

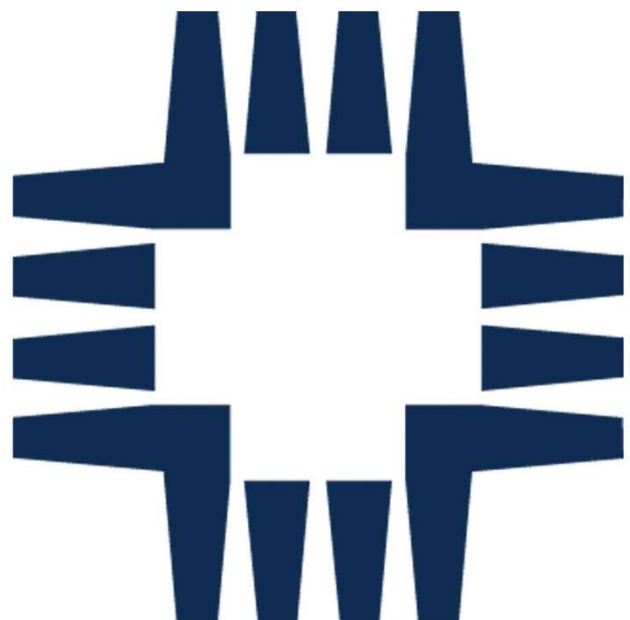


12th Annual

Academic and Research Symposium

Concordia University, Nebraska

April 24, 2023



ACADEMIC AND RESEARCH SYMPOSIUM – PRESENTER SCHEDULE

	Dunklau Lobby	Dunklau 142	Dunklau 144	Dunklau 143	Dunklau 151
2:30 PM - 3:30 PM	Poster Session A	Oral Session A1	Oral Session A2		
	Carsen Arline Gerald Morris Erin Painter Katie Rickords Ivan Yabut Katherine Bauer Tyler Bartels	Tyler Linneman Esther Langness Renata Peperkorn	Camden Sesna Jaxson Kany Madison Ellis (ind) Victoria Perry		
3:40 PM - 4:40 PM	Poster Session B	Oral Session B1	Oral Session B2	Oral Session B3	Oral Session B4
	Kadyn Lane Victoria Ritzma Teegan Tschampel Devin Rathman Megan Lange Benjamin Larsen Elayne Poppe Kadyn Lane	Brooke Lange Owen Dawson Lauren Dawson	Madison Ellis (group) Nathan Kieser Matthew Gebauer Tyler Linneman	Juan Rabellino Eduardo Rojas Wyatt Loga Anthony Perez	Rachel Battershell Haley Compton Creighton Taylor
4:50 PM - 5:50 PM	Poster Session C	Oral Session C1	Oral Session C2	Oral Session C3	
	Rachel Battershell Madelyn Graham Rachel Otten Hannah Callahan Emily Otten Grace Soenksen Gabrielle Krutsinger	Jonathan Landrey Victoria Ritzma Nicole Rodriguez	Brooke Lange Sabrina Reed Ben Moll Ben Moll	Jacob Gosnell Joel Rathe Naomi Postier Malia Rolf	
6:00 PM - 7:00 PM	Poster Session D	Oral Session D1	Oral Session D2		
	Christopher Shelton Psalm Richters Charlie Hayden Ellie Jander Justin Otten Carlos Benavides Taylor Johnson	Logan French Julia Witt Nathan Birtell	Zachary Zohner Callum Goldsmith Olivia Leising Daylan Russell		



Special Thanks

Thank you to all presenters, faculty sponsors, staff, judges, administrators, and attendees for supporting the symposium!

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Poster Session A

Monday April 24, 2023

2:30-3:30p

Dunklau Lobby

Working With/Along Side a Person with a Disability in the Workforce

Carsen Arline

Faculty Sponsor: Nolan Harms

The point of this poster is to show that working with a person that has a disability doesn't mean that they are different from you. Yes, they might have something different than what you do but the person is unique in their own way. We can treat people with disabilities just the same as a person who might be so much different, people tend to think that just because someone is different we have to treat them differently when sometimes people don't want to receive different benefits or get treated differently because of their disability it's all about how can that work space can make that person feel that they are needed and also that their voice means something.

Sports Impact on the Mental Health of Athletes

Gerald Morris

Faculty Sponsor: Nolan Harms

It is known that a large percentage of any sport is mental. It is also known that sports can ultimately determine the status of an athlete's mental health. Mental health issues have been noticed in sports for as long as sports have been around. What causes this? Who is responsible for this? How can this be prevented?

Recruiting Hot Spots of Great Plains Athletic Conference Throwers 2022-23

Erin Painter

Faculty Sponsor: Joel Helmer

Concordia University-Nebraska is part of the Great Plains Athletic Conference (GPAC) in the National Association of Intercollegiate Athletics (NAIA). This conference includes schools in North Dakota, South Dakota, Iowa, and Nebraska. Using data from the US Track and Field & Cross-Country Coaches Association (USTFCCCA) and each GPAC school's track and field roster, this research mapped every hometown of each thrower from the twelve track teams in the GPAC conference. This data also showed how many all-conference awards (top 8 places in each throwing event {javelin, hammer, discus, shot put, and weight throw} each thrower possesses as of the 2023 Indoor GPAC Championship. In order to learn more about where recruiting hot spots for GPAC coaches sit, heat and density maps were used to show patterns in recruiting regions for the two largest teams, Doane and Concordia. These maps can help GPAC coaches look for recruiting opportunities in areas that other universities in the conference do not recruit from.

The Book Drive - A Collection for Children's Literacy

Katie Rickords

Faculty Sponsor: John Hink

Having books easily accessible to read may not seem like a luxury to some people, but for many children it is. Throughout the course of this semester, I have been collecting children's books for three different programs – Lutheran Family Services of Nebraska, Christian Friends of New Americans, and Lincoln Literacy. I have done significant research on the need for children's books and in what areas they are



needed. I have also researched how best to collect these books and fill this need for children, and have put this research into action, actively creating a Seward book drive.

The Effects of Mindfulness Practice on Golf Performance

Ivan Yabut

Faculty Sponsor: Sara Brady

Mindfulness can have a significant impact on anxiety in sports performance as well as high stress situations through managing thoughts and feelings (Foley, 2021). The aim of this study is to see if mindfulness practice of deep breathing has a positive impact on golf performance and perceived performance. Participants took a survey during a nine-hole round of golf and were either instructed to do mindfulness practice on their first or last four holes. Participants were asked on each hole regardless of treatment and non-treatment holes to record their score for the hole and their perceived performance. I used a paired t test to compare mindfulness practice scores and non-mindfulness scores to see if there is any correlation between mindfulness practice and better performance. The results of this study show that mindfulness improved golf performance. These results have implications for sports psychology research and the mental health of athletes in competition.

Spatial Distribution of Catholic Churches in Nebraska

Katherine Bauer

Faculty Sponsor: Joel Helmer

There are over 350 Roman Catholic Churches located in the state of Nebraska. This research displays the geographic location of those churches. The data was gathered from the Omaha, Lincoln, and Grand Island diocese's 2023 databases. Resulting maps show the topographical depiction of all the individual parishes inside their respective diocese, along with the name of the resident priest, church contact information, and further data on each individual parish. The research also shows which parishes are associated with the over 100 Catholic Schools in Nebraska and where those schools are located. This research depicts the distribution of parishes and schools for the over 390,000 Catholics who currently reside in Nebraska.

Bobcat Harvest Distribution in Nebraska (1977-2021)

Tyler Bartels

Faculty Sponsor: Joel Helmer

The illusive Bobcat (*Lynx rufus*) is a medium sized cat native to North America. This predator ranges from southern Canada, throughout most of the United States, and into regions of Mexico. In the state of Nebraska, the harvest season for Bobcat begins the first day of December and ends on the last day of February. Historically, bobcat pelts have been one of the most valuable wild pelts in Nebraska. Data was obtained from Nebraska Game and Park's Sam Wilson, Manager of the Furbearer and Carnivore Program. The data was divided into five-year increments and then mapped. The resulting maps show where Nebraska's Bobcat populations are densest and how those densities have shifted through the years. In conclusion, this research shows that bobcat populations have increased in southeastern Nebraska and some of the south central counties.



Poster Session B

Monday April 24, 2023

3:40-4:40p

Dunklau Lobby

The Impact of Periodization in Sport Training on Recovery and Performance

Kadyn Lane

Faculty Sponsor: Nolan Harms

There is a high prevalence of sport participation in the world. The incidence of injury is also high. Overall sport performance and rate of injuries can be impacted by the methods coaches use in their training, specifically the use of periodization for training and recovery. This literature review examines the benefits of utilizing periodization in sport-specific training and the impact that it can have on athletic performance, as well as sport-related injury.

Distribution of Lutheran Church-Missouri Synod Schools in the United States

Victoria Ritzma

Faculty Sponsor: Joel Helmer

Education has always been central to the mission and ministry of the Lutheran Church. In the United States, this rich heritage has been reflected throughout the history of the Lutheran Church-Missouri Synod (LCMS) in the strong relationships between synodical churches and schools. Indeed, the original constitution of the LCMS required that any congregation seeking union with the synod provide a Christian education for the children of the congregation. Today, the LCMS continues this rich tradition of faith and learning through the ministry of over 1,800 schools in the United States. This map, built with the most recent data from the LCMS Office of Rosters, Statistics, and Research Services, illustrates the distribution of LCMS schools across the nation generally and by synodical district, offering valuable spatial information for how the LCMS may continue to faithfully point students to our Lord and Savior Jesus Christ in the future.

DNR Structures for Fish in Iowa

Teegan Tschampel

Faculty Sponsor: Joel Helmer

Fish structures are sunk by biologists in order to provide habitats for fish. I will be showing the different types of structures that are used on the map and why they are used. I am showing different lakes and providing pictures of the depths that the structures are in those lakes. This will allow people to learn at what depth they put the structures at. I am choosing Clear lake, and Easter lake. And I am providing pictures of the different structures that are in those lakes. I will also be providing a big picture of the map that will allow you to more easily view what structures are where. The results of the map showed how many and what types of structures there are. In conclusion, if you see a structure in the water just know that it is there for a good reason.

Necrogeography: Mapping a Small Church Cemetery

Devin Rathman

Faculty Sponsor: Joel Helmer

Immanuel Lutheran Church, Rising City, Nebraska will celebrate its 140th anniversary this year on April 23, 2023. The church's many years of life has left it without much of the aid technology provides. This project examines the current church cemetery and brings the map from paper and stone to a readily



available online map. Using Field Maps, an online software created by ESRI, each headstone was mapped individually with the name of the deceased along with their birthdate and death date attached to this mapped location. The map gives a renewed remembrance to the names and lives of those who lived and died in fellowship with Christ almighty. Along with giving important remembrance to the dead, this map will help the church council make future decisions on the expansion of their cemetery.

Graduation Rates and Average GPA of Midwest Colleges and Universities

Megan Lange

Faculty Sponsor: Joel Helmer

Does the size of a school affect the quality of education that students receive? That is the question this research seeks to answer. Data was collected from individual websites of all four-year colleges in Nebraska, Kansas, and Iowa. All of the institutions were geocoded with the attribute data of school size, graduation rate, and average GPA. The schools were then spatially presented by state and number of full-time students on two different maps, the first analyzes the graduation rates of each school and the second analyzes the average GPA of each school. This information this research presents provides students with an efficient way to learn about multiple college options at once and find the best fit for them to continue their education.

The Use of Diet and Hypertrophy in Muscle Building Sports

Benjamin Larsen

Faculty Sponsor: Nolan Harms

The key to achieve muscle volume begins with hypertrophy focused resistance training incorporated alongside proper nutrition in stages throughout a training cycle. Multiple studies have been conducted on the process of hypertrophy driven resistance training and show an overlap on repetition ranges and sets for optimal muscle growth. There is also research that covers the nutrition and timing of dietary change used by bodybuilders during the preparatory stages leading up to competition. The implementation of supplements in diet used in different stages of preparation to achieve a desired look were discussed. These factors are all important to success within muscle building sports.

