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# Summit Presentations and Presenters

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## Advancing K-12 Education

### Presentations

#### Establishing Quality on Rural Schools' Professional Development Choices

In-service professional development (PD) can enhance teachers' instructional practice. However, teachers report that they are not as well prepared from their colleges to teach reading and writing. Teacher literacy instruction has been a focus of the state of Tennessee that invested funds to provide PD on foundational/secondary literacy. However, top-down approaches, even though they intend to be supportive, may not consider districts' differential needs. The purpose of this work is to strengthen K to 12 literacy education by developing a CANVAS site with modules on topics that connect theory/research to practice, offering PD choices. The focus is on literacy and on classroom behaviors/management as the latter can affect implementation. Modules of instruction will be hosted on CANVAS and their development/content will be based on a collaboration between researchers, practitioners, and district leaders. The project is transformative as 1) the development of the modules of instruction can offer tailor-made PD experiences to sites; 2) UT system collaboration will support rural needs; 3) it will develop leaders to sustain evidence-based practices.

**Presenter(s):** Zoi Apostolia Traga-Philippakos (UTK); Staci Fuqua (UTM)

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**Campus/Institute:** UT Knoxville; UT Martin

**College/Department:** Theory and Practice in Teacher Education within the College of Education, Health, and Human Sciences (CEHHS)

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## The Community Schools Solution

What if I were to tell you that for the cost of one teaching position, we could increase school attendance and lower behavior referrals? That we could build long lasting partnerships in our community that support school resources? That we could even begin to increase the academic performance of the entire school? I am speaking now to the results of the evidence-based, best practices of the Community School (CS) model. Rooted in the work of Jane Addams and John Dewey, the CS model has two decades of research proving its efficacy in rural and urban contexts. With a return on investment of \$7 for every \$1 invested, this is a cost-effective strategy for transforming public schools that works. Tennessee's coalition of community schools, the Tennessee Community Schools State Network, has been hard at work revitalizing schools into thriving community hubs addressing the challenges faced by many Tennessee students and families through holistic support and building leadership capacity within communities to better support schools. Audience members will gain an understanding of how the assets-based approach of the CS model produces Tennessee's best kept secret for advancing K-12 education.

**Presenter(s):** Janine Al-Aseer (UTK); Caitlyne Steward (Hamilton County Schools); Adam Fritts (United Way of Greater Knoxville)

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## Thriving in Tennessee: Empowering Students through MTSS and School Behavioral Health

The escalating youth mental health crisis in TN necessitates a proactive and comprehensive approach to school behavioral health within schools. School settings present a unique opportunity for early identification and intervention, providing timely support, reducing stigma, and improving student well-being. The Multi-Tiered System of Support (MTSS) framework offers a public health lens to creating a structured, evidence-based approach to address students' diverse mental health needs. MTSS employs tiered interventions, ranging from universal prevention to intensive, individualized support, ensuring each student receives tailored support. MTSS addresses risk and protective factors influencing student mental health. Recognizing these factors empowers schools to create environments that mitigate risks and promote well-being. The Interconnected Systems Framework (ISF) further enhances MTSS by fostering collaboration between schools and communities, ensuring a continuum of care. Implementing MTSS can cultivate a supportive educational environment that enhances student well-being. This presentation equips attendees with the knowledge and tools to integrate this approach into practice.

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**College/Department:** College of Social Work

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## **Transformative Test Prep: TCAPs Test Prep in Community Schools**

There is a well-documented link between family wealth and standardized test scores: kids from wealthier families get much better test scores (Rearden 2011, 2018). There is also a well-documented (and -marketed!) link between access to high quality test prep courses, like those offered by the Princeton Review, and higher scores. In Tennessee, retention laws linked to third-grade TCAPs scores mean that standardized tests have an outsized, early impact on children's long-term academic outcomes. Academic success in turn impacts other outcomes, including a child's risk of addiction and risk of involvement in the criminal justice system. Could access to high quality extra-curricular TCAPs test prep transform outcomes for TN children living in poverty? Our presentation will paint a comprehensive picture of the TCAPs challenge, and explain how our proposed Test Prep Academy will seek to address it. We'll rely on a combination of state-level and national data, and student, parent, and teacher testimony. We will detail the planned intervention and invite the audience to collaborate on honing the idea, identifying potential problems, and suggesting ways to expand or refine the project.

**Presenter(s):** Kristina Gehrman (UTK); Francheska Starks (UTK)

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## **Equipping Educators for Excellence (E3)**

Rural communities often experience greater challenges in STEM education in grades K-12. The Equipping Educators for Excellence (E3) program supports the TN Grow Your Own (GYO) initiative with a K-12 mentorship program for rural teachers to develop knowledge and skills in lab/data science (LDS) education, provides stipends to fund curriculum development, and small grants for materials to deploy the lesson plans. E3 seeks to 1) increase STEM resources for teachers and students in K-12, 2) provide mentorship support to rural teachers, 2) increase exposure to LDS careers. E3 provides a unique mentoring program pairing UTHSC LDS faculty with rural STEM teachers in West TN to develop new modules about LDS. These modules educate K-12 students about real-world health problems and providing earlier exposure to other health careers. Our efforts will also increase health literacy in rural communities. The E3 project takes advantage of the

infrastructure already established within Lauderdale and McNairy counties by the High School to Health Care (HS2HC) grant program funded by the NIH.

**Presenter(s):** Rebecca Reynolds (UTHSC)

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## **Access to and Success in Secondary Advanced STEM: The State of AP® Programming in Tennessee's Rural Public High Schools**

Nearly 38% of public high schools in Tennessee are rural-located; troublingly, rural secondary students nationwide have less access to and success in advanced STEM compared to their non-rural peers. Using licensed College Board® Advanced Placement® data covering the entire TN student population, this session explores how and geographically where national patterns of STEM inaccessibility are mirrored in Tennessee's rural public high schools. Findings reveal that TN rural schools are less likely to offer advanced STEM courses, and when they do, they are less likely to offer the variety of courses more common in TN non-rural secondary institutions. Data also shows that the rural TN students who do have access and are taking AP® examinations are largely members of Tennessee's most affluent rural communities. Variations by AP® STEM subject and rural student subgroups are also discussed. The session will close by highlighting implications and recommendations for researchers, teacher educators, and policymakers to improve advanced STEM access and success in Tennessee's rural public high schools.

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## **Changing Addictive Landscape with Knowledge Qualification and Exchange in Integrated Social Media Interactions**

The concept of social media addiction is not limited to college students. The challenge is in every facet of society. The principal question is how can we transport the addition of social media to

benefits of learning objectives? The design in the work is to aggregate qualified knowledge of participants in a social media landscape for its exchange and as a measure of learning. This was deemed possible by qualifying (a) learning objectives (b) participant profile (c) knowledge object (d) social media parameters and (e) learning source. The created knowledge is qualified are integrated back to the social media environment within the initial environment. This proposal allows college students to learn while interacting with peers in an addictive environment. The work propounded the integration of these entities using information technology provisions as a learning and evaluation tool. It also demonstrated scenarios of applications.

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## **Access + Content + Language = STEM Learning for Culturally and Linguistically Diverse Youths (ACL=STEM)**

Culturally and linguistically diverse youths (CLDYs), the fastest growing student population in Tennessee, face numerous educational challenges and significant achievement gaps. They are underrepresented in high-paying careers within science, technology, engineering, and math (STEM) careers. ACL=STEM will ensure that CLDYs are critically engaged with STEM content while developing academic English necessary for content learning. The specific goals are to (1) develop a project-based 6th and 7th grade engineering curriculum that emphasizes building academic content literacy, (2) implement it in an after-school program mentored by bilingual UTK engineering students, (3) evaluate the impact on participants' mastery of STEM learning and their appropriate use of content-specific academic English, (4) understand the CLDYs' perceptions regarding the support of academic language in accessing STEM content learning, and (5) examine STEM identity development in participants. ACL = STEM addresses inequity issues in STEM education by establishing a community-driven, sustainable educational structure that would otherwise not be feasible in K-12 public education.

