

# Minds @ Work Student Research Conference 2023

Times	Frost (Bareis 204)	Bareis 310	Adams 101	Adams 104	Adams 201	Adams 204	Bareis 329
<b>9:00</b>	<b>Kaitlyn Kroll</b>	<b>Gavin Robison</b>	<b>Zane Mirgon</b>	<b>Macray Metz</b>	<b>Kelsey Stanfield</b>	<b>Kelsey Wells and Rachel Terbovich</b>	<b>Bridger Cline</b>
	<i>Dr. Traci Stark</i>	<i>Dr. Courtney DeMayo Pugno</i>	<i>Professor Douglas Woods</i>	<i>Dr. Nathaniel Beres</i>	<i>Professor Dan Higgins</i>	<i>Dr. Ryan Musgrave</i>	<i>Dr. Amy Berger</i>
	American Heartbreak: Marilyn Monroe	Overconfident: A Comparative Analysis Between the Winter War and the Russo-Ukrainian War	Modern Cost Accounting Practices in Healthcare	Twin Arginine Transport in Synechocystis	Stepping Up and Stepping In: Mitigating the Bystander Effect	Depression in intercollegiate fall sports teams	Review of Field Trip to the Colorado Front Ranges
<b>9:30</b>	<b>Molly Cannon</b>	<b>William Bohlen</b>	<b>Adam Mcvicker</b>	<b>Tristen Hatfield and Madison Mosier</b>	<b>Megan Hamilton</b>	<b>Kaiden Hammer</b>	
	<i>Dr. Traci Stark</i>	<i>Dr. Amy Berger</i>	<i>Professor Douglas Woods</i>	<i>Dr. Sarah Lazzari</i>	<i>Dr. Ginny Gregg</i>	<i>Dr. Pam Faber</i>	
	Edvard Munch and His Experience With Mental Illness	Constructing a Virtual Museum: An Exercise in Game Development	The Ethics of Interrogation	Neurodivergent Behavior in Incarcerated Environments	The Effectiveness of Support Groups for Cancer Patients	Acidic Erosion on Mandibular Teeth of Human Cadaver	
<b>10:00</b>	<b>Cole Stoots</b>	<b>Katelyn Gluck</b>	<b>Braxton Fox</b>	<b>Cassidy Beringer and Taylor Ratliff</b>	<b>Easton St. Clair, Isaac Wiene, and Bridgette Burrus</b>	<b>Madalyn Newby</b>	
	<i>Dr. Barry Devine</i>	<i>Dr. Traci Stark</i>	<i>Professor Douglas Woods</i>	<i>Dr. Sarah Lazzari</i>	<i>Dr. Ginny Gregg</i>	<i>Dr. Pam Faber</i>	
	The Language of Flowers in the Picture of Dorian Gray: An Ecocritical Analysis	The Ethics of True Crime Media	Hedging Their Bet, Accounting for Futures Contracts in the Farming Industry	Exploring the Behavior and Pre incarceration Family Situations of Incarcerated Parents	Attraction: Positive Qualities in Beauty	Effect of Long Term and Short Term Nicotine on the Development of Female Rats and their Pups	
<b>10:30</b>	<b>Ella Hoover and Sean Freidhoff</b>	<b>Claire St. Bernard</b>	<b>Lauren Gronsky</b>	<b>Rowan Gill</b>	<b>Lindsay Cline, Madison Sundquist, Jaxon Howard, and Cheyenne Wright</b>	<b>Cale Horsch, Meredith Bruce, and Brynlee Vermillion</b>	
	<i>Dr. Sarah Lazzari</i>	<i>Dr. Traci Stark</i>	<i>Professor Douglas Woods</i>	<i>Dr. Julie O'Reilly</i>	<i>Dr. Ginny Gregg</i>	<i>Dr. Pam Faber</i>	

Diplomas and Delinquency: How education influences an individual's entrance into crime

Britney Spears: Mental Health in the Media

Gender Differences in Terms of Ethical Practices and Behaviors of Accounting Professionals

The Horror (Movies) of the LGBTQ+ Community

The Relationships among Political Parties, News Finds Me Perspective, Education Status, and Knowledge of U. S. History in Belief of Fake News Stories

Food Waste Differences Between Male and Female Rats When Given or Not Given Catalog Strips

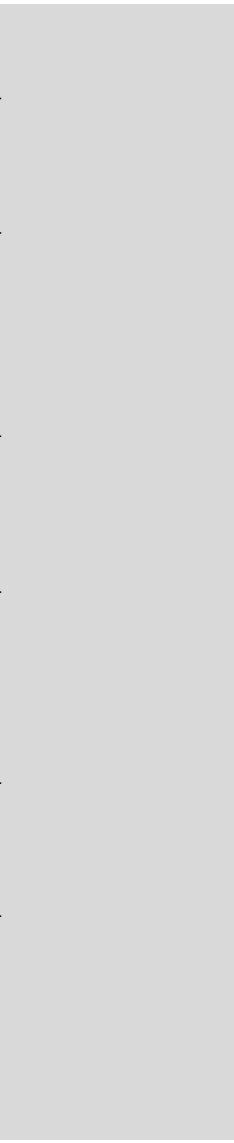
**11:00 Keynote Address by Dr. Alisa Hove: Gundlach Theatre**

**12:00 Lunch: Wickham Hall**

**Poster Presentations in Wickham Hall**

<b>12:30</b>	<b>Crimson Stuckert</b>	<b>Jake Justice</b>	<b>Halie Monhollen</b>	<b>Kaiden Murphy</b>	<b>Simon Yochheim</b>	<b>Bridger Cline</b>
	<i>Dr. Justin Pruneski</i> RNA Biology Characterization of SARS-CoV-2	<i>Dr. Amy Berger</i> A Brief Study on Lake Size and Nutrient Loads Between Grand Lake St. Marys and Lake Erie	<i>Dr. Robert Oates</i> College Athletes and Anxiety	<i>Dr. Amy Berger</i> Tracking Nitrate Trends in Ohio Using Remote Sensing	<i>Dr. Amy Berger</i> Comparison of Soil Profiles at Heidelberg University throughout the years	<i>Dr. Amy Berger</i> Comparison of the Invasion of Spotted Lanternfly and Emerald Ash Borer In the United States.
<b>1:30</b>	<b>Cameron Spraggins</b>	<b>David Harbaugh</b>	<b>Guy Tibbels</b>	<b>Chloe Yuhasz and Maggie Hoffman</b>	<b>Sophia Lee</b>	<b>Elliston Herner</b>
	<i>Dr. David Hogan</i> The Legacy of the Iraq War	<i>Dr. Amy Berger</i> Comparing the Quality of Rock Creek to the Sandusky River Using Different Diversity Indices	<i>Professor Douglas Woods</i> Sin Taxes: Paying for Your Sins	<i>Dr. Ryan Musgraves</i> Coping Mechanisms in College Students	<i>Dr. Barry Devine</i> How the History of "Holy Thursday" Effects William Blake's Poems of the Same Name	<i>Dr. Jiachun Hong</i> My Journey Through Music (Documentary Project)
<b>2:00</b>	<b>Sarah Clemens</b>	<b>Cody Benesh</b>	<b>Darrion Thomas</b>	<b>Morgan Adams and Alexis Langwasser</b>	<b>Serria Allen</b>	<b>Kamryn Stainfield</b>
	<i>Dr. David Hogan</i>	<i>Dr. Amy Berger</i>	<i>Professor Douglas Woods</i>	<i>Dr. Ryan Musgraves</i>	<i>Dr. Barry Devine</i>	<i>Dr. Jiachun Hong</i>

