



Madonna University Center for Research
**Symposium for Research,
Scholarship and Creativity**

Wednesday, April 22, 2026 | 12-5 p.m.

M MADONNA[™]
UNIVERSITY

DIRECTOR'S WELCOME MESSAGE

12th Annual Madonna University Symposium for Research, Scholarship and Creativity!



It is with great pride and enthusiasm that I welcome you to the 12th Annual Symposium for Research, Scholarship and Creativity at Madonna University. This event celebrates the intellectual curiosity, innovation, and dedication of our students, faculty, and staff. Each year, the Symposium provides a meaningful space to share discoveries, exchange ideas, and recognize how research and creativity enrich our academic community and the world beyond our campus.

This year's Symposium holds special significance as it coincides with Earth Day, April 22, a global reminder of our shared responsibility to care for our planet and communities. The alignment of our Symposium with Earth Day highlights that research is not only about generating knowledge, but also about developing solutions that promote sustainability, improve quality of life, and serve the

greater good. The work showcased today reflects our collective commitment to making a positive and lasting impact.

We are especially grateful for the partnership and assistance of the Center for Humane Studies, whose collaboration has enriched several of our Madonna Talks presentations this year. Their involvement reflects the strong connection between compassion, service, and scholarship that defines our mission.

Madonna University's theme for this academic year, "Widening Our Tent for Charism and Mission," is clearly reflected in the breadth and diversity of research presented at this Symposium. Our scholars are expanding knowledge, inviting new voices into the conversation, and addressing complex challenges through collaboration, embodying our Franciscan values of service, inclusion, and respect for all creation.

Thank you for being part of this important celebration of scholarship and creativity. I encourage you to explore the presentations, engage in discussion, and be inspired by the remarkable achievements of our students and faculty. Together, we celebrate the power of research to transform lives and strengthen our communities.

Elena Qureshi, Ph.D.
Interim Director, Center for Research
Interim Dean, The Graduate School

CONTENTS

- 2 Madonna Talks
- 5 Undergraduate Poster Presentations
- 10 Graduate Poster Presentations
- 19 Demonstration Poster
- 19 Faculty Poster Presentations
- 20 Interactive Displays
- 22 Symposium for Research, Scholarship and Creativity Awards
- 23 Institutional Review Board
- 23 Poster Presentation Judges

MADONNA TALKS



James Noelker, Ph.D.
Assistant Professor
Department of Forensic Science
College of Arts and Sciences

Dr. James Noelker is an assistant professor in the Forensic Science department at Madonna University. He has a strong background in science education, teaching, and research. Dr. Noelker graduated from Concordia University Wisconsin in 2014 with a BA in science education. In 2020 he earned a MS in environmental science from the University of Michigan-Dearborn and earned his PhD in biological and biomedical sciences from Oakland University in 2025.

Dr. Noelker's research interests are primarily focused on quantifying and modeling the temperature dependence of infectious disease dynamics, especially in the amphibian-chytrid disease system. A major component of this includes scaling disease dynamics from individuals to populations. He is also interested in cross-taxa comparisons of metabolic and morphometric characteristics of ectotherms. At Madonna he teaches a variety of classes in forensic science, biology, and data analysis in graduate research.

Do Animals Matter? Animal Use in Scientific Research – What They Can Tell us

Animals have long been used in scientific research, but ethical concerns remain about their inclusion in experimental studies. My talk will introduce some of the ethical considerations of animal subjects and the tools and solutions available to researchers. I will also introduce several key findings from my doctoral research related to infectious disease ecology which investigated the temperature-dependence of chytridiomycosis in amphibians. Finally, I will discuss some of the applications and ethical considerations of this kind of research and the implications for human, animal, and ecological health.



David Payne
Graduate Student

David is an emerging scholar focused on the intersection of human and non-human interactions, with particular interest in how social systems shape relationships with animals. He earned a double major in Animal Studies and Social Studies, as well as a minor in English, and is currently completing a Master's degree in Nonprofit Leadership at Madonna University, along with certificates in Animal Cruelty Investigation, Sustainability, and Higher Education Leadership. He is excited to continue this work as a PhD candidate in Sociology at the University of Windsor, where he also looks forward to pursuing research assistantship opportunities that support and expand his scholarly interests.

His academic and professional experiences reflect a commitment to both scholarship and applied practice. He is actively involved with Natures Helping Hands Wildlife Rehabilitation and volunteers with Bark Nation, supporting efforts to improve animal welfare and advocacy. These experiences inform his broader goal of advancing more ethical and informed human-animal relationships through research and education.

In addition, David serves as a Graduate Assistant in Madonna University's Instructional Design and Delivery department, where he contributes to course design across disciplines, develops training for students and faculty, and explores applications of AI in education, including prompt engineering. He aims to continue teaching at the university level while advancing research that supports both human and animal well-being.

What Do Dogs Do When No One is Watching? Evaluating AI Detection of Canine Behavioral Cues in Shelter Environments

Animal shelters often must make important decisions about a dog's care based on brief observations during busy daytime hours. Yet a dog's behavior can change significantly when people are not present, particularly during quieter periods such as overnight hours when staff are not observing them. This project explores whether video captured from simple, affordable camera systems can be analyzed using widely available AI tools to identify meaningful canine behavioral cues that might otherwise go unnoticed.

By combining accessible video capture with AI-based behavioral analysis, this approach aims to give shelters another way to better understand the dogs in their care outside of normal observation times. Insights from this type of monitoring could

help inform adjustments to care, including decisions related to medication, space, enrichment, or behavioral support. The long-term goal is to explore whether low-cost, scalable technology can help shelters make more informed decisions and improve outcomes for the dogs they serve.



Fr. Charles Morris, M.U.P., M.Div.
Assistant Professor
Religious Studies and Philosophy
College of Arts and Sciences

Fr. Charles Morris is a priest of the Archdiocese of Detroit who has served on the faculty of Madonna University since 2010, including as a full-time member of the Humanities Department from 2013 to 2024. Ordained in 1983, he has ministered in multiple parishes across the Archdiocese as both associate pastor and pastor. Fr. Morris is the founder of Michigan Interfaith Power & Light and has been actively involved in sustainability initiatives through organizations such as the Great Lakes Renewable Energy Association and the Green Burial Council, where he served on the Board. His work in environmental stewardship has been recognized in national media outlets including The New York Times and CBS Sunday Morning, as well as in Catholic publications such as The National Catholic Register and The National Catholic Reporter, for which he authored an Eco-Catholic blog. He has also served on state licensing boards and was named to Rolling Stone Magazine's honor roll in 1996.

A frequent presenter at national conferences on sustainability and environmental justice, Fr. Morris has collaborated with Dr. Elaine Hockman on environmental justice research since the mid-1990s, producing peer-reviewed publications and presenting their work at venues such as the University of Notre Dame and Great Lakes Bioneers Detroit. His parish, St. Elizabeth, became powered by renewable energy in 2001, and the cemetery he administered, Mt. Carmel in Wyandotte, was the first in Michigan, and the first in the US, to receive certification from the Green Burial Council. In recognition of his leadership in sustainability, he received the Michigan Green Leader Award in 2011 and the Green Burial Council National Award in 2012.



Elaine Hockman, Ph.D.
Senior Research Associate
Public Research & Evaluation Services

Dr. Elaine Hockman specializes on research design, measurement, and statistical analysis. She began the Research Support Laboratory at Wayne State University and was an adjunct professor in Environmental Justice at the School of Natural Resources and the Environment (SNRE) at the University of Michigan. She is the co-editor of a book on environmental justice in Michigan.



Sofia Qureshi
Student Researcher

Sofia Qureshi is a Michigan native currently pursuing a Bachelor of Arts in Biology at Boston University, where she is on the pre-medical track. She has a strong interest in the intersection of science, medicine, and community health, and is particularly passionate about understanding how environmental factors influence health outcomes.

Although she is new to formal research in public health, Sofia was eager to join the research team led by Fr. Charles and Dr. Hockman because of their focus on issues directly affecting communities in Michigan. Contributing to research that examines environmental exposures, such as PFAS, and their relationship to race, socioeconomic status, and public health has provided her with valuable insight into the real-world applications of scientific inquiry and the importance of data-driven approaches to improving population health.

Race, Class, Pollution, and the Public Health: The Changing Landscape 1990-2020. What has been the Impact of PFAS and Renewables on Those Relationships?

