increase (12%). In contrast, Washington County and Elbert County both saw extreme drop-offs in the number of deaths for one year each during the timeframe analyzed, compared to 200 or more in other years: in 2003, Washington County dropped to 19 deaths and in 2009, Elbert County dropped to 39. Possible reasons for these outliers include unreliable data reporting from the county coroner and/or inconsistent interpretation or application of local reporting criteria.

Deaths by Residence, Alcoholic Liver Disease showed a peak among the intervention sites, with Lumpkin hitting four in both 2009 and 2015, while Elbert saw four in 2004. Tattnall had an early peak of three deaths in 2004, none in 2005, and two in 2006; Washington showed no deaths at the start of the timeframe in 2002, then peaked at one death the following two years. Washington showed no deaths in seven of the 16 years analyzed, and one death in each of the remaining nine years.

Deaths by Residence, All Opioids showed Lumpkin County far exceeding the other sites, with a high of 10 deaths in 2017, followed by five in both 2009 and 2013, three in 2010 and 2016, two in 2005, 2007, 2011, and 2014, and one in 2002 and 2012. Elbert County ranked second in all opioid attributed deaths, with a high of three deaths in both 2004 and 2008, and two

deaths in 2005, 2007, 2013, 2014, 2015, 2017, and 2018. Tattnall County reported a peak death rate due to opioids in 2017 with five, followed by four in 2015, and three in 2010. Washington County ranked last, with a high of three opioid-attributed deaths in 2016.

Deaths by Residence, Blood Poisoning were the highest in Elbert County in 2002, with 10 deaths reported, followed by a low of three in 2005, which bounced up to eight in 2006 and 2012. Washington and Tattnall reported similar patterns until 2015, with Tattnall reaching a peak of nine deaths in 2008 and Washington peaking with eight in 2008 and 2018. Tattnall had a drop off to two deaths in 2018, however.

Deaths by Residence, Disorders Related to Drug Use saw a high point among the study sites early on, with a total of three deaths in Washington in 2002 and three in Tattnall in 2003. Elbert then had two in 2008, and again in 2017 and 2018. Washington and Lumpkin reported two deaths due to disorders related to drug use in 2015 and 2016, respectively. Washington reported no deaths for this reason between 2009 and 2013.

Deaths by Residence, Drug Overdoses were led by Lumpkin County, with 11 deaths reported in 2017, nine in 2013, and eight in 2018. Elbert ranked next in drug overdose deaths, with a high of six deaths reported in 2008, five in 2013, and four in 2003, 2004, 2014, and 2015. Tattnall reported a high of six deaths in 2017, followed by five in 2015, and four deaths in 2008 and 2010. Washington ranked last with a high of four deaths reported in 2002, and three in 2006 and 2016.

Deaths by Residence, Heroin showed no reported instances in Elbert and Tattnall County between 2002 and 2018. Lumpkin County reported the most from the sites, with a total of four heroin-attributed deaths, the first appearing in 2014, then one in 2016, and two in 2017. Washington County reported only one death due to heroin during the timeframe, in 2016.