	The Women Against Women's Suffrage	Climate change effects on small Ohio streams	Life death and taxes	Analysis of the Hydration Levels of Women and Their Implications Throughout the Menstrual Cycle	Morphine	Under the Rustling
<b>2:30</b>	<b>Tyler Turek</b>	<b>Chloe Duquette</b>	<b>Chayne Treharn</b>	<b>Zakaria Vincent</b>	<b>Autumn Perry</b>	<b>Kennedi Siders</b>
	<i>Dr. David Hogan</i>	<i>Professor Sean Joyce</i>	<i>Professor Douglas Woods</i>	<i>Dr. Ryan Musgraves</i>	<i>Dr. Barry Devine</i>	<i>Professor Douglas Woods</i>
	African American Influence in the Union Army	Cybersecurity Risks in Precision Agriculture	Refereeing the NCAA, Accounting Regulation of a Billion Dollar Corporation	Antidepressants Affecting College Students Daily Routine	Interpreting Frankenstein's Behavioral Changes	Corporate Financial Fraud Prevention and Detection Strategies
<b>3:00</b>	<b>Jessica Harness-Koehnle</b>	<b>Jarett Woodall</b>	<b>Griffin Pendry</b>	<b>Tyler Amstutz</b>	<b>Lillian Whitcomb</b>	<b>Nakhi Taylor</b>
	<i>Dr. Laura Johnson</i>	<i>Professor Sean Joyce</i>	<i>Professor Douglas Woods</i>	<i>Dr. Robert Oates</i>	<i>Dr. Marc O'Reilly</i>	<i>Professor Douglas Woods</i>
	A Look At Water Monitoring Data	LSTM Predictions of Water Temperatures for Cold-Stunning Events	Issues in Real Estate Accounting	Depression & Anxiety Among Injured Athletes	Economic Feasibility of Green Infrastructure	Understanding a Company's Financial Performance
<b>3:30</b>	<b>Hussein Ali Faraj</b>	<b>Ethan Campbell</b>	<b>Ella Lane</b>	<b>Abigail Birchenough and Iosef Nunez Torres</b>	<b>Adrian Barman and Rilee Kotewicz</b>	<b>Alexis Kirkendall</b>
	<i>Dr. Steven Velasquez</i>	<i>Professor Sean Joyce</i>	<i>Professor Douglas Woods</i>	<i>Dr. Robert Oates</i>	<i>Dr. Robert Oates</i>	<i>Dr. Justin Pruneski</i>
	Astrolabe	Infrastructure as Code and the Disruptive Force of Cloud Computing within Industries such as Consumer Packaged Goods	Big Data and Its role in Accounting	Anxiety Related to Class Load	Sleep Differences Between Athletes and Non-Athletes	Cryptosporidium and Other Parasites Found in Farm Calves Using Multiple Lab Techniques
<b>Times</b>	<b>Frost (Bareis 204)</b>	<b>Bareis 310</b>	<b>Adams 101</b>	<b>Adams 104</b>	<b>Adams 201</b>	<b>Adams 204</b>



**Bareis 329**

**Morgan Adams & Alexis Langwasser**

**Sponsored by: Ryan Musgrave**

**Analysis of the Hydration Levels of Women and Their Implications Throughout the Menstrual Cycle**

J. Gordon Betts and the other senior contributing authors of the article “Anatomy and Physiology of the Female Reproductive System” describe the menstrual cycle to be the process in which the lining of the uterine wall is shed throughout a cycle of three phases; which lasts approximately twenty-eight days in total. The three phases of the menstrual cycle are menses, proliferative, and secretory, which occur at different time points throughout cycling. There is speculation of a correlation between the menstrual cycle and hydration. Water is essential for all human life, with “a major key to survival [being] the prevention of dehydration.” Although the maintenance of hydration is important, the uncertainties lie within properly recognizing signs of dehydration and the inability to measure hydration status. Within the bounds of this research, menstrual cycle comprehension and the differences in hydration levels amongst menstruating women and those who are not actively cycling will be analyzed. To fully understand the complexity of this study, possessing background knowledge in the physiology of the menstrual cycle, adequate hydration, the assessment of hydration levels, and hormonal effects on the female body is necessary. The researchers explore how most college-aged women have the knowledge required to correctly identify signs and symptoms of dehydration, but the majority still remain significantly dehydrated. Throughout the study, urine specific gravity (USG) levels are measured with a refractometer to determine hydration levels from each of the participants during the month.

**Sierra Allen**

**Sponsored by: Barry Devine**

**Morphine**

Two fictional characters, 22-year-old Marcel Xavier and 25-year-old Amethyst Rose go through the ups and downs of the loss of Amethyst's younger sister, Thai. Based in Manhattan, New York, the story follows Marcel and Amethyst as they go through the stages of grief as well as the bond that comes with the loss of a loved one.

**Tyler Amstutz**

**Sponsored by: Robert Oates**

**Depression & Anxiety Among Injured Athletes**

Research shows that injury can have negative effects on one's mental health. Also, there have been studies conducted that have suggested that athletes may be at an increased risk of depression or anxiety compared to non-athletes. With athletes being constantly exposed to injuries through their respective sports, and potentially already at increased risk of depression and anxiety, the possibility of injured athletes developing these conditions could be more common than previously thought. This study used quantitative methodology aimed at the purpose of assessing and describing the relationship between athletic injuries and depression/anxiety. Students were sent an email and asked to take an anonymous survey aimed at assessing their experience with athletic injuries and depression/anxiety. This study aimed to explore the idea that long term injuries can lead to depression and anxiety in injured athletes.

University athletic staff and leaders' understanding of this idea could increase through this study, thus raising more awareness for mental health problems among student athletes.

**Adrian Barman & Rilee Kotewicz**

**Sponsored by: Robert Oates**

**Sleep Differences Between Athletes and Non-Athletes**

This study is diving into sleep differences between athletes and non-athletes. The study is anticipating to uncover average sleep times for college students in general but more specifically athletes and non-athletes. Getting proper quality and quantity of sleep is crucial for healthy living. It is known that college students usually do not get the recommended amount of sleep each night. According to the NIH report, some symptoms of sleep deprivation include memory loss, mood swings, weakened immune system, trouble concentrating, and increased hunger and weight gain. Learning and memory have been linked to a good night's sleep. College students are particularly vulnerable to the effects of sleep deprivation and daytime drowsiness, which can lead to poor grade point averages, an increased chance of academic failure, degraded learning, and decreased mood. Increasing the amount of quality sleep students get each night could improve their academic performance, as well as overall health.

**Cody Benesh**

**Sponsored by: Amy Berger**

**Climate change effects on small Ohio streams**

Climate change has had a significant impact on all ecosystems around the world. Climate change alters weather extremes creating more precipitation in rainy events and even less precipitation in times of drought. Small streams are particularly sensitive to these changes, with small changes in climate having a disproportionate impact on their ecosystems due to their small watershed areas and low volumes of water. Using data from the National Center for Water Quality Research (NCWQR), flow rate, temperature, nitrogen, and total phosphorus have been provided from Rock Creek located in Tiffin, Ohio. These three variables are used to determine how climate change has affected the small stream. To address these challenges, conservation efforts must consider the complex and interconnected effects of climate change.

From there, we can work on adopting adaptive management strategies to protect small stream ecosystems in the face of a changing climate. Overall, the impacts of climate change on small streams highlight the need for urgent action to reduce greenhouse gas emissions and reduce the severity of climate change to protect these vital ecosystems.