This presentation will address three questions. First, we will contrast the impacts of race and social class on the exposure to various pollution sources and public health stressors across Michigan zip codes over a 30-year period – 1990 and 2020. Comparing the strength of relationships over a three-decade period, we will describe what is stronger, weaker and unchanged. Second, we will look at the impact on Michigan's public health from the introduction of renewable energy on the grid and its replacement of coal fired and natural gas energy sources. Third, for the first time, we will add the presence of PFAS, their relationship with race and income, and how that form of pollution measurably impacts public health stressors across the State of Michigan.

Our methodology relies significantly on multivariate statistical analysis such as factor analysis and structural equation modeling to present our multilayered descriptions of the interrelationships among demographic factors, various forms of pollution and measures of public health.

POSTER PRESENTATIONS

Undergraduate

Poster Number: 1

An Analysis of Student Nurses' Perspectives on Patient Autonomy in End of Life Care
Keturah Dikong, Madison Hibbs, Gediola Iljazi, and Alesia Morris

Advisor: Angela Gogolowski

End-of-life (EOL) care is a fundamental aspect of nursing practice, emphasizing patient comfort, dignity, and respect for individual values. Central to this care is the ethical principle of patient autonomy, which ensures that individuals retain the right to make informed decisions about their treatment, even as they approach death. Despite strong ethical support for autonomy, nursing students may feel unprepared to effectively engage in EOL discussions. This study aimed to analyze nursing students' perspectives on patient autonomy in EOL care and assess their confidence in communicating about these issues. A quantitative, descriptive design was used with a convenience sample of 20–50 students enrolled in an Accelerated Bachelor of Science in Nursing (ABSN) program. Data were collected using a self-administered electronic questionnaire using a 5-point Likert scale to measure attitudes toward autonomy, life-sustaining treatment, comfort care, and cultural considerations. Descriptive statistics, including mean, mode, and range, were calculated using Microsoft Excel. Findings indicated that students strongly value patient autonomy, with 91.67% expressing agreement (mean = 4.92). However, confidence in discussing EOL care was moderate (mode = 3), suggesting a gap between ethical understanding and communication readiness. Additionally, responses varied slightly when question wording changed (mean = 4.47), indicating that comprehension of autonomy may depend on familiarity with terminology. The results highlight a need for enhanced educational strategies in nursing curricula, including simulation, role-playing, and exposure to varied clinical scenarios, to strengthen both conceptual understanding and communication skills. Improving preparedness in EOL

discussions will better equip future nurses to advocate for patient autonomy and deliver patient-centered care at the end of life.

Poster Number: 2
Who is in the Box?

Viktora Garcia and Natalie Richards
Advisor: Stephanie Gladysck

The identification of individuals from co-mingled cremated skeletal remains presents a significant challenge in forensic science due to DNA degradation and contamination. This study investigates the application of mitochondrial DNA (mtDNA) analysis to unpulverized bone fragments in order to associate fragments with known mitochondrial profiles and assess the presence of additional contributors. Five bone samples were subjected to decontamination, demineralization using EDTA, DNA extraction using a magnetic bead-based forensic kit, and PCR amplification using DreamTaq polymerase. Mitochondrial DNA is a 16,569 base pair circular genome that is passed through the maternal line. In the context of forensic science, this typically involves unidentified human remains or missing persons. These cases tend to have more challenging sample types (e.g., rootless hairs, bone, blood, and saliva), and mtDNA analysis can be an additional method to assist in identification efforts. Due to the multifaceted protection of mtDNA within cells, mtDNA is able to be extracted even in cases of extreme degradation. But how reliable is mtDNA in thermally altered commingled remains? This study highlights both the potential and limitations of mtDNA analysis in forensic cases involving cremated remains.

Poster Number: 3
Nursing Students' Perceptions of the Usefulness of Madonna University Students' Support Resources

Hanna Godfrey, Tatyana Cranford, Aneeta Eeso, Riley Bush, and Kara McBride
Advisor: Adlah Hamlan

This study focused on Madonna University nursing students' perception of the usefulness of

student support resources. Nursing students are faced with many academic stressors, such as assignments, clinical shifts, exams, etc. Having useful student support resources to aid nursing students through their college career is vital to a successful education. Purpose: to identify perceptions of the traditional nursing program students' opinions regarding the usefulness of available resources at Madonna University. Methodology: This study was conducted using a cross-sectional, descriptive design approach. The study sample consists of 15 traditional BSN nursing students at Madonna University, terms 1 through 5. Data was collected between March 16th and March 26th by emailing a Google Form to the traditional BSN students. The tool includes demographic information, student perception of the university resource usefulness. Results: The results showed that 100% of the participants were female, 96.3% of participants were between the ages of 20-25, and 70.4% in term 5. The findings indicated that the most utilized student resource was the writing center (63%). The tutoring services were perceived to be most helpful (39.1%). The most useful CDRC accommodations included the alternative testing accommodations (e.g., private rooms, additional time). Conclusion: The study illustrates how Madonna University's traditional BSN students approach academic resources, such as tutoring and CDRC accommodations, as helpful tools for improving their academic performance and preparedness for graduate nursing practice. The results highlight how important it is to increase access to and knowledge of these tools to improve student outcomes.

Poster Number: 4
Effects of Human Activity on Animal Behavior and Scavenging
Tristan Janson
Advisor: James Noelker

Effects of Human Activity on Animal Behavior and Scavenging Human activity can influence animal behavior such as scavenging and carcass degradation. This study analyzed how different levels of human activity can affect behavior of scavengers, species richness, and even carcass degradation from data collected at different sites across Madonna University. Pig carcasses were used in this study and they were monitored using motion activated camera traps at different sites across campus. Scavenger appearance, frequency of visits, length of activity, and

carcass degradation was all recorded and then analyzed using Random Encounter Surveys and with coyote density estimated using Random Encounter Models. Results showed higher biodiversity at sites with low human activity. Coyotes, rabbits, raccoons, and turkeys were only detected in low traffic areas. Deer were only seen in high traffic areas. Skunks were mainly observed in low traffic areas and squirrels were detected in both high traffic and low traffic areas with high traffic areas being more common. After the sites were reevaluated after approximately two weeks, only one pig cadaver remained at a high traffic area, which suggests increased scavenger activity at lower human activity sites though this was non-significant based on Welch two sample t-test. These results indicate a possible trend where lower human activity increases species richness and influences scavengers.

Poster Number: 5
The Relationship between Social Support and Academic Resilience Among Undergraduate Nursing Students
Mackenzie LaBuhn, Reagan Esch, Jessica Dunkel, Madilyn Beckwith, and Emma Mood
Advisor: Adlah Hamlan

Academic resilience is important to undergraduate nursing students because higher GPAs and stronger nursing program performance have a positive correlation with NCLEX pass rates. One factor that affects academic resilience is social support, which consists of family, friends, and other community resources. Purpose: to identify the relationship between social support and academic resilience among undergraduate nursing students. Methodology: The study was conducted by using descriptive correlational design. Twenty-seven participants were recruited from nursing terms one through five. The data was collected using a survey includes demographic, academic resilience, and social support. Academic resilience and social support were measured on a scale of strongly agree, agree, neutral, disagree, and strongly disagree. IRB approval was obtained, and ethical considerations were met for this research. Results: The study results showed that one third of the participants were term 5 nursing students. 75% of the participants live at home with their parents and the most common parental occupation was in the engineering or automotive field. The results

showed that over 90% of participants believe they have the ability to overcome setbacks and use past successful experiences as motivation. At the same time, the results showed that over 90% of participants believe they have someone special to share their joys and sorrows with. Conclusion: The students have a high level of academic resilience and high social support to help them overcome the challenges they face during their journey in nursing school.

Poster Number: 6
Enhancing Forensic Screening of Synthetic Cannabinoids in Correctional Facilities Using vSC Technology
Peyton Lehman
Advisor: Wayne Jiang

Correctional facilities are increasingly confronted with a sophisticated smuggling method in which illicit drugs, particularly synthetic cannabinoids, are dissolved in solvents and applied to counterfeit legal or printed documents. These drug-soaked papers can bypass standard mail screening procedures, posing serious safety risks to both facility staff and incarcerated individuals, while also placing additional strain on forensic laboratories tasked with identifying these substances. This study evaluates the effectiveness of the Video Spectral Comparator (VSC 8000 HS) as a forensic chemistry screening tool capable of detecting suspicious mail before submission for full laboratory analysis. Suspected documents were examined under multiple wavelengths and viewing angles using the VSC, enabling the identification of unusual optical patterns or luminescent features that may indicate the presence of drug laden areas. Targeted sections of the documents were then cut, extracted with methanol, and analyzed using Gas Chromatography–Mass Spectrometry (GC–MS) for confirmatory chemical identification. Results showed a strong correlation between anomalous visual patterns detected by the VSC and the presence of synthetic cannabinoids confirmed through GC–MS analysis. These findings demonstrate that a smaller, portable version of the VSC could serve as a reliable pre laboratory forensic chemistry screening method, reducing unnecessary analytical submissions while preserving the accuracy and evidentiary value of confirmatory testing. This approach

strengthens frontline detection capabilities, enhances laboratory efficiency, and contributes meaningfully to the forensic chemistry response to evolving drug smuggling techniques.