**Presenter(s):** Clara Lee Brown (UTK)

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**College/Department:** College of Education, Health, & Human Sciences, Theory and Practice in Teacher Education; Tickle College of Engineering, Engineering Fundamentals

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## Thermal Runaway in Electronic Devices: a Transformational PBL Unit for High School Chemistry

The goal of this project is to design a problem-based learning (PBL) unit for high school chemistry that involves engagement with local community partners and features scientific phenomena that are culturally relevant, engaging, and evidence-based. In Spring 2024, our project team implemented a PBL unit centered around thermal runaway in electronic devices at a local area high school. In this session, we will present our results and lessons learned from the pilot year implementation as well as plans for next year's implementation. We will also engage participants in a brief PBL activity and brainstorm on how participants could implement PBL activities in their own classrooms. Key takeaways for participants include: (1) How can I implement PBL activities effectively in my own classroom? (2) What are some of the key challenges that we must overcome in order to improve life for our communities, and ultimately, for our planet? (3) What are some emerging technologies that may allow us to realize solutions to these key challenges? and (4) How can I use PBL to get my students to focus on the solutions to these problems instead of the enormity of the problem itself?

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## Addressing K-12 Financial Education Challenges in Rural Tennessee

K-12 financial education in Tennessee has received growing attention. The state continues requiring personal financial education for high school graduation, and currently the state has 10 bills introduced or enacted aiming to improve financial literacy of school-age students. In-school financial education has a unique potential for strengthening education and communities when its design and implementation involves multiple levels (students, families, financial institutions, schools). In this presentation, we will share insights gained from Money Week, a financial education curriculum that has reached over 7,000 elementary students across 31 Tennessean counties since its implementation in 2021. Additionally, we will discuss critical gaps in research, policy, and practice regarding K-12 financial education in rural Tennesseans. Using the ecosystem perspective, we will explore determinants of effective financial education in schools with a particular focus on factors relevant to schools in rural Tennessee and discuss evidence-based multi-level (e.g., state, county, school) solutions for effective, equitable K-12 financial education in the state of Tennessee.

**Presenter(s):** Zibei Chen (UTK); Christopher Sneed (UTK); LaKesha Page (Tennessee Department of Treasury); Bill Parker (Tennessee Financial Literacy Commission, Tennessee Department of Treasury)

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**College/Department:** College of Social Work; UT Extension - Department of Family and Consumer Sciences

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## **I.D.E.A.L. Citizenry: Innovative Designs that Engage Active Learning for Citizenry**

The "I.D.E.A.L. Citizenry: Innovative Designs that Engage Active Learning for Citizenry" project aims to enhance civic literacy among secondary Social Studies and English Language Arts students in grades 8-12 by empowering teachers to become transformative leaders. The project recognizes the critical role these grades play in adolescent development and citizenship responsibilities. By promoting interdisciplinary collaboration between Social Studies and English Language Arts, the program seeks to develop innovative strategies that integrate literacy and civic engagement. The design-based research approach emphasizes iterative cycles of implementation, where content is co-designed with participants and refined through feedback, aiming to address media literacy challenges in both rural and urban settings.

**Presenter(s):** Joshua Kenna (UTK); Zoi Traga-Philippakos (UTK); Kim Holder (UTC)

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**College/Department:** College of Education, Health, and Human Science/Theory and Practice in Teacher Education (Kenna & Traga-Philippakos); Institute for American Civics (Weaver)

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## **Innocrate for Innovative K-12 Education in Advanced Materials and Manufacturing on a National Scale**

Innocrate is a brand name for K-12 learning kits developed by the UT Composites team in collaboration with IACMI-The Composites Institute. Innocrate is analogous to 'lab in a box' but highly customized for STEM, plastics/polymer, composites and metal casting/forging. provides experiential learning through the concept of 'learn by doing'. It is tailored for K-2, 3-5, 6-8 and 9-12 grade levels. DoD IBAS, DOE, NSF, ONR and other agencies have identified a major need for work force development for the United States starting at the K-12 stage. The team has diligently developed Innocrate to meet this need. Innocrate is licensed through the University of Tennessee Research Foundation (UTRF) and is being launched on a national scale. Over 2000 K-12 students are benefitting from Innocrate. Tennessee, Mississippi, Minnesota, Michigan, Hawaii and Guam are early



adopters of Innocrate at different K-12 grade levels. Innocrate integrates a 'train the trainers' component, accompanied by learning books, teacher and student guide(s), virtual reality goggle, videos and on-line training materials. Innocrate can be adopted in a flexible manner based on a schools' needs, time, students, curriculum.

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## **Enhancing Parenting Practices and Child Well-Being: Assessing the Impact of Trauma-Informed Parenting Training through a University-School Collaboration**

This mixed-methods pilot study draws on a university-elementary school collaboration to provide a trauma-informed parenting (TIP) training to 27 parents at a Tennessee elementary school. The objective of this study was to understand how the TIP training informed participants' parenting practices and their perceptions of their child's behaviors. Findings show significant reductions in children's behavior problems, emotional symptoms, and hyperactivity, along with improved parental empathy, communication, and supportive approaches. The training helped parents to better understand their children's trauma and adopt strategies fostering resilience and emotional well-being. This study highlights the role of school-parent partnerships in advancing K-12 education through trauma-informed approaches.

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## **Machine Learning Approach to Studying the Intersection of SDoH; Physiological, Psychological Well-being and Academic Performance; and Subsequent Holistic Intervention Development (TennWell Project)**

Adolescence is a crucial time for development, and trauma and stress can weaken the immune system, leading to absenteeism and academic challenges. In collaboration with the Emerald Youth Foundation, we are studying how the gut microbiome affects the immune and neuroendocrine systems in local adolescents, focusing on the impact of stress and trauma. By integrating Social Determinants of Health (SDoH) into our Adolescent Microbiome Study, we aim to inform future interventions that promote well-being and academic success. The project has two phases: data collection on SDoH, psychological health, the gut microbiome, and academics, followed by Machine Learning analysis.

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**College/Department:** College of Nursing; Department of Psychology; Department of Educational Psychology and Counseling; College of Nursing

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## **Building a Bridge to an Inclusive Future: UTK CLEE's Commitment to Advancing Education Through Belonging, Inclusion and Equity in the Classroom**

The Center for Learning, Education and Employment's (CLEE) Access for All Learning Network (AALN) equips districts with the tools and strategies to ensure every student, including those with disabilities, receives high-quality literacy and math instruction. The AALN partners with the Tennessee Department of Education (TDOE) and district leaders to develop and implement strategic action plans, provide statewide professional development, and facilitate Learning Networks and Communities of Practice. We believe every student belongs in the Tier 1 (general education) classroom. Our work bridges special education and general education to enhance inclusivity.

This presentation highlights the need for equity and access, aligning CLEE's mission of continuous improvement and equitable access in education with TDOE's insights on the impact of inclusionary practices on students with disabilities, families, and communities. We will present our plan for intentionally providing professional development and leadership coaching across Tennessee, sharing lessons learned to encourage attendees to break silos, build empathy, advocate for others, and recognize potential in every individual.

**Presenter(s):** Andrea Reyes (UTK); Tishona Lowe (UTK); Shea Hennessee (UTK); Angela Wegner (UTK)

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**College/Department:** The Center for Learning, Education, and Employment (CLEE) within the College of Education, Health, and Human Sciences (CEHHS)

## Addressing Tennessee's Teacher Shortage: How UT PLAYS and the Be One UT Values are Advancing K-12 Education

Teachers are essential to advancing K-12 education, and UT's traditional Educator Preparation Programs are crucial in preparing and developing Tennessee's educators. However, these efforts alone have not been enough to ensure every classroom has a highly qualified, well-prepared teacher. Tennessee has experienced teacher shortages exacerbated by the pandemic and persistent to date. Shortages are most dramatic in high needs subject areas, like Special Education and Math, and in hard to staff schools, such as in rural communities. Aspiring teachers often face significant barriers to obtaining licensure. In this presentation, UTK demonstrates how we've leveraged the Be One UT values to create a high-quality teacher preparation program, UT PLAYS, designed to address these shortages. We will highlight the program's successes, including testimonials from participants and partner schools, showcasing its statewide impact and accessibility for anyone, anywhere, at any stage of life who aspires to become a teacher in Tennessee.

