



BELMONT
DATA & AI
COLLABORATIVE

IMPACT REPORT

Fall 2025



TABLE OF CONTENTS

LETTER FROM EXECUTIVE DIRECTOR

Page 1

BDAIC'S IMPACT ON HEALTHCARE

Pages 2-5

IMPROVING ANTI-TRAFFICKING WITH AI

Page 6

BRIGHTER FUTURES FOR FOSTER CARE

Page 7

SHAPING BELMONT'S DATA & AI FUTURE

Pages 8-12

BELMONT UNIVERSITY HOPE SUMMIT 2025

Page 13

AI ACCOUNTABILITY

Page 14

AI-DRIVEN DATA LAKES

Page 15

METAHUMAN

Page 16

LETTER FROM EXECUTIVE DIRECTOR

Partners, Colleagues, and Friends,

I am proud to share the remarkable progress the Belmont Data & AI Collaborative has made in advancing our mission to harness analytics and artificial intelligence for meaningful community impact. This quarter has been marked by the deepening of partnerships, compelling research, and innovative applications that demonstrate the transformative potential of responsible AI.

Through the Heart of Nashville/Operation Pulse initiative, we presented compelling findings to the Metro Public Health Director showing that an integrated approach of combining clinical care with transportation and healthy meals is successfully improving blood pressure outcomes and preventive care engagement in the North Nashville Wellness Opportunity Zone. Among patients with elevated hypertension or higher at baseline, 39% improved by at least one stage. Additionally, our research on hypertension disparities was accepted for publication in *Family & Community Health*, providing data-driven insights that support targeted interventions in underserved communities.

We have also expanded our impact in protecting vulnerable populations. Our updated Vulnerability Profile Indices for both Alabama and Tennessee, developed in partnership with Engage Together and the Tennessee Bureau of Investigation, now incorporate refreshed data sources and expanded vulnerability domains. We also leveraged AI-powered research tools to catalog more than 1,000 initiatives across the country addressing labor trafficking.

In foster care, our interactive analysis report on transition-age youth in Tennessee, created with Belmont Innovation Labs, the Tennessee Department of Children's Services, and Every Child TN, will guide statewide programming and inform the national Reconstruct Challenge.

We submitted a proposal to the National Science Foundation (NSF) with Belmont's Center for Interprofessional Engagement & Simulation Center to advance IVAN, an AI-driven conversational avatar designed to transform how healthcare students learn professional communication. If funded, this project will position Belmont as a national leader at the intersection of AI, education, and healthcare workforce development.

Across campus, we are building AI capacity through workshops, Senior BDAIC Fellows, and BDAIC committees. The Bruin AI Den & BDAIC Bellwether Program Committee and the AI Proficiency Pathway Committee are laying the foundation for a unified, campus-wide AI ecosystem. At the Hope Summit in October, we led a session on bridging the AI accountability gap, demonstrating our commitment to responsible AI adoption.

Our Data Lake Steward now autonomously governs datasets with little to no manual intervention. These innovations showcase how AI can deliver scalable, cost-effective solutions while maintaining the highest standards of trust and security.

None of this work would be possible without the dedication of our team, the collaboration of our partners, and the support of the Belmont community. As we look ahead, we remain committed to using analytics and AI not just to solve problems, but to advance human flourishing. Thank you for being part of this journey.

Jeff Donahoo, Ph.D.
Executive Director
Belmont Data & AI Collaborative

A NEW STEP FORWARD IN IMPROVING COMMUNITY HEALTH

Redefining Community Health Care

This quarter, BDAIC presented new findings from the **Heart of Nashville / Operation Pulse** initiative to the **Metro Public Health Director**. Data from the **North Nashville Wellness Opportunity Zone** demonstrate that combining clinical care with transportation and healthy meals is **successfully improving blood pressure and engagement in preventive care**.