The Correlation between Social Media, Mental Health and Self-Identification

Elayne Poppe

Faculty Sponsor: Sara Brady

Previous studies have shown that young adults experience various degrees of identity distress and identity problems (Lou et al., 2021, Booker et al., 2021). Research has also shown that social media can promote depressive and stress symptoms (Mukta et al., 2022, Drouin et al., 2018). This study aimed to determine if the time spent using social media decreased an individuals mental health. It also set out to determine if they believed to identify with who they project themselves as on their social media platforms completely would increase their mental health. Participants were asked to complete the Social Media Usage Integration Scale, Depression, Anxiety, and Stress Scale, and the Inclusion of the Other in the Self scale. Results and implications will be discussed.



Poster Session C

Monday April 24, 2023

4:50-5:50p

Dunklau Lobby

Analysis of Shoe Midsole Design and Injury Among Amateur Runners

Rachel Battershell

Faculty Sponsor: Nolan Harms

Anyone stepping foot into a running shoe store is confronted with a wall of engineering, technology, and aesthetics. With the knowledge that per year, more than 50% of runners have a related injury, how is the amateur runner to make an informed decision on which shoe to purchase? The midsole is the primary shoe component that interacts with the foot during running. Midsole design is highly variable, emphasizing energy return, comfort, or stability. This brief literature review will discuss common variables in midsole construction, how these variables interact with the biomechanics of the lower leg in relation to injury, and practical considerations for the amateur runner.

Stranded Wildlife: Alaska Marine Wildlife Rescue, 2013-2023

Madelyn Graham

Faculty Sponsor: Joel Helmer

The Alaska Sealife Center (ASLC) in Seward, AK, is an organization that responds to stranded or injured marine wildlife and is the only institution authorized to rehabilitate marine mammals in the state. Using data from the ASLC Wildlife Response team, concentrations of stranding sites by Alaskan boroughs and census areas were mapped to demonstrate the relationship between animal stranding and human presence. By looking at the frequencies of injured animals in areas of human civilization, conservationists can use this data to recognize marine sectors that need reform. The information gathered from this research will be passed on to the Alaska Sealife Center to assist them with their marine conservation efforts, allowing for interactive learning opportunities about the animals of the ASLC's rescue and rehabilitation programs.

Grassland Loss in Northeast Nebraska, 2001 to 2020

Rachel Otten

Faculty Sponsor: Joel Helmer

Grasslands are the most threatened yet least protected biome, with only seven intact grasslands remaining in the world. They are home to many plant and animal species, and are important for biodiversity and carbon sequestration. Northeast Nebraska was historically tallgrass prairie but has now been predominantly converted to cropland. Utilizing the National Land Cover Database (NLCD) change over the past two decades, this study observed the amount of grassland loss in Northeast Nebraska. Focusing on the counties of Pierce, Wayne, Madison, Stanton, and Cuming from 2001 to 2020, results show that almost 55,000 acres of grasslands were lost in the five counties during this time. Seeing this, steps should be considered to ensure that the tallgrass prairie of Northeast Nebraska is not degraded further.

Spatial Distribution of Suicide and Behavioral Health Services in Nebraska

Hannah Callahan

Faculty Sponsor: Joel Helmer

Suicide is a rapidly growing public health crisis in America. In Nebraska, suicide is the leading cause of death for children ages 10-14 and the second leading cause of death for ages 10-34 – well above the



national average. Using data from the Nebraska Department of Health and Human Services, this study focuses on the suicide rate per county in 2016 and how it relates to the overall population. With GIS, this research visualizes the distribution of behavioral health services across Nebraska and determines the ratio of providers per 1,000 Nebraskans by county. Results show a severe lack of behavioral health providers across 88 of Nebraska's 93 counties. Many rural Nebraskans must travel significant distances for behavioral healthcare. This research is helpful for accurately determining where new public behavioral health services could be established.

Locations and Attendance of Historic, Recreational, and Entertainment Sites in Nebraska

Emily Otten

Faculty Sponsor: Joel Helmer

For years, Nebraska consistently ranked as one of the least visited states. After the launch of "Honestly, it's not for everyone" campaign, tourism and revenue from spending in Nebraska is growing steadily. Examining data from the Nebraska Tourism Commission, attendance was mapped at attractions taken annually from 2007-2018. Attractions sites in this data include but are not limited to; recreational areas, parks, museums, galleries, and performance centers. Examining geographic locations paired with the number of attendees sites are receiving gives insight into understanding the interest in historical and attraction sites across Nebraska. As tourism in Nebraska grows, it is important to see spatially where we can refine or locate our efforts.

Negative Impact of Lionfish on the Belize Barrier Reef Reserve System

Grace Soenksen

Faculty Sponsor: Joel Helmer

The Lionfish (Pterois) is a carnivorous fish native to the Indo-Pacific oceans, but in recent years has invaded marine ecosystems in the Atlantic, Gulf of Mexico, and the Caribbean. This research focuses on the presence of lionfish along the Belize Barrier Reef Reserve System (BBRRS) by utilizing data from the Tobacco Caye Marine Station. First introduced off the coast of Florida in the 1980s, the highly-aggressive species has spread rapidly over recent decades, resulting in a decline of reef ecosystem health across the Atlantic and Caribbean. Since there are no natural predators of lionfish in the Caribbean, human efforts to eradicate this invasive species are key in sustaining reef health. By mapping the distribution of lionfish, conservationists can better understand where efforts are most needed, and the impact these fish can have on a reef patch. Further data collection and research could provide useful information for control and eradication efforts.

The Effects of Warm & Cool Colors on Emotions

Gabrielle Krutsinger

Faculty Sponsor: Sara Brady

Colors can evoke different emotions and affect how an individual perceives pictures. Previous research on colors and emotions suggests that warm colors are found to be more stimulating than cool colors (de Villemor-Amaral & Yazigi, 2022). Furthermore, warm colors, particularly red, are more likely to elicit higher emotions of arousal, such as anger (Leichsenring, 2004; Wilms & Oberfeld, 2018). This study aims to explore if warm and cool colors evoke different types of emotions, particularly low and high arousal emotions. Using a within-subjects design, participants viewed randomly assigned warm, cool, and gray-colored pictures. While viewing each picture, they were asked to record their emotional responses using a modified Affect Grid (Russell et al., 1989). Two repeated measures ANOVAs were conducted to determine if warm and cool colors elicit different emotions using the scores from the grid. Results and implications of the study will be discussed.



Poster Session D

Monday April 24, 2023

6:00-7:00p

Dunklau Lobby

The Effects of Reward Systems in Athletics

Christopher Shelton

Faculty Sponsor: Nolan Harms

Athletes of all ages have a drive to be competitive. Many of these athletes also strive to enjoy their sport while performing. One factor in an athlete's willingness to compete and enjoy playing sports is the reward. Reward systems in athletics have been a controversial topic over the past 30 years. Parents of young athletes have been the leaders in this uproar, deciding if it is best for young athletes to receive participation rewards or not. Researchers have found that people like to feel appreciated for their efforts; however, some studies say there is a larger feeling of accomplishment and competitive drive within athletes when there is a reward to compete for.

A Time Series Analysis of Nebraska's Rainwater Basin and Wetlands in Seward County, NE

Psalm Richters

Faculty Sponsor: Joel Helmer

The Rainwater Basin and its wetlands are a crucial ecosystem in Nebraska that has declined throughout the years. Outdoor Nebraska states that wetlands filter groundwater and provide 95% of Nebraska's clean drinking water. The Rainwater Basin provides nesting grounds for 8.6 million migrating birds according to the Rainwater Basin Joint Venture. This series of maps examines the differences between Nebraska's Rainwater Basin and its wetlands in Seward County, NE over a 15-year period by using data collected from the U.S. Fish and Wildlife Service and NebraskaMap. This research shows the size and location of the Rainwater Basin and the wetlands from 2007 to 2022. This research also examines the acreage of wetlands in Seward County, Ne from 2007 to 2022. By examining these results we can monitor change within the Rainwater Basin wetlands to help prevent further losses to this important ecosystem.

Spatial Analysis of National Park Visitation in the United States

Charlie Hayden

Faculty Sponsor: Joel Helmer

Does location determine the number of visitors a national park gets in a particular year? National parks are a common theme for outdoor enthusiasts who enjoy spending quality time in mother nature's most beautiful places. It's a source of quality time spent outdoors. This research maps the locations and the annual visitation data of every United States national park. All visitation data is mapped back to 2013, and a distribution of analysis is provided to show the predominant years of visitation within each park. The data variation is found in the NPS national reports database displaying a geographical distribution of each park. This data is meant to show which park has the most visitors and what determines the influx of tourists. Mapping the annual visitation of national parks is important because it analyzes which parks are highly sought after and which aren't.



The Delmar Divide in St. Louis, MO: A Turbulent History and a Hopeful Future

Ellie Jander

Faculty Sponsor: Joel Helmer

Delmar Boulevard runs east and west through St. Louis, Missouri, roughly dividing the city in half, hence the name Delmar Divide. Its defining characteristic is the socioeconomic disparity between the communities to the north and south. Residents in all parts of the area continue to face repercussions of St. Louis's history of segregation and redlining. Using data from the United States Census Bureau American Community Survey, this research illustrates the comparatively high African American population and low socioeconomic status of the census tracts north of the Divide. The United States Crime Index data from Esri displays the differences in crime rates throughout the city. The 1937 Home Owners' Loan Corporation Neighborhood Redlining Grade provides a visual of the city's history of segregation. Understanding why, where, and to what extent racial disparity exists in St. Louis will enable residents to work toward positive changes in their city.

Coral Bleaching on the Mesoamerican Barrier Reef

Justin Otten

Faculty Sponsor: Joel Helmer

Coral bleaching is a natural phenomena affecting marine ecosystems in tropical oceans. Due to ocean acidification and rising water temperatures, coral bleaching has been rapidly increasing over the past thirty years. Coral bleaching is the act of Zooxanthellae (*Zooxanthella nutricula*), a symbiotic algae, being expelled from the coral's polyps, leaving the coral unprotected and more susceptible to disease. This study uses geospatial data to observe the effects and occurrences of it specifically on the Mesoamerican Barrier Reef. Data was collected by Tobacco Caye Marine Station in Belize. The data collected includes location, bleaching and disease severity, water temperature and depth, as well as coral type and species. The findings of this study provides insights into the current state of the Mesoamerican Barrier Reef and inform conservation strategies to protect this valuable ecosystem.

Effects of Cannabis on Athletic Performance

Carlos Benavides

Faculty Sponsor: Nolan Harms

Cannabis has been a growing topic in today's world ever since the legalization of recreational use was passed in 2012. Tetrahydrocannabinol (THC) is the main ingredient in cannabis which leads to psychoactive effects on the body. We know that marijuana has its medical benefits for conditions such as chronic pain, depression, anxiety and many others. These conditions may occur in athletes from their respective sport. With this, how does it affect the performance they put out on the field? Although these athletes may not play under the influence they still see some benefit in consuming this drug. Many professional athletes have opened up about their use of cannabis and it has been made into a reason for research.

"FORE, Right!": More Golf in Nebraska

Taylor Johnson

Faculty Sponsor: Joel Helmer

In the United States, 25.6 million people played golf in 2022. Expanding the game of golf and making it more accessible to more people is important in the expansion of the game, especially for the younger generation. Gathering information from the Nebraska Golf Association, this information will help figure out where in Nebraska we need to either add a new nine or eighteen-hole golf course or expand on one that



already exists. Using data from the Nebraska Golf Association on the golf courses that already exist, current and estimated population, and more, will help figure out where in Nebraska needs to add or expand on new golf courses. This research shows where in Nebraska we need to add or expand on golf course and help further introduce the game to people that don't have regular access to it.