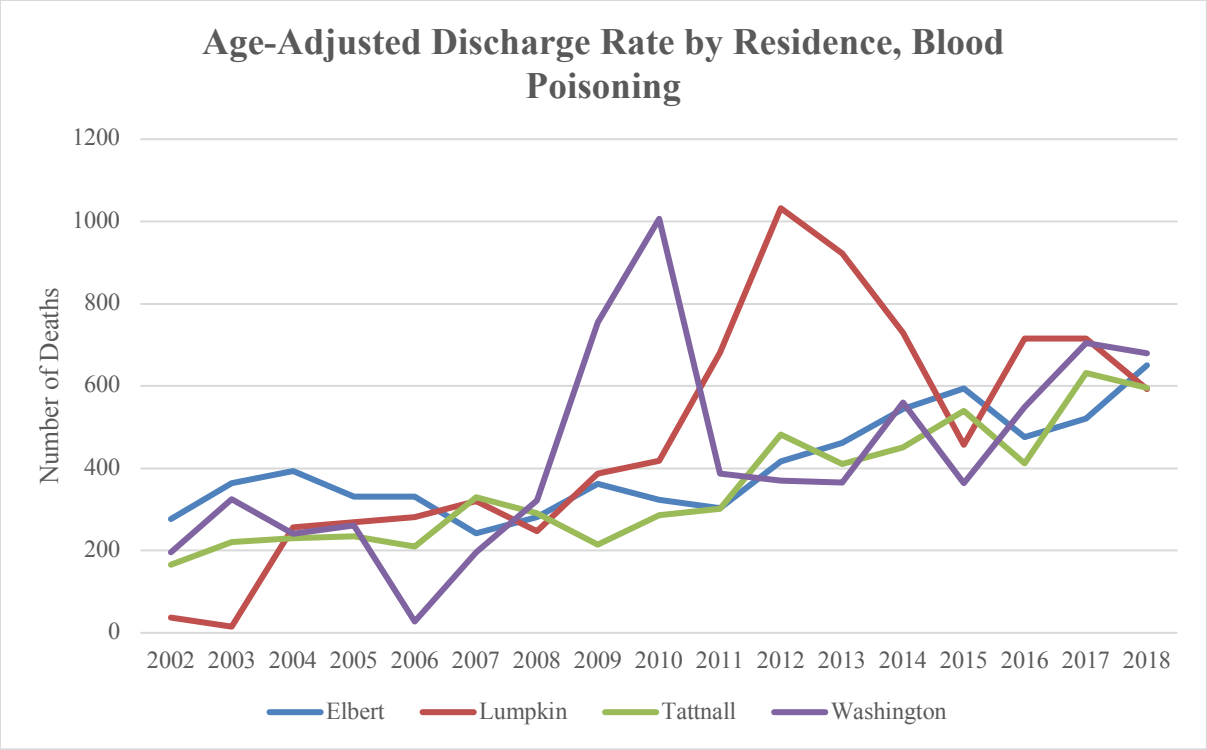


Figure 3.13: Age-Adjusted Discharge Rate by Residence, Blood Poisoning

(Source: OASIS, Georgia Department of Public Health, 2020)

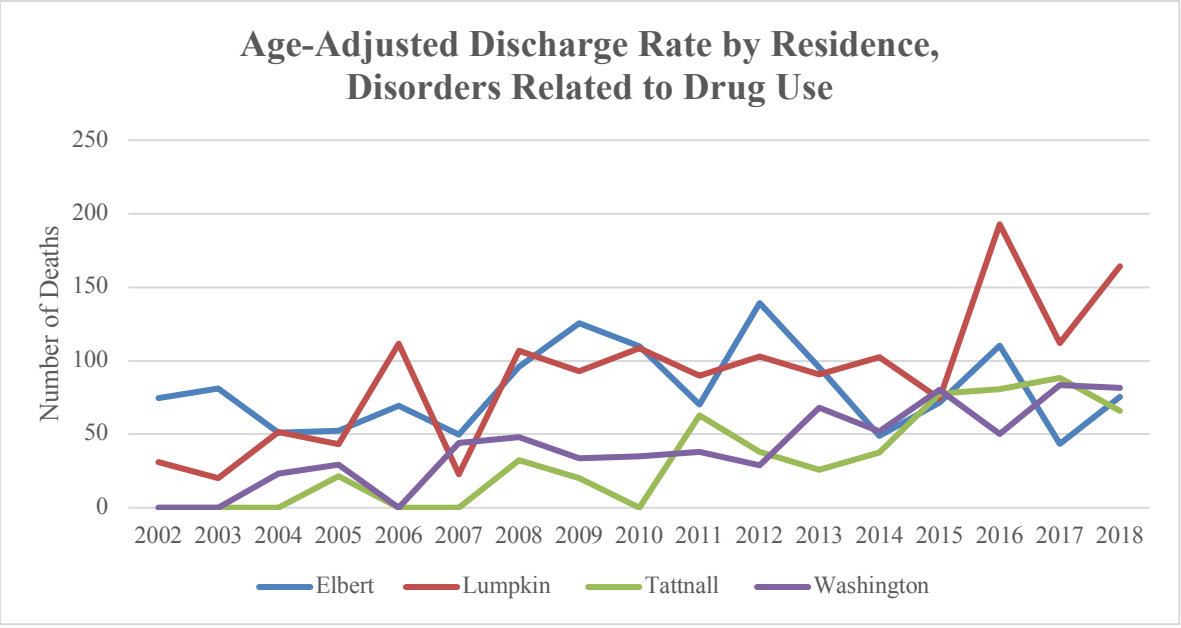


Figure 3.14: Age-Adjusted Discharge Rate by Residence, Disorders Related to Drug Use