**Cassidy Beringer & Taylor Ratliff**

**Sponsored by: Sarah Lazzari**

**Exploring the Behavior and Pre incarceration Family Situations of Incarcerated Parents**

Families are experiencing the effects of parental incarceration at higher rates than ever before. There has been little research that has taken this topic into consideration from the viewpoint and circumstances of the incarcerated parent. Current research has shown that there are mixed results when it comes to an incarcerated parent's efforts to get back into society and their outlook on parenting. We are evaluating incarcerated parents who both were or were not living with their children at the time of their arrest, and if this status impacts the number of write ups that they have obtained in the past 12 months. Our study hypothesized that incarcerated individuals who were living with their children at the time of their arrest will have a lower number of write ups in the past 12 months. We utilized SPSS to evaluate the data through a Chi-Square test, Point Biserial Correlation test, and Independent Sample T-Test. Although there were some positive results, we were unable to draw any definitive patterns of behavior from the data. Future research needs to explore different programs within the justice system to better educate these parents and find the best ways to keep and build these relationships.

**Abigail Birchenough & Josef Nunez Torres**

**Sponsored by: Robert Oates**

**Anxiety Related to Classload**

Anxiety is a common element of the human experience. Individuals with anxiety disorders, on the other hand, usually experience severe, excessive, and persistent concern and terror about ordinary events.

Anxiety disorders frequently feature recurring bouts of acute anxiety, panic, or terror which can increasingly develop worse in a matter of minutes.<sup>2</sup> These symptoms tend to affect daily activities, such as school, because they are so hard to control and will prevent the person from wanting to do anything related to the thing which is giving them anxiety. The focus of this experiment is to determine whether a student's anxiety increases as their workload increases, and to see which classes give them the most/least anxiety. The purpose was also to look at the differences between male and female, year in school, and whether or not they played sports. Surveys were sent out to collect the data on how the 21 students rated their anxiety overall, for the class that gives them the most anxiety, and for the class that gives them the least anxiety.

**Will Bohlen**

**Sponsored by: Amy Berger**

**Constructing a Virtual Museum: An Exercise in Game Development**

From the blocky landscapes of Minecraft to the intricate alien world of Avatar, virtual environments are a fundamental part of modern games and films: but how are they created? The purpose of my project is to explore the process of designing and constructing interactive environments. In this presentation I provide a brief overview of the game development process, using a virtual museum as a case study. I also demonstrate how software packages such as Unity and Blender, both of which are used in the industry, are used to build virtual spaces. These demonstrations offer a behind-the-scenes glimpse into how games and films are made, allowing for a deeper understanding and appreciation of the development process.

**Meredith Bruce, Cale Horsch, & Brynlee Vermillion**

**Sponsored by: Pam Faber**

**Food Waste Differences Between Male and Female Rats When Given or Not Given Catalog Strips**

This study investigated the influence of gender and the presence or absence of an enrichment item on rat food wastage. It was hypothesized that rats with catalog strips would waste less food than rats without catalog strips. Strips were used as an enrichment item. Eight food wasters and eight non-wasters were identified. Four food wasters and four non-food wasters were provided with a catalog strip as an enrichment item. Over the course of three weeks, the food wastage was monitored and weekly grams of wasted food was recorded. Females wasted considerably more than the males. There was no apparent difference in wastage between the rats with catalog strips and the rats without catalog strips. However, males with catalog strips wasted a higher quantity of food than males without. Future studies could investigate different enrichment items not located on the cage lid near the food.

**Bridgette Burrus, Isaac Wiene, & Easton St. Claire**

**Sponsored by: Virginia Gregg**

**LSTM Predictions of Water Temperatures for Cold-Stunning Events**

For this experiment, we were interested to see if the more attractive a person is perceived, would also mean they would receive higher ratings for positive adjectives than someone perceived as less attractive.

Our hypothesis is that an individual seen as more attractive would obtain results in higher-scoring adjectives. We found that our hypothesis was not supported by our results, with us being 0.017 from being significant. This can intrigue us to possibly try to re-conduct this experiment in the future using

different methods to gather data, a larger sample pool, and add more variables to the experiment to see if we can support our hypothesis.

**Ethan Campbell**

**Sponsored by: Sean Joyce**

**Infrastructure as Code and the Disruptive Force of Cloud Computing within Industries such as Consumer Packaged Goods**

Cloud computing has become the new industry paradigm, with many companies switching from on-premises servers to cloud technologies. This has brought the idea of Infrastructure as Code to the forefront. Infrastructure as Code creates a cleaner, simpler, and more replicable way of provisioning servers for specific tasks. This is in contrast to the traditional way of provisioning server technology, where specific servers are very unique. During my internship at the J.M. Smucker Company, I researched and implemented multiple Infrastructure as Code designs. I directly implemented Infrastructure as Code technology to deal with the Jif recall of 2022, which resulted in the J.M. Smucker Company having to manipulate thousands of consumer data for refunds. The results of such designs are a telltale sign for the rest of the industry that Infrastructure as Code will be replacing the old way of provisioning servers, creating a more replicable solution.

**Molly Cannon**

**Sponsored by: Traci Stark**

**Edvard Munch and His Experience With Mental Illness**

Edvard Munch was a Norwegian painter and printmaker. Many of his most famous works, including the painting “The Scream”, are still well-known today. Munch’s childhood and early adult years were filled with death and abusive relationships that caused him to develop mental illnesses such as depression and anxiety. These mental illnesses continued to develop in Munch’s adult years. Because of his struggle with mental illness, it is believed that Edvard Munch used his paintings as an outlet to express himself and what he was feeling. This presentation was completed in the HNR 303 Artist Seminar where we explored the correlation between mental illness and artists. Some essential questions explored in the class include: “Does mental illness make someone more creative and therefore a better artist?”, “Are people who are skilled in art more prone to mental illness?”, and “Is there even a correlation between artists and mental illness?” These questions will be addressed in this presentation by examining Munch’s life from childhood until his death. His paintings will be discussed as well as the meaning he was conveying behind them and how these correlated to experiences that were occurring in his life at the time. We will also explore how people saw his art and why so many people found Munch’s artwork so appealing. This idea will be supplemented with an example from TikTok about how people view modern-day art and how it isn’t very different from the people who lived during Edvard Munch’s time.

**Sarah Clemens**

**Sponsored by: David Hogan**

**The Women Against Women's Suffrage**

Starting in the mid 19th century, the efforts of women suffragist groups led to the ratification of the 19th amendment in 1920. Since the beginning of the century, strict gender roles were imposed on women which relegated them to the private sphere of domestic life while men took on the public sphere outside the home. Gender roles affected every aspect of one’s life including in government and politics. Popular portrayals of history show the movement as a clear succession between the 1848 convention at Seneca Falls and the ratification of the 19th amendment. In reality, the right to vote was a long journey with one of

the main groups in opposition being women known as the anti-suffragists. This research project will seek to answer what motivated women to oppose women's voting rights, the fight between the Suffrs and the Antis, and the true story of suffrage.

**Bridger Cline**

**Sponsored by: Amy Berger**

**Comparison of the Invasion of Spotted Lanternfly and Emerald Ash Borer In the United States**

In this paper, I will provide a comparative review of the distribution and effects of the invasive Emerald Ash Borer (*Agrilus planipennis*) and the Spotted Lanternfly (*Lycorma delicatula*). Both of these species have had negative effects economically and ecologically since their introduction to the United States. This paper reviews the different biologies, distributions, and host species of both insects. Understanding these differences helps to understand what management practices will be effective for each species. I also discuss the treatments and management that are used to control these species and the complications that come with managing them. As a whole, this paper discusses the historical spreading patterns and what lead to these two species successfully invading the United States.

**Review of Field Trip to the Colorado Front Ranges**

In this presentation, I review the Field Geology trip to the front ranges of Colorado. This trip is a geology-based field trip that takes us to a state that has many examples of historical geological events. This presentation will include many images that were taken during the trip and an explanation of what is in the images. While showing the Images I will give a description of what type of formation is present in the image and how that formation came to be. Locations that will be discussed in this presentation include Pikes Peak, Fluorescent Fossil Beds, Victor and Cripple Creek Mines, Painted Mines, Garden of the Gods, and many more. It will also give an explanation of geological events that include mineral reactions, fault lines, sediment erosion, volcanism, and mineral deposits.

