

Center for Applied Data Analytics (CADA)

Milestone & Vision Presentation

Presented by Dr. Lily Popova Zhuhadar

March 2025



Mission of CADA



Over the Years | 2015–2025 Milestones



2023–2024 Highlights



This Year So Far | 2025



Plans for Next Year | 2026



Looking Ahead to 2028



CADA's Impact at a Glance



Mission of CADA

Aiming to Empower Innovation Through Data

- **Advance** AI & Data Analytics education across disciplines
- **Promote** research excellence among students & faculty
- **Foster** industry and community partnerships
- **Strengthen** WKU's national reputation in AI & Data Analytics

Over the Years

[2015 – 2025 Milestones]

Acknowledging Our Foundation & Growth

- Special thanks to Kirk Atkinson, Founding Director (2015–2021), for establishing the Center's foundation in **research**, **education**, and **community engagement**.

Our development follows two key phases:

Building the
Foundation
(2015 – 2021)

Laying the
Groundwork for
Impact
(2022 – Today)

Building the Foundation (2015 – 2021)

Official Launch of CADA (2015)

The Center was officially launched on December 14, 2015.

Received a generous \$100,000 gift from Ms. Michelle Wells (Yum! Brands, Louisville) with a \$50,000 match from Bucks for Brains®—totaling \$150,000.

Center's inaugural physical space (2017)

Established the Center's inaugural physical office space on Fountain Square.

Provided Training Workshop (2019)

Basic Excel - ARGI (Dan Cupkovic, Louisville, KY), Jim Lindsey.

Advanced Excel - ARGI (Dan Cupkovic, Louisville, KY), Kirk Atkinson.

Formed Community Partnerships (2019 – 2021)

The Foundry Christian Community Center.

Good Shepherd Clinic.

HOTEL INC.

Kentucky Legal Aid.

TVA – Ft Knox Federal Credit Union.

Laying the Groundwork for Impact (2022 – Today)

7

1- Business Partnerships

Established Business Partnerships with Industry Leaders to support data analytics training and innovation:

- SAS
- JMP
- Altair
- KNIME
- INFORMS

2- Institutional Growth and Impact (2023 – Today)

Expanded **student funding** opportunities by prioritizing grant development and aligning resources with high-impact experiential learning.

Launched **WKU's first faculty externship** in collaboration with the Arts of Kentucky nonprofit, providing unique professional development opportunities.

The Center's **second physical location** in Grise Hall (Room 128) accommodated growing operations and outreach.

3- Cross-Center and Lab Collaborations with WKU Directors (2023 – Today)

CADA has initiated efforts to expand interdisciplinary research by collaborating on external grants with the following WKU Center/Lab Directors and research leaders:

Kirollos Haleem, Founding Director, Center for Transportation Research.

Farhad Ashrafzadeh, Founding Director of the Center for Energy Systems.

Katrina Burch, Director, Work-Life Lab.

Jenni Teeters, Director, Technology Enhancing Community Health Lab.

These collaborations aim to leverage shared expertise in transportation, energy, workforce wellbeing, and health technology to pursue high-impact, externally funded research initiatives.

4- Organizational Partnership Collaborations (2023 – Today)

Forged organizational collaborations through **external** grants and strategic partnerships with Ogden College and the CHHS:

- **Public Lands Service Coalition** to expand civic engagement and workforce development initiatives.
- **Kentucky Mesonet Center**: Studying the impact of weather patterns on driver behavior using high-resolution environmental data.
- **Kentucky Transportation Cabinet**: Collaborating to enhance road safety through the testing of innovative roadway configurations, including the integration of connected and autonomous vehicles.
- **National Corvette Museum**: Partnering on driver education programs, safety research, and the exploration of autonomous vehicle scenarios.
- **WKU Innovation Campus**: Advancing research on driver behavior and cultivating strategic partnerships with technology companies.