(Source: OASIS, Georgia Department of Public Health, 2020)

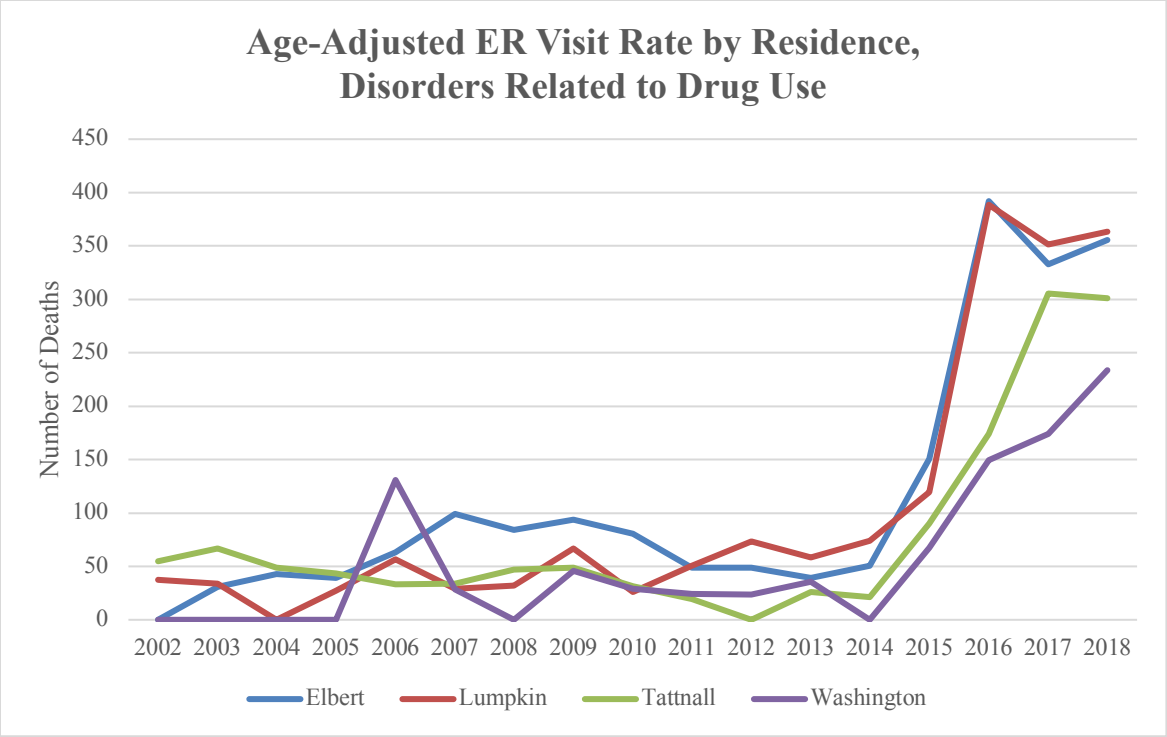


Figure 3.15: Age-adjusted ER Visit Rate by Residence, Disorders Related to Drug Use

(Source: OASIS, Georgia Department of Public Health, 2020)

Age-adjusted Discharge Rate by Residence, Blood Poisoning showed significant spikes in discharge rates for both Washington and Lumpkin County, with Washington reporting 1006 in 2010 and Lumpkin reporting 1032 in 2012. In general, all of the sites showed a steady upward trend during the timeframe studied, with Lumpkin showing the fewest in 2002 at 36.8 and Elbert having the most at 276.6 in 2002. By 2018, Lumpkin reported exponential growth, to 592.8, and Elbert reported more than double their 2002 rate at 650.4.