Poster Number: 7
Senior Nursing Student Knowledge and Perceptions about Opioids
Brianna Llewellyn, Doha Alhillo, Farrah Hassoun, Jillian Lipinski, and Allison Mullins
Advisor: Rebecca Gibbs

Nurses frequently provide care for patients affected by opioid use disorder. According to the Center for Disease Control (CDC), approximately 105,000 people died from a drug overdose in 2023, with 80,000 of those deaths involving opioids. Understanding senior student nurse knowledge and perceptions about opioids can assist in improving care for this population. The purpose of the study is to collect data from senior nursing students about nurse knowledge and perceptions about opioids. Surveys were sent out via Blackboard. Data collection is still in progress. Findings from this study will aim to identify gaps in knowledge to implement future educational strategies for senior nursing students. This will better prepare new graduate nurses to improve the care they provide to patients with an opioid use disorder.

Poster Number: 8
Student Nurse Attitudes: Community vs Hospital
Jordyn Myatt, Madison Plaut, and Kristin Watkins
Advisor: Angela Gogolowski

Nursing students are exposed to both hospital and community-based clinical settings; however, many continue to favor hospital-based careers despite the growing importance of community nursing in prevention, population health, and reducing hospital readmissions. Limited interest in community-based nursing may contribute to workforce gaps in this essential area of healthcare. This study aimed to examine nursing student attitudes toward hospital versus community-based nursing and evaluate how clinical exposure influences career preferences. A quantitative, descriptive survey design was utilized with a convenience sample of 11 pre-licensure nursing students.

Data were collected using an anonymous Google Forms questionnaire assessing student attitudes, preferences, and perceptions of clinical settings using a Likert scale. Descriptive statistics were analyzed using Microsoft Excel to identify trends in responses. Findings revealed a strong preference for hospital-based nursing, while interest in community-based nursing remained comparatively low. Although students acknowledged the value and importance of community nursing, many reported limited understanding and exposure to this field. Results suggest that clinical experience plays a significant role in shaping student perceptions and career interests. These findings highlight the need for enhanced integration of community-based clinical experiences and targeted educational strategies within nursing curricula. Increasing student exposure to community settings may improve understanding, shift perceptions, and promote a more balanced distribution of the nursing workforce across healthcare environments.

Poster Number: 9
Nursing Students' Perceptions of the First Clinical Rotation: Challenges and Learning Needs
Kailyn Nunneley, Kalin Bates, Isabella Lashaway, Lilly McKee, and Diamond White
Advisor: Adlah Hamlin

The transition from classroom learning to the first clinical rotation is a significant milestone in nursing education, often associated with increased anxiety, uncertainty, and difficulty applying theoretical knowledge to patient care. Nursing students must adapt to new environments, perform clinical skills, and develop confidence while balancing academic and clinical responsibilities. Purpose: to identify the nursing students' perceptions of their first clinical rotation, focusing on the challenges they encounter and the learning needs that support their development in clinical settings. Methodology: A descriptive cross-sectional design was utilized. A total of 27 Term II nursing students enrolled in their first clinical rotation were recruited. Data were collected using a structured survey consisting of demographic questions and Likert-scale items ranging from strongly disagree to strongly agree. The survey assessed perceptions of preparedness,

faculty support, and clinical challenges. Ethical considerations were applied, and participation was voluntary and anonymous. Results: The study results showed that most of the students are 18-25 years old and 81.55 are female. Findings indicated that most students felt prepared (70.3%) and supported by clinical instructors (88.9%). However, only 63% reported that all concerns were addressed before clinical. While medication administration was not widely perceived as challenging (66.6% disagreed), longer clinical hours contributed to stress in some students (29.6%). Conclusion: Overall, students reported general preparedness and support, but gaps remain in addressing concerns and managing stress. Improving preparatory strategies and faculty support may enhance student confidence and clinical outcomes.

Poster Number: 10
Senior Nursing Student Knowledge and Perceptions about the Mental Health of Adolescents
Riley Patzer, Mia Borg, Sarah Collins, and McKenna Lauer
Advisor: Rebecca Gibbs

An estimated 49.5% of adolescents have experienced a mental health disorder at some point in their lives (Office of the Assistant Secretary of Health, n.d.). It is the duty of the nurse to recognize adolescents struggling with a mental health disorder and provide adequate care and resources for them. The purpose of this study is to understand senior nursing student knowledge and perceptions of adolescent mental health. Surveys were sent via Blackboard. Data collection is still in progress. Findings from this study are expected to identify gaps in knowledge and to support future interventions to improve the care of adolescents with a mental health disorder.

Poster Number: 11
Visualizing Genetic Code with the Application of AI-powered Image Generation to Forensic Phenotyping
Gianni Rosa
Advisor: Wayne Jiang

Forensic phenotyping utilizes genetic markers, especially single nucleotide polymorphisms

(SNPs), to determine physical characteristics they are correlated with. Several phenotyping kits have been developed in recent years, especially for hair, eye, and skin color, but the vast majority are not connected with a means to visualize the results. Artificial intelligence and image-generation models may fill this gap, providing a quick connection between data and visual. To this end, the study used a minimal set of loci to perform a holistic phenotyping practice on three donors, encompassing skin color, hair color, eye color, height, weight, and waist-hip ratio. The results of the SNP panel were interpreted by a custom Python program to generate a prompt that was automatically input to OpenAI's GPT Image 1.5 model to produce a recreation of the DNA sample donors. However, the model failed to accurately reproduce many of the traits analyzed. Despite this, the practice seems viable if used in tandem with a greater panel of SNPs under a larger budget. This work is significant to forensic chemistry and genetics because it demonstrates a conceptual bridge between molecular data and visual investigative intelligence -a step toward improving how complex SNP based predictions can be operationalized in real forensic contexts. It also underscores the emerging need for validated AI assisted visualization tools that can support investigators when no reference images or suspects are available.

Poster Number: 12
Senior Nursing Student Knowledge and Perceptions about Human Trafficking
Eizabeth Shinoj, Claire Pagnucco, Hyeonju Park, Alisha Patel, and Mitzi Tanalgo
Advisor: Rebecca Gibbs

Human trafficking remains a critical global public health issue, with an estimated 27.6 million individuals affected worldwide (Department of Homeland Security, 2025). Although up to 88% of victims encounter healthcare professionals during their exploitation, less than 1% of providers report suspected cases (American Association of Critical Care Nurses, 2021). Nurses are in a key position to identify and assist victims, yet insufficient training hinders effective intervention. The purpose of this study is to assess senior nursing students' knowledge and perceptions of human trafficking as they transition into practice. A survey was distributed to graduating nursing students via Blackboard.

Data collection is currently in progress. Findings are expected to identify educational gaps and support the need for increased training to improve recognition, reporting, and care for human trafficking victims.

Poster Number: 13
Exploring Senior Nursing Student Knowledge and Perception about Genetics
Hailey Titus, Lucy Carroll, Olivia Collins, and Madyson Wild
Advisor: Rebecca Gibbs

Advances in genetics are increasingly influencing clinical decision-making in the healthcare setting. Understanding genetics is becoming more prevalent in nursing practice as genetics plays a key role in patient outcomes. The purpose of this study is to understand the knowledge and perceptions of senior nursing students about genetics. Surveys were sent via Blackboard to senior nursing students. The results of this study are currently in progress. This study will help to identify gaps in knowledge and guide improvements in genetics education to better prepare senior nursing students as they enter the field of nursing.

Poster Number: 14
Senior Nursing Student Knowledge and Perceptions about Health Disparities
Michaela Wroblewski, Faten Aljahmi, Isabella Covert, Autumn Gubert-Bullington, and Laura Korff
Advisor: Rebecca Gibbs

Despite advances in modern healthcare, significant health disparities persist, leaving vulnerable populations at a disproportionate risk for poor health outcomes. Health disparities may exist for over 50% of the United States population (Yancy et al., 2025). This study examined the knowledge and perceptions about health disparities among senior nursing students. Surveys were distributed via Blackboard. Results of this study are still pending. The findings of this study aim to identify gaps in nursing education to determine how to better prepare future nurses to recognize health disparities that impact the patients they care for.