**Presenter(s):** Amelia Brown (UTK); David Cihak (UTK); Rhea Carmon (UTK); Julie Owens (UTK); Alex Moseman (Knox County Schools); Paul Kirkland (Monroe County Schools)

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**Campus/Institute:** UT Knoxville

## Strengthening Rural Communities



### Presentations

#### Project RAISE: An Innovative Partnership to Strengthen Mental Health in Rural Tennessee Schools

It is no secret that it takes a grand plan to tackle a Grand Challenge, but what does it take to tackle two Grand Challenges? Project RAISE (Rural Access to Interventions in School Environments), an ambitious and innovative partnership between the UT's Center for Learning, Education, and Employment (CLEE) and the Tennessee Department of Education (TDOE) that will address the shortage of school-based mental health providers in rural school districts across the state.

In this presentation we'll share the details of this partnership—which brings CLEE's longstanding reputation and mission to facilitate continuous improvement and equitable access in education and employment together with TDOE's understanding of the impact that a lack of supports and services can have on students and communities—and the innovative plan to recruit and retain intern-level school-based mental health practitioners to rural school districts. We'll also share lessons learned for recruitment and retention strategies, building relationships with and for school district personnel

and university programs, and creating sustainable resources to strengthen rural communities and advance K-12 education.

**Presenter(s):** Angela Wegner (UTK); Erica Garza (UTK); April Ebbinger (Tennessee Department of Education)

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**College/Department:** Center for Learning, Education, and Employment, College of Education, Health & Human Sciences

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## **Promising Pathways for Career and Technical Education in Rural Tennessee**

Career and Technical Education (CTE) is offered to some degree in all U.S. high schools, colleges, and universities. Modern CTE is organized into “career clusters” that span almost every occupation in the economy, including those that typically require a college or advanced degree. Research has shown that participating in CTE at the K-12 or postsecondary level can lead to better employment and earnings. Rural schools face many challenges, however, in offering, expanding, and adapting CTE pathways.

We propose a session for the Grand Challenges Summit to review and discuss new research on access to CTE in rural Tennessee. Topics include:

- Which K-12 and postsecondary CTE programs align with high-paying, in-demand jobs?
- Are these programs available in Tennessee's rural high schools, community colleges, and technical colleges?
- Which K-12 and postsecondary CTE programs are associated with better student outcomes in terms of employment, earnings, and/or further postsecondary study?
- What barriers hinder rural students from enrolling in high-quality CTE?

We will close the session with a guided discussion on policy solutions and areas where more research is needed.

**Presenter(s):** Celeste Carruthers (UTK); Cameron Sublett (UTK)

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**College/Department:** Boyd Center for Business and Economic Research (Haslam College of Business); The Education Research & Opportunity Center (College of Education, Health, and Human Sciences)

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## **Strengthening Rural Communities: Using Drones to Delivery Health Care Services**

This presentation outlines the findings from the National Science Foundation (NSF) Smart and Connected Communities (S&CC) Planning Grant titled "Securing Underserved Communities from Drug Abuse with Drone-Assisted Smart Medication Delivery." The research focuses on enhancing healthcare delivery in rural communities through innovative drone technologies, in collaboration with multiple community stakeholders including Tennessee Department of Mental Health and Substance Abuse Services, Tennessee Department of Transportation, Knox County Health Department, Metro Drug Coalition, Health Wagon, Helen Ross McNabb Center, and Remote Area Medical.

The project emphasizes the importance of understanding social perceptions and public concerns, developing coordinated delivery mechanisms, and engaging community stakeholders to enable more efficient healthcare service delivery paradigms. Key outcomes include the development of novel AI and machine learning frameworks for optimizing delivery services and a promising proof-of-concept for truck-drone sidekick operations, designed to minimize delivery time and maximize coverage, particularly in combating drug abuse in rural areas in Tennessee.

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## **"We're All in This Together": Exploring Tennessee Farm Family Stress and Mental Health Management**

One key factor in strengthening rural communities is to strengthen farm families. According to the 2022 USDA Census of Agriculture, 93% of farms in Tennessee are family or individual farms. Family farms provide a stabilizing impact on rural economics by generating economic activity and offering vital sources of employment. However, family farms in rural areas face many challenges as the rates of suicide increase, with some sources placing suicide rates anywhere between 1.5 and 3 times the national rate. These rising rates coincide with drops in prices, exports, and land values, but are not tied directly to mental health concerns; rather, cultural values of privacy, independence, and self-sufficiency present challenges for rural community leaders seeking to help family farm members. This presentation will focus on findings from recent work exploring family farm stress, and offer concrete ways rural community leaders can help family farm members. These recommendations include shifting current messaging and educational efforts, and learning from farmers themselves about issues they face in the 21st century.



**Presenter(s):** Emily A. Paskewitz (UTK); Laura Miller (UTK); Victoria Bertram (James Madison University)

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**College/Department:** College of Communication and Information/School of Communication Studies

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## **Creating People-Centric Workplaces in Rural Communities**

This presentation highlights how people-centric workplaces can improve well-being, drive manufacturer performance, and strengthen rural communities. In today's turbulent global economy, small manufacturers face tremendous challenges that threaten their ability to provide good jobs in rural communities. Industry shifts, rapid technological change, and supply chain disruptions are a few of their many challenges. The most significant challenge for manufacturers, however, is hiring and retaining the talent they need to succeed and grow. This is particularly true for small manufacturers in rural communities with weak labor force participation and limited access to resources.

This presentation describes how small manufacturers can develop people-centric workplaces to attract, develop and retain the people needed to grow and succeed. A people-centric workplace balances the need for high performance with employee well-being. Audience takeaways include an understanding of how small manufacturers can systematically develop people-centric workplaces; the value of people-centric workplaces for individuals, families, companies and rural communities; and obstacles to implementing people-centric workplaces.

**Presenter(s):** Paul Jennings (IPS)

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**Campus/Institute:** UT Institute for Public Service

**Agency:** Center for Industrial Services

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## **Connecting Opportunities Through a Global and Local Lens for Rural Tennessee**

The University of Tennessee System has an opportunity to undertake collaboration across multiple institutions leveraging expertise while conserving financial resources to enhance international business and education opportunities for rural Tennesseans from a macro to micro-level. This

presentation will share how collaborative partnerships within the System, the U.S., and abroad help bridge the gap between global markets and local communities, fostering economic growth and cultural exchange for underrepresented areas and all of Tennessee.

**Presenter(s):** Stephanie Sieggreen (UTK); Olivia Blackmon (Oak Ridge Associated Universities); Takeo Suzuki (UTC); Todd Beard (UTK)

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**Campus/Institute:** UT Knoxville; UT Chattanooga

**Agency:** Enrollment Management

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## **Addressing Access to Employment and Resources for Individuals with Barriers in Rural Communities toward Workforce Pipeline Development**

Presentation goals are to: confirm the workforce and labor shortage reasons; understand the need to create new workforce pipelines for people who are not working; explore basic barriers faced by individuals in rural areas; and discuss initial interventions to address these barriers.

At the conclusion of the presentation, participants will more fully comprehend difficulties faced by individuals with barriers in rural areas in securing employment with a life-sustaining wage as well as learn key ways to improve opportunities for rural individuals. Participants will learn about other innovative programs working to address this dilemma on the back-end. Those in attendance will hear a discussion about potential solutions to address the identification problem for the future.

Key Learning Objectives:

- (1) Understand problems faced by rural individuals with barriers in moving forward.
- (2) Comprehend opportunities to address current needs which can greatly improve a person's employment options.
- (3) Discover other programs that are currently addressing the identification dilemma.
- (4) Explore potential solutions to address the identification problem earlier in the process.