1- Partnerships	2- Institutional Growth & Impact	3- Cross Center/Lab Collaborations	4- Organizational Partnership Collaborations
<p>Established Business Partnerships with Industry Leaders to support data analytics training and innovation</p> <ul style="list-style-type: none"> • SAS • Altair • KNIME • INFORMS 	<ul style="list-style-type: none"> • Expanded student funding opportunities by prioritizing grant development and aligning resources with high-impact experiential learning. • Launched WKU's first faculty externship in collaboration with the Arts of Kentucky nonprofit, providing unique professional development opportunities. • The Center's second physical location in Grise Hall (Room 128) accommodated growing operations and outreach. 	<p>CADA has initiated efforts to expand interdisciplinary research by collaborating on external grants with the following WKU Center/Lab Directors and research leaders:</p> <ul style="list-style-type: none"> • Kirolus Haleem, Founding Director, Center for Transportation Research. • Farhad Ashrafzadeh, Founding Director of the Center for Energy Systems. • Katrina Burch, Director, Work-Life Lab. • Jenni Teeters, Director, Technology Enhancing Community Health Lab. <p>These collaborations aim to leverage shared expertise to pursue high-impact, externally funded research initiatives.</p>	<p>Forged organizational collaborations through external grants and strategic partnerships with Ogden College and the CHHS:</p> <ul style="list-style-type: none"> • Public Lands Service Coalition to expand civic engagement and workforce development initiatives. • Kentucky Mesonet Center: Studying the impact of weather patterns on driver behavior using high-resolution environmental data. • Kentucky Transportation Cabinet: Collaborating to enhance road safety through the testing of innovative roadway configurations, including the integration of connected and autonomous vehicles. • National Corvette Museum: Partnering on driver education programs, safety research, and the exploration of autonomous vehicle scenarios. • WKU Innovation Campus: Advancing research on driver behavior and cultivating strategic partnerships with technology companies.

Data Literacy and Analytics Training Sessions Delivered:

CADA Empowered **1,500+ Professionals** and **Students** Through **25+ Data Literacy and Analytics Training Sessions**

2024: WKU Data Analytics Awareness Webinar Series with Altair

- Demystifying Data Analytics
- How to Accelerate AI Adoption for Industrial Processes
- Unlocking AI/ML Potential for Engineering Designs and Manufacturing

2023: CADA launched a Virtual Summer Enrichment Series for WKU faculty, staff, and graduate students, featuring weekly seminars from June to August

- Enabling Data Science & Analytics - SAS – Lori Downen & Tom Grant
- Longitudinal Data Analysis – Jackie Johnson
- Data Cleaning – Nancy Rausch
- Sentiment Analysis (Text Mining) – Tom Grant
- Designing Effective Online Surveys – Nancy Rausch
- Multilevel Mixed Models – Jackie Johnson
- Exploratory Data Analysis – Tom Grant
- Structural Equation Modeling – Cat Truxillo

2022: 2nd Annual SAS Training Workshops: Delivered across multiple WKU colleges, this series expanded access to analytics training:

- GFCB: SAS Studio, Fraud Detection, R & Python in SAS
- CEBS: SAS Studio, R & Python in SAS, Analyzing Big Data
- Ogden: SAS Studio, R & Python in SAS, Analyzing Big Data
- CHHS: SAS Studio, Analyzing Big Data

2021 Spring Break SAS & JMP Zoom Workshops

- Modeling & Machine Learning in SAS Viya
- JMP Pro for Teachers & Researchers

2019: 1st Annual SAS Training Workshops

Undergraduate Students Supported:

\$68,500 in undergraduate grants funding **19 students** through the FUSE program to engage in national and international research projects.

Recent Awardees (2023-2024):

1. **Ryan Spychalski** (\$4,500) – Social Media & Mental Health (2024)
2. **Michael Delaney** (\$3,500) – Body Fat Prediction Using ML (2024)
3. **Jonathan Roberts** (\$4,500) – Diabetes Prediction Modeling (2024)
4. **Lilly Shipley** (\$3,500) – Stroke Risk Detection (2024)
5. **Geoffrey Ross** (\$3,500) – Diabetes Prediction Modeling (2024)

Previous awardees:

Layla Dalton, Aaron Wallace, Jonah Hathaway, Abbigail Daly, Sarah Shirley, Morgan Lyons, Abigail McGraw, Ian Hamilton, Kyla Scanlon, Kyle Hart, Ryan Boone, Zach Ross, Corey Travis, and Cody Kirk—each awarded \$3,500 to support their undergraduate research projects in data analytics.

Graduate Students Supported:

\$54,000 in graduate assistantships supporting **7 graduate students** in research projects.