This milestone strengthened our alignment with public health leadership and established a foundation for the following:

- **Scaling & Sustainability:** Ensuring the long-term growth of this equity-centered model
- **Collaborative Evaluation:** Partnering on data-driven assessments of program impact
- **Strategic Expansion:** Laying the groundwork to reach more residents through community-driven partnerships



SIGNIFICANT IMPROVEMENTS IN BLOOD PRESSURE CONTROL

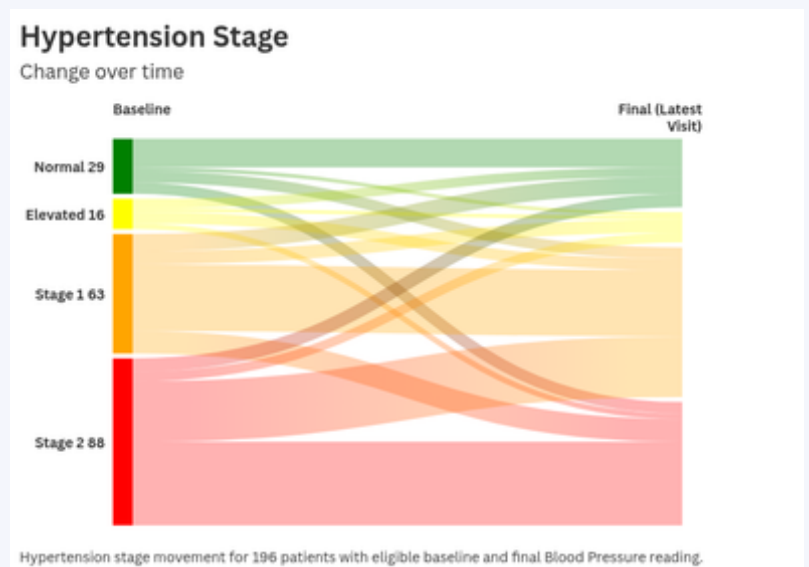
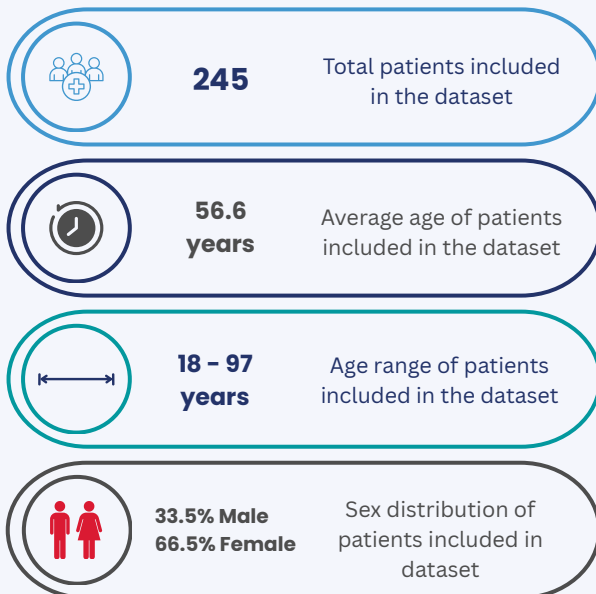
Data from North Nashville Wellness Opportunity Zone

The data shows that the Heart of Nashville / Operation Pulse initiative is making a clear and measurable difference in community health. Many patients are experiencing meaningful improvements in their blood pressure.

Reducing the number of individuals in Stage 2 Hypertension lowers the risk of heart attack, stroke, and other serious health complications. These outcomes highlight that pairing medical care with practical supports, such as transportation and access to healthy meals, helps patients stay engaged in their treatment and overcome common barriers to consistent care.

This evidence demonstrates that community-based, equity-centered approaches can significantly improve health outcomes and should help inform decisions about future investment, program expansion, and scaling efforts.