**Presenter(s):** Jennifer Leigh Eppley (IPS); Dr. Joy Radice (UTK); Debbie Abrams-Cohen (UTK)

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**Campus/Institute:** UT Knoxville; UT Institute for Public Service

**Agency / Department:** UT Center for Industrial Services; UT Legal Clinic; UT TN Child Support Employment and Parenting Program (UT TCSEPP); UT College of Law; UT Social Work Office of Research and Public Service

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## Enhancing Health Care Access and Training Future Nursing Leaders Through a Mobile Health Program

A college of nursing launched a mobile health unit to address rural health disparities while simultaneously educating nursing students on how to assess patients' social determinants of health and deliver culturally sensitive care. The program collaborates to provide care to the rural population while resource sharing and problem solving. The program expands clinical training via a mobile unit while enhancing students' skills.

Rural healthcare access remains a significant challenge. The program enhances healthcare delivery and works to increase the nursing workforce in these areas. Collaborations with rural and urban providers, community agencies, and local leaders facilitate resource sharing, knowledge exchange, and collaborative problem-solving.

The program has significantly expanded healthcare access through multiple partnerships. Students gain experience in assessing and addressing the needs of rural and underserved populations.

The program represents a transformative approach to rural healthcare delivery, combining innovative strategies with strategic partnerships to overcome access barriers, promote health equity, and address the rural healthcare provider shortage.

**Presenter(s):** Diana Dedmon (UTHSC); Lisa Beasley (UTHSC); Heidi Bockholt (Dr. Zaidi & Associates); Syed A. Zaidi (Dr. Zaidi & Associates)

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**Campus/Institute:** UT Health Science Center

**College/Department:** College of Nursing, Department of Community and Population Health

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## Strengthening Rural Governance in West Tennessee

This presentation explores the critical challenge of limited governance capacity in rural Tennessee communities. By examining the specific needs and challenges faced by local governments, we propose a comprehensive approach to enhance their capabilities and foster sustainable development.

The project focuses on building capacity in governance, economic development, and staff augmentation. Through collaboration with leading organizations and the involvement of UT students, we aim to provide targeted support to rural communities.

Key highlights include:

1. Identifying and addressing specific capacity needs in rural governments.
2. Fostering partnerships to leverage resources and expertise.
3. Implementing targeted training programs and student support initiatives.
4. Measuring the impact of interventions on community development and well-being.

The expected outcomes of this project include improved governance practices, enhanced economic opportunities, and a stronger quality of life for rural residents. By addressing the root causes of limited capacity, we can create a more sustainable and prosperous future for rural Tennessee communities.

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**College/Department:** College of Humanities and Fine Arts

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## **Empowering Rural Communities: Leadership Development and Volunteer Engagement for Enhanced Community Capacity**

This presentation explores the role of leadership development and volunteer engagement in strengthening rural communities. The University of Tennessee Extension aims to enhance community capacity, drive sustainable development, and improve overall quality of life in rural areas through locally motivated action driven by residents. Through existing programs and strategic initiatives, UT Extension is poised to strengthen rural communities.

Key highlights will include:

- Understanding Rural Communities
- Discussing the Importance of Leadership Development
- Revealing the Value of Volunteer Engagement
- Integrating Leadership and Volunteerism as a Mechanism for Building Community Capacity

Key takeaways for participants would be:

- A comprehensive understanding of the unique challenges and opportunities in rural communities.
- Practical strategies for developing leadership and engaging volunteers.
- Real-world examples and success stories to inspire action.
- Resources and support networks to aid in the development of rural communities.

Our agency exists in all 95 counties of the state. UT Extension provides direct access to our university's resources to residents statewide.

**Presenter(s):** Dave Close (UTK); Brandi Berven (UTK)

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**College/Department:** UT Extension - Evaluation & Staff Development

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## **Improving Rural Patient Outcomes by Optimizing Targeted Social Drivers of Health: An EHR-AI Systems Engineering Simulation Approach to Precision Health**

This precision health initiative aims to strengthen rural communities by integrating Electronic Health Records (EHR), artificial intelligence (AI), and systems engineering to deliver tailored health interventions. It combines EHR data, machine learning models, and systems engineering to address clinical and social drivers of health. A predictive toolkit uses agent-based modeling and community health statistics to forecast outcomes and guide interventions for individuals and communities. This systems approach allows healthcare providers to optimize resource allocation, target high-risk patients, and enhance healthcare delivery in underserved rural areas.

Collaboration is integral, involving multidisciplinary teams from the University of Tennessee, University of Nebraska Medical Center, and local health organizations. Stakeholder engagement ensures the project aligns with community needs, enhancing the utility and sustainability of the initiative. The project's long-term goal is to improve rural healthcare efficiency, reduce health disparities, and create a scalable model that addresses both clinical and social factors affecting health outcomes.

**Presenter(s):** Tom Berg (UTK)

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**College/Department:** College of Nursing

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## **Rural Expansion of Access to Genetic Counseling and Health Care through AI Innovations (REACH)**

This project aims to address the significant disparities in genetic counseling services available to rural communities in Tennessee. With only 0.72 genetic counselors per 100,000 people, many rural residents face delayed diagnoses and suboptimal treatment. REACH seeks to bridge this gap by developing a cutting-edge AI platform that provides high-quality, personalized genetic counseling remotely.



This AI platform will employ advanced machine learning, natural language processing, and telemedicine technologies to analyze patient data, offer risk assessments, educational materials, and facilitate virtual consultations. The platform is designed with a user-friendly interface, multilingual support, and compatibility with assistive technologies to ensure accessibility. It will initially focus on targeted variant testing and cascade testing, with plans to expand to newborn screening education.

The project will engage with stakeholders to secure long-term support and expand the platform's reach. The ultimate goal is to enhance rural healthcare capacity, reduce disparities, and advance the responsible use of AI in genetic counseling, ensuring better health outcomes for rural Tennesseans.

**Presenter(s):** Xiaopeng Zhao (UTK)

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**College/Department:** Tickle College of Engineering

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## **AI-Driven Precision Medicine: Tackling Rural Health Care Disparities with EHR Insights**

Inequities in healthcare delivery in rural areas create significant challenges in sustaining rural communities, where limited access to advanced medical care hinders effective healthcare solutions. Our research aims to address this pressing issue by leveraging machine learning (ML) to extract deep insights from electronic health records (EHRs) and improve healthcare outcomes. Initially, we have developed conceptual models to enhance cancer staging from pathology reports and anonymize patient data within EHRs, both of which are critical for improving healthcare in underserved areas. These efforts are focused on addressing the disparities that rural communities, particularly in Tennessee, face in healthcare access and delivery.

As our research progresses, we will expand to include a holistic view of patient health, integrating EHRs with other data sources to support precision health. By applying this technology in rural communities, we aim to reduce healthcare inequities and contribute to the sustainability and well-being of these regions, where the need for advanced solutions is urgent.

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**College/Department:** College of Nursing

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## **The Be More Tennessee Initiative: Sustainably Reducing Obesity in 7 Rural Tennessee Counties using Policy, Systems and Environmental Change**

The obesity epidemic and its associated chronic metabolic disease outcomes are the leading cause of mortality in the US. In Tennessee, 7 counties with adult obesity rates over 40% are included in the CDC-funded High Obesity Program (HOP) at University of Tennessee Extension. Research links food insecurity, obesity, race, geographical region (Appalachia and Lower Mississippi Delta) and high rates of chronic disease in rural Tennessee counties.

We are addressing health disparities using policy, systems, and environmental (PSE) changes, to make lifestyle changes easier for all community members. Extension agents are trusted local leaders who chair their county steering committees to identify nutrition and physical activity resources and opportunities. Community needs assessment data helps inform committee work to implement sustainable PSE projects aimed to reduce obesity rates and improve community health outcomes. Findings indicate that county residents want to incorporate healthy lifestyle changes, but many have several barriers to making those changes. Projects initiated this year will build momentum for subsequent PSE changes in partnership with local, state and federal entities.

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**College/Department:** UT Extension - Family & Consumer Sciences

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## **Rural Health and Older Adult Interprofessional Mobile Health Program: Forging Collaborative Partnerships**

Older adults living in rural Tennessee are at high risk for chronic disease, brain disease, and poor health outcomes due to lack of knowledge, health care access, continuity of care, and resources.