**Lindsey Cline, Madison Sundquist, Jaxon Howard, & Cheyanne Wright**

**Sponsored by: Virginia Gregg**

**The Relationships among Political Parties, News Finds Me Perspective, Education Status, and Knowledge of U. S. History in Belief of Fake News Stories**

The misconception of fake news being real is becoming an increasingly common problem as social media becomes people's main news source. The students in Dr. Gregg's BSC 201 class conducted a study in the form of a survey. The participants included 14 Heidelberg students and 20 faculty members. The survey asked a series of questions regarding news consumption through social media and traditional sources, knowledge about U. S. History, adherence to the News Finds Me Perspective (NFMP), and belief in fake news stories. The results of the study indicated no relationship between where people get their news from and how susceptible they are to believe fake news, but there were differences between faculty members and students with respect to belief in fake news. There also were political party differences in belief in fake news stories.

**Chloe Duquette**

**Sponsored by: Sean Joyce**

**Cybersecurity Risks in Precision Agriculture**

By 2050 global food production will have to increase by approximately 70% to meet the needs of a rapidly growing population. Precision agriculture plays a critical role to achieve this goal, which adopts modern



information and communication technologies and information management systems to shift the agricultural industry from labor-intensive to technology-native to significantly increase productivity. On the other hand, the wide adoption of these cyber technologies and systems in agriculture, including crop and livestock production processes, has exposed an industry that was mostly mechanical to growing cyber-attacks. The goal of this project is to have a better understanding of the cybersecurity risks in agricultural production processes that are equipped with modern precision agriculture technologies.

**Hussein Ali Faraj**

**Sponsored by: Steven Velasquez**

**Astrolabe**

The Astrolabe is an ancient astronomical instrument that was used to measure the altitude of stars and planets as well as give Prayer times for the five daily prayers to the Muslim World. The instrument consisted of a circular disc, called a mater, with a rotating arm, called an alidade, which had sights for aligning with celestial bodies. The Astrolabe allows us to determine the time of day and night, and the position on earth. It also enabled astronomers to accurately observe the stars and planets and create detailed star maps. Although the astrolabe has mainly been replaced by modern technology, it remains a symbol of human ingenuity and our enduring fascination with the mysteries of the universe.

**Braxton Fox**

**Sponsored by: Douglas Woods**

**Hedging Their Bet, Accounting for Futures Contracts in the Farming Industry**

My topic is going to be about agricultural accounting. Going to talk about the basics of how it works, the issues/processes they go through, and also talk about futures and how they work in agriculture.

**Sean Friedhoff & Ella Hoover**

**Sponsored by: Sarah Lazzari**

**Diplomas and delinquency: How education influences an individual's entrance into crime**

Previous studies have continuously examined different root causes of criminal behavior and have identified a few potential suspects, however, results have been inconclusive. The current study wanted to examine the relationship between level of education and when an individual begins participating in crime.

We looked specifically at the completion of a high school diploma (HSD) and the age at which the participant was arrested for the first time. We hypothesized that the completion of a HSD positively correlates with the age of first arrest. We analyzed the data by performing a Chi-Square Test for Independence, a Point-Biserial Correlation, and an Independent Samples T-Test. Our results indicated that there was a statistically significant positive relationship between age of first arrest and completion of a HSD. This suggests that education does affect the onset of criminal behavior, however, the current study and previous research suggest it is not the only risk factor in play. Future research should consider the impact of other factors such as socioeconomic status, home life, or drug use.

**Rowan Gill**

**Sponsored by: Julie O'Reilly**

**The Horror (Movies) of the LGBTQ+ Community**

Horror films have often embraced the LGBTQ+ community long before most of society has. However, this does not mean their support accurately portrayed and positively reflected the community. Now that the LGBTQ+ are widely accepted, there is a problem with the older ways queer people were represented.

Many queer individuals argue over whether or not these representations should continue to be celebrated. After extensive research into movies from throughout the decades that show off these derogatory stereotypes, I have found common themes among characters who are homosexual men, homosexual women, and transgender women. Gay men have often been portrayed as either fun best friends who will be killed off or as sexual beings who are punished for their promiscuousness. Lesbians, meanwhile, are sexualized villains who take advantage of other women. Transgender women are often violent serial killers who attack because of their identity crises. These finds make it easy to declare that while these representations should be remembered, they should not be as celebrated as they are.

**Katelyn Gluck**

**Sponsored by: Traci Stark**

**The Ethics of True Crime Media**

This paper explores the evolution of true crime media and evaluates the ethics surrounding the genre. To begin, there is a delve into the history of true crime and a look into the multitude of ways in which this media exists today. With this established, I am able to explore the idea that true crime media is a goliath of a genre that must be analyzed and discussed in regard to its ethicality, specifically the craze and compulsion towards serial killers. Through in depth research, I propose the unethical nature of this phenomenon while acknowledging and considering the complexities of this unique issue.

**Lauren Gronsky**

**Sponsored by: Douglas Woods**

**Gender Differences in Terms of Ethical Practices and Behaviors of Accounting Professionals**

This paper looks into the question of how gender affects ethical decision making, as well as the overall effect that a lack of women in executive positions could have on the accounting profession. Using the five fundamental principles of ethics established by the International Ethics Standards Board for Accountants a breakdown of the importance of these principles and the different approaches seen between men and women in ethical dilemmas will be compared. This paper will use data from prior studies as well as research from a sample of the current population of Heidelberg University. The principles being looked at are integrity, objectivity, professional competence (due care), confidentiality, and professional behavior. There are many factors that affect ethical decision making such as culture, gender, and a person's core values. Ethics is a key factor in the accounting field as seen by the required ethics exam as part of the CPA certification. The field of accounting was heavily male dominated but Christine Ross was the first woman to enter the profession in the United States gaining her CPA in December of 1899. While the number of women working in an accounting based field has increased to 62% over time, according to the U.S. Bureau of Labor Statistics (2021), there is still a discrepancy seen more predominantly in larger firms when it comes to women in executive positions. In fact, in the 2019 CPA Firm Gender Survey conducted by the American Institute of Certified Public Accountants revealed women were only 23% of partners in CPA firms.

**Megan Hamilton**

**Sponsored by: Virginia Gregg**

**The Effectiveness of Support Groups for Cancer Patients**

Cancer is one of the hardest medical diagnoses a person can face in their lifetime and can have a major impact on a person's physical, mental, and emotional well-being. Individuals faced with cancer are encouraged to utilize social support groups as they have been acknowledged to be a promising tool with many positive effects. In the current study, 39 participants, involved with the Pink Ribbon Good organization (previously known as Pink Ribbon Girls), were asked questions about their basic demographics, where they were in their cancer journey, how satisfied they are with the support groups that Pink Ribbon Good offers, and their typical daily mental state based off of the LOT-R, STAI, QOL, and PSS scales. Data were analyzed through an SPSS statistical software, and findings indicated that the hypothesis that participants who attended support groups, and go more frequently, will have better mental health and well-being than those that don't attend or don't attend as often was partially supported. Conclusions can be drawn that there is evidence indicating the positive effects that social support services have on individuals affected with cancer.

**Kaiden Hammer**

**Sponsored by: Pam Faber**

**Acidic Erosion on Mandibular Teeth of Human Cadaver**

Dental erosion is a recently identified risk factor in the formation of cavities and tooth decay. Acidic food and beverages that are able to initiate this process can frequently be found in a person's diet.