Recent Awardee: (2023-2024):

Maria Wells –The Impact of AmeriCorps Members in Ecosystem Management | \$6,000 | Q1 Journal Publication

Previous awardees: Scarlett Marklin (\$18,000), Ryan Boone (\$6,000), Tuyen Pham (\$6,000), Khoa Nguyen (\$6,000), Chase Bolton (\$6,000), and Stephen Guffey (\$6,000).

Grant Submissions & Funding Status:

Through strategic grant writing efforts, CADA has secured funding for impactful projects and continues to seek opportunities to expand its reach and resources.

Recent Proposals (2023-2024):

- **WKU TOP Grant** – \$100,000 (2025–2027) – **Funded**.
- **WKU Sisterhood Grant** – \$60,000 – Finalist but not funded.
- **NSF MRI Grant** – \$1.2M (2025–2028) – **Under Review**. This proposal seeks funding to enhance driver behavior research, develop advanced wildfire training programs, and accelerate innovation in autonomous vehicle technologies. The initiative provides collaborative exposure and impact across key partners such as Kentucky Transportation, National Corvette Museum, Hopkinsville Fire Department, WKU Institute for Rural Health, Kentucky Mesonet, and WKU Innovation Campus.

Previous awarded grants:

- **AmeriCorps & Public Lands Service Coalition Grant** – \$156,136 (2022–2024) – **Funded**.
- **Innovative BINDR** – \$14,547 (2022–2026) – **Funded**.

\$126,000

Undergraduate Students Supported

\$72,000 awarded in undergraduate research grants, supporting 20 students through the FUSE program and the Data Science Scholarship to participate in national and international conferences.

Recent Awardees (2024-2025) - \$23,000

- 1. Ryan Spychalski (\$4,500) - Social Media & Mental Health (2025) + (\$1,800) Scholarship
- 1. Jenna Wells (\$1,700) Scholarship - Student Retention
- 2. Michael Delaney (\$3,500) - Body Fat Prediction Using ML (2025)
- 3. Jonathan Roberts (\$4,500) - Diabetes Prediction Modeling (2024)
- 4. Lilly Shipley (\$3,500) - Stroke Risk Detection (2024)
- 5. Geoffrey Ross (\$3,500) - Diabetes Prediction Modeling (2024)

Previous awardees: Layla Dalton, Aaron Wallace, Jonah Hathaway, Abbigail Daly, Sarah Shirley, Morgan Lyons, Abigail McGraw, Ian Hamilton, Kyla Scanlon, Kyle Hart, Ryan Boone, Zach Ross, Corey Travis, and Cody Kirk—each awarded \$3,500 to support their undergraduate research projects in data analytics.

Graduate Students Supported

\$54,000 in graduate assistantships supporting 7 graduate students in research projects.

Recent Awardee: (2023-2024):

Maria Wells -The Impact of AmeriCorps Members in Ecosystem Management | \$6,000 | Q1 Journal Publication

Previous awardees: Scarlett Marklin (\$18,000), Ryan Boone (\$6,000), Tuyen Pham (\$6,000), Khoa Nguyen (\$6,000), Chase Bolton (\$6,000), and Stephen Guffey (\$6,000).

\$156,547

Grant Submissions & Funding Status

Through strategic grant writing efforts, CADA has secured funding for impactful projects and continues to seek opportunities to expand its reach and resources.

Recent Proposals (2023-2025) - \$100,000

- WKU TOP Grant - \$100,000 (2025-2027) - Funded.
- WKU Sisterhood Grant - \$60,000 - Finalist but not funded.
- NSF MRI Grant - \$1.2M (2025-2028) - Under Review. This proposal seeks funding to enhance driver behavior research, develop advanced wildfire training programs, and accelerate innovation in autonomous vehicle technologies. The initiative provides collaborative exposure and impact across key partners such as Kentucky Transportation, National Corvette Museum, Hopkinsville Fire Department, WKU Institute for Rural Health, Kentucky Mesonet, and WKU Innovation Campus.

Previous awarded grants:

- AmeriCorps & Public Lands Service Coalition Grant - \$156,136 (2022-2024) - Funded. (GFCB portion approximately \$42,000, supporting faculty stipends, course buyout, and F&A costs.)
- Innovative BINDR - \$14,547 (2022-2026) - Funded.