Oral Session A1

Monday April 24, 2023

Dunklau 142

Understanding King Manasseh: A Commentary on 2 Chronicles 33

Tyler Linneman

2:30-2:50p

Faculty Sponsor: John Hink

Might evil king Manasseh really be good king Manasseh? This king who shed very much innocent blood (2 Kings 21:16), is also the same king who humbled himself greatly before God (2 Chronicles 33:12). Both remembered as the most wicked king in Judah's history and remembered for his dramatic redemption story in 2 Chronicles, King Manasseh both set up idols and cast false gods out of the Temple, practiced witchcraft and commanded the worship of Yahweh. In sin, Manasseh is second to none. But his redemption shows that despite all of that, perhaps he really is good king Manasseh.

Bearing with One Another in Love: Forgiveness and Reconciliation in the Church

Esther Langness

2:50-3:10p

Faculty Sponsor: John Hink

Forgiveness and reconciliation are central concepts in Christianity. The Church is called to forgive, be reconciled, and live in unity with one another, yet conflict and disunity abound within congregations and across the entire Church. This project explores the common societal perspective on forgiveness and contrasts it with Biblical forgiveness in order to present practical ways for individuals within the Church to better live out the lives of forgiveness. This would enable them to live in unity with one another and bear with each other in Christian love.

Selecting Church Choral Music: A Guide

Renata Peperkorn

3:10-3:30p

Faculty Sponsor: John Hink

Selecting church choral music is a daunting task, especially for those new to the field. Picking a choral piece appropriate for the Scripture passages, hymns, liturgy, and time of year can be overwhelming. Even more so when considering the practical resources, such as choir members, instrumentalists, and their skill level. This project aims provide some structure for this information so that the pure message of the Gospel is free to shine through the beautiful music. It provides these organizational structures to help musicians produce the best music they can with the resources they have.



Oral Session A2

Monday April 24, 2023

Dunklau 144

Black-Capped Chickadees and West Nile Virus: A Comeback Story

Camden Sesna

2:30-2:45p

Faculty Sponsor: Joel Helmer

In the early 2000's, West Nile Virus (WNV) spread like wildfire across the United States, affecting many different species of wildlife. The avian family was heavily impacted by WNV with the Black-Capped Chickadee (*Poecile atricapillus*) being especially devastated. This research examines the population trends of the Black-Capped Chickadee through the use of publicly available banding data from the United States Geological Survey (USGS). Examining the data from the Great Lakes and Northeast regions, areas of an abundant population of Black-Capped Chickadees, this research spatially visualizes the changes in population before, during, and after WNV. This data determines the rate at which the population of Black-Capped Chickadees has been changing within specified regions of the northern United States over the past two decades.

The Geography of Recruiting: Great Plains Athletic Conference Football Roster Distribution, 2022

Jaxson Kany and Daylan Russell

2:45-3:00p

Faculty Sponsor: Joel Helmer

Recruiting is an essential aspect of building a successful collegiate football program. Each program tends to have its own "hot spots," where they focus their recruiting efforts, often related to coaching connections with certain high schools. This research examines the spatial distribution of Great Plains Athletic Conference (GPAC) football rosters for the 2022-23 academic year. The roster data was procured from the websites of each school, imported into Excel, and then mapped with ArcGIS Pro. This research provides the Concordia University, Nebraska football coaching staff with a visual tool to analyze where competitor programs are and are not recruiting. This information can assist in recruiting decision making, including investments in time, resources, and personnel.

Victimology: An Overview

Madison Ellis

3:00-3:15p

Faculty Sponsor: Kathy Miller

Victimology is a field study that focuses on the victim's role in criminal events. This concept became prevalent in the 1940s after many criminologists looked more in-depth into victim-offender relationships and prevention was then introduced in the 1970s. This paper provides an overview of the main concepts within victimology, the main types of victimization like sexual assault and abuse, the impact of victimization on the individual, and what is being done to help the victim within and outside of the criminal justice system. Drawing off of many research articles this paper brings light to the challenges within victimization, and brings more awareness to the need for continuous research to support the individuals who have been victimized.

Perceived Effort and Team Success

Victoria Perry

3:15-3:30p

Faculty Sponsor: Sara Brady

Participation effort, as well as ability and perceptions of task difficulty by an individual, can play a role in sport-related behaviors (Rejeski and Lowe, 1980). However, to what extent can effort improve the success rates of individuals or teams? This study sought to determine if perceptions of increased individual and team efforts will predict a better ranking of GPAC cheer and dance teams. In doing so, I conducted a study using 17 GPAC cheer and dance teams, but only 11 teams had a sufficient sample size for the analysis. Participants completed a brief survey using a simplified version of the Borg scale of perceived exertion (Borg, 1998). The responses from the survey were correlated with the results of the GPAC competition. The results showed a trend of individual effort being positively correlated with team effort. However, team ranks were not correlated with the team or individual effort.



Oral Session B1

Monday April 24, 2023

Dunklau 142

Fundamental Delusions

Brooke Lange

3:40-4:00p

Faculty Sponsor: John Hink

How we think about our current reality can have a significant impact on how we choose to live our lives. In order to thrive, I argue that people occasionally need to engage in “fundamental delusions” in order to achieve well being. “Fundamental delusions” are the idea that there are things we need to believe even if they are not directly in front of us. In this capstone, I explore fundamental delusions in the context of how we think about ourselves, how we think about other people, and how we think about adverse experiences. This study will aim to show that having fundamental delusions can point to fundamental truths: we are born with value, we need forgiveness, and that our adverse experiences point us to the fact that we need something greater.

Rediscovering Two Kingdom Theology in America

Owen Dawson

4:00-4:20p

Faculty Sponsor: John Hink

American Christianity is increasingly facing a crisis of identity. The tendency to combine our civil and heavenly citizenships results in a political agenda with a misplaced religious conviction to support it, further leading to a “theology” of politics in which our idea of what America should be is a god, and any opponents—even well meaning Christians—are evil. This project examines the current state of American Christian politics, how it arrived here, and how the Church in America can better educate its members in light of Luther’s two kingdoms doctrine to live according to God’s will.

The Relational Nature of Truth

Lauren Dawson

4:20-4:40p

Faculty Sponsor: John Hink

Truth, or reality, exists. Every human being has searched for and interacted with Truth. However, though belief in the existence of Truth is universal, the relationships that different people have with it are not. Some people revere Truth, some despise it, some ignore it, and the list goes on. This project is a work of fiction centered on the theme of Truth. A philosophically diverse cast of characters interacts with each other and the world they live in, raising and answering questions about reality, reverence, and freedom. This project is intended to cause readers to examine their own relationship with Truth and how it plays out in their life.



Oral Session B2

Monday April 24, 2023

Dunklau 144

Extroversion and Social Media

Madison Ellis and Julia Phillips

3:40-3:55p

Faculty Sponsor: Sara Brady

As a prevalent part of modern society, social media can predict well-being. Among the Big Five personality factors, extroversion has been established as one of the most predictive indicators of different types of social networking service activities (Wang & Zhang, 2018). People high in extroversion may relate well with others, making it a sole indicator of higher activity in social networking platforms. This study aims to determine whether an individual's level of extroversion is directly correlated with how long they are on social media on a weekly basis. Participants were asked to complete the Extraversion Questionnaire (IPIP-NEO) followed by a social media questionnaire as well as demographic questions pertaining to age, gender, and academic year. Results and implications will be discussed.

Not All Those That Wander Are Lost

Nathan Kieser

3:55-4:10p

Faculty Sponsor: Joel Helmer

One of the most difficult parts of backpacking is the preparation and planning before starting the trail. This is what keeps many people from backpacking because of the amount of planning and fear of the unknown. For those wanting to backpack the Knobstone Trail, this project provides the information they need to fully prepare for their exciting adventure. This project used ArcGIS Pro and ArcGIS Online, mapping the entirety of the trail, elevation, and mileage. The Indiana Department of Natural Resources provided the data for the maps and mile markers. This project provides a guide on how to hike the Knobstone Trail each day for intermediate backpackers, from beginning to end. Trail guides are very useful when planning a backpacking trip and make it significantly easier for those who are unfamiliar with the trail.

The Effect of Automated Audio on Reading Comprehension

Matthew Gebauer

4:10-4:25p

Faculty Sponsor: Sara Brady

The use of reading aids (text being read aloud) has grown in the digital age, making longer reading easier for people who struggle with reading. Previous research has shown that reading aids boost performance on tests of reading comprehension. However, the effects of the type of audio used for the aid have not been thoroughly examined. The purpose of this research is to explore whether the use of a computer-generated audio reading aid impacts reading comprehension differently than a human voice. Students currently attending Concordia University, Nebraska completed two reading comprehension tests, one with a human voice as the reading aid and the other with a computer-generated voice. Multiple paired t-tests were conducted to compare the effectiveness of the two different reading aids. The results of this study might help direct further research into the effectiveness of computer-generated voices and whether they should be considered for use as reading aids.



Is Luther Right about Aristotle? A Study of Virtue Ethics and Lutheranism's Compatability

Tyler Linneman

4:25-4:40p

Faculty Sponsor: David Coe

What has Athens to do with Jerusalem? This famous rhetorical question by 2nd century theologian Tertullian is the matter taken up in this paper. Scholastic theologians such as Thomas Aquinas held Aristotle and his ethics in high regard, but Martin Luther famously derided "the whole Aristotle is to theology as darkness is to light." This paper will briefly examine virtue ethics by itself, then turning to Aquinas' question and answer style to examine virtue ethics' implications on Lutheran theology, before finally examining a few key virtues for the Lutheran. This will show the place of virtue ethics in Lutheranism.



Oral Session B3

Monday April 24, 2023

Dunklau 143

Modeling an Epidemic with Both Quarantine and Vaccination

Ben Moll

3:40-3:55p

Faculty Sponsor: Brian Albright

In this project, I used a Susceptible, Infected, Removed (SIR) model to model the spread of a disease through a community. The model relies on a set of assumptions that simplify the situation which will be discussed. On top of the basic model, I have added a quarantine rate, a vaccination rate, and a variable population size. The effects of each variable were analyzed graphically and conclusions were made based on the graphs and numbers generated.

Native vs Invasive: Spatial Analysis of Trout Populations in Montana's Clark Fork River

Wyatt Loga

3:55-4:10p

Faculty Sponsor: Joel Helmer

Invasive species cost the United States around \$21 billion per year. Whether these species were transported from around the world or a few states away, they can have massive impacts on the native ecosystem. This is no different when it comes to trout, including in the Clark Fork River. Bull trout (*Salvelinus confluentus*) are a native species of char that has been threatened by the introduction of brook trout (*Salvelinus fontinalis*) in the region, which has been transplanted from the eastern United States. Using data from the state of Montana and its wildlife managers, I have created a spatial analysis of these two fish populations in the Clark Fork River. By mapping the preferred river locations for both species, I have shown where wildlife management could target to restore the native trout populations. If steps are not taken, invasive trout could continue to hinder native populations.

Social Science Teachers Income in the United States

Anthony Perez

4:10-4:25p

Faculty Sponsor: Joel Helmer

The stereotype of teachers not being able to make a living has been present for many years. As a future teacher and for potential other future teachers, I wanted to find this out for myself through the use of data rather than word of mouth. What this spatial data examines is the annual income and employment for social science teachers via state and compares that to the common housing and living expenses for people 20-24 years of age. This data came from the U.S. Bureau Labor of Statistics. The results of this study is able to give a stronger perspective of the financial situation and expenses for new incoming teachers across the United States.



Oral Session B4

Monday April 24, 2023

Dunklau 151

Anything You Can Do, Fly Can Do Better: Differences in Exercise Adaptation Between Male and Female Fruit Flies

Rachel Battershell, Jacob Gosnell, and Caitlin Davis

3:40-4:00p

Faculty Sponsor: Kyle Johnson

Males and females respond differently to exercise. The mechanisms behind this differential response, however, have been difficult to elucidate. Sestrin has been established as a mediator of exercise benefits, and is expressed in humans and in fruit flies. Here, we put male and female flies on the same protocol, then measured changes in performance and sestrin expression. We used sestrin deficient and overexpressing flies as a floor and ceiling of performance. The role of sestrin in sex-differentiated responses will be further elucidated in this study.