Understanding exactly how dental erosion occurs along with its ability to damage tooth structure is important to optimize prevention and treatment. This study utilized cadaver tooth samples and exposed them to a solution of either R.O. water or lemon juice for 10 minutes daily. To investigate possible dental erosion taking place, atomic absorption spectrometry, mass comparison, and microscopic pictures were analyzed. After 3 weeks of data collection, lemon juice solutions showed a significantly higher concentration of calcium ions, supporting an increased amount of enamel breakdown. To further support these findings, teeth exposed to lemon juice recorded an increased mass loss and visual erosion. Data from this study is able to assist further research in the dental community in order to build a greater understanding of how to help people avoid this damage to their teeth.

**David Harbaugh**

**Sponsored by: Amy Berger**

**Comparing the Quality of Rock Creek to the Sandusky River Using Different Diversity Indices**

Rock Creek and the Sandusky river both flow urbanized areas of Tiffin, OH however, the quality of habitat differs from one another. Testing locations have been determined along both Rock Creek and the Sandusky River which allowed for a comparison of quality to be made. Habitat, nutrient concentrations, water flow, and macroinvertebrate organisms were sampled to compare the sites to each other. Habitat was assessed using A Qualitative Habitat Evaluation Index explained in a guide provided by the OhioEPA for both Rock Creek and the Sandusky River. This index assesses the type of substrate, instream cover, channel morphology, riparian zones, and flow providing an overall score for each site. Two diversity indices were used to compare sites, Simpson's index and Sorensen's index. Macroinvertebrate data collected during testing allowed for the calculation on these indices. Diversity indices are used to compare the quality of each site, by quantifying the differences in species found in the dataset, which allows for the conclusion of the quality at each site. Along with determining how the quality of each site compares to each other, different diversity indices are compared to determine which of the indices gives the best representation of the data. The indices that are compared include the Simpson index, Sorensen index, Jackknifing, Brillouin index, Sheldon index, Jost's diversity index, and Pielou's evenness index. I compared these indices across all sampling sites to determine which sites had the highest overall quality as well as assessing which indices are most useful for the urban habitat present in Tiffin.

**Jessica Harness-Koehnle**

**Sponsored by: Laura Johnson**

**A Look At Water Monitoring Data**

Water quality data is generally calculated in two standard ways, called loads. These two methods of conducting calculations both have their strengths and weaknesses. Loads are calculated using the amount of water that flows through the river and the amount of chemicals that are present in the water. Looking at data provided by the National Center for Water Quality Research, this project focused on why discrepancies occurred between the two forms of calculation.

**Tristen Hatfield & Madison Mosier**

**Sponsored by: Sarah Lazzari**

**Neurodivergent Behavior in Incarcerated Environments**

In prison settings, those who identify as neurodivergent may have a difficult time adjusting to their new environment. With that comes conflicts that can result in write-ups. These can include notices from officers of the prison facilities that were considered misconducts due to behavior. Our research question asked if there was a correlation between those that identify as neurodivergent and how many write ups those individuals had since their admission to prison. Evidence suggests that neurodivergent individuals tend to act on aggression more often. Our hypothesis indicated that those that identify with ADD or ADHD are more likely to have more write ups since their admission to prison. We utilized SPSS and ran three different statistical analyses to test the correlation and significance of our two variables. After running an Independent Samples T Test and a Point Biserial Correlation, we found the correlation between our two variables is negative and statistically significant. The results tell us that people who identify as neurodivergent are more likely to have a higher number of write ups since admission to prison. We will also continue to explore other factors that affect the number of write ups and determine what effect those have as well.

**Elliston Herner**

**Sponsored by: Jiachun Hong**

**My Journey Through Music (Documentary Project)**

For my film studies class, we were tasked with creating a short documentary film project in which we were allowed to explore any topic of interest to us. I chose to explore why I left my music major, but ultimately why it's still important to me and others even though I am not majoring in it. Through my 7 minute documentary, I explore the importance of music education, how it can provide an outlet for students who need it, and why you don't have to pursue music as a career in order to enjoy it.

**Maggie Hoffman & Chloe Yuhasz**

**Sponsored by: Ryan Musgrave**

**Coping Mechanisms in College Students**

The goal for this research project is to closely examine how coping varies among students and this will be done by sending out a survey consisting of 10 close-ended questions to the student body about what coping is and how stress affects each person differently. Coping is how an individual deals with day-to-day events and specifically a lot of the time it is how each person deals with their emotions and stress.<sup>1</sup> We will then ask specific questions about how each person copes and then when we receive results from the survey, we will break it into the four major categories of coping are problem-focused, emotion-focused, meaning-focused, and social coping. <sup>2</sup> The participants consist of any students in

Heidelberg's student body who choose to participate and of the age of 18 years or older. In hopes of having at least 20 participants and a maximum of 100 participants the case study would be satisfied. The questions that will be asked will help the researchers understand how college students utilize coping mechanisms and see how it differs between gender and other demographics. It has been found that when reacting to stressors, males tend to respond to issues with problem-based coping strategies and females tend to respond with emotion-focused coping strategies.<sup>3</sup> Driving research will include asking gender, if the participant partakes in extracurriculars, and etc.

**Jake Justice**

**Sponsored by: Amy Berger**

**A Brief Study on Lake Size and Nutrient Loads Between Grand Lake St. Marys and Lake Erie**

Lake Erie is a large freshwater lake that sees use from recreational activities to shipping and many other things. Due to all of this, the health of the lake is very important and it experiences lots of contact with things that can impact the health of the water. One of these is algal blooms that form in the lake. Algal blooms can negatively impact the health of the water due to the production of microcystin which is a harmful toxin. This research study looked at the impact of nutrient loads on microcystin levels in Lake Erie and Grand Lake St. Marys. The reason for this is that I wanted to determine if the size of the lake plays a factor in the effect of nutrient levels on microcystin production. I decided that nutrient levels would be a good factor to look at since they play a major role in algal formation in freshwater lakes. I found that the nutrient levels vary between the lakes but even with one lake having a higher level of nutrients in it than the other, no significant correlation could be seen between lake size and nutrient levels. This is more than likely because there are lots of factors that play an effect in algal formations and without taking a look at all of them, it is difficult to determine how much of a role lake size by itself plays in algal growth.

**Alexis Kirkendall**

**Sponsored by: Justin Pruneski**

**Cryptosporidium and Other Parasites Found in Farm Calves Using Multiple Lab Techniques**

Cryptosporidium parvum is protozoa found frequently on dairy farms. It typically infects calves causing cryptosporidiosis. This has low mortality rates but requires intensive care and leads to economic loss on farms. There currently are many ways to find and identify Cryptosporidium, there are microscopy and cell staining, PCR amplification of genes, and other ways to look for Cryptosporidium. However, we want to find a method for finding crypto that is cheap, fast, and can do several dozen samples in a day. In the research, many methods were tested on three sample types, water, fecal, and soil. The Modified Ziehl-Neelsen stain method was found to be the best for water samples. For fecal samples, fecal flotations combined with gram's iodine has been found to be the best. The soil samples were tested with fecal flotations but had no significant findings. More tests are needed to improve the identification of Cryptosporidium. We plan to use PCR in the future to improve identification combined with staining and microscopy.

This is due to crypto's circular shape that can look like many other things. To continue on, we would also like to test the same stain methods used on the water samples for the fecal flotations.

There is still place to improve on finding the best technique for identifying cryptosporidium as this research continues.

**Kailyn Kroll**

**Sponsored by: Traci Stark**

**American Heartbreak: Marilyn Monroe**

Marilyn Monroe: American heartthrob, sex-icon, jack-of-all trades. Simply, these are words that many would describe the fabulous Marilyn Monroe. However, behind all the fame and fortune, the “best friend of diamonds” star had a dark past and was living a life that many could not imagine experiencing. Marilyn Monroe was a star that covered up her addictions, abuse, and overall mental illnesses by a simple smile on the television screen. Looking at how her past made what was her present, we see how trauma can develop further into what may become mental disorders. Taking a deeper dive into the mind of Monroe, we will look at the mental disorders that Monroe was diagnosed with: paranoid schizophrenia, anxiety, substance abuse, borderline personality disorder, and bipolar disorder. Monroe lived a life that was truly a double life, and sadly that came to an end when she died by suicide in August of 1962. Between the scandals, mental health, fame, fortune, and absolute admiration, Monroe was an individual that many now see as an icon to this day. Seeing past the bright, shiny lights, we can see the science of the darkness that lurked in Marilyn Monroe.