~\$280,000

Trough Business Partnerships

**CADA Empowered 1,500+ Professionals and Students Through 25+
Data Literacy and Analytics Training Sessions**

Analytics Training Sessions

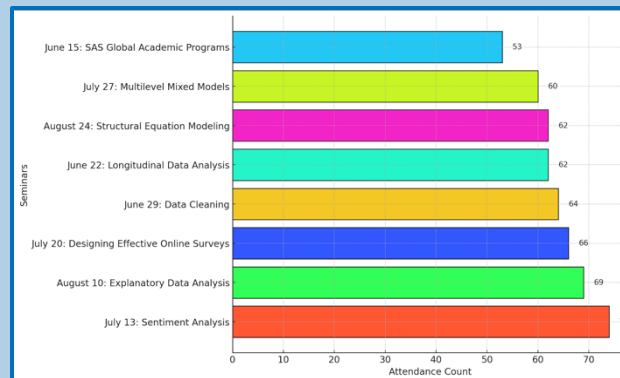
2024 – WKU Data Analytics Awareness Webinar Series with Altair

- Demystifying Data Analytics
- How to Accelerate AI Adoption for Industrial Processes
- Unlocking AI/ML Potential for Manufacturing



2023 – CADA Launched a Virtual Summer Enrichment Series for WKU faculty, staff, and GAs

- Enabling Data Science & Analytics - Lori Downen
- Longitudinal Data Analysis – Jackie Johnson
- Data Cleaning – Nancy Rausch
- Sentiment Analysis (Text Mining) – Tom Grant
- Designing Effective Online Surveys – Nancy Rausch
- Multilevel Mixed Models – Jackie Johnson
- Exploratory Data Analysis – Tom Grant
- Structural Equation Modeling – Cat Truxillo



- The chart highlights attendance for the 2024 seminars held from June to August.
- Sentiment Analysis recorded the highest attendance with 74 participants, while SAS Global Academic Programs had the lowest at 53.
- Other popular sessions included Explanatory Data Analysis (69 attendees) and Designing Effective Online Surveys (66 attendees), showcasing a strong interest in practical and applied data analytics skills.

2022 – 2nd Annual SAS Training Workshops

2nd Annual SAS Training Workshops: Delivered across multiple WKU colleges, this series expanded access to analytics training:

- GFCB: SAS Studio, Fraud Detection, R & Python in SAS
- CEBS: SAS Studio, R & Python in SAS, Analyzing Big Data
- Ogden: SAS Studio, R & Python in SAS, Analyzing Big Data
- CHHS: SAS Studio, Analyzing Big Data

2021 Spring Break SAS & JMP Zoom Workshops

- Modeling & Machine Learning in SAS Viya
- JMP Pro for Teachers & Researchers

2019: 1st Annual SAS Training Workshops

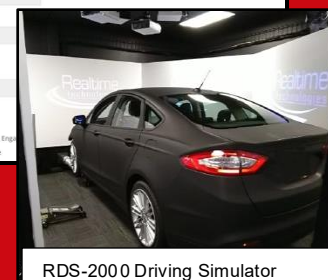
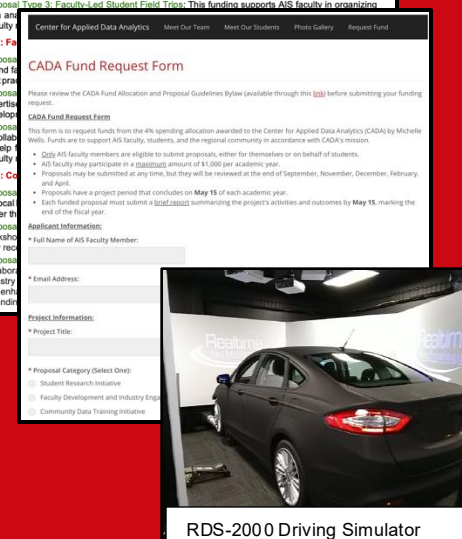
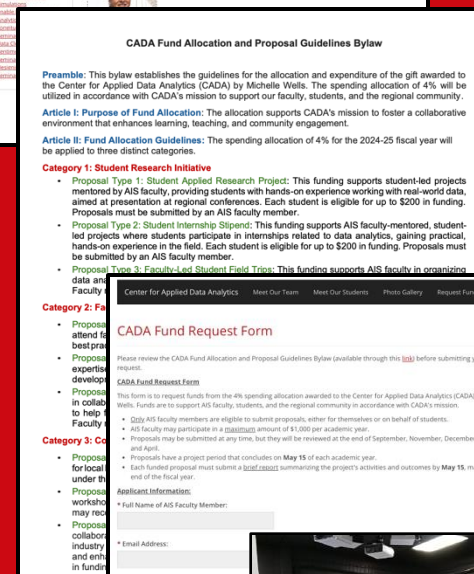
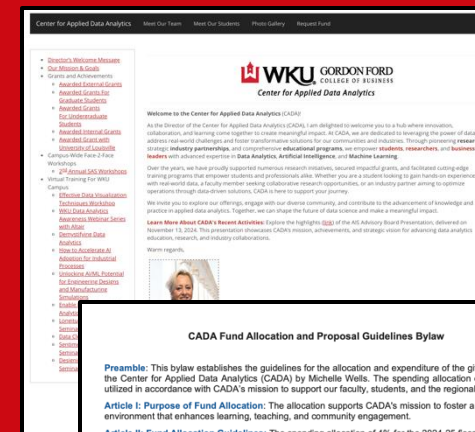
- SAS Studio
- SAS Viya