Data Overview



HYPERTENSION INSIGHTS THAT DRIVES ACTION



COMMUNITY HEALTH IMPACT

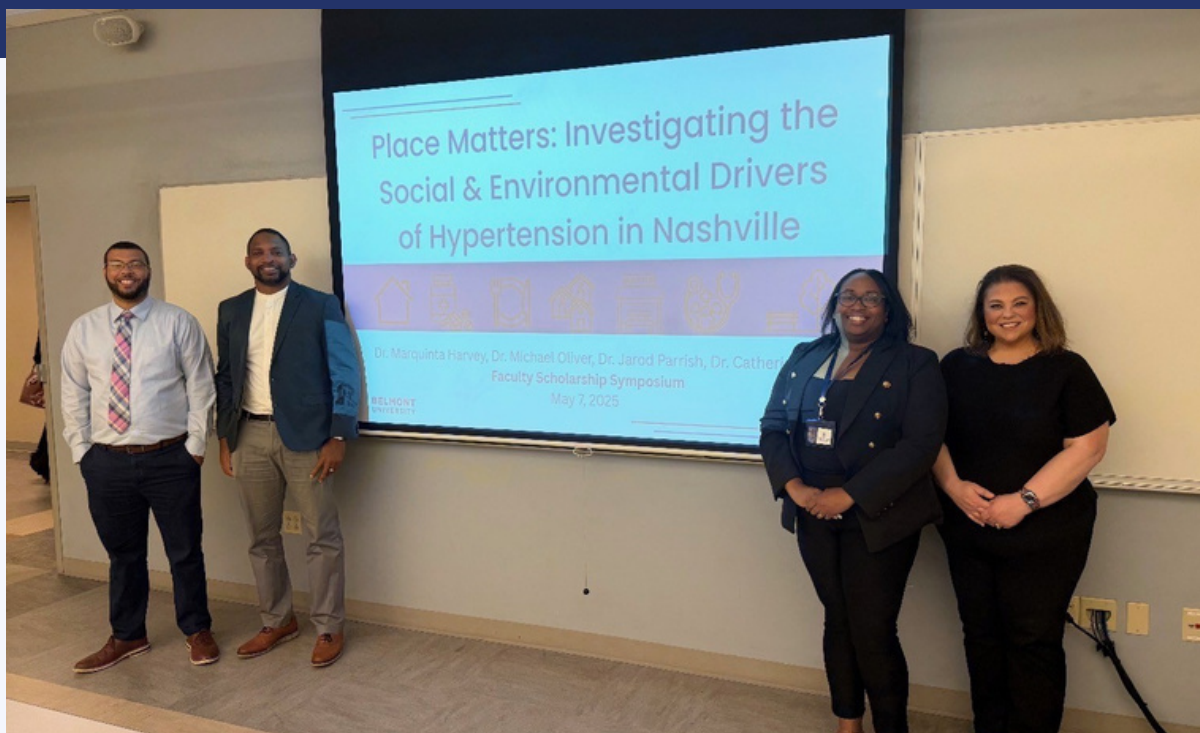


ZIP CODE ANALYSIS



DATA-DRIVEN INSIGHTS

This quarter, BDAIC's research on hypertension disparities was accepted for publication in **Family & Community Health**. The study analyzed **ZIP code–level data** across Nashville and identified five population groups with different cardiovascular risk levels. We found that **socioeconomic hardship, housing instability, and limited healthcare** access create concentrated areas of high hypertension risk, particularly in lower-income and predominantly Black neighborhoods. These findings support targeted interventions and demonstrate the role of **BDAIC in community-driven public health analytics**.



ADVANCING AI-ENABLED CLINICAL TRAINING

NSF PROPOSAL

This quarter, the BDAIC and Belmont's Center for Interprofessional Engagement & Simulation Center submitted a \$900,000 proposal to the National Science Foundation to advance IVAN, an AI-driven conversational avatar designed to transform how healthcare students learn professional communication. The project represents a significant milestone in our growing partnership, blending the BDAIC's AI development expertise with the Simulation Center's nationally recognized strengths in interprofessional training and pedagogical validation.

BELMONT DRIVING INNOVATION

The proposed three-year study would develop and rigorously evaluate an adaptive, emotionally responsive avatar capable of delivering high-fidelity clinical communication practice at scale, helping address rising training demands amid national workforce shortages. The partnership positions Belmont as an innovator in AI-enabled simulation, with plans for usability testing, a randomized controlled trial, and real-world transfer evaluation in clinical settings.



U.S. National
Science Foundation



FUTURE OF AI AT BELMONT

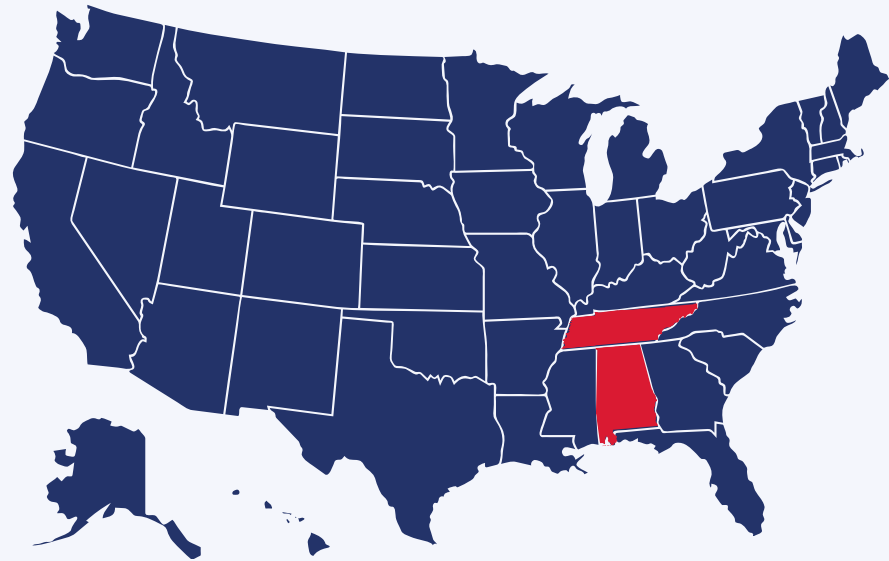
If funded, the project would accelerate access to high-quality, cost-efficient communication training for learners across diverse institutions while expanding Belmont's leadership at the intersection of AI, education, and healthcare workforce development.