Age-Adjusted Discharge Rate by Residence for Disorders Related to Drug Use showed a steep spike in Lumpkin County, reaching 192.8 in 2016, followed by Elbert with 139.2 in 2012, and 2017 peaks for Tattnall at 88.3 and Washington with 83.4. These figures also show an upward trend in drug use, given that the rates in 2002 ranged from 0 (for both Tattnall and Washington) to Lumpkin at 31.1 and Elbert with the highest rate of 74.6.

Age-adjusted ER Visit Rate by Residence, Disorders Related to Drug Use rates also show a steady upward growth between 2002 and 2018. Both Elbert and Lumpkin Counties lead the sites, with a peak in Elbert of 392 in 2016 (followed by 332.6 in 2017 and 355.6 in 2018) and Lumpkin with 388.6 in 2016 (just fewer in 2017 with 351.3, and 363.7 in 2018). Tattnall follows with a peak of 305.5 in 2017 and 300.9 in 2018; Washington showed the least in 2018 with 233.7, but in 2006 actually had the highest rate among the sites at 130.8.

Discussion

The county-level demographic profiles outlined many commonalities across the four study sites, which stand apart from Georgia's statewide average in virtually every aspect. These disparities contribute to a complex host of rural-centric problems that affect overall quality of life. Any effective, sustainable prevention effort, intervention program design, and implementation process requires acknowledging and addressing these inequities.

Three of the four counties lost population between 2010 and 2019, while Georgia grew at a statewide average of almost 10%. As the state's population grows, these counties shrink, resulting in a lower tax base and compromised local funding for education, healthcare, and other priorities. Racially, the sites are less diverse than the statewide average, with a higher White population and fewer Black or African Americans (except for Washington County) and Other categories. Broadband internet access is also significantly lower in all four counties than the state, which averages almost 80%. Education levels are notably lower in all four counties than statewide averages, including Lumpkin County, home to the University of North Georgia.

Three of the four counties had significantly higher uninsured (Washington County was actually .5% lower than the state average of 15.5%). All of the sites had much lower average income levels than the state, by almost $8,000 in median household income and $5,000 in per

capita income in 2018. Employment figures were also lower: only Elbert fell remotely close to the state average of 62.4%, at 61.1%. Both Washington and Tattnall County's poverty rates were almost double the state rate (13.3%), at 25.6% and 25.9%, respectively. Elbert's was again the closest to the state poverty rate at 14.9%, but still 1.6% higher. Rurality rates showed Washington County to be the least densely populated and Lumpkin as the most densely populated.

These outliers help demonstrate the disparities among rural, suburban, and urban parts of Georgia. Opportunities for education, employment, healthcare, and future prosperity are hindered simply because of geography. A better understanding of these statistics will help empower local decision makers with the knowledge and tools to make more informed decisions regarding policies, budgets, and programs to help address such widespread inequities.

This study serves as the quantitative component of a needs assessment, critical for developing suitable intervention and prevention efforts within the USDA Rural Health and Safety Grant's four rural counties. The supply-side data described above summarizes much of what the researchers suspected—the supply of opioids far exceeds local population requirements (true medical needs) and access to treatment for opioid use disorder (and substance misuse in general) is severely limited. In particular, the lack of virtually any local access to MOUD indicates the critical nature of the situation. As the recommended standard for care in treating opioid use disorder, treatment providers are extremely restricted. In addition, the dwindling number of both primary care and mental health providers in all four sites suggests that the availability and access to suitable treatment are barriers to those seeking treatment for opioid use disorder.

Supply side dynamics can illustrate effective approaches to treatment and care. Access to opioid prescriptions available at local pharmacies and primary care and treatment

providers/facilities influence the availability and supply chain, and the resulting need for medical care. The fact that all four counties are designated as healthcare provider shortage areas indicates larger issues related to overall access to healthcare amid a population well understood to be suffering from deteriorating health conditions and elevated rates of chronic disease. The lack of mental healthcare providers is also a prevalent issue which must be addressed in local and RHSG project efforts, to effectively respond to the opioid epidemic in Elbert, Lumpkin, Tattnall, and Washington Counties.