2023–2024 Highlights

Scaling Innovation & Outreach

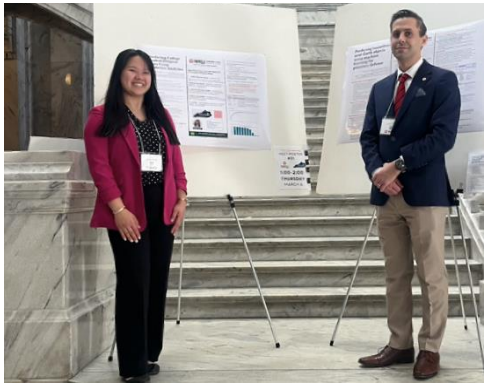
1. **Secured \$23,000** in student research grant funding, supporting 5 out of 11 competitive student proposals. While all 11 proposals were accepted, limited funding allowed awards to be issued to only five students.
2. **Hosted** the SAS Summer Virtual Enrichment Series and Altair Webinars, providing hands-on training in cutting-edge analytics tools to **over 600** participants, including students, faculty, and professionals.
3. **Launched** the official **CADA website**, serving as a central hub for showcasing initiatives, sharing resources, and promoting opportunities in data analytics and applied research.
4. **Developed and published** the **CADA Fund Bylaws** and submission process, formalizing a \$6,000 annual allocation supported by a growing endowment to sustain innovation and student engagement.
5. **Established** a strategic partnership with **KNIME**, expanding access to professional training, collaborative research, and open-source data science platforms.
6. **Co-developed** a **\$1.2M NSF MRI Proposal** (currently under review) to support advancements in autonomous vehicle systems, wildfire training simulations, and driver behavior analytics.



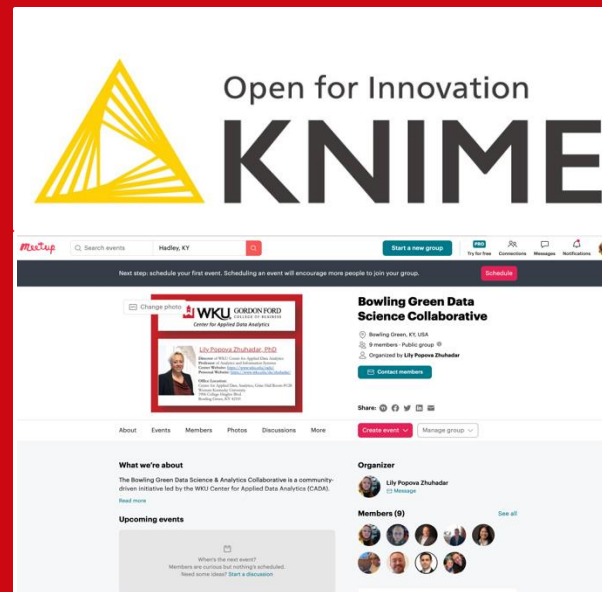
This Year
So Far | 2025

Regional Hub for Data Analytics and Innovation

- Mentoring **2 students** presenting at **Posters @ the Capitol** – March 6, 2025
- Mentoring **8 students** for the **WKU Student Scholar Showcase** – April 5, 2025
- Accompanying **5 students** to the **2025 INFORMS Analytics Conference** – April 6–8, 2025
- Ongoing collaboration with SAS – **Presenting at SAS Innovate roundtable** on Ethical Challenges in Machine Learning & AI – May 6–9, 2025
- Hosting **KNIME Event** – Fall 2025