Birds vs. Blades: Avian Mortality Near a Wind Turbine in Seward County

Haley Compton

4:00-4:20p

Faculty Sponsor: Kyle Johnson

The increase in renewable energy has led to a greater number of wind turbines in use. This increase has led to many studies on the relationship between turbines and bird mortality rates. This study seeks to find the correlation between the presence of an isolated wind turbine and its effect on the surrounding bird population. Using transects, the number of deceased birds was counted around a single turbine for a period of two weeks. This study ultimately seeks to inform future turbine builders on the best placement to decrease bird mortality rates within the area.

Flying High on Ascorbic Acid: The Effects of Antioxidants on Drosophila Exercise

Creighton Taylor

4:20-4:40p

Faculty Sponsor: Kyle Johnson

Vitamin C is an antioxidant that deactivates free radicals that cause damage to cells. After intense exercise, Vitamin C has shown signs of increased muscle health and pain reduction. In this study, we use fruit flies to provide results regarding the effects of antioxidants on exercise. Our study took male flies and divided them amongst different tubes with varying amounts of vitamin C. Exercise and lifespan was observed and analyzed. We predict that the low antioxidant tubes will have no effects or positive effects, whereas the tubes with an excessive amount of vitamin C will create negative effects and decrease the exercise efficiency in the flies.



Oral Session C1

Monday April 24, 2023

Dunklau 142

Underhall: A Fictional Exploration of Idolatry in the Modern World

Jonathan Landrey

4:50-5:10p

Faculty Sponsor: John Hink

Deep underground stands a great tower, inhabited by every idol humanity has made and worshiped. With the guidance of Coifi, an ancient Northumbrian priest, Martin, an ordinary young urbanite, must ascend the tower and become familiar with his own idols and the subtle ways they tempt him to worship them. Underhall explores the nature of idolatry in modern life, the futility of the human will, the fickle nature of our hearts, and the overwhelming presence of grace, even in our lowest moments.

Teaching in a Manner Worthy of the Calling to Which We Have Been Called: Lutheran Liberal Arts Education

Victoria Ritzma

5:10-5:30p

Faculty Sponsor: John Hink

In Ephesians 4:1, Paul encourages the Christians in Ephesus to “walk in a manner worthy of the calling to which you have been called.” In accordance with this encouragement, this project examines how we as Lutheran educators can serve our Lord and our students in a manner worthy of the calling God has graciously given us. Specifically, this project considers the implications of Lutheran doctrine for our educational philosophy, our pedagogical methods, and our content and curricular choices.

Redeeming Destruction: Derision in Art

Nicole Rodriguez

5:30-5:50p

Faculty Sponsor: John Hink

The concept of derision, laughter at an object of reverence for the purpose of bringing it down from its position of high regard, can hold two motives. Throughout history, derision can either attack the foundations of human motivation and harm human purpose by doing so, or it can critique an object which has been improperly upheld, which may or may not lead to a different object of reverence growing in the place of the displaced object. This project explores the morality involved in derision and how the two types of derision relate to human motivation.



Oral Session C2

Monday April 24, 2023

Dunklau 144

Engagement with Religion and Belief in a Just World

Brooke Lange

4:50-5:05p

Faculty Sponsor: Sara Brady

Religion can have a significant impact on people's views about justice. Certain types of religious groups have been found to be correlated with general beliefs about justice (Wenzel et al. 2017). Using a correlational design, this study researched the relationship between religious practices and beliefs and personal and general belief in a just world. This study aimed to find whether religious practices and beliefs were correlated with personal or general views of justice. Results will be reported.

Unspoken: Conversations in Body Image

Sabrina Reed

5:05-5:20p

Faculty Sponsor: Sara Brady

Phrases such as, "Birds of a feather flock together," have implicitly promoted the concept of social influence since long before the availability of empirical evidence. Emily Falk, from the University of Pennsylvania, has studied how social networking and peer influence can impact decision making, risk taking, and more. She found that as teens learn to navigate their world socially, their reward system plays a monumental role (Falk, 2021). The psychological payoff of reward system activation, such as through receiving a compliment, can further influence both implicit and explicit thoughts, behaviors, and attitudes. This analysis seeks the impact of these social reward influences on young adults' body image. Therefore, if conversations with peers negatively discuss body image, they will have a direct impact on body image attitudes. Through a self-reported study of 91 people aged 19 to over 50 years old, participants answered questions about four to five different subscales of body image. Analysis of the data will hopefully show correlations about how these conversations impact multiple subscales of body image.

The Collection and Analysis of Weather Variables on Solar Energy Generation

Ben Moll

5:20-5:50p

Faculty Sponsor: Robert Hermann

This project investigates correlations among data taken from the University's solar array and the new weather station on campus. In particular, it analyzes the relationship between solar radiance, temperature, pressure, and output energy from the array. In addition, the new weather station and its capabilities will be highlighted and its implication for future use will be discussed. Finally, I will review the software that I created to collect and display data which can be used in the Dunklau Center.



Oral Session C3

Monday April 24, 2023

Dunklau 143

Faithful Science

Jacob Gosnell

4:50-5:05p

Faculty Sponsor: Kyle Johnson

For centuries, science and the Christian faith have been perceived to be at odds with one another. Some have suggested that science has tried to disprove the existence of God, while others have argued that religion has inhibited critical thinking and hindered scientific progress. The Christian calling to live differently, God-given morality, and the greatness of God and His truth all demonstrate that in reality, the two are not antagonistic. Science and faith are both means to understand God's world and our purpose in it. This is my personal philosophy regarding this collision.

Snow Geese: A Historic Migration

Joel Rathe

5:05-5:20p

Faculty Sponsor: Joel Helmer

Since 1920, the United States Geological Survey (USGS) has been banding different species of birds. Snow and blue geese (*Chen caerulescens*) are one of these many species that are banded. Migrating in flocks by the thousands they are a site to see, especially in the spring season. Biologists band snow geese to learn about areas such as their age, sex, and where they are recovered in relation to where they were banded. This presentation contains data for snow geese from the USGS website to plot where these birds were recovered or harvested by hunters in the state of Nebraska. This data has been used to create maps using ArcGIS software that help show concentrations of snow geese within Nebraska. Biologists and outdoorsmen can use this map data to show where snow geese are more precisely harvested, and the flyways they follow.

Worldbuilding a Sci-Fi Novel

Naomi Postier

5:20-5:35p

Faculty Sponsor: Gabe Haley

This presentation is a senior Capstone presentation covering the book I wrote, *The Mindworlders*. The novel is set on a planet which orbits a white dwarf star, which means the people essentially live in darkness. The people are affected by certain minerals present on the planet, giving those with certain genetics. The presentation looks at the methods used for world-building in my novel.

How Applied Voltage Affects the Foraging Behavior of *Physarum polycephalum*

Malia Rolf

5:35-5:50p

Faculty Sponsor: Connie Callahan

The slime mold *Physarum polycephalum* is a model organism used to study how aneural organisms navigate complex environments. Previous studies have shown that free calcium ion concentrations in the cell regulate contraction and relaxation of the foraging front. If ion concentrations can be externally controlled, the foraging behavior of *Physarum* may be affected. In this study, we assessed this possibility by applying voltage to an agar substrate containing colonized *Physarum*. The results of this study may contribute to a better understanding of the foraging mechanism in *Physarum polycephalum*.



Oral Session D1

Monday April 24, 2023

Dunklau 142

Controversy in the Tetons: The Establishment and Protection of Grand Teton National Park

Logan French

6:00-6:20p

Faculty Sponsor: John Hink

The fight to establish Grand Teton National park and then to expand the park's boundaries was a complex and arduous debate that would span decades of the early twentieth century. It would ultimately take the work of a few significant and dedicated individuals. Horace Albright, the secretary of the Interior who never dropped the fight to expand the park. John D. Rockefeller Jr. who would use his wealth and power to protect the land he fell in love with on family vacations. Lastly, it would take President Franklin D. Roosevelt and his Executive power to secure the Tetons while WWII raged around the world. While it is a legal fight within our nation's history of conservation, it includes the drama and exaggerations one may not expect from Wyoming cattlemen. One such exaggeration was likening the establishment of the park to a similar action as Pearl Harbor which had happened two years earlier. Ultimately, the park would be established and extended to the boundaries we know today, protecting some of the most stunning mountains in our nation.

The Psalm 8 Project - A VBS Curriculum

Julia Witt

6:20-6:40p

Faculty Sponsor: John Hink

The Psalm 8 Project is a free online VBS curriculum that aims to teach kids about the majesty of our Lord through science and Scripture. It has been designed specifically with small and under-resourced congregations in mind, so the expected costs are \$500 or less, and the programming is very flexible. Each day, kids will get to learn more about our Savior and Creator through music, Bible study, experiments, and more! In the process, they will also learn how science is a gift of God that can be used to study His creation and to care for it, just as we are called to do in Psalm 8. The Psalm 8 Project is a fulfillment of the capstone requirement for the Luke Scholars Program.

Mental Health in Clergy

Nathan Birtell

6:40-7:00p

Faculty Sponsor: John Hink

Pastors are commonly known as the "shepherd" of God's flock. But who shepherds the pastor? This project examines the many mental issues that pastors face, such as burnout, trauma, and compassion fatigue, as well as other illnesses while trying to lead congregations. These issues are amplified even further when faced with a variety of barriers that keep them from getting help. Thankfully, an abundance of resources are available to help pastors fulfill the call which God has assigned to them.



Oral Session D2

Monday April 24, 2023

Dunklau 144

S.I.R Mathematical Model with Multiple Strains

Zachary Zohner

6:00-6:15p

Faculty Sponsor: Brian Albright

The model is a Discrete Dynamical System. It is a simple S.I.R. model that describes how the level of Susceptibles (people who haven't gotten a sickness yet), Infectives (people who are currently infected with a sickness), and Recovered (people who have recovered from a sickness and can no longer get it) change over time. This model extends from the basic one from the textbook by considering a hypothetical scenario. It asks, what if when someone recovers from an illness, there is a chance of them getting the next strain of the original illness?

Salt and Light: Geographic Distribution of Concordia University Nebraska Alumni

Olivia Leising

6:15-6:30p

Faculty Sponsor: Joel Helmer

You are the light of the world. A city set on a hill cannot be hidden...In the same way, let your light shine before others, so that they may see your good works and give glory to your Father who is in Heaven" (Matthew 5:14,16). As a Lutheran, Christian university, Concordia is called to share the light of Christ. However, Christ's light does not remain sequestered in Seward, Nebraska. It is carried into the world by the lives and careers of Concordia's alumni. Utilizing ArcGIS software and data supplied by the Office of Institutional Advancement and Alumni Relations, this research illustrates the distribution of over 14,000 alumni from the classes of 1934-2022 who are serving and leading in classrooms, congregations, communities, businesses, and offices around the world. Furthermore, this research demonstrates the impact of Concordia's ongoing mission to spread the light of Christ to the world.

Yahtzee: The Microsoft Excel Algorithm

Daylan Russell

6:30-6:45p

Faculty Sponsor: Brian Albright

Yahtzee is another common game of chance played in many households, some of which with differing rules and strategies for it. The numbers and data obtained for this research was obtained from the Yahtzee rulebook, with a minor adjustment of only one 5 dice roll per attempt instead of the typical two. Players will come up with the formulas for each different outcome, given that each number of the dice has an equal chance of happening (there are 5 dice). The players will be given the "scores" that each outcome receives and will have need to decide whether they want to use this via the many different Excel functions and formulas given. Players will also have to solve for the possible probabilities that each outcome has. Some of the more major parts of this research is the actual "rolling" of the dice, the dice number frequency, the outcome and it's corresponding score, the best score for the round, and then finally the probabilities of each score. The reasoning behind this research is that as someone who grew up playing Yahtzee and rarely ever getting an actual Yahtzee, I wanted to find out the actual probability of obtaining a Yahtzee, Full House, or any of the other outcomes and since I played the one roll rule growing up, that is what I wanted to show in my research.