On the demand side, analysis of the death-related statistics from the Georgia Department of Public Health showed an upward trend in all four counties, with Lumpkin County more than doubling the number of deaths reported between 2002 and 2018. When examining all opioid-attributed deaths, Lumpkin also far exceeded the other sites, with up to 10 deaths reported in 2017; Tattnall reported a peak in opioid-related deaths in 2017, and Lumpkin County reported 11 in 2017. Lumpkin also reported the most heroin deaths, with a total of four during the timeframe studied. Washington County generally saw the fewest drug related deaths. ER visitation rates due to disorders related to drug use spiked in all four counties in 2015, and have remained elevated, pointing to a persistent problem facing these communities.

Potential solutions to help address some of these factors require diligent planning and collaboration of many community partners and stakeholders. The data describes county statistics, which lag behind the state and country in almost every measure examined. Ways that these rural communities may address the opioid epidemic vary based on the local needs and priorities surrounding substance misuse; however, some proven strategies are gaining momentum, including widely advertised and promoted prescription medication take-back events, expanded efforts to provide in-school and community-based prevention education and messaging, reliance

on community input and prioritization of needs and funding structures, and expansion of both federal and state rural healthcare medical training and incentive programs.

Cooperative Extension is positioned to be a viable partner in all of these possible rural solutions to the opioid epidemic. The prescription medication takeback days, often coordinated in partnership with local law enforcement, provide resources for participants. The federal Drug Enforcement Administration (DEA) hosts a National Prescription Drug Take Back Day that usually takes place in either October or April (DEA, 2020). The DEA also maintains a database of authorized collection sites for year-round drop off of unwanted medications. All of the communities except Lumpkin County showed active collection sites in the DEA system.

Informal community education is where Extension excels. Using existing strong relationships with local school systems, Extension agents could readily deliver prevention-based programming, and in some areas already are. As part of the Rural Health and Safety Grant, Extension project faculty are in the midst of training youth educators in Mental Health First Aid in Elbert, Lumpkin, Tattnall, and Washington Counties. This training has recently been modified to be delivered online, representing a tremendous potential to rapidly scale up this effort in other parts of the state. Youth Mental Health First Aid is an 8-hour training that provides adults who work with youth skills needed to identify, understand, and respond to signs of mental illness and substance use disorders (Mental Health First Aid, 2020). According to the National Alliance for Mental Illness, one in five teens and young adults suffer from a mental health condition (2020), and 64% with major depression receive no mental health treatment (Reinert et al., 2020).

Using Cooperative Extension's leadership system to engage local decisionmakers is inherent to how the organization functions within the local community. Helping to facilitate and build engagement with stakeholders, community advocates, educators, law enforcement, and

medical providers is well within reach, and often already embedded in Extension's program development process. The data generated from this study will provide evidence of the importance of the opioid epidemic to address in their local work plans. Working in partnership with county officials, school system personnel, law enforcement, public health, and medical providers will contribute to these stakeholders' understanding and appreciation for the depth and breadth of Extension expertise and resource networks.

One of the biggest challenges facing these rural communities is the lack of access to both primary care and mental health providers. By building awareness and appreciation for state and federal rural medical provider training and loan forgiveness programs, community stakeholders can more effectively advocate for and recruit potential physicians to serve their counties. Currently, there are none or few providers in each of the four counties, and the lack of medication assisted treatment is one of the most significant barriers to addressing the prescription opioid epidemic in these communities. The FDA has approved three primary medications for treating Opioid Use Disorder, and buprenorphine, one of the leading scripts, is wholly unavailable in most of these counties. To obtain buprenorphine or other medications approved for treating opioid use disorder, a patient must have access to a physician who can prescribe the medicine. In the case of buprenorphine specifically, the physician must complete a training and acquire a physician's waiver to prescribe the drug.

Focusing on improving both the number of providers and treatment facilities in these communities is a first step. A second critical step is ensuring that the physicians in these counties are trained on the latest evidence and methods for treating opioid use disorder, including the prescription of these critical medications that show efficacy in treating the disease.