BDAIC Improving Anti-Trafficking Work with AI

Utilizing AI tools, BDAIC updated the Vulnerability Profile Indices (VPIs) for Alabama and Tennessee. Work that once took weeks now takes only a few hours. AI refreshed and validated data sources, integrated new partner datasets, and expanded vulnerability domains with greater speed and accuracy.

These updates, completed with Engage Together and the Tennessee Bureau of Investigation, demonstrate how AI enables faster, more precise, and more scalable vulnerability assessments.



Training & Capacity Building Initiatives

Explore training programs, educational initiatives, and capacity building efforts focused on combating labor trafficking.

Total Initiatives	Unique Organizations	Labor Trafficking Focus	Training Initiatives	Avg Confidence Score
1057	587	776	386	57.9%

[All Initiatives](#) [Grouped View](#) [Overview & Guide](#)

[Export Filtered Data](#)

Showing 10 of 1057 initiatives

2024 National Labor Trafficking Conference (The Coterie) (95% confidence)

About: This multi-disciplinary conference will provide information and resources to build capacity to identify and respond to labor trafficking. This year's conference will have several plenaries and workshop sessions that focus on the intersections of labor trafficking and unaccompanied minors, among many other topics. Framework will be doing a Labor Trafficking 101 Pre-Conference training! We hope to see you there!

[Labor Trafficking](#)

Leader: Marissa Castellanos

[Assessment Details](#)

Source: [View Original](#)

BDAIC leveraged AI-powered research tools to analyze national data and develop a web application that provides Engage Together with detailed information on more than 1,000 initiatives across the country addressing labor trafficking. This research and application directly support Engage Together's partnership with the Tennessee Bureau of Investigation in developing state-sponsored strategies to combat labor trafficking.

BDAIC's Insights Powering Brighter Futures for Foster Youth

DCS Foster Youth Analysis Report

BDAIC created an interactive report with visualizations, analysis, and insights on the strengths and needs of transition-age foster youth in Tennessee, in partnership with Belmont Innovation Labs, the Tennessee Department of Children's Services, and Every Child TN.

This report supports state programming and drives the statewide "Reconnect Through Technology" initiative, helping organizations design services that are better matched to the needs of young people moving toward independence.

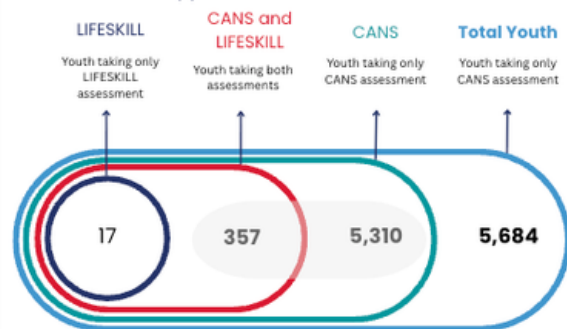
Pillar Indicators

BDAIC developed a web application using AI tools that helps Belmont Innovation Labs, the Tennessee Department of Children's Services, and Every Child TN identify how CANS assessment indicators relate to the Reconstruct Challenge's three focus areas:

- Supportive relationships
- Mental health
- Housing instability.

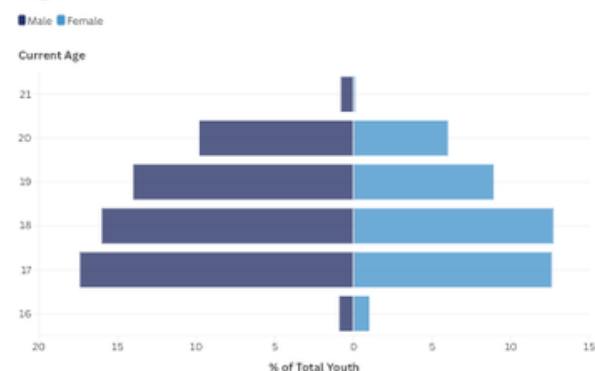
Raw Data Overview

Number of youth in dataset by assessment type



Analysis focused on youth with CANS assessment data (n = 5,667)

Age and Sex



Males make up 60% of the study population.