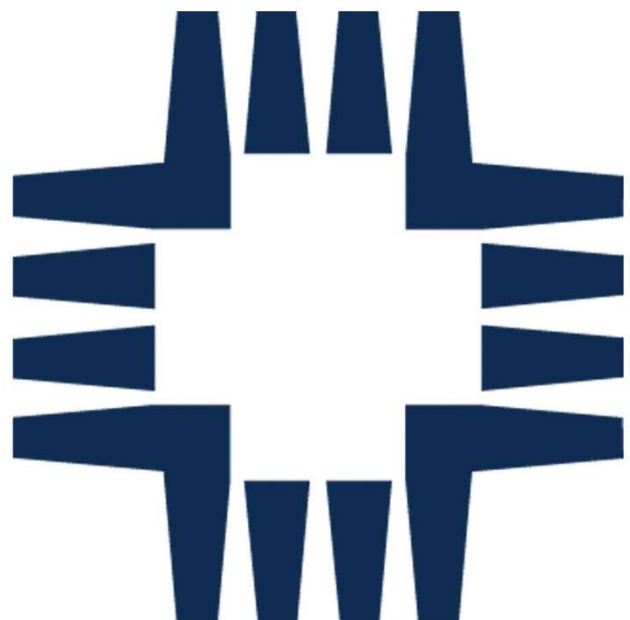


12th Annual

Academic and Research Symposium

Concordia University, Nebraska

April 24, 2023



ACADEMIC AND RESEARCH SYMPOSIUM – PRESENTER SCHEDULE

	Dunklau Lobby	Dunklau 142	Dunklau 144	Dunklau 143	Dunklau 151
2:30 PM - 3:30 PM	Poster Session A	Oral Session A1	Oral Session A2		
	Carsen Arline Gerald Morris Erin Painter Katie Rickords Ivan Yabut Katherine Bauer Tyler Bartels	Tyler Linneman Esther Langness Renata Peperkorn	Camden Sesna Jaxson Kany Madison Ellis (ind) Victoria Perry		
3:40 PM - 4:40 PM	Poster Session B	Oral Session B1	Oral Session B2	Oral Session B3	Oral Session B4
	Kadyn Lane Victoria Ritzma Teegan Tschampel Devin Rathman Megan Lange Benjamin Larsen Elayne Poppe Kadyn Lane	Brooke Lange Owen Dawson Lauren Dawson	Madison Ellis (group) Nathan Kieser Matthew Gebauer Tyler Linneman	Juan Rabellino Eduardo Rojas Wyatt Loga Anthony Perez	Rachel Battershell Haley Compton Creighton Taylor
4:50 PM - 5:50 PM	Poster Session C	Oral Session C1	Oral Session C2	Oral Session C3	
	Rachel Battershell Madelyn Graham Rachel Otten Hannah Callahan Emily Otten Grace Soenksen Gabrielle Krutsinger	Jonathan Landrey Victoria Ritzma Nicole Rodriguez	Brooke Lange Sabrina Reed Ben Moll Ben Moll	Jacob Gosnell Joel Rathe Naomi Postier Malia Rolf	
6:00 PM - 7:00 PM	Poster Session D	Oral Session D1	Oral Session D2		
	Christopher Shelton Psalm Richters Charlie Hayden Ellie Jander Justin Otten Carlos Benavides Taylor Johnson	Logan French Julia Witt Nathan Birtell	Zachary Zohner Callum Goldsmith Olivia Leising Daylan Russell		



Special Thanks

Thank you to all presenters, faculty sponsors, staff, judges, administrators, and attendees for supporting the symposium!

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- Dr. Amanda Geidel
- Prof. Justin Groth
- Dr. Nolan Harms
- Prof. Tim Heidorn
- Dr. Rob Herman
- Dr. Kathy Miller
- Dr. Matt Phillips
- Dr. Tim Preuss
- Dr. Ed Reinke
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- Gabbi Krutsinger
- Stephanie Mashuga
- Julie Oetting
- Sabrina Reed
- Nick Sazama
- Mollie Urkoski



Poster Session A

Monday April 24, 2023

2:30-3:30p

Dunklau Lobby

Working With/Along Side a Person with a Disability in the Workforce

Carsen Arline

Faculty Sponsor: Nolan Harms

The point of this poster is to show that working with a person that has a disability doesn't mean that they are different from you. Yes, they might have something different than what you do but the person is unique in their own way. We can treat people with disabilities just the same as a person who might be so much different, people tend to think that just because someone is different we have to treat them differently when sometimes people don't want to receive different benefits or get treated differently because of their disability it's all about how can that work space can make that person feel that they are needed and also that their voice means something.

Sports Impact on the Mental Health of Athletes

Gerald Morris

Faculty Sponsor: Nolan Harms

It is known that a large percentage of any sport is mental. It is also known that sports can ultimately determine the status of an athlete's mental health. Mental health issues have been noticed in sports for as long as sports have been around. What causes this? Who is responsible for this? How can this be prevented?

Recruiting Hot Spots of Great Plains Athletic Conference Throwers 2022-23

Erin Painter

Faculty Sponsor: Joel Helmer

Concordia University-Nebraska is part of the Great Plains Athletic Conference (GPAC) in the National Association of Intercollegiate Athletics (NAIA). This conference includes schools in North Dakota, South Dakota, Iowa, and Nebraska. Using data from the US Track and Field & Cross-Country Coaches Association (USTFCCCA) and each GPAC school's track and field roster, this research mapped every hometown of each thrower from the twelve track teams in the GPAC conference. This data also showed how many all-conference awards (top 8 places in each throwing event {javelin, hammer, discus, shot put, and weight throw} each thrower possesses as of the 2023 Indoor GPAC Championship. In order to learn more about where recruiting hot spots for GPAC coaches sit, heat and density maps were used to show patterns in recruiting regions for the two largest teams, Doane and Concordia. These maps can help GPAC coaches look for recruiting opportunities in areas that other universities in the conference do not recruit from.

The Book Drive - A Collection for Children's Literacy

Katie Rickords

Faculty Sponsor: John Hink

Having books easily accessible to read may not seem like a luxury to some people, but for many children it is. Throughout the course of this semester, I have been collecting children's books for three different programs – Lutheran Family Services of Nebraska, Christian Friends of New Americans, and Lincoln Literacy. I have done significant research on the need for children's books and in what areas they are



needed. I have also researched how best to collect these books and fill this need for children, and have put this research into action, actively creating a Seward book drive.

The Effects of Mindfulness Practice on Golf Performance

Ivan Yabut

Faculty Sponsor: Sara Brady

Mindfulness can have a significant impact on anxiety in sports performance as well as high stress situations through managing thoughts and feelings (Foley, 2021). The aim of this study is to see if mindfulness practice of deep breathing has a positive impact on golf performance and perceived performance. Participants took a survey during a nine-hole round of golf and were either instructed to do mindfulness practice on their first or last four holes. Participants were asked on each hole regardless of treatment and non-treatment holes to record their score for the hole and their perceived performance. I used a paired t test to compare mindfulness practice scores and non-mindfulness scores to see if there is any correlation between mindfulness practice and better performance. The results of this study show that mindfulness improved golf performance. These results have implications for sports psychology research and the mental health of athletes in competition.

Spatial Distribution of Catholic Churches in Nebraska

Katherine Bauer

Faculty Sponsor: Joel Helmer

There are over 350 Roman Catholic Churches located in the state of Nebraska. This research displays the geographic location of those churches. The data was gathered from the Omaha, Lincoln, and Grand Island diocese's 2023 databases. Resulting maps show the topographical depiction of all the individual parishes inside their respective diocese, along with the name of the resident priest, church contact information, and further data on each individual parish. The research also shows which parishes are associated with the over 100 Catholic Schools in Nebraska and where those schools are located. This research depicts the distribution of parishes and schools for the over 390,000 Catholics who currently reside in Nebraska.

Bobcat Harvest Distribution in Nebraska (1977-2021)

Tyler Bartels

Faculty Sponsor: Joel Helmer

The illusive Bobcat (*Lynx rufus*) is a medium sized cat native to North America. This predator ranges from southern Canada, throughout most of the United States, and into regions of Mexico. In the state of Nebraska, the harvest season for Bobcat begins the first day of December and ends on the last day of February. Historically, bobcat pelts have been one of the most valuable wild pelts in Nebraska. Data was obtained from Nebraska Game and Park's Sam Wilson, Manager of the Furbearer and Carnivore Program. The data was divided into five-year increments and then mapped. The resulting maps show where Nebraska's Bobcat populations are densest and how those densities have shifted through the years. In conclusion, this research shows that bobcat populations have increased in southeastern Nebraska and some of the south central counties.



Poster Session B

Monday April 24, 2023

3:40-4:40p

Dunklau Lobby

The Impact of Periodization in Sport Training on Recovery and Performance

Kadyn Lane

Faculty Sponsor: Nolan Harms

There is a high prevalence of sport participation in the world. The incidence of injury is also high. Overall sport performance and rate of injuries can be impacted by the methods coaches use in their training, specifically the use of periodization for training and recovery. This literature review examines the benefits of utilizing periodization in sport-specific training and the impact that it can have on athletic performance, as well as sport-related injury.

Distribution of Lutheran Church-Missouri Synod Schools in the United States

Victoria Ritzma

Faculty Sponsor: Joel Helmer

Education has always been central to the mission and ministry of the Lutheran Church. In the United States, this rich heritage has been reflected throughout the history of the Lutheran Church-Missouri Synod (LCMS) in the strong relationships between synodical churches and schools. Indeed, the original constitution of the LCMS required that any congregation seeking union with the synod provide a Christian education for the children of the congregation. Today, the LCMS continues this rich tradition of faith and learning through the ministry of over 1,800 schools in the United States. This map, built with the most recent data from the LCMS Office of Rosters, Statistics, and Research Services, illustrates the distribution of LCMS schools across the nation generally and by synodical district, offering valuable spatial information for how the LCMS may continue to faithfully point students to our Lord and Savior Jesus Christ in the future.

DNR Structures for Fish in Iowa

Teegan Tschampel

Faculty Sponsor: Joel Helmer

Fish structures are sunk by biologists in order to provide habitats for fish. I will be showing the different types of structures that are used on the map and why they are used. I am showing different lakes and providing pictures of the depths that the structures are in those lakes. This will allow people to learn at what depth they put the structures at. I am choosing Clear lake, and Easter lake. And I am providing pictures of the different structures that are in those lakes. I will also be providing a big picture of the map that will allow you to more easily view what structures are where. The results of the map showed how many and what types of structures there are. In conclusion, if you see a structure in the water just know that it is there for a good reason.

Necrogeography: Mapping a Small Church Cemetery

Devin Rathman

Faculty Sponsor: Joel Helmer

Immanuel Lutheran Church, Rising City, Nebraska will celebrate its 140th anniversary this year on April 23, 2023. The church's many years of life has left it without much of the aid technology provides. This project examines the current church cemetery and brings the map from paper and stone to a readily



available online map. Using Field Maps, an online software created by ESRI, each headstone was mapped individually with the name of the deceased along with their birthdate and death date attached to this mapped location. The map gives a renewed remembrance to the names and lives of those who lived and died in fellowship with Christ almighty. Along with giving important remembrance to the dead, this map will help the church council make future decisions on the expansion of their cemetery.

Graduation Rates and Average GPA of Midwest Colleges and Universities

Megan Lange

Faculty Sponsor: Joel Helmer

Does the size of a school affect the quality of education that students receive? That is the question this research seeks to answer. Data was collected from individual websites of all four-year colleges in Nebraska, Kansas, and Iowa. All of the institutions were geocoded with the attribute data of school size, graduation rate, and average GPA. The schools were then spatially presented by state and number of full-time students on two different maps, the first analyzes the graduation rates of each school and the second analyzes the average GPA of each school. This information this research presents provides students with an efficient way to learn about multiple college options at once and find the best fit for them to continue their education.

The Use of Diet and Hypertrophy in Muscle Building Sports

Benjamin Larsen

Faculty Sponsor: Nolan Harms

The key to achieve muscle volume begins with hypertrophy focused resistance training incorporated alongside proper nutrition in stages throughout a training cycle. Multiple studies have been conducted on the process of hypertrophy driven resistance training and show an overlap on repetition ranges and sets for optimal muscle growth. There is also research that covers the nutrition and timing of dietary change used by bodybuilders during the preparatory stages leading up to competition. The implementation of supplements in diet used in different stages of preparation to achieve a desired look were discussed. These factors are all important to success within muscle building sports.