The University of Tennessee at Chattanooga (UTC) strives to promote healthier communities through an interprofessional project titled Rural Health and Older Adult Interprofessional Mobile Health and Workforce Recruitment Program (ROAD MAP). ROADMAP will utilize a mobile health unit to deliver healthcare and social services to older adults in 8 rural Southeast Tennessee counties. With an emphasis on interprofessional education and service learning, UTC aims to serve the older adult population, build capacity for an Age-Friendly Ecosystem, and bolster the health professions workforce. This presentation is designed to introduce the members of the ROAD MAP team and outline the critical role that academic and public health partnerships play in rural healthcare and higher education.

**Presenter(s):** Kristi Wick (UTC); Erin Pemberton Melhorn (UTC); Cathy Scott (UTC)

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**College/Department:** School of Nursing

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## **Feasibility of Implementing Personalized eHealth Program through Fitness Wearable and Application Among Rural Cancer Survivors**

Rural cancer survivors encounter unique challenges, and physical activity significantly impacts their well-being. Unfortunately, most struggle to meet the recommended physical activity levels. To tackle this issue, our interdisciplinary team aims to develop and implement an innovative, scalable, and sustainable AI-based personalized fitness program. We'll leverage eHealth technologies, including integrated fitness wearables and apps to enable data-driven personalization. Our Objective is to shift from generic eHealth programs to an AI-based personalized eHealth solution for rural cancer survivors. The project is innovative as it employs novel methodologies (e.g., app refinement, reinforcement learning, and algorithm development) and addresses health disparities among rural cancer survivors. It will guide health professionals and communities toward affordable, remote eHealth programs.

**Presenter(s):** Zan Gao (UTK)

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**College/Department:** Department of Kinesiology, Recreation, and Sport Studies

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## **Mobile Interprofessional Tandem Service (MITS) Model to Enhance Audiology and Speech Pathology Care and Outcomes in Rural East Tennessee**

Often rural Tennesseans lack access to audiologists (A) and speech pathologists (SP). Debilitating impairments go untreated, burdening families, schools, and senior centers who lack relevant training and infrastructure. Patients often seek help in cities but return overwhelmed by information and concerned about the finances required for ongoing care. Case managers can assist by assessing needs, coordinating care, and advocating for resources to address the unique A or SP demands. Social workers (SW) are equipped to provide case management but there is a SW shortage in rural TN.

In response, UTHSC ASP and UTK SW implemented a mobile, interprofessional service model to reduce barriers to health care accessibility in rural TN. Our van carries resources and professionals to evaluate and treat hearing, language, and speech disorders across the lifespan. External partners identified high need areas and priorities for their citizens. Our students are exposed to barriers to care in rural TN, leading to civic growth and commitment to equalizing accessibility and effectiveness of rural health care. Patients see providers in their own community, improving their health literacy and outcomes.

**Presenter(s):** Ashley W Harkrider (UTHSC); Julie Beeler (UTHSC); Saravanan Elangovan (UTHSC); Rachel Ross (UTK)

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**College/Department:** UTHSC Audiology and Speech Pathology; UTK Social Work

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## Wellness on Wheels: Bringing Care to Your Community

Wellness on Wheels is a mobile service designed to provide food, basic healthcare, and social services to underserved communities. Our mobile units will deliver nutritious food, offer healthcare screenings, and assist individuals with applying for essential services like SSI, unemployment, voter registration, rental assistance, and employment applications. By bringing these critical services directly to the community, we aim to remove barriers to access, ensuring that people in need receive timely, comprehensive support. Key takeaways include the impact on food security, improved healthcare access, and support for financial and social stability, fostering healthier, empowered communities.

**Presenter(s):** Tanesha Davis (UTHSC)

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**Campus/Institute:** UT Health Science Center

**College/Department:** College of Medicine Basic Sciences Department

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## Tempo-spatial Analysis of Rural Gentrification in Tennessee

Investigating gentrification in rural communities is crucial as it can have both positive and negative effects. Wealthy individuals can stimulate economic growth by investing in local businesses and infrastructure, improving living standards. However, gentrification can also lead to loss of community character, increased living costs, and displacement. This study plays a crucial role in

investigating the phenomenon of gentrification in Tennessee, which has not been previously examined

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**College/Department:** Engineering Management and Technology

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## **Workforce Challenges in Tennessee's Water and Wastewater Industry**

Rural communities across Tennessee depend on water and wastewater utilities for clean water. These utilities face significant challenges, one of which is hiring and retaining skilled operators.

To better understand these workforce issues, the Tennessee Water Workforce Survey was conducted in the spring of 2024, which received almost 800 responses from utility operators and managers. The survey results highlighted significant issues including a current operator shortage, which will be exacerbated by an aging workforce and decreasing applicant pool. Retention of the current workforce is a challenge, as operators feel underappreciated and underpaid; and recruitment suffers from a lack of licensed and experienced applicants.

These results highlight important issues facing the water industry that will affect all Tennesseans, if only indirectly. Rural communities will likely feel the impacts of these challenges most acutely and before major metropolitan areas. Pathways toward addressing these challenges will also be discussed, one of which will focus on the importance of educating communities, local decision-makers, and the next generation of the water workforce.

**Presenter(s):** Steven Hoagland (UTK); John Schwartz (UTK); Jenny Strobel (TN Dept. of Environment & Conservation)

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**College/Department:** Institute for a Secure and Sustainable Environment

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## **The RAIL (Rural Assessment and Intervention Library) System**



Within rural communities, school psychologists are constantly fighting barriers that their urban and suburban counterparts often do not have to contend with, which directly impacts the millions of students who attend school in these communities. Two of the main barriers they face are a lack of resources and funding. This can inhibit school psychologists from providing thorough evaluations, which can potentially impact being able to accurately determine eligibility for special education. This is crucial, as students with disabilities are more likely to attend higher education if they receive the services they need in high school.

Our grant looks to address the above-mentioned barriers for our rural communities in Tennessee with the creation of the RAIL (Rural Assessment and Intervention Library) System. The RAIL System would provide rural school districts with the following: ability to check out assessments and/or interventions that they can't afford or justify purchasing; ability to try new assessments/interventions to decide if they are worth purchasing; access to protocols for rating scales in English and Spanish; academic and social/emotional interventions to use for free; current publications they can check out and review; and access to a team of school psychologists for consultation.

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**College/Department:** School Psychology; Educational Psychology and Counseling; Counselor Education;

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## **On the Road to Better Rural Health: Outreach, Education and Training to Strengthen Health and Health Care**

Tennessee ranks 44<sup>th</sup> in the nation for health outcomes, with rural residents experiencing grave disparities versus their urban counterparts. Health care workforce shortages also plague rural areas, in part due to isolation and limited professional development opportunities. There is a need not only to improve the health of rural residents, but also to expand the capability of the health care workforce. This proposal will simultaneously address both problems by going on the road with 3 One UT-branded rural health units—launching from UTHSC, UT-Martin, and UT-Southern—to provide outreach, education, and training to a) the community and b) the health care workforce. Our nursing-led initiative creates a strategic overlap to spread and scale beyond current projects and workforce development activities to reach a broader population. The team will engage with UT Extension Offices, community members, and external stakeholders to develop educational opportunities to address the needs of these counties, capitalizing on existing programs and leveraging the synergistic expertise of our nursing faculty and colleagues from other disciplines. By uniting strengths across the UT system, we will create a lasting impact on rural health outcomes and the rural health care workforce.