Pillar: Housing

Sub-Category: Barriers / Risk

2 indicator(s) in this sub-category

Physical Abuse

Description

This item describes whether or not the child/youth has experienced physical abuse.

Scoring Criteria

Score 0: No current need; no need for action or intervention. There is no evidence that the youth has experienced physical abuse.

Score 1: Identified need requires monitoring, watchful waiting, or preventive activities. There is a suspicion that the youth has experienced physical abuse but no confirming evidence. Age appropriate spanking that does not leave a mark or bruise would be rated here. The threat of physical harm without actual harm inflicted would also be rated here.

Score 2: Action or intervention is required to ensure that the identified need is addressed; need is interfering with youth's functioning. Youth has experienced a level of physical abuse that may include one or more incidents of physical punishment (e.g., hitting, punching) when the parent/caretaker uses physical discipline or intentional harm that results in injuries, such as bruises or marks. Physical punishment that includes the use of items such as belts or paddles or that is done out of anger by the caretaker would be rated here.

Score 3: Problems are dangerous or disabling; requires immediate and/or intensive action. Youth has experienced severe and repeated physical abuse with the intent to do harm and/or that causes sufficient physical harm to necessitate medical attention. Unexplained injuries for non accidental trauma such as hemorrhages, subdural hematoma and breaks, as well as disorders such as Munchausen by Proxy Syndrome qualify here.

? Questions to Consider

- Is physical discipline used in the home? What forms?
- Has the child/youth ever received bruises, marks, or injury from discipline?

Runaway

ADVANCING CROSS-CAMPUS COLLABORATION AND EXPERTISE

BDAIC Fellows



Jamie Adam continued to strengthen our partnership with CoffeeMed, conducting a needs assessment focused on technologies that BDAIC and Belmont could develop or support to enhance their community health work.



Steve Busby designed and led a well-attended workshop on qualitative research with AI, providing faculty and graduate students with hands-on strategies for integrating AI into coding, analysis, and interpretive work. He also offered one-on-one consultations to support ongoing qualitative projects across campus.



Will Best advanced several statistical consulting collaborations, contributing to two publications and a conference presentation as early outputs. His work demonstrates the high-impact scholarship and methodological support the Fellows bring to the broader academic community.

Collectively, the Senior BDAIC Fellows are extending BDAIC's reach, strengthening interdisciplinary partnerships, and accelerating research and training efforts across campus.

DRIVING AI INTEGRATION AT BELMONT

AI Committees

This quarter, BDAIC advanced two major initiatives to strengthen AI readiness across campus. **The Bruin AI Den & BDAIC Bellwether Program Committee** is developing practical, vetted AI resources, tools, tutorials, and use cases, while preparing faculty mentors to lead discipline-specific workshops.

At the same time, the **AI Proficiency Pathway Committee** is defining a five-level competency model and curated learning pathway to equip faculty and staff with essential AI skills.

With BDAIC providing **strategic guidance, technical expertise, and coordination**, these committees are laying the groundwork for a coherent, campus-wide AI ecosystem that supports skill development, informed experimentation, and responsible integration of AI into academic and operational practice.

AI-FOCUSED WORKSHOPS

This semester, BDAIC hosted a series of workshops to strengthen AI literacy, practical skills, and responsible use across campus, equipping Belmont faculty and staff with hands-on strategies to integrate AI into teaching, research, and administrative work.

BDAIC Building AI Capacity Across Campus



RIP Browser: Embrace the Chrome Over

Speaker: Dr. Jeff Donahoo (September 10th, 2025)

This workshop showed how AI Browser streamlines workflows by connecting insights across tabs and introduced tools like Fellou and Comet for automation and faster discovery.



You, Me and GPT A First Date

Speaker: Dr. Anna Grace Usery (October 2nd, 2025)

This workshop introduced generative AI in academia and the APEX method for crafting effective prompts, showing how strong prompt engineering boosts productivity with tools like ChatGPT, Gemini, and Copilot.



Enhancing Qualitative Research

Speaker: Dr. Steven Busby (October 22nd, 2025)

This workshop demonstrated how AI can boost efficiency in qualitative research while preserving human insight, showcasing practical ways to optimize analysis and expand knowledge sharing.