The Correlation between Social Media, Mental Health and Self-Identification

Elayne Poppe

Faculty Sponsor: Sara Brady

Previous studies have shown that young adults experience various degrees of identity distress and identity problems (Lou et al., 2021, Booker et al., 2021). Research has also shown that social media can promote depressive and stress symptoms (Mukta et al., 2022, Drouin et al., 2018). This study aimed to determine if the time spent using social media decreased an individuals mental health. It also set out to determine if they believed to identify with who they project themselves as on their social media platforms completely would increase their mental health. Participants were asked to complete the Social Media Usage Integration Scale, Depression, Anxiety, and Stress Scale, and the Inclusion of the Other in the Self scale. Results and implications will be discussed.



Poster Session C

Monday April 24, 2023

4:50-5:50p

Dunklau Lobby

Analysis of Shoe Midsole Design and Injury Among Amateur Runners

Rachel Battershell

Faculty Sponsor: Nolan Harms

Anyone stepping foot into a running shoe store is confronted with a wall of engineering, technology, and aesthetics. With the knowledge that per year, more than 50% of runners have a related injury, how is the amateur runner to make an informed decision on which shoe to purchase? The midsole is the primary shoe component that interacts with the foot during running. Midsole design is highly variable, emphasizing energy return, comfort, or stability. This brief literature review will discuss common variables in midsole construction, how these variables interact with the biomechanics of the lower leg in relation to injury, and practical considerations for the amateur runner.

Stranded Wildlife: Alaska Marine Wildlife Rescue, 2013-2023

Madelyn Graham

Faculty Sponsor: Joel Helmer

The Alaska Sealife Center (ASLC) in Seward, AK, is an organization that responds to stranded or injured marine wildlife and is the only institution authorized to rehabilitate marine mammals in the state. Using data from the ASLC Wildlife Response team, concentrations of stranding sites by Alaskan boroughs and census areas were mapped to demonstrate the relationship between animal stranding and human presence. By looking at the frequencies of injured animals in areas of human civilization, conservationists can use this data to recognize marine sectors that need reform. The information gathered from this research will be passed on to the Alaska Sealife Center to assist them with their marine conservation efforts, allowing for interactive learning opportunities about the animals of the ASLC's rescue and rehabilitation programs.

Grassland Loss in Northeast Nebraska, 2001 to 2020

Rachel Otten

Faculty Sponsor: Joel Helmer

Grasslands are the most threatened yet least protected biome, with only seven intact grasslands remaining in the world. They are home to many plant and animal species, and are important for biodiversity and carbon sequestration. Northeast Nebraska was historically tallgrass prairie but has now been predominantly converted to cropland. Utilizing the National Land Cover Database (NLCD) change over the past two decades, this study observed the amount of grassland loss in Northeast Nebraska. Focusing on the counties of Pierce, Wayne, Madison, Stanton, and Cuming from 2001 to 2020, results show that almost 55,000 acres of grasslands were lost in the five counties during this time. Seeing this, steps should be considered to ensure that the tallgrass prairie of Northeast Nebraska is not degraded further.

Spatial Distribution of Suicide and Behavioral Health Services in Nebraska

Hannah Callahan

Faculty Sponsor: Joel Helmer

Suicide is a rapidly growing public health crisis in America. In Nebraska, suicide is the leading cause of death for children ages 10-14 and the second leading cause of death for ages 10-34 – well above the



national average. Using data from the Nebraska Department of Health and Human Services, this study focuses on the suicide rate per county in 2016 and how it relates to the overall population. With GIS, this research visualizes the distribution of behavioral health services across Nebraska and determines the ratio of providers per 1,000 Nebraskans by county. Results show a severe lack of behavioral health providers across 88 of Nebraska's 93 counties. Many rural Nebraskans must travel significant distances for behavioral healthcare. This research is helpful for accurately determining where new public behavioral health services could be established.

Locations and Attendance of Historic, Recreational, and Entertainment Sites in Nebraska

Emily Otten

Faculty Sponsor: Joel Helmer

For years, Nebraska consistently ranked as one of the least visited states. After the launch of "Honestly, it's not for everyone" campaign, tourism and revenue from spending in Nebraska is growing steadily. Examining data from the Nebraska Tourism Commission, attendance was mapped at attractions taken annually from 2007-2018. Attractions sites in this data include but are not limited to; recreational areas, parks, museums, galleries, and performance centers. Examining geographic locations paired with the number of attendees sites are receiving gives insight into understanding the interest in historical and attraction sites across Nebraska. As tourism in Nebraska grows, it is important to see spatially where we can refine or locate our efforts.

Negative Impact of Lionfish on the Belize Barrier Reef Reserve System

Grace Soenksen

Faculty Sponsor: Joel Helmer

The Lionfish (*Pterois*) is a carnivorous fish native to the Indo-Pacific oceans, but in recent years has invaded marine ecosystems in the Atlantic, Gulf of Mexico, and the Caribbean. This research focuses on the presence of lionfish along the Belize Barrier Reef Reserve System (BBRRS) by utilizing data from the Tobacco Caye Marine Station. First introduced off the coast of Florida in the 1980s, the highly-aggressive species has spread rapidly over recent decades, resulting in a decline of reef ecosystem health across the Atlantic and Caribbean. Since there are no natural predators of lionfish in the Caribbean, human efforts to eradicate this invasive species are key in sustaining reef health. By mapping the distribution of lionfish, conservationists can better understand where efforts are most needed, and the impact these fish can have on a reef patch. Further data collection and research could provide useful information for control and eradication efforts.

The Effects of Warm & Cool Colors on Emotions

Gabrielle Krutsinger

Faculty Sponsor: Sara Brady

Colors can evoke different emotions and affect how an individual perceives pictures. Previous research on colors and emotions suggests that warm colors are found to be more stimulating than cool colors (de Villemor-Amaral & Yazigi, 2022). Furthermore, warm colors, particularly red, are more likely to elicit higher emotions of arousal, such as anger (Leichsenring, 2004; Wilms & Oberfeld, 2018). This study aims to explore if warm and cool colors evoke different types of emotions, particularly low and high arousal emotions. Using a within-subjects design, participants viewed randomly assigned warm, cool, and gray-colored pictures. While viewing each picture, they were asked to record their emotional responses using a modified Affect Grid (Russell et al., 1989). Two repeated measures ANOVAs were conducted to determine if warm and cool colors elicit different emotions using the scores from the grid. Results and implications of the study will be discussed.



Poster Session D

Monday April 24, 2023

6:00-7:00p

Dunklau Lobby

The Effects of Reward Systems in Athletics

Christopher Shelton

Faculty Sponsor: Nolan Harms

Athletes of all ages have a drive to be competitive. Many of these athletes also strive to enjoy their sport while performing. One factor in an athlete's willingness to compete and enjoy playing sports is the reward. Reward systems in athletics have been a controversial topic over the past 30 years. Parents of young athletes have been the leaders in this uproar, deciding if it is best for young athletes to receive participation rewards or not. Researchers have found that people like to feel appreciated for their efforts; however, some studies say there is a larger feeling of accomplishment and competitive drive within athletes when there is a reward to compete for.

A Time Series Analysis of Nebraska's Rainwater Basin and Wetlands in Seward County, NE

Psalm Richters

Faculty Sponsor: Joel Helmer

The Rainwater Basin and its wetlands are a crucial ecosystem in Nebraska that has declined throughout the years. Outdoor Nebraska states that wetlands filter groundwater and provide 95% of Nebraska's clean drinking water. The Rainwater Basin provides nesting grounds for 8.6 million migrating birds according to the Rainwater Basin Joint Venture. This series of maps examines the differences between Nebraska's Rainwater Basin and its wetlands in Seward County, NE over a 15-year period by using data collected from the U.S. Fish and Wildlife Service and NebraskaMap. This research shows the size and location of the Rainwater Basin and the wetlands from 2007 to 2022. This research also examines the acreage of wetlands in Seward County, Ne from 2007 to 2022. By examining these results we can monitor change within the Rainwater Basin wetlands to help prevent further losses to this important ecosystem.

Spatial Analysis of National Park Visitation in the United States

Charlie Hayden

Faculty Sponsor: Joel Helmer

Does location determine the number of visitors a national park gets in a particular year? National parks are a common theme for outdoor enthusiasts who enjoy spending quality time in mother nature's most beautiful places. It's a source of quality time spent outdoors. This research maps the locations and the annual visitation data of every United States national park. All visitation data is mapped back to 2013, and a distribution of analysis is provided to show the predominant years of visitation within each park. The data variation is found in the NPS national reports database displaying a geographical distribution of each park. This data is meant to show which park has the most visitors and what determines the influx of tourists. Mapping the annual visitation of national parks is important because it analyzes which parks are highly sought after and which aren't.



The Delmar Divide in St. Louis, MO: A Turbulent History and a Hopeful Future

Ellie Jander

Faculty Sponsor: Joel Helmer

Delmar Boulevard runs east and west through St. Louis, Missouri, roughly dividing the city in half, hence the name Delmar Divide. Its defining characteristic is the socioeconomic disparity between the communities to the north and south. Residents in all parts of the area continue to face repercussions of St. Louis's history of segregation and redlining. Using data from the United States Census Bureau American Community Survey, this research illustrates the comparatively high African American population and low socioeconomic status of the census tracts north of the Divide. The United States Crime Index data from Esri displays the differences in crime rates throughout the city. The 1937 Home Owners' Loan Corporation Neighborhood Redlining Grade provides a visual of the city's history of segregation. Understanding why, where, and to what extent racial disparity exists in St. Louis will enable residents to work toward positive changes in their city.

Coral Bleaching on the Mesoamerican Barrier Reef

Justin Otten

Faculty Sponsor: Joel Helmer

Coral bleaching is a natural phenomena affecting marine ecosystems in tropical oceans. Due to ocean acidification and rising water temperatures, coral bleaching has been rapidly increasing over the past thirty years. Coral bleaching is the act of Zooxanthellae (*Zooxanthella nutricula*), a symbiotic algae, being expelled from the coral's polyps, leaving the coral unprotected and more susceptible to disease. This study uses geospatial data to observe the effects and occurrences of it specifically on the Mesoamerican Barrier Reef. Data was collected by Tobacco Caye Marine Station in Belize. The data collected includes location, bleaching and disease severity, water temperature and depth, as well as coral type and species. The findings of this study provides insights into the current state of the Mesoamerican Barrier Reef and inform conservation strategies to protect this valuable ecosystem.

Effects of Cannabis on Athletic Performance

Carlos Benavides

Faculty Sponsor: Nolan Harms

Cannabis has been a growing topic in today's world ever since the legalization of recreational use was passed in 2012. Tetrahydrocannabinol (THC) is the main ingredient in cannabis which leads to psychoactive effects on the body. We know that marijuana has its medical benefits for conditions such as chronic pain, depression, anxiety and many others. These conditions may occur in athletes from their respective sport. With this, how does it affect the performance they put out on the field? Although these athletes may not play under the influence they still see some benefit in consuming this drug. Many professional athletes have opened up about their use of cannabis and it has been made into a reason for research.

"FORE, Right!": More Golf in Nebraska

Taylor Johnson

Faculty Sponsor: Joel Helmer

In the United States, 25.6 million people played golf in 2022. Expanding the game of golf and making it more accessible to more people is important in the expansion of the game, especially for the younger generation. Gathering information from the Nebraska Golf Association, this information will help figure out where in Nebraska we need to either add a new nine or eighteen-hole golf course or expand on one that



already exists. Using data from the Nebraska Golf Association on the golf courses that already exist, current and estimated population, and more, will help figure out where in Nebraska needs to add or expand on new golf courses. This research shows where in Nebraska we need to add or expand on golf course and help further introduce the game to people that don't have regular access to it.