Graduate

Poster Number: 15

Determining the Effectiveness of Forensic Examination in Cases Involving 3D Printed Firing Pins

Damon Baker

Advisor: Jessica Zarate

The ability of NIBIN (National Integrated Ballistic Information Network) technicians to distinguish fired cartridge cases (FCCs) produced by machined firing pins versus 3D-printed firing pins is a modern-day concern with advancements in 3D printing technology. Ghost guns (privately made firearms) are being recovered at an increasing rate by law enforcement as the 3D components can be easily printed, preventing law enforcement from tracing these non-serialized firearms to the registered purchaser. Research on ghost guns in forensic science is essential for improving methods of identification and addressing the growing challenges posed by these untraceable weapons, including the challenge of preventing prohibited individuals from acquiring firearms, which can be easily bypassed through the acquisition of ghost guns. In this study, NIBIN technicians were tasked with differentiating between machined .223 caliber firing pins and the 3D-printed counterparts printed from a single STP file that were compiled into four sample sets. NIBIN technicians concluded, FCCs from the machined firing pin were determined to be consistently identified, while 3D-printed pins were misclassified more frequently. Accuracy improved in data sets simulating real-world casework, indicating the uniqueness of 3D-printed firing pins even when printed from the same STP file. Inter- and intra- data assessments were conducted, enabling reliable, a strong level of agreement of the findings. In conclusion, 3D-printed firing pins can generate recognizable toolmarks, though subtle variations may affect classification accuracy.

Poster Number: 16

Ultra-High Molecular Weight Polyethylene Body Armor and the Effects of High Velocity Rifle Calibers to Understand the Effects of Trauma on the Wearer

Nathaniel Breitner

Advisor: Jessica Zarate

Understanding ballistic performance of high-velocity rifle impacts using .22-250 Remington cartridges on Ultra-High Molecular Weight Polyethylene (UHMWPE) body armor to provide a more complete understanding of how body armor protects law enforcement against these atypical rounds. UHMWPE is widely used by law enforcement due to its lightweight and multi-hit capabilities, yet research is limited regarding the protection the armor provides against extremely high-velocity sporting calibers. The .22-250 can exceed 4,000 feet per second, which presents a significant test of velocity-driven penetration and energy transfer. This amount of energy transfer could be fatal, even if the UHMWPE body armor is not penetrated. Handloaded and factory-loaded ammunition were test-fired from a Savage Model 12 rifle into UHMWPE plates backed with Roma Plastilina brand ballistic clay in accordance with the National Institute of Justice (NIJ) shooting standards. During the test firing, projectile velocity was measured using a chronograph to calculate kinetic energy and back face deformation of the rounds penetrating the armor into the clay was measured using digital calipers. Results showed survivable protection against low weight and slower velocities. However, against heavier weight bullets and higher velocities, the plate was either penetrated or considered lethal by back face deformation.

Poster Number: 17

The Influence of TikTok Food Trends on College Students' Dietary Habits and Eating Behaviors

Fatme Elhellani

Advisor: Karen Schmitz

Social media consumes a huge part of people's daily lives and may impact many aspects of young adults' lifestyle choices, including their dietary behaviors. This research study was conducted to examine the association between TikTok food trends and college students' dietary behaviors. A quantitative cross-sectional survey was used to assess how exposure to TikTok food content affects college students' eating behaviors. There were a total of 65 college students ages 18-30 years who were recruited through snowball sampling and social media. Data was collected through Google

form to protect anonymity. The form included 16 online questions including multiple-choice and Likert-scale questions. The results of the survey indicated that 63% of participants spent 2 or more hours on TikTok per day, 93% of the participants reported eating fast food at least 1 time per week, and 47% believed that exposure to TikTok has influenced their food choices with 66% reporting a likelihood of ordering a specific meal because it went viral on TikTok. A correlation coefficient was calculated to find whether there is a correlation between exposure to TikTok food content and weekly fast-food consumption, results showed $r(0.33)$, $p=0.005$, indicating a statistically significant positive correlation. The overall findings of this research study suggest that an increased exposure to TikTok food content influences a change in dietary behaviors among college students.

Poster Number: 18

The Impact of an Introductory or Advanced College Nutrition Course on Nutrition Label Literacy Among Madonna University

Bouchra El-Zaatari

Advisor: Karen Schmitz

Nutrition label literacy is a key component of food literacy and affects the potential of making an informed dietary decision. Despite availability of nutrition information on packaged foods, many college students may lack the knowledge and confidence necessary to utilize this information effectively. Limited research has focused on whether college nutrition courses improve students' ability to understand and utilize nutrition labels. For this research, an anonymous survey was conducted among undergraduate students at Madonna University with Institutional Review Board approval, participants were recruited via email distribution through faculty members. The survey included 20 multiple choice and rating scale questions about demographics, knowledge of nutrition labels, and label use behaviors. A total of 60 students started the survey, with 49 completing all items. Among respondents, 34% ($n = 17$) reported completing at least one nutrition course, while 66% ($n = 32$) had not. An independent sample t-test revealed that students who completed at least one nutrition course had significantly higher nutrition label literacy scores compared to those who had not ($M = 7.27 \pm 1.95$ vs. $M =$

5.97 ± 1.72 , $p = 0.002$). These findings suggest that college level nutrition education may positively influence nutrition label literacy among students. Students with nutrition literacy may strengthen their informed dietary choices. Future research with larger samples is necessary to confirm these findings and explore long-term behavioral impacts.

Poster Number: 19

Navigating the Dream: NCAA Soccer Pathways and the Transition to Professional Soccer

Wagner Gameiro Febbe

Advisors: Andrew Malec and David Piasecki

Becoming a professional soccer player is highly competitive, with only a small percentage of collegiate athletes successfully transitioning to professional leagues. This study examines how participation in NCAA soccer programs influences the likelihood of becoming a professional player and explores external factors that impact athletes' career decisions. A quantitative secondary data analysis design was used, relying on publicly available NCAA and professional soccer statistics. Data were collected using a data extraction worksheet and analyzed using descriptive and comparative methods. Preliminary findings indicate that NCAA Division I athletes have a higher probability of transitioning to professional soccer compared to Division II and Division III athletes. These differences suggest that factors such as level of competition, access to resources, and exposure to professional scouting opportunities may play a significant role in career outcomes. Analysis and interpretation are currently in progress and will be completed by April 30, 2026. The results of this study aim to provide valuable insights for student-athletes, coaches, and athletic organizations by improving understanding of collegiate development pathways and professional transition opportunities in soccer.

Poster Number: 20

Revenue Diversification and Financial Stability in U.S. Nonprofits

Donatha Gerard

Advisors: Andrew Malec and David Piasecki

This study examines the influence of revenue diversification on financial vulnerability in the

U.S. nonprofit organizations (NPOs). Using data from the National Center for Charitable Statistics (NCCS), derived from IRS Form 990 filings from 2016 to 2019, this study analyzes data on 99,000 NPOs to investigate how diversified revenue streams affect financial vulnerability. It also examines how dependence on restricted and unrestricted revenue sources affects financial vulnerabilities. Regression analysis is employed while controlling for organizational and environmental factors. The findings indicate that diversified revenue sources reduce financial vulnerability over time under normal economic conditions, thus highlighting the importance of diversified revenue strategies. However, the effects of revenue composition are mixed: restricted revenues are linked to improved financial outcomes, while unrestricted revenues are associated with increased vulnerability. This underscores the need for further research into the complex role of different revenue sources in shaping NPOs' financial stability.

Poster Number: 21
The Impact of Healthcare System Structure on Surgeon Mental Health and Patient Outcomes
Nicole Golder
Advisors: Andrew Malec and David Piasecki

This study examines differences in the mental health of surgeons in the United States and Europe and how these differences relate to patient death rates. Europe is defined as countries with socialized healthcare systems, where medical care is publicly funded and work conditions are more regulated, while the United States primarily operates a privatized healthcare system with greater financial and workload pressures on surgeons. Using publicly available data from healthcare organizations and government sources, this study will analyze surgeon burnout, stress, and mental health indicators alongside patient mortality statistics. A regression analysis in Excel will test whether mental health differences are linked to patient outcomes and whether healthcare system structure influences these results. The study aims to provide insights for hospital leadership, showing how supporting surgeon well-being can reduce errors, improve patient safety, and enhance operational and financial performance. The hypothesis is that European surgeons will demonstrate better mental health outcomes

and lower patient death rates due to the structure and support of socialized healthcare systems.