Extension entered a partnership with Mercer University in 2018 to help cultivate students for Setting Your Sights on Medical School, a program to expose students from medically underserved rural Georgia to the idea that medical school can be an option for them (Dowdy, 2018). To date more than 84 students have completed the campus-based experience designed to bolster the pipeline of rural students interested in pursuing a medical career.

Limitations

The limitations of using secondary data may include bias of those supervising its collection. Official statistics and measurement methods may change over time, making historical comparisons challenging. The data may not be representative of the target study population or generalizable to a larger population. Some of the sources rely on self-reported data, which is subject to response bias.

Assessing county-level need on the opioid crisis comes with a set of specific challenges. At present, there is not a county-level measure of opioid use disorder prevalence in the United States. As a result, many needs assessments rely on the count of opioid-related deaths to measure the magnitude of the disease at the county level, which comes with its own challenges.

Studies by Ruhm showed that U.S. death certificates under-report the number of opioid-involved deaths by at least 20% (2018). The specific drugs leading to death are often not listed on death records, with a lack of coding standardization and the need for additional training of medical examiners and coroners. Lowder et. al (2018) showed that, over a six-year period, 57.7% of accidental overdose deaths were categorized as unspecified and 34.2% involved opioids (Lowder et al., 2018). Toxicity screenings for the unspecified cases revealed that 86.8% tested positive for opioids (Lowder et al., 2018). Including toxicology reports doubled the rate of opioid-related deaths.

The Lowder study, among others, suggests that local authorities under-report opioid-related deaths. The shame associated with substance-abuse related deaths may tempt medical examiners to loosely define these deaths in a way that protects family members from public finger pointing and embarrassment or humiliation. In Georgia, coroners are elected officials, serving four- year terms (CDC, 2019). Coroners can authorize local medical examiners, who must be licensed physicians or pathologists. In rural areas, having a locally elected coroner likely creates local political pressure which may result in inaccurate reporting of drug-involved deaths. These problems create systemic limitations in how death records data are generated and used, and are a considerable limitation in the study analysis. To combat this, this study uses as many proxy measures as possible to capture the prevalence of opioid-related adverse health outcomes.

Conclusion

Results from this study indicate a severe situation regarding opioid misuse in rural Georgia. Possible measures to help mitigate the crisis include improving access to primary care physicians and mental health providers and medications for opioid use disorder (MOUD), the standard of care for opioid use disorder treatment. Providing opioid-related training (such as SBIRT and naloxone use) for community educators, including Cooperative Extension and public health officials and law enforcement, could also help establish and strengthen rapport among social service agencies who most often interact with this clientele. The continuous growth in death rates related to drug use, especially opioids, signifies an ongoing epidemic requiring vigilance and careful monitoring. By keeping a watchful eye on both the supply and demand side of the prescription drug misuse problem, policymakers can remain mindful of the evolving situation.

Extension can play a crucial role in helping address the opioid epidemic in many ways. The proposed solutions outlined above align very well with Extension agents' position within their communities, as conduits of research for applying practical solutions to everyday problems. By using the newly described, county-specific data sets, and both supply and demand information, local decisions makers will have the tools they need to prioritize and address their most critical issues, and implement holistic solutions. By collaborating with existing and new partners, Extension agents can effectively facilitate innovative discussions and help deliver promising solutions addressing opioid use disorder prevention and treatment.

References

Centers for Disease Control (2019). Public Health Professionals Gateway, Public Health Law. Georgia, Coroner/Medical Examiner Laws. https://www.cdc.gov/phlp/publications/coroner/georgia.html

Dowdy, S. (2018). UGA Extension, Mercer University partner to recruit future doctors for rural Georgia. *UGA Today*, https://news.uga.edu/doctors-rural-health/.