Oral Session A1

Monday April 24, 2023

Dunklau 142

Understanding King Manasseh: A Commentary on 2 Chronicles 33

Tyler Linneman

2:30-2:50p

Faculty Sponsor: John Hink

Might evil king Manasseh really be good king Manasseh? This king who shed very much innocent blood (2 Kings 21:16), is also the same king who humbled himself greatly before God (2 Chronicles 33:12). Both remembered as the most wicked king in Judah's history and remembered for his dramatic redemption story in 2 Chronicles, King Manasseh both set up idols and cast false gods out of the Temple, practiced witchcraft and commanded the worship of Yahweh. In sin, Manasseh is second to none. But his redemption shows that despite all of that, perhaps he really is good king Manasseh.

Bearing with One Another in Love: Forgiveness and Reconciliation in the Church

Esther Langness

2:50-3:10p

Faculty Sponsor: John Hink

Forgiveness and reconciliation are central concepts in Christianity. The Church is called to forgive, be reconciled, and live in unity with one another, yet conflict and disunity abound within congregations and across the entire Church. This project explores the common societal perspective on forgiveness and contrasts it with Biblical forgiveness in order to present practical ways for individuals within the Church to better live out the lives of forgiveness. This would enable them to live in unity with one another and bear with each other in Christian love.

Selecting Church Choral Music: A Guide

Renata Peperkorn

3:10-3:30p

Faculty Sponsor: John Hink

Selecting church choral music is a daunting task, especially for those new to the field. Picking a choral piece appropriate for the Scripture passages, hymns, liturgy, and time of year can be overwhelming. Even more so when considering the practical resources, such as choir members, instrumentalists, and their skill level. This project aims provide some structure for this information so that the pure message of the Gospel is free to shine through the beautiful music. It provides these organizational structures to help musicians produce the best music they can with the resources they have.



Oral Session A2

Monday April 24, 2023

Dunklau 144

Black-Capped Chickadees and West Nile Virus: A Comeback Story

Camden Sesna

2:30-2:45p

Faculty Sponsor: Joel Helmer

In the early 2000's, West Nile Virus (WNV) spread like wildfire across the United States, affecting many different species of wildlife. The avian family was heavily impacted by WNV with the Black-Capped Chickadee (*Poecile atricapillus*) being especially devastated. This research examines the population trends of the Black-Capped Chickadee through the use of publicly available banding data from the United States Geological Survey (USGS). Examining the data from the Great Lakes and Northeast regions, areas of an abundant population of Black-Capped Chickadees, this research spatially visualizes the changes in population before, during, and after WNV. This data determines the rate at which the population of Black-Capped Chickadees has been changing within specified regions of the northern United States over the past two decades.

The Geography of Recruiting: Great Plains Athletic Conference Football Roster Distribution, 2022

Jaxson Kany and Daylan Russell

2:45-3:00p

Faculty Sponsor: Joel Helmer

Recruiting is an essential aspect of building a successful collegiate football program. Each program tends to have its own "hot spots," where they focus their recruiting efforts, often related to coaching connections with certain high schools. This research examines the spatial distribution of Great Plains Athletic Conference (GPAC) football rosters for the 2022-23 academic year. The roster data was procured from the websites of each school, imported into Excel, and then mapped with ArcGIS Pro. This research provides the Concordia University, Nebraska football coaching staff with a visual tool to analyze where competitor programs are and are not recruiting. This information can assist in recruiting decision making, including investments in time, resources, and personnel.

Victimology: An Overview

Madison Ellis

3:00-3:15p

Faculty Sponsor: Kathy Miller

Victimology is a field study that focuses on the victim's role in criminal events. This concept became prevalent in the 1940s after many criminologists looked more in-depth into victim-offender relationships and prevention was then introduced in the 1970s. This paper provides an overview of the main concepts within victimology, the main types of victimization like sexual assault and abuse, the impact of victimization on the individual, and what is being done to help the victim within and outside of the criminal justice system. Drawing off of many research articles this paper brings light to the challenges within victimization, and brings more awareness to the need for continuous research to support the individuals who have been victimized.

Perceived Effort and Team Success

Victoria Perry

3:15-3:30p

Faculty Sponsor: Sara Brady

Participation effort, as well as ability and perceptions of task difficulty by an individual, can play a role in sport-related behaviors (Rejeski and Lowe, 1980). However, to what extent can effort improve the success rates of individuals or teams? This study sought to determine if perceptions of increased individual and team efforts will predict a better ranking of GPAC cheer and dance teams. In doing so, I conducted a study using 17 GPAC cheer and dance teams, but only 11 teams had a sufficient sample size for the analysis. Participants completed a brief survey using a simplified version of the Borg scale of perceived exertion (Borg, 1998). The responses from the survey were correlated with the results of the GPAC competition. The results showed a trend of individual effort being positively correlated with team effort. However, team ranks were not correlated with the team or individual effort.



Oral Session B1

Monday April 24, 2023

Dunklau 142

Fundamental Delusions

Brooke Lange

3:40-4:00p

Faculty Sponsor: John Hink

How we think about our current reality can have a significant impact on how we choose to live our lives. In order to thrive, I argue that people occasionally need to engage in “fundamental delusions” in order to achieve well being. “Fundamental delusions” are the idea that there are things we need to believe even if they are not directly in front of us. In this capstone, I explore fundamental delusions in the context of how we think about ourselves, how we think about other people, and how we think about adverse experiences. This study will aim to show that having fundamental delusions can point to fundamental truths: we are born with value, we need forgiveness, and that our adverse experiences point us to the fact that we need something greater.

Rediscovering Two Kingdom Theology in America

Owen Dawson

4:00-4:20p

Faculty Sponsor: John Hink

American Christianity is increasingly facing a crisis of identity. The tendency to combine our civil and heavenly citizenships results in a political agenda with a misplaced religious conviction to support it, further leading to a “theology” of politics in which our idea of what America should be is a god, and any opponents—even well meaning Christians—are evil. This project examines the current state of American Christian politics, how it arrived here, and how the Church in America can better educate its members in light of Luther’s two kingdoms doctrine to live according to God’s will.

The Relational Nature of Truth

Lauren Dawson

4:20-4:40p

Faculty Sponsor: John Hink

Truth, or reality, exists. Every human being has searched for and interacted with Truth. However, though belief in the existence of Truth is universal, the relationships that different people have with it are not. Some people revere Truth, some despise it, some ignore it, and the list goes on. This project is a work of fiction centered on the theme of Truth. A philosophically diverse cast of characters interacts with each other and the world they live in, raising and answering questions about reality, reverence, and freedom. This project is intended to cause readers to examine their own relationship with Truth and how it plays out in their life.



Oral Session B2

Monday April 24, 2023

Dunklau 144

Extroversion and Social Media

Madison Ellis and Julia Phillips

3:40-3:55p

Faculty Sponsor: Sara Brady

As a prevalent part of modern society, social media can predict well-being. Among the Big Five personality factors, extroversion has been established as one of the most predictive indicators of different types of social networking service activities (Wang & Zhang, 2018). People high in extroversion may relate well with others, making it a sole indicator of higher activity in social networking platforms. This study aims to determine whether an individual's level of extroversion is directly correlated with how long they are on social media on a weekly basis. Participants were asked to complete the Extraversion Questionnaire (IPIP-NEO) followed by a social media questionnaire as well as demographic questions pertaining to age, gender, and academic year. Results and implications will be discussed.

Not All Those That Wander Are Lost

Nathan Kieser

3:55-4:10p

Faculty Sponsor: Joel Helmer

One of the most difficult parts of backpacking is the preparation and planning before starting the trail. This is what keeps many people from backpacking because of the amount of planning and fear of the unknown. For those wanting to backpack the Knobstone Trail, this project provides the information they need to fully prepare for their exciting adventure. This project used ArcGIS Pro and ArcGIS Online, mapping the entirety of the trail, elevation, and mileage. The Indiana Department of Natural Resources provided the data for the maps and mile markers. This project provides a guide on how to hike the Knobstone Trail each day for intermediate backpackers, from beginning to end. Trail guides are very useful when planning a backpacking trip and make it significantly easier for those who are unfamiliar with the trail.

The Effect of Automated Audio on Reading Comprehension

Matthew Gebauer

4:10-4:25p

Faculty Sponsor: Sara Brady

The use of reading aids (text being read aloud) has grown in the digital age, making longer reading easier for people who struggle with reading. Previous research has shown that reading aids boost performance on tests of reading comprehension. However, the effects of the type of audio used for the aid have not been thoroughly examined. The purpose of this research is to explore whether the use of a computer-generated audio reading aid impacts reading comprehension differently than a human voice. Students currently attending Concordia University, Nebraska completed two reading comprehension tests, one with a human voice as the reading aid and the other with a computer-generated voice. Multiple paired t-tests were conducted to compare the effectiveness of the two different reading aids. The results of this study might help direct further research into the effectiveness of computer-generated voices and whether they should be considered for use as reading aids.



Is Luther Right about Aristotle? A Study of Virtue Ethics and Lutheranism's Compatability

Tyler Linneman

4:25-4:40p

Faculty Sponsor: David Coe

What has Athens to do with Jerusalem? This famous rhetorical question by 2nd century theologian Tertullian is the matter taken up in this paper. Scholastic theologians such as Thomas Aquinas held Aristotle and his ethics in high regard, but Martin Luther famously derided "the whole Aristotle is to theology as darkness is to light." This paper will briefly examine virtue ethics by itself, then turning to Aquinas' question and answer style to examine virtue ethics' implications on Lutheran theology, before finally examining a few key virtues for the Lutheran. This will show the place of virtue ethics in Lutheranism.



Oral Session B3

Monday April 24, 2023

Dunklau 143

Modeling an Epidemic with Both Quarantine and Vaccination

Ben Moll

3:40-3:55p

Faculty Sponsor: Brian Albright

In this project, I used a Susceptible, Infected, Removed (SIR) model to model the spread of a disease through a community. The model relies on a set of assumptions that simplify the situation which will be discussed. On top of the basic model, I have added a quarantine rate, a vaccination rate, and a variable population size. The effects of each variable were analyzed graphically and conclusions were made based on the graphs and numbers generated.

Native vs Invasive: Spatial Analysis of Trout Populations in Montana's Clark Fork River

Wyatt Loga

3:55-4:10p

Faculty Sponsor: Joel Helmer

Invasive species cost the United States around \$21 billion per year. Whether these species were transported from around the world or a few states away, they can have massive impacts on the native ecosystem. This is no different when it comes to trout, including in the Clark Fork River. Bull trout (*Salvelinus confluentus*) are a native species of char that has been threatened by the introduction of brook trout (*Salvelinus fontinalis*) in the region, which has been transplanted from the eastern United States. Using data from the state of Montana and its wildlife managers, I have created a spatial analysis of these two fish populations in the Clark Fork River. By mapping the preferred river locations for both species, I have shown where wildlife management could target to restore the native trout populations. If steps are not taken, invasive trout could continue to hinder native populations.

Social Science Teachers Income in the United States

Anthony Perez

4:10-4:25p

Faculty Sponsor: Joel Helmer

The stereotype of teachers not being able to make a living has been present for many years. As a future teacher and for potential other future teachers, I wanted to find this out for myself through the use of data rather than word of mouth. What this spatial data examines is the annual income and employment for social science teachers via state and compares that to the common housing and living expenses for people 20-24 years of age. This data came from the U.S. Bureau Labor of Statistics. The results of this study is able to give a stronger perspective of the financial situation and expenses for new incoming teachers across the United States.



Oral Session B4

Monday April 24, 2023

Dunklau 151

Anything You Can Do, Fly Can Do Better: Differences in Exercise Adaptation Between Male and Female Fruit Flies

Rachel Battershell, Jacob Gosnell, and Caitlin Davis

3:40-4:00p

Faculty Sponsor: Kyle Johnson

Males and females respond differently to exercise. The mechanisms behind this differential response, however, have been difficult to elucidate. Sestrin has been established as a mediator of exercise benefits, and is expressed in humans and in fruit flies. Here, we put male and female flies on the same protocol, then measured changes in performance and sestrin expression. We used sestrin deficient and overexpressing flies as a floor and ceiling of performance. The role of sestrin in sex-differentiated responses will be further elucidated in this study.