Poster Number: 22
An Examination the Financial Effects of Nurse Retention Factors in Skilled Nursing Facilities
Sarah Head
Advisors: Andrew Malec and David Piasecki

Nurse retention in skilled nursing facilities is a critical issue affecting both quality of care and organizational financial performance. High turnover increases costs related to recruitment, onboarding, and staffing instability. An Examination the Financial Effects of Nurse Retention Factors in Skilled Nursing Facilities study examined factors influencing nurse retention and their financial implications. A quantitative survey was conducted with 13 nurses using Likert-scale and ranking questions to assess the importance of factors such as compensation, staffing, benefits, and work environment. Results showed that while compensation and benefits were highly rated, staffing was most frequently ranked as the primary factor influencing retention. Work environment and leadership support were also identified as key contributors. These findings suggest that operational factors, particularly staffing, play a critical role in retention decisions. Improving nurse retention may reduce turnover-related costs, supporting retention as a financially beneficial strategy for skilled nursing facilities.

Poster Number: 23
Understanding College Students' Health Perceptions and Purchasing Decisions about Protein Bars
Sara Ibseilah
Advisor: Karen Schmitz

Protein products are increasingly marketed as essential dietary components, and low protein intake is often portrayed negatively. As a result, protein bars have become widely available and aggressively advertised to consumers, particularly young adults. The purpose of this study was to examine college students' health perceptions and purchasing decisions regarding protein bars. A cross-sectional survey was conducted among 97 college students aged 18 years and older using Qualtrics. The survey

assessed reasons for protein bar consumption and the importance of specific ingredients in purchasing decisions. Participants were also asked about their perceptions of the healthfulness of protein bars compared to common snack foods. Results indicated that the majority of participants perceived protein bars as healthier snack options. Approximately 55–60% of respondents reported that protein bars were somewhat healthier, while 25–30% considered them much healthier than snacks such as chips or candy bars. A smaller proportion reported that protein bars were about the same (10–15%) or less healthy (approximately 3–5%). In terms of consumption patterns, the most commonly reported frequency was 1–2 times per week, followed by 3 or more times per week. Many respondents also indicated awareness of ingredient labels when making purchasing decisions. These findings suggest that college students generally perceive protein bars as healthier snack options and frequently incorporate them into their diets. Future research should examine whether these perceptions align with actual dietary intake and whether marketing strategies influence protein consumption beyond recommended dietary needs.

Poster Number: 24
Business Strategies and Management for Just Jameen Products and Services
Deborah Love-Peel
Advisors: Andrew Malec and David Piasecki

This capstone project presents a comprehensive strategic and managerial evaluation of Just Jameen, a niche personal care brand operating through JustJameen.com online ecommerce and well as pop-ups and shows. The company distinguishes itself in the competitive beauty and wellness industry by emphasizing high-quality products and exceptional customer service, which are central to its value proposition. This specialized focus has fostered robust customer relationships, brand loyalty, and market credibility. However, the study identifies several areas for improvement: deficiencies in performance measurement, reliance on informal operational procedures, and limited use of data analytics hinder scalability and efficiency. Opportunities for growth include enhancing inventory management,

formalizing leadership and strategic planning, strengthening service quality monitoring, implementing customer retention strategies, and expanding digital marketing analytics. By aligning its quality standards and service excellence with measurable management practices, Just Jameen can achieve sustainable performance and profitability while preserving its boutique brand image. The global beauty and personal care industry has been experiencing significant growth, fueled by several key factors. There is an increasing consumer emphasis on wellness, which is reshaping purchasing behaviors and expectations. Alongside this, the rapid expansion of digital commerce has made it easier for brands to reach and engage customers. Within this evolving landscape, there is a notable rise in demand for high-quality, niche brands that offer specialized products and unique value propositions. Independent and emerging personal care companies have managed to gain momentum by focusing on product specialization, developing authentic brand narratives, and delivering customer-centered service experiences. These strategies have enabled such brands to attract and retain loyal customer bases. Despite these successes, many niche brands face difficulties when attempting to scale their operations sustainably. Common challenges include a lack of robust strategic infrastructure, inconsistent approaches to performance measurement, and operational management processes that are not fully developed. Just Jameen is one such niche personal. The brand distinguishes itself in the marketplace through its commitment to producing high-quality formulations and providing exceptional customer service. This dual focus on product standards and personalized engagement has helped Just Jameen carve out a competitive position within its target segment and foster strong customer loyalty.

Poster Number: 25
Medicaid Payer Mix and Its Impact on Operating Margins in Nonprofit Acute Care Hospitals in Michigan
Evan McDowell
Advisors: Andrew Malec and David Piasecki

This presentation investigates the complex relationship between hospital ownership type,

insurance payer mix, and financial performance. The study aims to understand the key factors that enable For-Profit hospitals to achieve superior operating margins compared to their Non-Profit and Governmental counterparts, with a specific focus on the paradoxical profitability derived from Medicaid and Medicare Advantage plans.

Poster Number: 26
Hospital Length of Stay Financial Waste Analysis
Mathew Myatt
Advisors: Andrew Malec and David Piasecki

A multiple regression analysis of six years of financial data, looking at the differences in hospital readmission rates and length of stay on hospital costs.

Poster Number: 27
Sugar Sweetened Beverages and Self-reported Symptoms
Shaina Najim
Advisor: Karen Schmitz

Sugar-sweetened beverages (SSBs) are a major source of added sugars in the United States and remain a significant public health concern. Approximately half of U.S. adults consume at least one SSB per day, increasing the risk of chronic disease. University students are particularly vulnerable to poor dietary habits due to lifestyle changes and irregular eating patterns. This study examined the frequency and types of SSBs consumed by undergraduate students at Madonna University and evaluated whether higher intake was associated with self-reported symptoms including headaches, fatigue, poor concentration, stomach discomfort, and poor sleep. A cross-sectional quantitative survey was completed by 62 undergraduate students aged 18 years or older using a QR-code questionnaire. The survey assessed weekly SSB consumption, beverage types, and symptom frequency. Descriptive statistics and Pearson's correlation coefficient were used to analyze the relationship between SSB intake and symptom scores. Results showed that 29% of participants consumed seven or more SSBs per week, and 33% reported drinking sweetened coffee beverages during a typical week. Poor concentration

every day was reported by 13% of students. A moderate positive correlation was found between weekly SSB consumption and symptom score ($r = 0.60$), indicating that higher SSB intake was associated with more frequent symptoms. These findings demonstrate a high prevalence of SSB intake among university students and support the need for targeted nutrition education and campus health initiatives to reduce high-sugar beverage consumption.

Poster Number: 28
Endurance Athletes Awareness of Nutrition Supplementation Regulation
Kendra Nysten
Advisor: Karen Schmitz

In the United States, the Food and Drug Administration (FDA) does not regulate dietary supplements. This means that supplements may not be tested for quality and safety. The purpose of the following research is to determine endurance athletes' awareness of nutrition supplement regulation. Through a cross-sectional survey, the researcher collected data from the participants, who were currently training for an endurance event. The participants of the study were 18 years of age, female or male, living in the United States, and affiliated with the same running group. The participants were asked to fill out an anonymous questionnaire with a total of 20 survey questions. Of the 52 participants, 32 were male (62%) and 20 were female (38%). The mean age of participants was 32.3 (SD = 8.5) the median was 30, and the mode was 29 years of age. One participant was excluded from the data due to age, being younger than 18 years old. A chi square test was done to see if a correlation existed between the number of nutrition supplements taken and how likely participants are to check if nutrition supplement certification prior to purchase. The results showed there was no significant relationship. Based on a t-test, there was no significant relationship between endurance athletes' gender and importance of nutrition supplement testing for potency, purity, and accuracy. These findings indicate more research is needed to determine endurance athletes' awareness of nutrition supplement regulation.