**Ella Lane**

**Sponsored by: Douglas Woods**

**Big Data and Its role in Accounting**

In this presentation, I will explain the basic principles and concepts of Big Data and its general use in the world of business. These concepts are known as the “Vs of Big Data”. I will also explain how these concepts relate to Big Data’s use in the field of accounting. This is very important to understand, as Big Data is a large part of the Fourth Industrial Revolution, and will cause significant changes in the accounting industry. Additionally, I will discuss how Big Data collection aids in the development and sophistication of AI and automation. I will highlight potential pros and cons of increased usage of Big Data in accounting, as well as possible ethical concerns.

**Sophia Lee**

**Sponsored by: Barry Devine**

**How the History of “Holy Thursday” Effects William Blake’s Poems of the Same Name**

William Blake wrote two poems called “Holy Thursday” in his time of writing. The first poem was part of a collection called Songs of Innocence and the second poem was part of the Songs of Experience collection. Each poem describes the same holiday, but the tone of the poems are remarkably different. The history literary theory will be used throughout to show how literature is affected by the history in which it is surrounded.

**Adam McVicker**

**Sponsored by: Douglas Woods**

**Revenue accounting in the MLB**

The purpose of this study was to find out how Major League Baseball does their revenue accounting. My project discusses ways that teams do their revenue accounting and goes in depth by taking a look at each of their financial statements. This project will go in the order of the problems of revenue accounting in Major League Baseball, then it will take a look at some of the teams financial statements, then it will talk about what the Atlanta Braves financial statements can tell us about Major League Baseball’s financial losses in 2020, and finally it will end with how some teams turn profits into losses.

**Macray Metz**

**Sponsored by: Nathaniel Beres**

**Twin Arginine Transport in Synechocystis**

The twin-arginine transport system is a conserved transport system that transports fully folded proteins without the use of ATP-hydrolysis. It is a membrane-bound transport system, but the mechanism is currently unknown. It is comprised of three 3 proteins: TaTA, TaTB, and TaTC. However, most land plants and bacteria, including cyanobacteria, have this transport system. Within land plants, the twin-arginine transport system exists within the chloroplast, within the thylakoid membrane. Within bacteria, it exists within the plasma membrane. However, specific cyanobacteria, such as *Synechocystis* PCC 6803, have both plasma and thylakoid membranes within an individual cell. It is currently unknown where the twin-arginine transport system lies within the cyanobacteria. In order to examine the different membranes of the *Synechoystis*, a separation was done in order to split out the membranes. The separation of the membranes, plasma membrane, and thylakoid membrane was then compared to the antibodies against the twin-arginine transport system, derived from land plants, in order to determine where the twin-arginine transport system lies within the cell.

**Zane Mirgon**

**Sponsored by: Douglas Woods**

**"Modern Cost Accounting Practices in Healthcare"**

The research being conducted is in depth cost accounting skills that are taken in healthcare/hospitals. Cost accounting lets you determine the value of the products and services that flow through the healthcare systems supply chain. The breakdown of all the steps going into this process will be further explained by stating all the processes starting from data sources and software used to the ending process. Incident reporting systems, direct cost, and how information of systems is used. The process of cost accounting is very precise within the healthcare system with a lot of steps to make sure it is pin pointed to the right number with spending almost \$4 trillion dollars last year. This research project will break down into depth what really happened to the cost accounting system throughout the Covid-19 virus just to see how it changed or how it really affected hospitals. This is where the budgeting aspect of the healthcare systems will come in to show how they break their stages up into four major categories that allows them to stay where they need to be. Finally the research will talk about the refinement of cost accounting by going into depth about dashboards and management behind the refinement.

**Halie Monhollen**

**Sponsored by: Robert Oates**

**College Athletes and Anxiety**

I am writing this review because of the increasing cases of mental health issues coming to surface more recently in the past few years. These cases have been becoming more traumatic and more prevalent. Mental health has been a strong topic of athletes as they feel it affects their performance. The focus of this review is anxiety in specific and seeing what sports feel mentally and physically, and if their anxiety is internalized or externalized in the fact they are holding themselves to a high standard or feel that their teammates and coaches are.

**Kaiden Murphy**

**Sponsored by: Amy Berger**

**Tracking Nitrate Trends in Ohio Using Remote Sensing**

Nitrates are an important part of water quality and are required for plant growth. Although nitrates can be harmful to the environment when they are too high. For more accurate measurements sensors have been developed. They take measurements throughout the day to increase accuracy. In this experiment I used

NICO sensors, YSI exo 2 and 3 sondes, and YSI NitraLED sensors to track nitrate trends in 8 watersheds around Ohio. These measurements were compared to the grab sample measurements taken by a lab to look for accuracy. These trends were also compared to previous data from some of the same sites. Overall the trends were similar and had multiple peaks. By comparing these trends over time I got to see how and if they are changing and how these measurements can be used as a tool to better predict algal blooms.

**Madalyn Newby**

**Sponsored by: Pam Faber**

**Effect of Long Term and Short Term Nicotine on the Development of Female Rats and their Pups**

Nicotine use has been linked with several significant health issues. With the release and promotion of nicotine-containing new e-cigarette options, nicotine use remains a constant threat to human populations. Nicotine use during pregnancy and breastfeeding has also been linked to health issues for fetuses and birthed children. It was hypothesized that pregnancy, litter size, and pup development would be negatively impacted by subcutaneous nicotine injections in pregnant and lactating female Wistar rats. This study followed three groups of mated rats. Ten females received 0.25 mLs of saline (0.9%) daily throughout pregnancy and lactation (control). Ten received 0.25 mLs of nicotine (0.0475%) throughout pregnancy and lactation (long-term nicotine), and ten received the same nicotine injections through pregnancy only (short-term nicotine). Maternal and average pup weights and litter size were collected daily, and pup development was additionally tracked by first date of fur development and eye opening.

Some of the data points collected supported the hypothesis of the study, and some contradicted the original predictions. The supporting information included: the percentage of each group that had to be pulled from the study, when each group developed hair growth, that only the control group showed eye opening, and the average pup weight group comparisons over the 14 days of lactation. The contradictory information was there not being a difference between groups in original litter size, and the average number of pups lost in each group. Overall the data supported the hypothesis more than it contradicted the original predictions.

**Griffin Pendry**

**Sponsored by: Douglas Woods**

**Issues in Real Estate Accounting**

#### Real Estate Accounting

To simplify it, I'm going to be talking about the real estate market and issues within the accounting field.

The real estate market is a complicated industry and the accounting aspect of it all is no different.

Whether we're talking about the issues covid brought to the table, how money is recognized and allocated, or even interest rates and how the market is constantly changing. My goal is to explain some of these topics/issues and how they've been affecting the real estate industry along with bringing in personal issues small businesses are having within the market. Hoping to bring somewhat of a realization that ideas behind real estate aren't as simple and easy as the social media portrays. There are many intricacies and things you need to look out for, especially when it comes to the accounting principles.

**Autumn Perry**

**Sponsored by: Barry Devine**

**Interpreting Frankenstein's Behavioral Changes**



Natural philosophy was Dr. Victor Frankenstein's most treasured asset, though also proved the leading factor to his tragic demise. The once young and carefree mind of Victor Frankenstein changes forever as he begins studying the natural sciences and sets his sole occupation on creating natural life.