**Presenter(s):** Ansley Stanfill (UTHSC); Alisa Haushalter (UTHSC); Mary Radford (UTM); Michelle Decker (UTS); Randi McElhaney Tuten (UTS)

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**College/Department:** College of Nursing, Department of Acute and Tertiary Care; Department of Nursing; School of Nursing and Health Sciences

## Overcoming Addiction

### Presentations

#### **It Takes a Village: An Ecological Approach to Youth Substance Use Prevention in East Tennessee**

In 2021, the Tennessee Department of Mental Health and Substance Abuse Services identified youth as top priority for addiction prevention, treatment, and recovery for each region of TN. Compared to older youth, early adolescents (ages 10-14) are less likely to have used substances, less autonomous, and have fewer competing activities. Early adolescence provides a window of opportunity to promote prevention through youth development efforts that promote substance use prevention promoting knowledge, leadership, and skill development. To further enhance a healthy transition to adulthood, the ecological model encourages us to move beyond the individual (i.e., youth) and activate relationships and systems to foster healthy development. So in addition to youth, we also support caregivers and teachers in understanding the unique opportunities of early adolescence and the importance of their role. This presentation will review 4 activities that serve to prevent addiction: Youth programming, caregiver workshops, and teacher workshops. These efforts focus on rural youth in Union County and Hispanic youth in Knox County. Data supporting the importance of these efforts are reviewed.

**Presenter(s):** Laurie L. Meschke (UTK); Leul Negussie (UTK); Rebeca Nieves (UTK); Chen Tan (UTK); Mindy Grimm (Union County ICARE)

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**Campus/Institute:** UT Knoxville

**College/Department:** College of Education, Health, and Human Sciences - Department of Public Health

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## **The HEALing Communities Study: Effectiveness of a Community-Engaged Data-Driven Process to Reduce Opioid Overdoses**

In 2022, Tennessee had the third highest rate of drug overdose deaths in the U.S. Results and strategies from the HEALing Communities Study (HCS) hold relevance to the overdose crisis here in Tennessee. HCS was a randomized clinical trial designed to reduce opioid overdose deaths in 67 communities in four states (KY, MA, NY, OH) using the Communities That HEAL (CTH) intervention. The CTH is a coalition-led community engaged data-driven intervention that supports communities in scaling up evidence-based practices (EBPs; overdose education and naloxone distribution, use of medication for opioid use disorder, and safer prescribing practices) alongside a communications campaign designed to reduce stigma and drive demand to these practices. 615 EBPs were implemented in intervention communities. Findings include a significant increase in naloxone distribution, decrease in community stigma towards those with opioid use disorder, 15% decrease in non-fatal overdoses, and 37% reduction in opioid overdose fatalities that include a psychostimulant (other than cocaine). This study has direct implications for treatment and recovery services and distribution of abatement funds across the state.

**Presenter(s):** Bridget Freisthler (UTK)

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**College/Department:** College of Social Work

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## **Leveraging the Right Partnerships at the Local Level**

To address the fact that musicians, music fans, and hospitality workers are at an increased risk of overdose but there was little being done to protect them, UT SMART coordinated partnerships crossing the private and public sectors to install ONEbox™ instructional and emergency overdose response kits in easily accessible locations in music venues in downtown Nashville, Knoxville, and Chattanooga. Each city involved different partnerships, challenges, and concerns, but have all ended in good results – namely confirmed lives saved.

This project demonstrates the value of finding the right local partners to implement a solution to a problem that everyone sees but is hesitant to act upon due to concerns of liability, stigma, and local political considerations. Key takeaways include finding partnerships (even if unorthodox) that get results, the importance of using timely, local data to target efforts effectively, and how UT is a leader that is able to rally and coordinate stakeholders and break through social and local political barriers.

**Presenter(s):** Jeremy Kourvelas (IPS); Trevor Henderson (IPS); Mike Hotz (Nashville Police Department); Jennifer Baggett (Hamilton County Gov.)

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**Campus/Institute:** UT Institute for Public Service

**College/Department:** SMART Initiative

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## **The Role of Business Organizations and Impact of Business Practices on the Creation of the Opioid Crisis in the Appalachian Region**

The creation story of the current opioid epidemic begins as a business model of manufacturing, distribution, and retail sales. Although Purdue Pharma has been characterized as the “tap root” of the crisis (Macy, 2019), many companies and organizations across the opioid supply chain were complicit in exacerbating and heightening this crisis (UNODC, World Drug Report, 2022).

**Highlight:** The audience will gain an understanding of how the management practices within and supply chain of the pharmaceutical industry created the opioid epidemic in the U.S. and targeted the Appalachian region.

**Key Takeaway:** The audience will be able to identify the unexpected and unintended consequences of common business practices in the creation and growth of the legal opioid market and how corporate influence and lobbying exacerbated the propagation of prescription opioid use.

**Key Takeaway:** We cannot overcome the addiction crisis without understanding its roots. Business leaders should heed this cautionary tale as they create and enter new markets (i.e. social media, artificial intelligence) with potential negative impact on communities and consider business practices useful for crisis remediation.

**Presenter(s):** Alice C. Stewart (UTK); Anne Smith (UTK); Jennifer Tourville (IPS)

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**College/Department:** Haslam College of Business/Management and Entrepreneurship Department

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## **Unraveling the Interconnection: Substance Use and Health-Related Behaviors among Youth in Tennessee**

This study addresses gaps in understanding substance use and mental health among Tennessee youth by employing spatial microsimulation modeling to provide detailed, small-area prevalence estimates at the census tract level. Using the National Survey on Drug Use and Health (NSDUH) dataset and U.S. Census information, the research generates high-resolution estimates of tobacco, alcohol, drug use, and mental health issues across all Tennessee counties. The study's innovative

approach allows for identifying local patterns and disparities, crucial for targeted interventions and resource allocation.

Led by Dr. Liem Tran and in collaboration with the Substance Misuse and Addiction Resource for Tennessee (SMART), the project will implement these models in Fall 2024, followed by stakeholder engagement in Spring 2025. The anticipated outcomes will enhance evidence-based decision-making for policymakers and healthcare providers, ultimately improving public health strategies to address the overdose crisis and other pressing challenges for youth in Tennessee.

**Presenter(s):** Liem Tran (UTK)

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**Campus/Institute:** UT Knoxville

**College/Department:** College of Arts & Sciences

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## **Opioid-Induced Epigenetic and Visuocognitive Changes Associated with Neonatal Abstinence Syndrome**

Tennessee faces a critical challenge with neonatal abstinence syndrome (NAS), where infants born to opioid-exposed mothers suffer from severe withdrawal symptoms leading to numerous cognitive and nervous system alterations. This condition affects our state at rates three times the national average, posing significant medical complexities and demanding intensive treatment and monitoring. This project will combine expertise from the UT Department of Psychology, UTIA Genomics Core, and Oak Ridge National Labs in an attempt to understand NAS through a novel integration of cutting-edge epigenetics research and eye-tracking based visuo-cognitive assessments. Further, this project will utilize novel explainable-AI-based supercomputing approaches to analyze and integrate epigenomic and precision visuo-cognitive assessments, facilitating a deeper understanding of NAS and potentially unlocking new therapeutic strategies. This initiative promises transformative change in the management and treatment of NAS, directly aligning with the Grand Challenge program's goals for innovation, impact, and sustainability.

**Presenter(s):** Shannon Ross-Sheehy (UTK); Daniel Jacobson (ORNL); Malinda Harris (East Tennessee Children's Hospital)

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**College/Department:** UTK Department of Psychology

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# **Nourish Recovery: A Nutrition Education Program for Individuals with Substance Use Disorders**

Rates of drug-related deaths in Tennessee are nearly double those in the US (56.6 per 100,000 in 2021). Rates have increased three-fold from 2011 to 2021. The Surgeon General has called for a public-health approach for treating substance use disorders (SUDs) using multiple forms of support to address drug addiction. Nutrition is often included in treatment for SUDs, both in the public and private sectors. As illicit substances alter the body's metabolism and increase the risk of malnutrition, attending to nutrition in drug recovery can be beneficial. With barriers to appropriate SUD care and increasing rates of deaths, Extension is a promising avenue for delivering evidence-based programming tailored to local community needs. Extension agents are well-connected with community partners and stakeholders, and these partners are requesting nutrition programming. Currently, there is no nutrition education program specific to individuals with SUDs in Tennessee or nationally. The purpose of this presentation is to discuss collaborative efforts to promote nutrition via Extension and present data related to current nutrition efforts in drug recovery centers across the state.