Poster Number: 29
College Students' Beliefs about Breakfast Consumption, Cognitive Function, and Academic Performance
Madison Olstyn
Advisor: Karen Schmitz

There is limited research about how college students' beliefs about regular breakfast consumption, how these habits might affect their academic performance, as well as what barriers prevent consistent breakfast consumption. Prior research has studied the effects of breakfast consumption in various populations; however, research about breakfast consumption effects on academic performance in college students is limited. Therefore, this study focused on the relationship between breakfast consumption and grade point average in undergraduate college students. A quantitative, cross-sectional survey design was completed by Madonna University undergraduates aged 18 years old or older, to assess the relationship between breakfast consumption habits and academic performance. Correlation analyses were conducted. Results indicated a weak positive relationship between grade point average and the number of times a student eats breakfast in a week ($r = 0.02$). Data also showed a weak positive relationship between a student's belief that breakfast affects cognitive function and the amount of breakfast consumption in a week ($r = 0.15$). The data showed a strong, positive relationship between the students' rating of the importance of eating breakfast daily and their weekly breakfast consumption ($r = 0.82$). The results also showed that 37% of the students stated that time-related issues are the main reason they do not eat breakfast daily. These findings suggest that daily breakfast consumption may not be associated with a higher grade point average but there may be an association between how important a student perceives breakfast consumption to be and the number of days a student eats breakfast in a week.

Poster Number: 30
An Analysis of Burnout Prevalence Among Male and Female Nurses in Out Patient Versus Bedside Settings
Natalia Owczarzak
Advisors: Andrew Malec and David Piasecki

Burnout among nurses is a growing concern in healthcare due to its impact on employee well-being, staff retention, and patient care outcomes. This study examines burnout prevalence among male and female nurses working in outpatient settings compared to bedside hospital environments. A survey-based study approach was used to gather information from nurses on their experiences at work, coping mechanisms, and reported burnout levels. Along with behavioral and Likert-scale items to gauge burnout intensity and associated causes, the survey also contained demographic questions. This study is meant to determine if burnout varies by gender and workplace, as well as whether these variables interact to affect burnout levels. Both demographic traits and employment circumstances have been linked to burnout in the past, but few studies have looked at these factors together. Due to increasing workload and emotional pressures, it is expected that nurses working in bedside hospital settings will report greater levels of burnout; nevertheless, gender disparities may indicate variances in how burnout is experienced. The results of this study could offer healthcare companies important information by identifying nurse groups that may be more susceptible to burnout.

Poster Number: 31
The Impact of Childcare Accessibility and Quality on U.S. Business Productivity
Erica Pavlik
Advisors: Andrew Malec and David Piasecki

This study examines how insufficient, high cost, and low-quality childcare affects U.S. business productivity, employee retention, and labor force participation. Through an integrated economic analysis and literature review, the research quantifies the financial impact of childcare related absenteeism, turnover, and workforce withdrawal—estimated at over \$122 billion annually—and evaluates how current policies and market structures contribute to these losses. Comparative analysis with international childcare models highlights structural differences in public investment, affordability, and access. The study also assesses private sector responses, including employer sponsored childcare, flexible care

models, and public-private partnerships such as Tri Share, identifying their potential to reduce business disruptions and improve workforce stability. Findings underscore childcare as essential economic infrastructure rather than a discretionary social service, and they point to opportunities for coordinated policy reform and corporate investment to strengthen labor force participation and mitigate business costs.

Poster Number: 32
Social Media Advertising
Madeline Percy

Advisors: Andrew Malec and David Piasecki

Social media is a major part of college students' daily lives, exposing them to constant advertising on platforms like Instagram and TikTok. Businesses use these platforms to influence purchasing behavior and increase brand engagement. The purpose of this study is to examine how social media advertising impacts college students' purchasing decisions and brand engagement, while also exploring differences between male and female students.

Poster Number: 33
DNA-Compatible Enhancement of Eccrine/Sebaceous Impressions Using Diamond Nucleic Acid Dye
Emilia Puda
Advisor: Jessica Zarate

Eccrine/sebaceous fingerprints are a critical source of forensic evidence, providing both ridge detail for individual identification and potential touch DNA for genetic analysis. Traditional enhancement methods, including powders and chemical reagents, can obscure ridge detail, pose health hazards, and degrade DNA, highlighting the need for safer, DNA-compatible visualization techniques. Diamond Nucleic Acid Dye (DD) is a latent, red-colored, nucleic acid-binding fluorescent dye utilized for non-destructive enhancement of eccrine/sebaceous impressions when visualized under alternate lighting conditions. To test the effectiveness of DD, fingerprints were deposited on non-porous, semi-porous, and porous substrates. Porosity performance was evaluated using optimized dye application and destaining protocols to assess impression detail and fluorescent intensity across substrate type. DD enhanced

impressions were photographed in situ on the substrate types and after lifting with adhesive tape under normal and alternate lighting conditions. The photographs were compiled into data sets and electronically distributed to two external raters to assess impression detail and fluorescent intensity. External raters concluded DD is an effective in situ enhancement method for nonporous and semi-porous substrates when visualized under alternate lighting. However, as porosity increased, effectiveness diminished. In addition, tape lifting of enhanced impressions also resulted in the loss of impression quality when assessed under both normal and alternate lighting. Inter- and intra-rater reliability of rater's values was quantified using Cohen's kappa statistics and show fair to moderate agreement. In conclusion, DD shows strong potential as a reliable fingerprint enhancement method that is also DNA-compatible, eliminating the need to choose between the recovery of impressions or DNA in forensic investigations.

Poster Number: 34
Safety and Dependability: Domestic vs. Foreign SUVs
Devin Romaniw
Advisors: Andrew Malec and David Piasecki

Comparative analysis of safety issue rates in domestic and foreign SUVs in the United States (2015–2024) examines whether top-selling sport utility vehicles (SUVs) from U.S. domestic manufacturers exhibit higher rates of safety-related issues than those from foreign manufacturers during this period. The analysis includes 18 high-volume SUV models across six major brands—Ford, Chevrolet, Jeep, Toyota, Honda, and Nissan—resulting in a dataset of 180 model-year observations. To ensure comparability across vehicles with varying sales volumes, recall, safety investigation, and consumer complaint counts were normalized and expressed as rates per 100,000 vehicles sold. Descriptive statistics, independent samples t-tests, and linear regression analysis were used to evaluate differences between domestic and foreign SUVs. Results indicate that domestic SUVs have significantly higher rates across all three safety measures. Specifically, domestic vehicles exhibited approximately 108.7% higher recall rates, 58.8% higher

investigation rates, and 78.4% higher consumer complaint rates. Regression analysis further confirms that domestic origin is a statistically significant predictor of increased safety issue rates, with domestic SUVs experiencing an average of 2.76 additional recalls, 0.30 additional investigations, and 109.51 additional complaints per 100,000 vehicles sold compared to foreign SUVs. These findings suggest that, when controlling for sales volume, domestic SUVs experience higher rates of safety-related issues than foreign competitors.

Poster Number: 35
Innovative Analytical Strategies for PFOS Detection in Complex Matrices: Bridging Environmental and Forensic Chemistry
Emma Romine
Advisor: Wayne Jiang

This research project evaluates the application of gas chromatography-mass spectrometry (GC-MS) and Fourier Transform Infrared spectroscopy (FT-IR) for detecting perfluorooctane sulfonate (PFOS) in bovine blood. PFOS, a member of the per- and polyfluoroalkyl substances (PFAS) family, represents a class of synthetic chemicals notorious for their environmental persistence and resistance to degradation. The challenges in detecting and removing PFOS from contaminated environments are compounded by limitations in resources, time, and available cleanup methods. Analytical techniques such as GC-MS are critical in this context due to their exceptional sensitivity and ability to detect trace levels of contaminants. This study employs established sample preparation protocols based on Quick, Easy, Cheap, Effective, Rugged and Safe (QuEChERS) technique and EPA Method 533.1, enhanced with an additional salting-out step to improve sample cleanup. Controlled spiking of bovine blood with varying PFOS concentrations simulates environmental contamination scenarios, enabling rigorous method evaluation. FT-IR serves as a qualitative screening tool to identify major structural features, while GC-MS provides quantitative confirmation and detailed analysis. Statistical analyses, including Welch's Two-Tailed T-test, ANOVA, and Linear Mixed Regression Models, were applied to retention time data to assess method performance. Initial test runs focused

on optimizing GC-MS parameters to reduce runtime. There was no significant difference in results when comparing salted vs. unsalted samples, as the p-value provided by the T-test was 0.8367. This work underscores the vital role of advanced analytical instrumentation in forensic and environmental chemistry for the reliable detection of persistent organic pollutants like toxic PFAS substances. Future work will explore extended LC-MS/MS studies, optimized GC-MS runtimes and alternative cleanup strategies expanding the method's applicability to other biological and environmental matrices to enhance analytical accuracy and robustness. The outcomes of this study contribute valuable insights toward improving analytical methodologies essential for environmental monitoring, food safety, and forensic investigations involving PFAS and other contaminants.