Birds vs. Blades: Avian Mortality Near a Wind Turbine in Seward County

Haley Compton

4:00-4:20p

Faculty Sponsor: Kyle Johnson

The increase in renewable energy has led to a greater number of wind turbines in use. This increase has led to many studies on the relationship between turbines and bird mortality rates. This study seeks to find the correlation between the presence of an isolated wind turbine and its effect on the surrounding bird population. Using transects, the number of deceased birds was counted around a single turbine for a period of two weeks. This study ultimately seeks to inform future turbine builders on the best placement to decrease bird mortality rates within the area.

Flying High on Ascorbic Acid: The Effects of Antioxidants on Drosophila Exercise

Creighton Taylor

4:20-4:40p

Faculty Sponsor: Kyle Johnson

Vitamin C is an antioxidant that deactivates free radicals that cause damage to cells. After intense exercise, Vitamin C has shown signs of increased muscle health and pain reduction. In this study, we use fruit flies to provide results regarding the effects of antioxidants on exercise. Our study took male flies and divided them amongst different tubes with varying amounts of vitamin C. Exercise and lifespan was observed and analyzed. We predict that the low antioxidant tubes will have no effects or positive effects, whereas the tubes with an excessive amount of vitamin C will create negative effects and decrease the exercise efficiency in the flies.



Oral Session C1

Monday April 24, 2023

Dunklau 142

Underhall: A Fictional Exploration of Idolatry in the Modern World

Jonathan Landrey

4:50-5:10p

Faculty Sponsor: John Hink

Deep underground stands a great tower, inhabited by every idol humanity has made and worshiped. With the guidance of Coifi, an ancient Northumbrian priest, Martin, an ordinary young urbanite, must ascend the tower and become familiar with his own idols and the subtle ways they tempt him to worship them. Underhall explores the nature of idolatry in modern life, the futility of the human will, the fickle nature of our hearts, and the overwhelming presence of grace, even in our lowest moments.

Teaching in a Manner Worthy of the Calling to Which We Have Been Called: Lutheran Liberal Arts Education

Victoria Ritzma

5:10-5:30p

Faculty Sponsor: John Hink

In Ephesians 4:1, Paul encourages the Christians in Ephesus to “walk in a manner worthy of the calling to which you have been called.” In accordance with this encouragement, this project examines how we as Lutheran educators can serve our Lord and our students in a manner worthy of the calling God has graciously given us. Specifically, this project considers the implications of Lutheran doctrine for our educational philosophy, our pedagogical methods, and our content and curricular choices.

Redeeming Destruction: Derision in Art

Nicole Rodriguez

5:30-5:50p

Faculty Sponsor: John Hink

The concept of derision, laughter at an object of reverence for the purpose of bringing it down from its position of high regard, can hold two motives. Throughout history, derision can either attack the foundations of human motivation and harm human purpose by doing so, or it can critique an object which has been improperly upheld, which may or may not lead to a different object of reverence growing in the place of the displaced object. This project explores the morality involved in derision and how the two types of derision relate to human motivation.



Oral Session C2

Monday April 24, 2023

Dunklau 144

Engagement with Religion and Belief in a Just World

Brooke Lange

4:50-5:05p

Faculty Sponsor: Sara Brady

Religion can have a significant impact on people's views about justice. Certain types of religious groups have been found to be correlated with general beliefs about justice (Wenzel et al. 2017). Using a correlational design, this study researched the relationship between religious practices and beliefs and personal and general belief in a just world. This study aimed to find whether religious practices and beliefs were correlated with personal or general views of justice. Results will be reported.

Unspoken: Conversations in Body Image

Sabrina Reed

5:05-5:20p

Faculty Sponsor: Sara Brady

Phrases such as, "Birds of a feather flock together," have implicitly promoted the concept of social influence since long before the availability of empirical evidence. Emily Falk, from the University of Pennsylvania, has studied how social networking and peer influence can impact decision making, risk taking, and more. She found that as teens learn to navigate their world socially, their reward system plays a monumental role (Falk, 2021). The psychological payoff of reward system activation, such as through receiving a compliment, can further influence both implicit and explicit thoughts, behaviors, and attitudes. This analysis seeks the impact of these social reward influences on young adults' body image. Therefore, if conversations with peers negatively discuss body image, they will have a direct impact on body image attitudes. Through a self-reported study of 91 people aged 19 to over 50 years old, participants answered questions about four to five different subscales of body image. Analysis of the data will hopefully show correlations about how these conversations impact multiple subscales of body image.

The Collection and Analysis of Weather Variables on Solar Energy Generation

Ben Moll

5:20-5:50p

Faculty Sponsor: Robert Hermann

This project investigates correlations among data taken from the University's solar array and the new weather station on campus. In particular, it analyzes the relationship between solar radiance, temperature, pressure, and output energy from the array. In addition, the new weather station and its capabilities will be highlighted and its implication for future use will be discussed. Finally, I will review the software that I created to collect and display data which can be used in the Dunklau Center.



Oral Session C3

Monday April 24, 2023

Dunklau 143

Faithful Science

Jacob Gosnell

4:50-5:05p

Faculty Sponsor: Kyle Johnson

For centuries, science and the Christian faith have been perceived to be at odds with one another. Some have suggested that science has tried to disprove the existence of God, while others have argued that religion has inhibited critical thinking and hindered scientific progress. The Christian calling to live differently, God-given morality, and the greatness of God and His truth all demonstrate that in reality, the two are not antagonistic. Science and faith are both means to understand God's world and our purpose in it. This is my personal philosophy regarding this collision.

Snow Geese: A Historic Migration

Joel Rathe

5:05-5:20p

Faculty Sponsor: Joel Helmer

Since 1920, the United States Geological Survey (USGS) has been banding different species of birds. Snow and blue geese (*Chen caerulescens*) are one of these many species that are banded. Migrating in flocks by the thousands they are a site to see, especially in the spring season. Biologists band snow geese to learn about areas such as their age, sex, and where they are recovered in relation to where they were banded. This presentation contains data for snow geese from the USGS website to plot where these birds were recovered or harvested by hunters in the state of Nebraska. This data has been used to create maps using ArcGIS software that help show concentrations of snow geese within Nebraska. Biologists and outdoorsmen can use this map data to show where snow geese are more precisely harvested, and the flyways they follow.

Worldbuilding a Sci-Fi Novel

Naomi Postier

5:20-5:35p

Faculty Sponsor: Gabe Haley

This presentation is a senior Capstone presentation covering the book I wrote, *The Mindworlders*. The novel is set on a planet which orbits a white dwarf star, which means the people essentially live in darkness. The people are affected by certain minerals present on the planet, giving those with certain genetics. The presentation looks at the methods used for world-building in my novel.

How Applied Voltage Affects the Foraging Behavior of *Physarum polycephalum*

Malia Rolf

5:35-5:50p

Faculty Sponsor: Connie Callahan

The slime mold *Physarum polycephalum* is a model organism used to study how aneural organisms navigate complex environments. Previous studies have shown that free calcium ion concentrations in the cell regulate contraction and relaxation of the foraging front. If ion concentrations can be externally controlled, the foraging behavior of *Physarum* may be affected. In this study, we assessed this possibility by applying voltage to an agar substrate containing colonized *Physarum*. The results of this study may contribute to a better understanding of the foraging mechanism in *Physarum polycephalum*.



Oral Session D1

Monday April 24, 2023

Dunklau 142

Controversy in the Tetons: The Establishment and Protection of Grand Teton National Park

Logan French

6:00-6:20p

Faculty Sponsor: John Hink

The fight to establish Grand Teton National park and then to expand the park's boundaries was a complex and arduous debate that would span decades of the early twentieth century. It would ultimately take the work of a few significant and dedicated individuals. Horace Albright, the secretary of the Interior who never dropped the fight to expand the park. John D. Rockefeller Jr. who would use his wealth and power to protect the land he fell in love with on family vacations. Lastly, it would take President Franklin D. Roosevelt and his Executive power to secure the Tetons while WWII raged around the world. While it is a legal fight within our nation's history of conservation, it includes the drama and exaggerations one may not expect from Wyoming cattlemen. One such exaggeration was likening the establishment of the park to a similar action as Pearl Harbor which had happened two years earlier. Ultimately, the park would be established and extended to the boundaries we know today, protecting some of the most stunning mountains in our nation.

The Psalm 8 Project - A VBS Curriculum

Julia Witt

6:20-6:40p

Faculty Sponsor: John Hink

The Psalm 8 Project is a free online VBS curriculum that aims to teach kids about the majesty of our Lord through science and Scripture. It has been designed specifically with small and under-resourced congregations in mind, so the expected costs are \$500 or less, and the programming is very flexible. Each day, kids will get to learn more about our Savior and Creator through music, Bible study, experiments, and more! In the process, they will also learn how science is a gift of God that can be used to study His creation and to care for it, just as we are called to do in Psalm 8. The Psalm 8 Project is a fulfillment of the capstone requirement for the Luke Scholars Program.

Mental Health in Clergy

Nathan Birtell

6:40-7:00p

Faculty Sponsor: John Hink

Pastors are commonly known as the "shepherd" of God's flock. But who shepherds the pastor? This project examines the many mental issues that pastors face, such as burnout, trauma, and compassion fatigue, as well as other illnesses while trying to lead congregations. These issues are amplified even further when faced with a variety of barriers that keep them from getting help. Thankfully, an abundance of resources are available to help pastors fulfill the call which God has assigned to them.



Oral Session D2

Monday April 24, 2023

Dunklau 144

S.I.R Mathematical Model with Multiple Strains

Zachary Zohner

6:00-6:15p

Faculty Sponsor: Brian Albright

The model is a Discrete Dynamical System. It is a simple S.I.R. model that describes how the level of Susceptibles (people who haven't gotten a sickness yet), Infectives (people who are currently infected with a sickness), and Recovered (people who have recovered from a sickness and can no longer get it) change over time. This model extends from the basic one from the textbook by considering a hypothetical scenario. It asks, what if when someone recovers from an illness, there is a chance of them getting the next strain of the original illness?

Salt and Light: Geographic Distribution of Concordia University Nebraska Alumni

Olivia Leising

6:15-6:30p

Faculty Sponsor: Joel Helmer

You are the light of the world. A city set on a hill cannot be hidden...In the same way, let your light shine before others, so that they may see your good works and give glory to your Father who is in Heaven" (Matthew 5:14,16). As a Lutheran, Christian university, Concordia is called to share the light of Christ. However, Christ's light does not remain sequestered in Seward, Nebraska. It is carried into the world by the lives and careers of Concordia's alumni. Utilizing ArcGIS software and data supplied by the Office of Institutional Advancement and Alumni Relations, this research illustrates the distribution of over 14,000 alumni from the classes of 1934-2022 who are serving and leading in classrooms, congregations, communities, businesses, and offices around the world. Furthermore, this research demonstrates the impact of Concordia's ongoing mission to spread the light of Christ to the world.

Yahtzee: The Microsoft Excel Algorithm

Daylan Russell

6:30-6:45p

Faculty Sponsor: Brian Albright

Yahtzee is another common game of chance played in many households, some of which with differing rules and strategies for it. The numbers and data obtained for this research was obtained from the Yahtzee rulebook, with a minor adjustment of only one 5 dice roll per attempt instead of the typical two. Players will come up with the formulas for each different outcome, given that each number of the dice has an equal chance of happening (there are 5 dice). The players will be given the "scores" that each outcome receives and will have need to decide whether they want to use this via the many different Excel functions and formulas given. Players will also have to solve for the possible probabilities that each outcome has. Some of the more major parts of this research is the actual "rolling" of the dice, the dice number frequency, the outcome and it's corresponding score, the best score for the round, and then finally the probabilities of each score. The reasoning behind this research is that as someone who grew up playing Yahtzee and rarely ever getting an actual Yahtzee, I wanted to find out the actual probability of obtaining a Yahtzee, Full House, or any of the other outcomes and since I played the one roll rule growing up, that is what I wanted to show in my research.