Student Scholar Showcase
April 5, 2025



Navigating Ethical Challenges in Machine Learning and AI

May 8, 2025 1:00 PM-1:45 PM ET

We explore the ethical challenges of machine learning and AI, emphasizing the need for responsible data science (RDS) to mitigate unintentional bias and ensure fairness. We will examine real-world examples such as the COMPAS algorithm in the criminal justice system, which illustrates how well-intentioned models can lead to discriminatory outcomes. Key principles of RDS such as nonmaleficence, fairness, transparency, accountability and privacy will be discussed, alongside legal considerations like the European Union's General Data Protection Regulation (GDPR) and the implications of protected groups. The aim is to spark an engaging discussion of the ethical implications of algorithms and the balance between technological innovation and social responsibility.

Presenting Company: Western Kentucky University

 Lily Popova Zhuhadar
Professor of Analytics & Director of WKU Center for Applied Data Analytics
Western Kentucky University



The image shows a stage at a SAS Innovate event. The stage is lit with blue and purple lights. There are large screens on the stage displaying the SAS Innovate logo. A group of people is standing on the stage, and a large audience is visible in the foreground.

SAS | SAS Innovate

May 6 – 9, 2025 | Orlando, Florida

sas innovate

The data and AI experience for business leaders, technical users and SAS Partners

[Register now](#)



BRENÉ BROWN
Researcher and author



JIM GOODNIGHT
Co-founder & CEO, SAS

"The best SAS event I've attended in the past 10+ years."

Chris Lester, Lenovo

Grant Impact - Students Presented at National & International Conferences

2023-2024



2024 INFORMS Advances in Decision Analysis Conference

ADA 2024 | July 10-12, 2024 | Helsinki-Espoo, Finland



2024 -2025



Predicting Body Fat Percentage Using Machine Learning Models in *AI Studies*

Presenter: Michael Delany, Business Data Analyst
Advisor: Dr. Lily Popova Zhukovskaya, Director of WKU Center for Applied Data Analytics

Research Objective & Significance: This study applies machine learning to predict body fat percentage using various physical measurements. The goal is to develop a non-invasive and cost-effective alternative to traditional methods like DEXA scans. Predicting body fat percentage is crucial for health assessments, fitness tracking, and medical research.

Data & Methodology: The study uses a Kaggle Body Fat Prediction dataset (202 male subjects). Features include age, weight, height, and body circumference measurements (neck, chest, waist, hip, knee, ankle, biceps, forearm, thigh, calf). Models used include Linear Regression, Decision Tree, Random Forest, Gradient Boosting, and XGBoost.

Key Findings & Model Performance: The study identifies the most influential predictors of body fat percentage. The best model is a Gradient Boosting Machine (GBM) with an R-squared value of 0.85, indicating a strong correlation between the features and the target variable.

Future Improvements & Recommendations: Enhancing predictive power through additional features like bone density and muscle mass. Implementing real-time monitoring systems for health and fitness tracking.

2024 INFORMS Analytics Conference

Key Takeaways!

- Machine Learning Provides Accurate Predictions** - Models effectively estimate body fat percentage using simple physical measurements.
- Density is the Most Influential Predictor** - Strong correlation (0.85) makes it essential for accurate body fat estimation.
- Advanced and Chest Circumferences Are Key Factors** - Strongly linked to body fat percentage and improve model accuracy.
- Generalized Linear Model (GLM) Performs Best** - Achieves the lowest RMSE (0.23), making it the most reliable model.
- Random Forest and Deep Learning Show Potential** - Perform well but require more data for improvement.
- Excluding Density Reduces Accuracy** - RMSE increases significantly when density is removed from the model.
- Machine Learning Can Replace Expensive Methods** - Provides a cost-effective, non-invasive alternative to traditional body fat measurement techniques.
- Future Improvements Can Enhance Accuracy** - Expanding the dataset and including lifestyle factors (diet, activity level) can improve predictions.
- Real-World Applications Are Promising** - Models can be integrated into fitness apps and health trackers for personalized body fat monitoring.
- Healthcare and Fitness Professionals Can Benefit** - Enables improved decision-making in health assessments and personalized fitness programs.