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**College/Department:** UT Extension - Family and Consumer Sciences; College of Nursing; UT Nutrition

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## **Mapping Recovery Ecosystems at the Local Level to Overcome Addiction**

Simultaneously overcoming addiction while strengthening rural communities, this presentation explores the Recovery Ready Ecosystem Model (RREM) (Ashford et. al) and its practical application through a mapping tool developed by East Tennessee State University and expanded upon by the UT SMART initiative. We will examine how this mapping tool aids community members in locating recovery resources and strategically allocating funds, with a focus on its impact in rural areas.

Key highlights include:

1. Understanding RREM: Learn about the RREM framework, its components, and the research behind it.
2. Real-World Application Insights: Review ETSU's experiences designing and implementing the Recovery Asset Ecosystem Map in rural settings, including challenges and successes.

3. Effective Resource Allocation: Discover how the UT SMART Initiative helps local governments and communities use the map to optimize the distribution of funds and resources, specifically opioid settlement funds.

4. Expansion and Adaptation: Learn about how this map is being expanded across the state through the partnership of UT Southern, UT Martin, UTK, UT SMART, and ETSU.

**Presenter(s):** Channie Paige Cretsinger (IPS)

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**College/Department:** SMART Initiative

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## Getting Things Done Through Relationships

Effectively allocating the opioid settlement funds is a difficult task for local government officials, particularly considering that many do not have related expertise, the requirements are complex, and the 18-year timeline is challenging considering election cycles.

The UT SMART Initiative has engaged local government officials in 82 of our 95 counties on developing local abatement strategies, assisting with grant writing and management, guiding community needs assessment and program evaluation, hosting stakeholder or community educational sessions or workshops, and anything else needed to cities and counties to help fight the opioid epidemic.

Key highlights: learn multiple methods for engaging with county leadership to drive the development of effective local action to address the overdose crisis. Takeaways will include how to find and utilize timely, local data to establish priorities, methods for developing county level relationships that can be leveraged to create informed decision-making bodies, and insight on how to participate and effectively support county level planning and decision making on the effective use of opioid settlement funds.

**Presenter(s):** Trevor Henderson (IPS)

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**College/Department:** SMART Initiative

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## **A Mathematics-based Approach to Opioid Epidemiology in Tennessee**

Mathematical modeling has played a significant role in the study of infectious disease epidemiology since at least 1927. Contributions to policy decision making include the minimal vaccine rate necessary for herd immunity and the prioritization of mosquito control in order to combat malaria. However, far less mathematical attention has been paid to the subject of addiction epidemiology - perhaps because there are many challenges. The mechanisms behind social contagion are less clear than for pathogenic disease transmission, and substance use disorders can often develop in relative isolation. Undiagnosed cases and lack of treatment data represent additional hurdles for model fitting. In this presentation, I will give an overview of my efforts to adapt the mathematics of infectious disease epidemiology modeling toward the problem of opioid use disorder, including some data-driven results (pre-COVID) for the state of Tennessee. I will discuss how our modeling approach may be useful for policy-level decision making, and I will describe both recent challenges due to COVID-19 and both current and potential next steps for our research.

**Presenter(s):** Christopher Strickland (UTK)

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**Campus/Institute:** UT Knoxville

**College/Department:** College of Arts and Sciences, Department of Mathematics and Department of Ecology & Evolutionary Biology

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## **Bridging the Gap: Tailored Distance Education for Rural Addiction Counseling in Tennessee**

This presentation discusses the critical need for accessible substance use treatment in rural Tennessee communities, contributing to the Grand Challenge of Overcoming Addictions. Despite 19.2% of Tennesseans aged 12 or older requiring substance misuse treatment, 71% receive no assistance (SAMHSA, 2022). A recent needs assessment (TDMHSAS, 2023) underscores the pressing demand for more addiction support in rural Tennessee communities, especially those facing a disproportionate loss of hospitals and a lack of specialized addiction services. These challenges result in higher rates of untreated addiction due to limited access to counselors, services, and treatment. Our team is conducting focus groups, interviews, and qualitative analysis to understand the nuances of addiction in rural TN and identify best practices to address and overcome these challenges. We aim to build an online course and produce research products that meet Tennessee's rural communities' critical public health needs. In this presentation, our team will discuss our project's process and the importance of culturally responsive counseling to support this population.

**Presenter(s):** Jamian Coleman (UTK); Carrie Bailey (UTK); Melinda Gibbons (UTK); Lisa Beasley (UTHSC)



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**College/Department:** UTK College of Education, Health, & Human Sciences; Department of Counseling, Human Development, & Family Science

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## **The Efficient Allocation of Harm Reduction Resources to Prevent Overdose Deaths**

There is evidence in the clinical literature about the need for, and effectiveness of, harm reduction resources to reduce overdose deaths, including access to medication assisted therapies, rehabilitation centers, and fentanyl test strips. However, for shaping harm reduction-related policies, more evidence is needed on how harm reduction resources should be allocated and distributed. In this session, we present two working papers, the first of which is on the optimal allocation of treatment centers, the second focuses on the distribution of fentanyl test strips (FTS). For the first paper, we construct a machine learning algorithm to show that treatment centers are inefficiently placed, if the goal is to reduce total overdose deaths. We also show that evidence-based algorithms can be used to help determine the location of future centers in order to improve both mortality and equity. In our second paper, we use causal inference methods to show that legalizing FTS is not enough to reduce overdose deaths. However, using case studies from community-based interventions, we identify several features of proactive community efforts to distribute FTS that can save lives.

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**Campus/Institute:** UT Knoxville

**College/Department:** Boyd Center for Business and Economic Research

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## **The Opposite of Addiction is Connection**

The Opposite of Addiction is Connection is a chronological storytelling of the conception and progress of Rocky Top Recovery, the University of Tennessee, Knoxville's (UTK) Collegiate Recovery Program (CRP). The goal of this presentation is for stakeholders of each university campus to understand the impact of CRP efforts in addressing the grand challenge of overcoming addiction. Rocky Top Recovery works to build connections among students, provide individual and group peer support, and educate the campus body about addiction and recovery. The Center for Health Education and Wellness' Alcohol and Other Drug focus area has implemented a social norm campaign, increased awareness of the university's Amnesty Policy, and expanded access to

Naloxone. At the completion of this presentation, participants will be able to explain the importance of providing students with prevention and intervention harm-reduction care and support, name the Tennessee Department of Mental Health and Substance Abuse Services (TDMHSAS) Collegiate Recovery Initiative contacts and the available support, and examine the role a CRP could play in your campus' efforts towards overcoming addiction.

**Presenter(s):** Elle Peeples (UTK)

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**College/Department:** Center for Health Education and Wellness

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## Merging Recovery and Education in K-12 and Beyond

The Educational Opportunity Center is a federally funded Trio grant that has been housed at the University of Tennessee for 33 years. Our aim is to assist individuals with educational services to specifically low income and first generation students and adults in 27 counties, most of them rural. We do this by 1) helping individuals discover what their interests are in terms of a career, 2) help them apply to the institution of their choice (Examples: TCAT, Roane State, or a 4 year institution) and finally 3) we assist them in completing their FAFSA and explain other financial aid that is available to them as a Tennessean.

The Gateway Recovery Community Center is a hub for individuals in recovery from substance use disorders, they offer peer support, recovery meetings, wellness programs, and an overall supportive environment for long term recovery and long term personal growth. The Gateway provides recovery coaching focusing not only on sobriety but on building life skills and how to navigate a path free of substance misuse. Some participants find they would like to further their education as part of their journey and this is where EOC steps in and helps.

**Presenter(s):** Amy King (UTK); Webster Bailey (Metro Drug Coalition)

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**Campus/Institute:** UT Knoxville

**College/Department:** College of Education, Health, and Human Sciences, – Education Research and Opportunity Center

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## Expanding Recovery Supports on College Campuses

The Mocs Recovery Program launched at the University of Tennessee at Chattanooga in January 2022. It utilizes a harm reduction approach to support students regardless of their pathway to recovery. It started with peer support meetings, but has grown to include recovery socials, retreats with other collegiate recovery programs, leadership development opportunities, recovery allyship trainings, naloxone and fentanyl test strip distribution, and community outreach. In Fall 2023, the program became one of the first ten collegiate recovery programs accredited through the Association for Recovery in Higher Education.