Poster Number: 36
Evaluating Caffeine Detectability in Human Sweat Using Microcrystalline Analysis for Forensic Applications
Kourtney Rouser
Advisor: Wayne Jiang

Human sweat contains a diverse mixture of endogenous metabolites and exogenous substances that enter the body through ingestion or dermal absorption, making it an effective substrate for non-invasive chemical analysis. Sweat collection is advantageous because it is non-invasive with minimal discomfort to the donor and presents fewer logistical and ethical challenges than traditional bodily fluids such as blood or urine. Sweat samples can also provide various detection windows through cumulative drug deposition for forensic screening applications. Positive controls consisted of crushed samples from a 200 mg caffeine pill (Nutricost brand). Donor sweat samples, including negative controls, were collected post-exercise using a black nylon sauna suit at a body temperature of 98.8°F, then pipetted from the suit into glass vials. Following oral administration of caffeine, sweat samples were collected at four and eight hours. The procedure was repeated on a separate date at the same time of day for external variables that may influence sample data. The formation of characteristic

microcrystals was examined under polarized light microscopy. The positive caffeine controls yielded distinct microcrystalline structures indicative of a caffeine–mercuric chloride complex, confirming the presence of caffeine, in comparison with the negative (non-caffeine) controls. While microcrystalline testing is commonly utilized in forensic chemistry for both preliminary and confirmatory analysis, a more sensitive analytical technique (GC-MS) is used to detect the presence of drug substances at lower concentrations. This research highlights the critical role of forensic chemistry in evaluating the suitability of alternative biological matrices and underscores the need for more sensitive analytical approaches when targeting compounds present at trace levels.

Poster Number: 37

What Drives Profitability in the Energy Drink Industry?

Nikola Sasaroga

Advisors: Andrew Malec and David Piasecki

This study examines the key factors that influence profitability in the energy drink industry using data from Monster Beverage Corporation and Celsius Holdings, Inc. between 2016 and 2025. Profitability is measured using EBITDA margin, which indicates how much of a company's revenue remains as profit before certain costs such as interest and taxes. The purpose of this study is to determine whether production costs, marketing expenses, or revenue growth have the strongest impact on profitability. A linear regression model is used to analyze the effects of cost of goods sold (COGS), selling and marketing expenses (SG&A), and revenue growth. The results show that higher costs significantly reduce profitability, while revenue growth is not statistically significant. These findings suggest that rapid growth does not guarantee higher profitability and that cost control is essential for long-term success.

Poster Number: 38

How Does Customer Service Experience Impact Customer Purchasing Decisions?

Mercedes Selma

Advisors: Andrew Malec and David Piasecki

Customer service is the support and assistance a company provides to its customers throughout

their experience with a product or service. It involves helping customers solve problems, answering questions, and ensuring their needs are met in a polite, timely, and professional manner. Customer service experience has a significant impact on customer purchasing decisions. Good customer service repeats purchase and strengthens brand trust, and no service leads to customer loss and dissatisfaction.

Poster Number: 39

The Relationship Between ESG Performance and Organizational Performance

Abigail Shepard

Advisors: Andrew Malec and David Piasecki

This study examines the relationship between environmental, social, and governance (ESG) performance and organizational performance across three performance areas: operational, market, and financial performance. The study analyzes a cross-sectional sample of U.S. publicly traded companies representing multiple industries, business models, and firm sizes to determine if a consistent pattern can be generalized across a diverse set of companies. ESG performance is measured through standardized ESG scores. Operational performance, market performance, and financial performance are measured through each company's earnings before interest, tax, depreciation, and amortization (EBITA) margin, stock return, and net profit margin, respectively. Multiple regression analysis is used to evaluate the relationship between ESG performance and each performance measure, with controls for firm size, industry effects, company growth, market risk, and capital structure. The results indicate a positive and statistically significant relationship between ESG performance and both operational and financial performance. In contrast, no statistically significant relationship is found between ESG performance and market performance.

Poster Number: 40

The Relationship of Diet and Well-being

Tanae Troupe

Advisor: Karen Schmitz

Nutrition and mental health are both complex topics that seem to be gaining the attention

of the public and scientific researchers. Many researchers suggest that the two may have connections in ways that are yet to be fully understood. This study set forth to further examine whether there is a relationship between an adult's diet quality and their overall perceived well-being. Specifically, the hypothesis proposed that individuals who consumed high levels of ultra-processed foods possessed more negative perceptions of their well-being compared to those who consumed high levels of whole foods. A survey composed of sixteen questions was sent to participants via snowball sampling by way of SMS messaging. Participants were individuals that were between 21-49 years of age and reside within the Detroit Metropolitan area. Forty-one responses were accumulated over the course of three weeks. The results showed that 34% of participants consumed a diet consisting of meals where over 50% possessed ultra-processed foods items. Twenty-eight percent of this group reported having greater experiences of negative well-being than positive. The results did not suggest that a diet rich in ultra-processed foods is an indicator for more experiences of negative well-being ($r = -.15$). This finding implies that additional studies, with substantial results, are needed before claiming a relationship between diet and perceptions of well-being among adults.

Demonstration Poster

Poster Number: 41

ProcureLink

Brandon Leavitt and Karlee Stoll

Advisor: Frank Nottorno

ProcureLink is a supply chain search engine designed to improve how companies identify, evaluate, and connect with suppliers based on specific component and Bill of Materials (BOM) requirements. Traditional sourcing methods are often time-consuming, fragmented, and reliant on outdated supplier lists, creating inefficiencies in procurement processes. This study introduces ProcureLink as a centralized, data-driven solution that streamlines supplier discovery and enhances decision-making. The platform analyzes BOM inputs and matches them with relevant suppliers

based on capabilities, historical performance, geographic alignment, and cost considerations. By integrating structured supplier data with intelligent search functionality, ProcureLink aims to reduce sourcing time, improve supplier quality, and increase overall supply chain responsiveness. Preliminary development has included building a working model and testing matching logic across multiple component categories. This research evaluates the effectiveness of ProcureLink in improving procurement efficiency and supplier alignment compared to traditional sourcing approaches. Early observations suggest reduced search time and more accurate supplier matches, which could lead to cost savings and stronger supplier relationships.

Faculty

Poster Number: 42

Online Parental Education to Prevent Obesity in Early Childhood

Bess Bertolis

Advisor: Diane Burgermeister

The prevalence of childhood obesity in the United States has increased significantly over the past decades, with disproportionate rates among minority and low-income populations. This Doctor of Nursing Practice (DNP) project focused on early intervention and health promotion for preschool-aged children at risk for obesity through parent-focused education. Grounded in Pender's Health Promotion Model, the project examined how culturally sensitive parental teaching strategies influenced children's nutrition and physical activity habits over a four-week period. A targeted literature review highlights key social determinants of health (SDOH), racial disparities, family behaviors, and socioeconomic barriers that contribute to early childhood obesity. Using the Family Nutrition and Physical Activity (FNPA) screening tool, data were collected from 22 families at Focus: HOPE preschool. Survey results indicated a need for structured family-based education to address unhealthy behaviors. Interventions were delivered using teach-back methods and American Academy of Pediatrics (AAP) guidelines. The findings supported the idea that early education and community engagement can improve health

behaviors in high-risk populations. The project aligned with Healthy People 2030 goals and addressed The Essentials: Core Competencies for Professional Nursing Education (AACN, 2021) related to population health, professionalism, informatics, and systems-based practice. A sustainability plan included continued use of the FNPA tool, community partnerships, and integration of health promotion practices into early childhood education settings. In the United States over the last thirty years, the prevalence of childhood obesity has increased dramatically. Mean obesity prevalence weights for children ages 6–11 years of age increased from 4% to 18.4% between 1971–1974 and continued to rise from 6 to 21% and between 2015 to 2016, respectively (Yusuf et al., 2020). These trends are alarming and have become a public health concern and childhood epidemic. A positive correlation exists between social determinants of health (SDOHs) such as socioeconomic and environmental factors and childhood obesity (Skinner, 2018). Evidence has shown that a multitude of factors exist that have contributed to this epidemic. Substantial disparities in obesity by race and ethnicity have been shown, with nearly half of Hispanic youths as overweight (Skinner, 2018). Public health concerns have been growing as these trends have also increased in our younger youth.