Model Performance Metrics:

Model	RMSE	MAE	R-squared
Linear Regression	0.25	0.18	0.78
Decision Tree	0.22	0.15	0.82
Random Forest	0.21	0.14	0.84
Gradient Boosting	0.20	0.13	0.85
XGBoost	0.20	0.13	0.85

Future Improvements & Recommendations: Enhancing predictive power through additional features like bone density and muscle mass. Implementing real-time monitoring systems for health and fitness tracking.

Predicting College Student Dropout Rates Using Predictive Analytics

Presenter: Anna Wells, Student Data Analyst & Accounting Major
Advisor: Dr. Lily Popova Zhukovskaya, Director of WKU Center for Applied Data Analytics

Research Objective & Significance: This study aims to predict college student dropout rates using various demographic and academic factors. The goal is to identify at-risk students early and provide targeted support to improve retention rates.

Data & Methodology: The study uses a dataset of college students with features like age, gender, race, income, and academic performance. Models used include Logistic Regression, Decision Tree, Random Forest, and XGBoost.

Key Findings & Model Performance: The study identifies the most influential predictors of student dropout. The best model is a Random Forest with an accuracy of 85%.

Future Improvements & Recommendations: Enhancing predictive power through additional features like family background and social support. Implementing early intervention programs for at-risk students.

Why is Sleeping Difficult?

Presenter: Parker Higgins, Business Data Analyst
Advisor: Dr. Lily Popova Zhukovskaya, Director of WKU Center for Applied Data Analytics

Research Objective & Significance: This study analyzes sleep quality by evaluating 13 sleep-related factors. The goal is to identify key contributors to poor sleep and provide recommendations for improvement.

Data & Methodology: The study uses a dataset of sleep-related factors. Models used include Logistic Regression, Decision Tree, Random Forest, and XGBoost.

Key Findings & Model Performance: The study identifies the most influential predictors of sleep quality. The best model is a Random Forest with an accuracy of 85%.

Future Improvements & Recommendations: Enhancing predictive power through additional features like stress levels and lifestyle factors. Implementing sleep hygiene education programs.

Leveraging Machine Learning to Enhance Workforce Stability and Retention

Presenter: Christian Sander, Business Data Analyst
Advisor: Dr. Lily Popova Zhukovskaya, Director of WKU Center for Applied Data Analytics

Research Objective & Significance: This study aims to predict employee turnover using various demographic and performance factors. The goal is to identify at-risk employees and provide targeted retention strategies.

Data & Methodology: The study uses a dataset of employee records. Models used include Logistic Regression, Decision Tree, Random Forest, and XGBoost.

Key Findings & Model Performance: The study identifies the most influential predictors of employee turnover. The best model is a Random Forest with an accuracy of 85%.

Future Improvements & Recommendations: Enhancing predictive power through additional features like job satisfaction and career development. Implementing targeted retention programs.

Predicting hazardous near-Earth objects using machine learning for planetary defense

Presenter: John Costa, Business Data Analyst
Advisor: Dr. Lily Popova Zhukovskaya, Director of WKU Center for Applied Data Analytics

Research Objective & Significance: This study aims to predict the likelihood of near-Earth objects (NEOs) becoming hazardous. The goal is to identify potential threats and provide early warning for planetary defense.

Data & Methodology: The study uses a dataset of NEOs with features like size, speed, and distance. Models used include Logistic Regression, Decision Tree, Random Forest, and XGBoost.

Key Findings & Model Performance: The study identifies the most influential predictors of hazardous NEOs. The best model is a Random Forest with an accuracy of 85%.

Future Improvements & Recommendations: Enhancing predictive power through additional features like orbital parameters and composition. Implementing early detection and deflection programs.