**Gavin Robison**

**Sponsored by: Courtney DeMayo**

**Overconfident: A Comparative Analysis Between the Winter War and the Russo-Ukrainian War**

Historians often look at past events to predict the present. After Russia's invasion of Ukraine in February of 2022, historians have looked for a conflict from the past to compare it to. The Winter War fought between Finland and the Soviet Union is a conflict that has often been overlooked, despite having many similarities to the modern conflict in Ukraine.

**Kennedi Siders**

**Sponsored by: Douglas Woods**

**Corporate Financial Fraud Prevention and Detection Strategies**

This paper will talk about what fraud is and some examples of fraud in the accounting industry, as well as what prevention and detection of fraud entails. Some examples of fraud in accounting can be manipulation of financial records, manipulation of tax returns, and money laundering. Some strategies to combat fraud can be firewalls, virus and password protection, and internal control review and improvement. Accountants, internal auditors, and certified fraud examiners all use prevention and detection methods. Throughout this paper I will discuss different prevention strategies that companies can use. I will also discuss different detection strategies to use. Forensic accounting plays a critical role in uncovering and preventing financial fraud in organizations. To prevent and detect fraud, organizations are encouraged to conduct thorough background checks on new employees. There are also some of the worst accounting scandals that have happened in the United States. Accounting crimes perpetrated by U.S. companies date back to the early 19th century. Some of these scandals are the Enron accounting scandal that happened in the early 2000's, Tyco accounting scandal in 2003, and General Electric Co. accounting scandal that happened in 2016 and 2017. Small and large companies are all at risk of having fraud in their organizations. However, a company without the proper fraud prevention and detection strategies is at greater risk of having fraudulent issues in their company. The impact of the loss of trust and reputation is likely to have a far greater effect on a company's valuation than just the amount of fraud.

**Cameron Spraggins**

**Sponsored by: David Hogan**

**The Legacy of the Iraq War**

In the 20 years that have ensued since the invasion of Iraq in March of 2003, it has been clear the war has extraordinarily impacted American domestic and foreign policy. Public approval for the military was in an acutely unique position before, immediately after, and in the years following the terrorist attack on September 11th, 2001, as the United States was eager to go to war following the attack. The unprecedented attack on American soil altered the course of American military policy as well as public urgency and support of the military, which allowed the American military legislative flexibility and executive favoritism in the invasion of Iraq and its subsequent occupation. The folly of American occupation in Iraq caused unintended repercussions in the Middle East, including the growth of ISIS and other insurgent groups in the region. Sectarian violence remains prevalent in Iraq, and as the United States limits its presence in the country the efficacy of American intervention becomes clearer to the American public and its policymakers. However, the legacy of the Iraq War is shaping up to be an odd

one thus far. Domestic and foreign policy experts question whether we have truly learned our lesson from the failures of democracy promotion, and what this ignorance may lead to in the future. A greater understanding of American legislative and practical failures is required in shaping a responsible and informed memory of the war.

**Kamryn Stanfield**

**Sponsored by: Jiachun Hong**

**Under the Rustling**

The original documentary, produced by Kami Stanfield, explores the challenges of cheerleading through the eyes of two characters. Dalton Rahrig, the lone male on his cheer squad, suffers from hurtful stereotypes. He also struggles to get a real uniform, unlike the rest of his teammates. Meanwhile, Angelique LeMaster does not represent what society believes a cheerleader should look like. She encounters harsh criticism from not only the world but also from her own teammates. Throughout the film, their insecurities and life experiences are brought to the surface, showing what lies beneath the rustling of their pom poms.

**Kelsey Stanfield**

**Sponsored by: Daniel Higgins**

**Stepping Up and Stepping In: Mitigating the Bystander Effect**

This speech investigates what is known as the bystander effect, its impact on individuals in critical situations, the psychological causes of the bystander effect, and how to overcome this passive stance. The bystander effect is a psychological process that affects a person's ability to respond to any situation that requires preventative action. The effect has resulted in numerous preventable deaths, and the cause of these deaths is relatively simple: a lack of action on behalf of onlookers. Researchers have identified three causes of the bystander effect, including the dismissal of responsibility, concern about public judgment, and an inaccurate discernment of what constituted a real emergency. However, a bystander's personal preparedness is the best predictor that they will respond to a critical situation. The more confident a bystander feels in taking action, the more likely they are to act. This speech argues that individuals should use the four D's of bystander intervention, including the direct, distract, delegate, and defer tactics, to mitigate the effect of the bystander effect in their communities.

**Claire St. Bernard**

**Sponsored by: Traci Stark**

**Britney Spears: Mental Health in the Media**

Britney Spears is a name that is known in households throughout the world, one that is iconic for her provocative outfits, her upbeat pop-dance music, but more recently for her very public mental breakdown. Britney's life has been nothing short of successful, but that did not come without plenty of trying times for Spears, leading to the creation of her conservatorship by her father. The music of Britney Spears had always been known for its energetic tempo and pop-feel, however it could be seen throughout her music that as her life and mental health changed, her music changed with it. The point of this presentation is to dive deeper into the changes in Britney's music and how it relates to both her life and her mental health, to decide whether or not mental illness facilitates creativity within artists, and to conclude if Britney Spears' conservatorship was necessary for the preservation of her estate and her reputation.

**Cole Stoots**

**Sponsored by: Barry Devine**

## **The Language of Flowers in the Picture of Dorian Gray: An Ecocritical Analysis**

Due to the rise of the middle class and earlier literary movements such as Romanticism, the interest in the natural world grew in Victorian England. This growing interest led to the creation of a system of communication through floral arrangements. Known loosely by countless cultures and individuals prior to this, these communicative floral arrangements are what we now refer to as the Language of Flowers. As this symbolic language grew in popularity and awareness in the minds of the middle class, it was codified and published into easy-to-read pocketbooks in 1884 by Edmund Evans with illustrations by well-known children's writer and artist Kate Greenaway. This allowed for the mass distribution of Language of Flowers throughout Victorian England. Many authors of the time, knowing that their readers were predominantly this new middle class, used the Language of Flowers to subtly include characterization, foreshadowing, and meaning to seemingly innocuous scenes or sentences. One such author was well known Irish poet and playwright Oscar Wilde. In Wilde's only novel, *The Picture of Dorian Gray*, the Language of Flowers is used to develop the characters of Dorian Gray, Lord Henry Wotton, and Basil Hallward. Using these floral symbols, Wilde goes as far as to foreshadow the eventual corruption Dorian will undergo.

### **Crimson Stuckert**

**Sponsored by: Justin Pruneski**

### **RNA Biology Characterization of SARS-CoV-2**

The Delta variant of SARS-CoV-2, the virus responsible for COVID-19, has two mutations that differentiate it from the wild type, or original virus. It has a G15U and G31U mutation. The G31U mutation of the 3' untranslated region of the virus has been shown to enhance N protein-facilitated dimerization of the s2m portion of the virus contributing to greater viral fitness. So, we tested the G15U mutation's effect on this within the context of the full-length untranslated region. We also focused on mir-1307-3p binding, a microRNA involved in the immune response to the virus to determine if there is any impact due to the mutation.

### **Nakhi Taylor**

**Sponsored by: Douglas Woods**

### **Understanding a Company's Financial Performance**

Financial performance measurement is essential for businesses and individuals as it helps them to evaluate their financial position and make informed decisions. There are several components in measuring financial performance, such as profitability, liquidity, efficiency, and solvency. Each of these have ratios that make them easy to understand. Profitability ratios measure the profitability of a company, while liquidity ratios measure its ability to meet short-term obligations. Efficiency ratios measure the company's effectiveness in managing its resources, and solvency ratios measure the company's ability to pay its debts in the long run. In conclusion, measuring a company's financial performance is crucial for businesses and investors to understand when making decisions, with the help of these financial ratios they will be good to go.