Dube, S. R., Felitti, V. J., Dong, M., Chapman, D. P., Giles, W. H., & Anda, R. F. (2003). Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: the adverse childhood experiences study. *Pediatrics*, 111(3), 564-572. doi:10.1542/peds.111.3.564

Georgia Department of Public Health. (2019). Opioid overdose surveillance 2018 preliminary report; 2017 overdose data. https://dph.georgia.gov/drug-surveillance-unit

Georgia Department of Public Health. (2016). Opioid Overdose Surveillance Georgia, 2016. https://dph.georgia.gov/drug-surveillance-unit

Hyer, R. L., Bazemore, A. W., Bowman, R. C., Zhang, X., Petterson, S., & Phillips, R. L. (2007). Rural origins and choosing family medicine predict future rural practice. *American Family Physician, 76*(207).

Keyes, K. M., Cerdá, M., Brady, J. E., Havens, J. R., & Galea, S. (2014). Understanding the rural-urban differences in nonmedical prescription opioid use and abuse in the United States. *Am J Public Health, 104*(2), e52-e59. doi:10.2105/AJPH.2013.301709

Lowder, E. M., Ray, B. R., Huynh, P., Ballew, A., & Watson, D. P. (2018). Identifying Unreported Opioid Deaths Through Toxicology Data and Vital Records Linkage: Case

Study in Marion County, Indiana, 2011–2016. *Am J Public Health, 108*(12), 1682-1687. doi:10.2105/ajph.2018.304683

Meit, M., Knudson, A., Gilbert, T., Yu, A., Tanenbaum, E., Ormson, E., . . . Popat, S. (2014). The 2014 Update of the Rural-Urban Chartbook. Rural Health Reform Policy Research Center, 153.

Mental Health First Aid (2020). Mental Health First Aid. https://www.mentalhealthfirstaid.org/wp-content/uploads/2020/07/072220_MHFA_YouthOnePager.pdf

Moy E, G. M., Bastian B, et al. (2017). Leading Causes of Death in Nonmetropolitan and Metropolitan Areas — United States, 1999–2014. *MMWR* Surveill Summ 2017, 66, 1-8. doi: http://dx.doi.org/10.15585/mmwr.ss6601a1external

Ruhm, C. J. (2018). Corrected US opioid-involved drug poisoning deaths and mortality rates, 1999-2015. *Addiction, 113*(7), 1339-1344. doi:10.1111/add.14144

United States Department of Justice. (2020). Diversion Control Division, Drug Enforcement Administration. https://www.deadiversion.usdoj.gov/drug_disposal/takeback/

Reinert, M., Nguyen, T., & Fritze, D. (2020). State of Mental Health in America – 2020, https://mhanational.org/issues/state-mental-health-america.

CONCLUSION

The intent of this study was to develop a conceptual framework through which Cooperative Extension can respond to the opioid epidemic within their local communities. In collaboration with a multidisciplinary team of faculty, I helped to assess the current opioid situation in four rural Georgia Counties—Elbert, Lumpkin, Tattnall, and Washington. A mixed methods approach was used to evaluate the opioid supply and demand within the four intervention sites. This summary provides systemic review of the current resources available to help intervene on the opioid epidemic and outlines recommendations resulting from the findings of the community needs assessment of the four intervention sites.

These findings point to four primary areas of emphasis, including the overarching need for continuous workforce development and training of medical providers, the prevalence of polysubstance use, the need for prevention programming through Extension's 4-H youth development program, and the empowerment of local residents through community awareness and education/outreach using shared decision making. Each component is described in further detail below. The manner in which these factors align and complement one another could be an interesting focus for a follow-up study within the intervention sites.

Key findings confirmed an excessive supply of prescription opioids, polysubstance use in all four counties, and aligning overdose and drug-related death rates during the study timeframe (2002 – 2018). Demographic data showed the sites trailing state wellbeing averages: three of the four counties lost population between 2010 and 2019 and showed lower overall income and education rates and considerably higher poverty rates, contributing to the complexity of social factors influencing substance misuse. A growing dearth of both primary care and mental health

providers shows significant access barriers to basic healthcare services and treatment for those suffering from opioid use disorder in rural communities.