Enhancing Airline Passenger Satisfaction Using Predictive Analytics

Presenter: Cole Kidd, Business Data Analyst
Advisor: Dr. Lily Popova Zhukovskaya, Director of WKU Center for Applied Data Analytics

Research Objective & Significance: This study aims to predict passenger satisfaction using various factors like flight time, service quality, and baggage handling. The goal is to identify areas for improvement and enhance the passenger experience.

Data & Methodology: The study uses a dataset of passenger satisfaction surveys. Models used include Logistic Regression, Decision Tree, Random Forest, and XGBoost.

Key Findings & Model Performance: The study identifies the most influential predictors of passenger satisfaction. The best model is a Random Forest with an accuracy of 85%.

Future Improvements & Recommendations: Enhancing predictive power through additional features like flight delays and customer service. Implementing targeted service improvements.

Smart Workforce Management: Leveraging AI for Employee Retention

Presenter: Hyden Cole, Business Data Analyst
Advisor: Dr. Lily Popova Zhukovskaya, Director of WKU Center for Applied Data Analytics

Research Objective & Significance: This study aims to predict employee turnover using various factors like job satisfaction, compensation, and career development. The goal is to identify at-risk employees and provide targeted retention strategies.

Data & Methodology: The study uses a dataset of employee records. Models used include Logistic Regression, Decision Tree, Random Forest, and XGBoost.

Key Findings & Model Performance: The study identifies the most influential predictors of employee turnover. The best model is a Random Forest with an accuracy of 85%.

Future Improvements & Recommendations: Enhancing predictive power through additional features like job satisfaction and career development. Implementing targeted retention programs.

Plans for Next Year | 2026

Strategic Initiatives & Future Plans

- **Proposing** the launch of a [CAP-Essentials Certification Preparation Course](#) in collaboration with INFORMS
 - **CAP-Essentials (CAP-E): Early-career certification launching Spring 2025**
 - CAP-Pro (CAP-P): Mid-career certification launching Late 2025
 - CAP-Expert (CAP-X): Advanced-level certification launched in Early 2025
- Proposing to host the [AI & Data Analytics Summit](#) – Spring 2026
- Resubmitting NSF proposals to strengthen research capacity and funding
- Expanding industry-sponsored projects to provide real-world experience for students
- Deepening AI literacy initiatives across K–12 and higher education through targeted outreach and training



Certified
Analytics
Professional

Looking Ahead to 2028



Certified
Analytics
Professional

Three-Year Vision

- Curriculum Integration: **CAP** Essential, Professional, and Expert
- Regional Leadership: **Annual WKU AI & Analytics Summit**
- Sustainable Growth: Annual funding > **\$250,000**
- Industry Pipeline: **20+ companies offering internships**
- National Recognition: **Top** Applied AI & Analytics Center

CADA's Impact at a Glance

- **Workshops Delivered:** **Over 25** sessions, **1,500+ participants**
- **Grants Submitted:** **25+** minor & major grant proposals
- **Total Research Funding Awarded:** **\$280,000**
- **Total Student Funding Awarded :** **\$126,000**
- **Partners:** Formed strategic partnerships with the following people/organizations to advance innovation, public service, community development, and experiential learning:
 - **Companies:** **SAS**, **JMP**, **Altair**, **KNIME**, and **INFORMS**
 - **WKU Center/Lab Directors:**
 - Julia Roberts (Gifted Studies Director)
 - Jerry Brotzge (Kentucky Mesonet Director)
 - Kirolos Haleem (Founding Director of Center for Transportation Research)
 - Farhad Ashrafzadeh (Founding Director of the Center for Energy Systems)
 - Katrina Burch, (Director of the Work-Life Lab)
 - Jenni Teeters (Director of Technology Enhancing Community Health Lab)
 - **Organizations:** Public Lands Service Coalition, AmeriCorps, Kentucky Mesonet (a division of the Kentucky Climate Center), Kentucky Transportation Cabinet, National Corvette Museum, and WKU Innovation Campus.

Thank you

24



Lily Popova Zhuhadar, PhD

Director of WKU Center for Applied Data Analytics | Professor of Analytics and Information Systems

✉ lily.popova.zhuhadar@wku.edu

🏢 Grise Hall 226

📞 (615) 604-4995

🌐 <https://www.wku.edu/cada>