### **Rachel Terbovich & Kelsey Wells**

**Sponsored by: Ryan Musgrave**

### **Depression in Intercollegiate Fall Sports Team Students**

The purpose of this study was to examine the prevalence of Depression in intercollegiate fall sport athletes. This study suggests that there is a correlation between Depression symptoms and college student athletes. There are 12 student athletes from Heidelberg University that have participated in this

study. There was a survey sent out asking students a series of questions that would show common signs of depression if they were to answer yes. Every participant is 18 years of age or older. At the end of the survey includes names and numbers of the therapy resources on campus.

**Darrion Thomas**

**Sponsored by: Douglas Woods**

**Life, death, and taxes**

In life, we all know that only a handful of things that are for certain are death and taxes. The main focus of this research paper is how taxes affect overall life. Taxes are the only thing that has saved people millions and caused people to go broke overnight. This research paper will go into depth on the effects that taxes have on the economic world. The major key parts that will be researched and presented are the effects on both sides of business being self entrepreneurship and big corporate business and the overall effect every person has to deal with every year of people doing the taxes.

**Guy Tibbels**

**Sponsored by: Douglas Woods**

**Sin Taxes: Paying for Your Sins**

Supplemental taxes on products and activities, such as alcohol, tobacco, and gambling, are nothing new.

These taxes are put in place with the intention that they prevent morally questionable behavior and improve health. Sin taxes have been around in the United States even before the country's founding. The government has used sin taxes to fund wars and prop up the economy during economic downturns. Taxes on these products have been promising in decreasing negative behavior, but there comes the point when these taxes become overbearing on citizens. Sin taxes have been met with strong opposition. New taxes on carbon and sugary beverages, in particular, have seen strong opposition. It is difficult to tell rather the government is using taxes to guide health and well-being or is simply aimed at gaining tax revenue. To determine the government's intentions, there must be a search into several different sin taxes and their roots. There also must be research into the circumstances as to why the government legalized sports betting and Marijuana to raise revenue despite their care for public health. Every tax put in place affects demographics differently, taxes must be precise to create change.

**Chayne Treharn**

**Sponsored by: Douglas Woods**

**Refereeing the NCAA, Accounting Regulation of a Billion Dollar Corporation**

In a nutshell, I would like to discuss how the accounting regulations within the NCAA compare to the real world. The non-profit organization is a billion dollar company according to revenues yearly, but how? How do the ins and outs work within the NCAA to make billions of dollars and still consider themselves non-profit? I would like to discuss where revenues come in and how money flows into this enormous company while also breaking down accounting methods to ensure that the NCAA can stay a non-profit organization. By breaking down certain accounting principles into subtopics and showing multiple ways the NCAA manipulates the words and actions they use to keep the nonprofit label and also draw a tremendous amount of money, I plan on opening the eyes of the people who are still left in the dark about this topic.

**Tyler Turek**

**Sponsored by: David Hogan**

**African American Influence in the Union Army**

The Civil War was a significant event in the history of the United States, specifically African American history. It was a war that was not just participated in by white northerners and southerners, but it also had heavy participation from African Americans. African Americans both freedmen and slaves supported the Union cause during the Civil War. These African Americans would prove to play a significant role in many aspects of the Civil War to come to the aid of the Union's military. They found themselves as soldiers, contraband, and teamsters. There are many articles, scholarly journals, and primary sources that explore, explain, and describe the impact that African Americans had on the war movement of the Civil War. African Americans did not sit back and watch the Civil War happen. Instead, they played active roles in many battles that the Union Army found themselves victorious through their courageous acts of bravery. African Americans saw the promise of freedom, and believed that enlisting with the Union was a path to that freedom. African Americans played a significant role in the success and victory that the Union Military experienced during the Civil War.

**Zakariea Vincent**

**Sponsored by: Ryan Musgrave**

**Antidepressants Affecting College Students Daily Routine**

The purpose of this research is to understand the effects that antidepressants have on college students.

The background for this research is the commonality college students have with being on antidepressants. Students often joke about being on these prescription medications and wonder if they are actually working or needed. The research questions are as follows; Do antidepressants help college students become more social? Do antidepressants have a reverse effect on college students? With the help of antidepressants, do college students stay on top of their studies? There are two possible hypotheses for the project. Antidepressants have the opportunity to help college students become more social. Antidepressants have the opportunity to keep college students focused on their work load.

**Lillian Whitcomb**

**Sponsored by: Marc O'Reilly**

**Economic Feasibility of Green Infrastructure**

The United States of America's corporate lobby on environmental legislation has become a fierce competitor in the realm of legislative drafting. The systems of control in place to limit lobbyists' influence on political actors are failing. This may be exacerbated by the lack of bipartisan support for environmental policy within current representatives. However, an overwhelming desire for environmentally-minded projects and legislation is evident in the general population. Economic sectors that contribute significantly to environmental harm include the automotive industry and the oil and gas industry. These industries have lobbied long and hard to keep themselves in the good graces of lawmakers, resulting in the prevalence of infrastructure centered entirely around gas-powered personal-use vehicles. While personal use transportation avoids many of the grievances associated with public transportation, the money required to sustain the roads, bridges, and highways needed to make travel possible at this level has become a drain on federal and state coffers alike. The solution to this problem is simple—begin an economic analysis of funding for public transportation-based infrastructure. Gathering the data required to better understand the financial benefits to both systems will better direct legislators to the conclusion that systems of transportation focused on utilitarianism—serving the greatest number of people in the most effective way possible—will make the most monetary sense, benefiting taxpayers in the long run. Even when faced with the inevitable decline of the automobile and oil and gas industries, the financial benefits of redesigning infrastructure for a sustainable and resilient future overshadow the idea of designing a world for personal, rather than public transportation.

**Jarett Woodall**

**Sponsored by: Sean Joyce**

**LSTM Predictions of Water Temperatures for Cold-Stunning Events**

In the Laguna Madre, Texas, major cold-stunning events occur when water temperatures fall below 8°C for about 24 hours, leaving endangered green sea turtles lethargic and vulnerable to cold-related illnesses and death if not rescued. During the winter of 2020-2021, a record 13,000+ sea turtles were affected by a severe cold-stunning event, while about 400 sea turtles were impacted during the December 2022 freeze event. Currently, an operational Multilayer Perceptron (MLP) model is used to predict water temperatures and potential cold-stunning events in south Texas. The predictions provide a forewarning to help better prepare community stakeholders for precautionary actions to mitigate the impact of these cold-stunning events. The research goal was to comparatively analyze the performance of 1) the current operational MLP model, 2) a more complex experimental MLP model, and 3) an experimental Long Short-Term Memory model (LSTM) to determine if higher prediction accuracy could be achieved by using different model types. Air and water temperature measurements and air temperature predictions were used as inputs for each model. The measurements came from the Texas Coastal Ocean Observation Network (TCOON) and the predictions were based on a perfect prognosis approach. This research found that a Long Short-Term Memory model could achieve better performance predicting water temperature than the MLP models. The high performance of the proposed model will be used to help better preserve marine life in southern Texas waters.

**Simon Yochheim**

**Sponsored by: Amy Berger**

**Comparison of Soil Profiles at Heidelberg University throughout the years**

The purpose of the presentation is to show the difference between the soil profiles here on Heidelberg University's campus. Data from the years 2014, 2016, 2018, 2020, and data that our soil class of 2022 collected will be compared to each other. Multiple factors will be taken into consideration when comparing the data with the aim of finding how the soil on Heidelberg's campus has changed throughout the years. This presentation hopes to show the changes of Heidelberg's soil profile over a certain time period and help demonstrate how the different factors of the soil can improve or damage the health of the soil on campus.