During this session, we will explore college student substance use data, the college environment's impact on substance use risk, microaggressions experienced by students in recovery, and the efficacy of collegiate recovery programs. This presentation will prepare those in attendance to advocate on behalf of college students in their work related to substance use and detail the impact of providing recovery supports in this environment.

**Presenter(s):** Megan McKnight (UTC); Jami Hargrove (UTC)

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**Campus/Institute:** UT Chattanooga

**College/Department:** Center for Wellbeing

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## **Counselors on the Front: Increasing Tennessee's Addiction Counseling Workforce**

It has long been established that there is a critical need for the training of addiction counselors and addiction specialists (Babor, 2000; Myers & Salt, 2007; Pavlovská et al., 2019) to combat the opioid epidemic in the United States. Additionally, research illustrates that many of the professionals working in the addictions sector do not have the proper education to address the needs of this population (Pavlovská et al., 2017). In order to address this need, employees at the University of Tennessee at Chattanooga have applied for and were awarded Hamilton County opioid settlement money to develop a certificate program preparing counselors in this field.

This session will (1) state the imperative need to train counselors from a variety of disciplines to recognize, assess, and treat clients presenting with substance use disorders and engage in recovery maintenance counseling for those with SUD histories, (2) identify opportunities for embedding these skills within required program courses, and (3) provide a blueprint for how to train counselors in alignment with the LADAC competencies.

**Presenter(s):** Megan McKnight (UTC); Tyler Oberheim (UTC); Jami Hargrove (UTC)

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**Campus/Institute:** UT Chattanooga

**College/Department:** Counselor Education; Center for Wellbeing

## **Pain Sensitivity, Pain Affect, Pain Catastrophizing, and Chronic Stress as Predictors of Quantity of Substance Use in People Who Use Methamphetamine and Opioids**

Methamphetamine is widely used in TN, often combined with opioids, and is a factor in many drug overdose deaths. In TN in 2022, there were 3,826 overdose deaths, with opioids present in 3,073. Stimulants like methamphetamine were present in 2,103 deaths. Several factors predict relapse to substance use, and likely predict the intensity (quantity and frequency) of substance use. Among these factors are pain, psychological distress about pain (pain catastrophizing), and stress, which may influence drug use via increases in craving or other mechanisms. The impact of these factors on quantity of drug use in methamphetamine and opioid users has not been studied. This project will enroll people who are actively using methamphetamine and opioids. We will assess participants at regular intervals to examine the association of intensity of drug use with experimental pain psychophysical measures (pain sensitivity and pain unpleasantness), pain catastrophizing (as measured by standard scales), and chronic stress. We will also examine the association of current drug craving and current pain with intensity of drug use. We predict that pain sensitivity and pain unpleasantness, pain catastrophizing, chronic stress, current pain, and craving will be positively associated with intensity of drug use and may interact to mediate use.

**Presenter(s):** Ronald L. Cowan (UTHSC); Karen Derefinko (UTHSC); Fridtjof Thomas (UTHSC); Tyler S. Oberheim (UTC); Todd B. Monroe (Ohio State University); Shawn Hamm (Connections Wellness Group)

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**Campus/Institute:** UT Chattanooga; UT Health Science Center

**College/Department:** Department of Psychiatry; Department of Anatomy and Neurobiology; College of Medicine; Counselor Education

## **Neurodiversity/Disabilities**



### **Presentations**

#### **Embracing Neurodiversity: Addressing Stigma and Promoting Neuroinclusivity in Elementary Education**

Neurodiversity refers to the natural variations in brain function and behavior among individuals, such as those with autism, ADHD, DLD, and dyslexia, who identify as neurodivergent. This

perspective views these differences as normal and not inherently better or worse. However, neurodivergent individuals often face trauma and stigma due to their differences being perceived as disorders, compounded by environments not designed for their needs. This stigma can negatively impact their education, leading to isolation and limited support. To address this, it's essential to educate young students about neurodiversity early on, promoting acceptance and inclusion. Utilizing Speech-Language Pathologists (SLPs) to collaborate with educators and integrate neurodiversity education can help reduce stigma and foster a supportive, inclusive learning environment.

**Presenter(s):** Tanzida Zaman (UTHSC)

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**Campus/Institute:** UT Health Science Center

**College/Department:** Department of Audiology and Speech Pathology

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## **Transitioning Gaps, Executive Functioning Impacts, and Assessing the Needs of Neurodivergent Students**

With the increased prevalence of autism diagnosis, and other neurotypes, it is imperative that our education system explore and implement best practices that serve a diverse student body. There is a huge contrast between the “supports to success” outlined by IDEA in primary and secondary school, and the changing “accessibility centered” supports outlined by the ADA in post-secondary institutions. Students with executive functioning impacts often do not fare well in the transition to college as they experience gaps in support while living away from their families, perhaps for the first time. We have identified shared challenges in areas including self-advocacy, social adjustment, time management, increased academic rigor, independent living, and resilience.

### **Learning objectives for this presentation include:**

1. Understanding neurodiversity and the prevalence today.
2. Familiarity with the differences in support for exceptional students in primary and secondary schools (IDEA) compared with accommodations available on the collegiate level (ADA).
3. An introduction to many common challenges neurodivergent students face, and helpful methods to mitigate impacts.
4. Strategies to minimize barriers in post-secondary schooling, which educators, families, and students can use to address gaps in executive functioning and other support needs to maximize college success.

**Presenter(s):** Amy Rutherford (UTC); Amanda Hardin (UTC); Anne Hill (UTC); Bruce Keisling (UTHSC)

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**Campus/Institute:** UT Chattanooga; UT Health Science Center

**College/Department:** UTC Student Affairs, Mosaic Program

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## **The Mosaic Program and Neurodivergent Education Transition (NET)**

Currently, many neurodivergent individuals face significant challenges navigating collegiate expectations, leading to reduced college graduation rates, and decreased academic and career success. The Mosaic Program at the University of Tennessee at Chattanooga has been in existence since 2008 and was developed to support autistic college students as they earn a degree. The drive to meet the unique needs of neurodiverse students has made Mosaic one of the most comprehensive autism support programs in the country.

Mosaic has the potential to provide insight into major gaps that exist in the transition from high school to college. Through collaborative efforts with the School Psychology Program and the Grand Challenge Funding, we have begun to explore exceptional education practices in high school, the challenges parents face, and the experiences students have while transitioning into the post-secondary environment.

With this presentation, our goals and objectives for attendees include the following:

- 1.) Have a clear understanding of the Mosaic Program.
- 2.) Identify gaps in transition and transition services.
- 3.) Examine possible strategies for addressing transition gaps.
- 4.) Discuss the NET Project and the outcomes it looks to provide.

**Presenter(s):** Amy Rutherford (UTC); Amanda Hardin (UTC); Anne Hill (UTC)

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**Campus/Institute:** UT Chattanooga

**College/Department:** The Mosaic Program

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## **Connecting Families in Rural Tennessee with Disability Resources: Rural Disability Resource Network**

The Rural Disability Resource Network (RDRN) was formed to address the lack of awareness and access to disability resources for rural Tennessee families. Our vision is to be a statewide leader where people with disabilities and their families living in rural communities flourish. With established connections across the University of Tennessee system, as well as external state partnerships, RDRN is implementing collaborative opportunities across the state to create transformational change for people with disabilities, their families and caregivers, and educators and other stakeholders in Tennessee to gain access to much needed disability support. Through this session, attendees can expect to learn more about the efforts of RDRN, plans for the use of RDRN's recent Grand Challenges grant funding, and opportunities to get involved in this meaningful effort.

**Presenter(s):** Claire Paul (UTS); Bruce Keisling (UTHSC)

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**Campus/Institute:** UT Southern; UT Health Science Center

**College/Department:** Grissom School of Education at UT Southern; UTHSC Departments of Pediatrics and Medical Education Center on Developmental Disabilities

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