On the qualitative side, findings from the four focus groups revealed some disturbing patterns across the four rural counties. Although opioid distribution has dropped drastically since Georgia's adoption of the prescription drug monitoring program in 2018, local law enforcement indicated concern over a responding increase in methamphetamine use. This revelation was shared in each of the four groups, and confirmed by social service providers. Participants agreed that methamphetamine is by far their biggest problem. Proximity to Atlanta, as a major distribution hub for illicit methamphetamine brought in from Mexico, makes the substance inexpensive and easy to obtain.

Conclusions drawn from this study point to the overriding issue of persistent polysubstance misuse, in the face of well-intentioned policy efforts to help stem the flow of legal opioid prescribing. This is what public health and policy experts refer to as an unintended consequence. The reality facing rural communities is that limited educational, heath care, and economic opportunities underlie generational poverty and substance misuse. Intervention efforts must be community-led, and must rely on educating students and families using an intentional process mindful of the unique characteristics of rural areas. Cooperative Extension is a logical and well-equipped resource embedded in all Georgia counties that has established credibility and is ideally positioned to help intervene on the opioid epidemic.

In particular, Extension's 4-H youth development program is a widely-available asset for customization of local opioid (and substance use in general) misuse prevention efforts. The conceptual model shared shows how Extension and community partners can work collaboratively to diffuse innovations that are required to help address this public health crisis.

The USDA Rural Health and Safety Grant team is training community educators through Extension in Mental Health First Aid for Youth, which provides practical strategies to help recognize crisis situations and common mental health challenges for youth. This grant is also piloting a new program in Lumpkin County called Strengthening Families Plus, which facilitates family-based conversations and communication.

Based on these conclusions, practitioners and researchers should consider a multifaceted strategy in responding to the epidemic. A community-driven approach that includes local decision makers (opinion leaders) in the shared development and implementation of solutions can drive progress. Community awareness and education outreach efforts should make use of existing resources and expertise, such as Cooperative Extension, state and federal prescription drug safety programs such as the DEA's Medication Takeback Day, and other evidence-based platforms to expedite local response efforts and provide validated, customizable tools. Education on the appropriateness and efficacy of MOUD should be a central component of these efforts, empowering local stakeholders with accurate information on their local epidemic.

Investment in workforce development and training of local healthcare providers could help to unlock restricted access to MOUD, the standard of care for treating opioid misuse disorder, which is a major barrier for those seeking treatment for opioid misuse disorder in Elbert, Lumpkin, Tattnall, and Washington Counties. Any treatment strategies in these areas should advocate for MOUD training for existing rural providers. Investing in state and federal loan forgiveness for medical students can help attract practitioners to rural communities. Expanding efforts to recruit future medical students from rural areas should also prove to be useful over time. The Rural Health and Safety Grant is providing these four counties access to evidence-based SBIRT training (screening, brief intervention, and referral to treatment) for

clinicians, social workers and medical providers. SBIRT is an integrated public health approach for early intervention and treatment for those experiencing or at-risk for substance use disorders. The training consists of online, self-paced modules which provide continuing education credits for clinical psychologists, social workers, alcohol and drug counselors, and nurses. The combination of geographic isolation and limited broadband internet availability create intense pressure on the already-limited availability of rural primary care providers.

To better understand the implications of these results, future studies could address some of the specific challenges faced by rural regions. Better understanding how to prepare communities for effective collaboration building, expanding the capacity of local public health offices, and helping to better align local issues and funding priorities could all yield sustained value. In addition, exploring ways to recruit and retain mental health and primary care providers in rural areas would be helpful in addressing these barriers to treatment. Finally, investigating the contributing factors to the recent explosion in methamphetamine use could help map out local intervention and treatment strategies for this growing and difficult-to-treat addiction.

This study contributes in-depth knowledge of current opioid and substance misuse in these four rural Georgia counties. The data confirmed some previous assumptions about the epidemics' effects on communities, and uncovered an alarming unintended consequence of recent policy changes resulting from the prescription drug monitoring program: statistical evidence suggests that a dropoff in the licit supply of opioids is not necessarily followed by a decrease in overdose and deaths. By understanding both the supply and demand sides of the situation, leaders can make informed decisions based on local, timely data. Cooperative Extension agents have the skillsets and community standing to facilitate local collaborations to address the opioid epidemic and act as a conduit for positive, lasting change.