The Explainable Edge: An introduction to Explainable AI

Speaker: Dr. Mana Azisoltani (November 12th, 2025)

Led by Mana Azisoltani, Head of Data Science at Differential Labs, this workshop introduced Explainable AI (XAI), showing how it makes “black box” algorithms transparent and its real-world impact on Responsible Gambling, Churn Modeling, and academic research.

AI Literacy On Campus

AI Summit

Thursday, April 30, 2026, from 9:00–11:30 a.m.

The AI Summit will bring faculty together to examine the evolving role of artificial intelligence in teaching, research, and academic practice. The morning will feature expert insights around emerging opportunities and challenges, faculty-led examples, and a description of Belmont's AI roadmap and campus-wide AI efforts.

Throughout the morning, we will explore the work of the Redemptive AI Task Force, updates from the Belmont AI Commons, and emerging directions in AI policy and accountability. We will discuss our growing efforts in AI literacy, hear Teaching Center perspectives on best practices and faculty-led examples, and share opportunities for certificates and training. Additional sessions will address the expanding role of AI in research and introduce faculty- and student-centered AI tools.

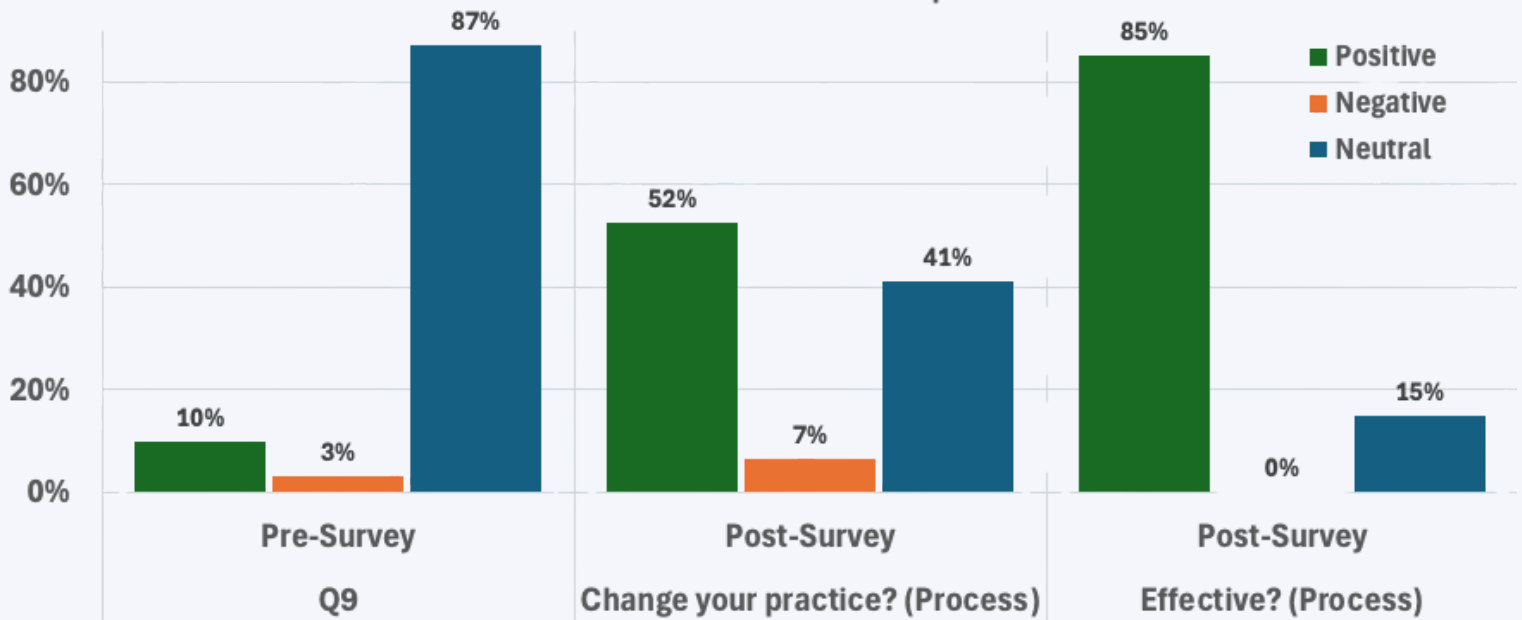
AI engagement aligns with Belmont's values: fostering spiritual and moral formation, deepening creativity, and promoting accountability and belonging. Through dialogue, faculty mentorship, and practice-informed education, Belmont prepares students to navigate AI responsibly, leveraging its potential for discovery and inclusion while preserving relational formation.