Poster Number: 43
Nursing Faculty and Student’s Perception of Integrating the National Council of State Board of Nursing (NCSBN) Clinical Judgment Model in Nursing Courses
Adlah Hamlan and Rebecca Gibbs

The National Council of State Boards of Nursing Clinical Judgment Model (CJM) has become central to nursing education following the implementation of the Next Generation NCLEX (NGN). Integrating CJM into curricula is essential for enhancing students’ clinical reasoning and decision-making skills. However, successful implementation depends on both faculty readiness and student engagement.

Interactive Displays

Exploring the Constraint Led Approach: An Interactive Experience
Students of PED 3250 – Afonso Beregula Faccini,

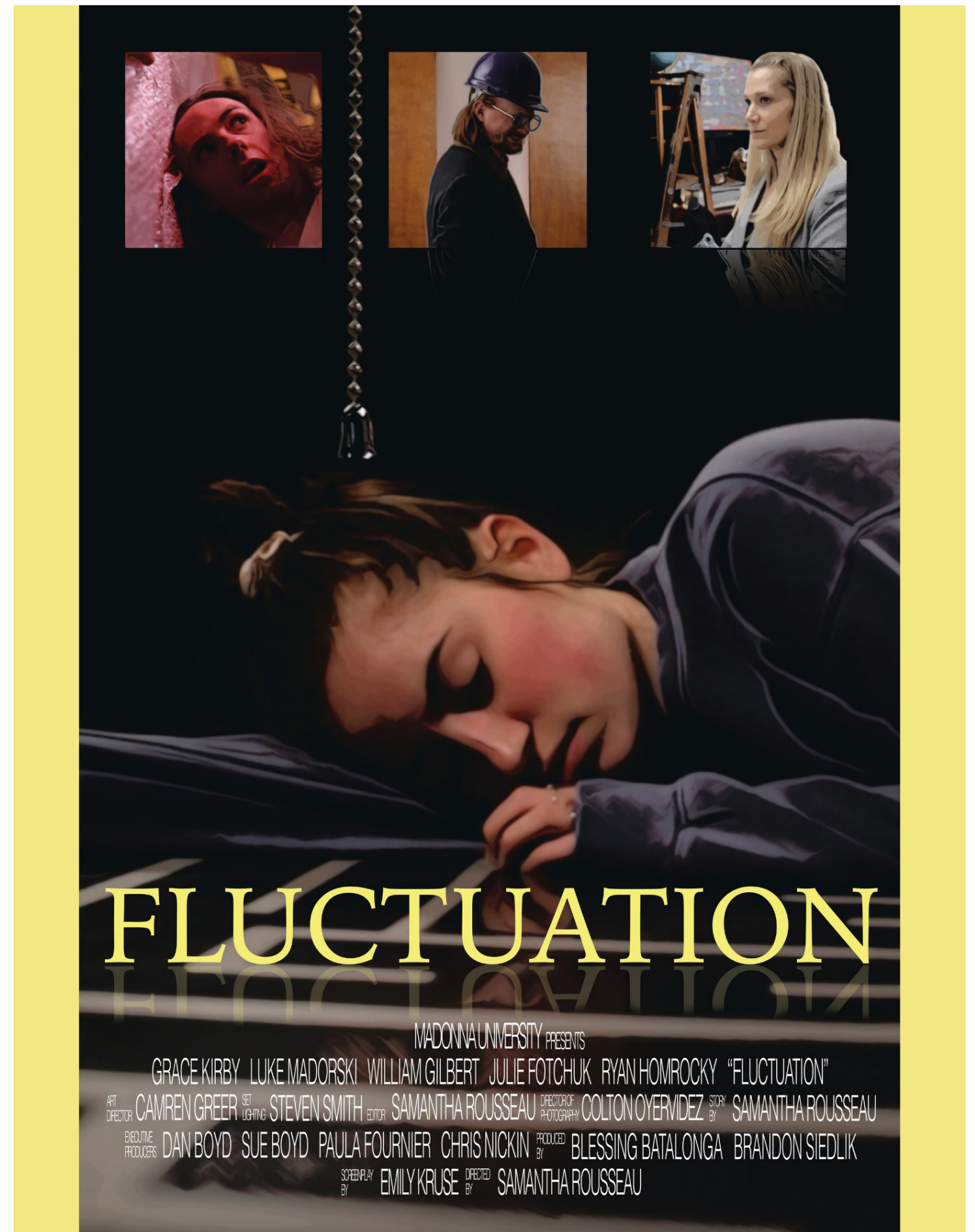
Clayton Emeigh, Angel Gary, Kyle Havens, Lillian Hayter, Hope Schriber, Sean Stout, Gabriel Vennard, and Abby Willis
Advisor: Joanna Tremble

This interactive demonstration explores the Constraint-Led Approach (CLA), a pedagogical framework grounded in ecological dynamic systems theory that replaces prescriptive instruction with learner-centered discovery. By strategically manipulating individual, environmental, and task constraints, practitioners can guide learners toward functional movement solutions without relying on rigid technical drills. Participants will engage in hands-on activities to observe how subtle environmental or rule changes induce neurobiological self-organization. This session bridges the gap between motor learning theory and practice, illustrating how affordances drive skill acquisition.

Fluctuation
Broadcast and Cinema Arts Capstone Class
Blessing Batalonga, Camren Greer, Emily Kruse, Colton Oyervidez, Samantha Rousseau, Brandon Siedlik, and Steven Smith
Advisor: Sue Boyd

Fluctuation follows two friends, Mack and Austin, who become trapped in a series of strange escape rooms led by the mysterious Glyale and Cortney. As each challenge grows more intense, the rooms begin to test their trust, emotions, and understanding of each other. What begins as a game soon becomes something far more unexpected, where escape is not what it seems.

The film was completed on December 9, 2025, and is currently under consideration for the Student Emmy Awards through the Michigan Chapter of NATAS.



Symposium for Research, Scholarship and Creativity Awards

College of Arts and Sciences

Distinguished Leadership in Animal Welfare and Community Engagement
Aislynn Kaminski

School of Business

Michael F. McManus Jr. Award for Leadership and Scholarship
Brandon Leavitt – Undergraduate Recipient
Abigail Shepard – Graduate Recipient

College of Education and Human Development

Learning Outcome Assessment Project (LOAP) Award
Samantha Bihun
Emmalee Hubbard

National Association of Social Work – Michigan Chapter Awards

Social Work Student Of The Year
BSW Award – Lauren Lee
MSW Award – Jill Anderson

College of Nursing and Health

The Blessed Mary Angela Scholarship Award
Emma Mood

Graduate School

Excellence in Research and Innovation in Graduate Education
David Payne

Leadership and Service to Graduate Education

Zena Moaikel

Madonna University Institutional Review Board 2025-2026

Diane Burgermeister, Ph.D., RN
College of Nursing and Health

Clara Chen, Ph.D.
School of Business

Adlah Hamlan, Ph.D.
College of Nursing and Health

Rachel Mahas, Ph.D.
Community Representative

Andrew Malec, Ph.D.
School of Business

Elizabeth A. Prough, Ph.D.
College of Education and Human
Development

Elena Qureshi, Ph.D., Director
Graduate School and Center for
Research

Kenneth Thiel, Ph.D., Chair
College of Education and Human
Development

Joanna Tremble, Ed.D.
College of Education and Human
Development

Mary Urisko, J.D.
College of Education and Human
Development

Jessica Zarate, MFS
College of Arts and Sciences

Thank you to our poster presentation judges

Nermine Atteya

Denise Brothers

Andrew Domzalski

Elizabeth Goulette

Joanna Tremble

Andrew Malec

Josh Olsen

David Piasecki

Susan Rokosz

Anne-Marie Sladewski

Kenneth Thiel

Susan Toma

Acknowledgement

We extend our sincere appreciation to Donna Bryden, Senior Coordinator of the Graduate School and Research, for her exceptional contributions to the organization of the 2026 Annual Symposium for Research, Scholarship, and Creativity. Her professionalism, meticulous coordination, and steadfast commitment were integral to the success of this event. We are truly grateful for her continued support of scholarly research and academic excellence at Madonna University.



Center for Research

36600 Schoolcraft Road • Livonia, MI 48150 • madonna.edu

The Mission of the Center for Research is to provide leadership, coordination and support to faculty in identifying, securing, and managing resources to solve real-world problems. To encourage multi-disciplinary research, scholarship and creative endeavors that benefits the University's faculty, staff, students, alumni and community members.