At the AI Summit, faculty will explore how to lead and shape a future where technology amplifies Belmont's Christ-centered virtues—empowering graduates to grow in wisdom, character, and purpose.

BDAIC Delivered Weeks of Research in Hours with AI

- BDAIC assisted a Doctor of Nursing Practice (DNP) student with a research project on analytics
- We utilized AI-powered analytics tools to create sentiment and thematic analyses of survey responses, along with a thorough outcomes report and data visualizations.
- Executed a full analysis using AI in under 2 hours, saving what could have been weeks of work for a nursing student unfamiliar with techniques in Natural Language Processing (NLP) and some analytics technology.

Sentiment Distribution Comparison



BELMONT UNIVERSITY HOPE SUMMIT 2025

BDAIC Advancing AI Accountability

In October, Belmont University hosted the Hope Summit, which is a workshop series highlighting innovation and emerging technologies. **Dr. Jeff Donahoo** and **Dr. Erich Baker** led a session titled “**Bridging the AI Accountability Gap**,” exploring the risks created by declining accountability in AI development and offering practical steps for responsible adoption. Panelists included **Dr. Pablo Rivas**, **Scott Charter**, and **Dr. Juan Sanchez**, with live demos of emerging AI tools such as IVAN, an AI capable of adaptive conversation.



HOW TO GO FROM ‘WE USE AI’ TO ‘WE TRUST OUR AI’



Why AI Accountability Matters

AI now shapes major decisions, and without safeguards, it can amplify bias, hide how choices are made, and cause real harm. Risks—from legal and reputational damage to security issues and lost trust—are growing. Acting early is essential before problems become embedded and costly to fix.



A Practical Path to Responsible AI

AI accountability frameworks offer an approachable way to get started. Organizations begin with a simple inventory of where AI is used, then evaluate risks, explain decisions, and assess harms. This step-by-step approach builds awareness, trust, and operational confidence before moving into deeper ethical considerations.



How the BDAIC Framework Delivers Trustworthy AI

The BDAIC Framework helps organizations move from basic AI awareness to full ethical governance by mapping AI use, identifying risks, adopting principles, adding oversight, and integrating responsible AI into everyday operations.

AI ACCOUNTABILITY MODEL



SELF-GOVERNING DATA LAKES POWERED BY AI

Overview

The Data Lake Steward is an autonomous AI system that governs and organizes cloud data assets. It automates dataset discovery, quality validation, and business-context enrichment.

- **Autonomous Governance:** AI agents detect anomalies and automatically approve or flag datasets.
- **Intelligent Enrichment:** Uses LLMs to add semantic tags and technical context for better discoverability.
- **Semantic Search (RAG):** Enables natural language queries to find relevant data without exact keywords.

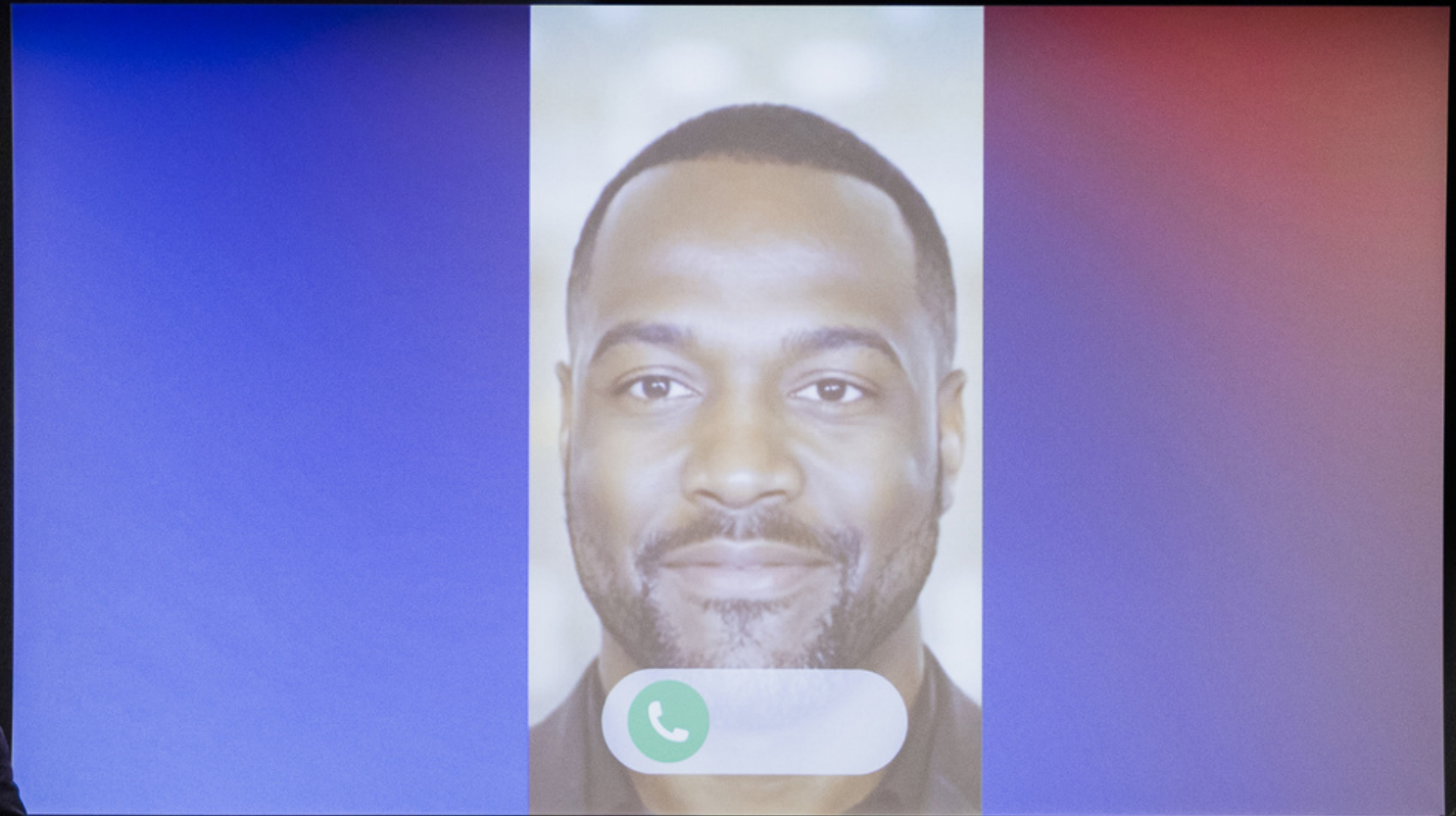
Impact

BDAIC has provided Data Lake Explorer access to:

- The **2024-2025 Master of Science in Applied Analytics (MSAA)** cohort for their capstone project
- the **2025-2026 MSAA** cohort for their capstone projects
- **2025-2026 Doctor of Pharmacy (PharmD)** program students for their Healthcare Informatics research projects

The screenshot displays the 'Data Lake Explorer' interface, which is part of 'AWS S3 Dataset Management'. The top navigation bar includes a 'User Panel' (selected), 'Dataset Explorer', and 'AWS Config'. A 'bdaic-public-transform' button and a 'Logout' link are also visible. Below the navigation bar, a summary section provides key metrics: 444 Total Datasets, 33.7 GB Total Size, 23 Data Sources, Last Updated January 13, and 5.9B Community Data Points. A search bar and filters for 'All Formats' and 'All Tags' are present, along with buttons for 'Find Dataset', 'AI Insights', and 'Refresh'. The 'Data Sources' section lists several datasets: CDC PLACES (20 datasets, 252.1 MB, 32.6M CDP, CSV (20)), CDC SVI (10 datasets, 253.3 MB, 55.2M CDP, CSV (10)), CDC WONDER (4 datasets, 105.3 KB, 14,556.12 CDP, CSV (4)), CENSUS ACS5 (72 datasets, 5 GB), CENSUS ACS5 PROFILE (54 datasets, 15.3 GB), and CMS MEDICARE DISPARITIES (13 datasets, 63.7 MB). The interface also indicates 21 folders.

REAL-TIME CONVERSATIONAL AI



BDAIC has developed an interactive **MetaHuman** experience in Unreal Engine that allows users to converse with an AI. The audio is captured, transcribed, and sent to an **LLM**, which generates a response. That response is then spoken back through the MetaHuman, complete with realistic lip-sync to match the dialogue.

Looking ahead, we're working toward deploying this technology in XR (Extended Reality) environments.



BELMONT DATA & AI COLLABORATIVE

EMAIL:

data@belmont.edu

WEBSITE :

<https://www.belmont.edu/data/>

INSTAGRAM:

[belmontdata](https://www.instagram.com/belmontdata)

LINKEDIN:

[Belmont Data & AI Collaborative](#)

