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What is JUROS: In Brief? JUROS is the Journal for Undergraduate Research at Ohio State. It is an online, undergraduate research publication that accepts manuscripts from Ohio State undergraduates in any area of study. Submission to JUROS is electronic, and requires a faculty approval form and an author license agreement form. There is no submission fee, authors retain rights to their work, and each manuscript is reviewed in a double-blind peer review process before being accepted and published on a rolling basis on the JUROS website. This publication, JUROS: In Brief, is made up of the abstracts from all published submissions from Volumes 5 and 6 of JUROS. These submissions came from the 2014-2016 academic years. It is designed to be a highlight publication to demonstrate the nature of our interdisciplinary journal and encourage more undergraduate researchers to submit in the future! JUROS is edited, reviewed and published by Ohio State undergraduate students. In conjunction with research manuscripts, JUROS also publishes undergraduate research feature articles and abstracts. All past and current volumes of JUROS can be viewed in-full on our website, JUROS.osu.edu, and you can request more information by reaching out to us via email at JUROS@osu.edu.

Letter from the Undergraduate Research Office

On behalf of the Undergraduate Research Office and the entire Ohio State University community, I would like to commend the researchers, authors, editors, photographers, and designers for their outstanding contributions to this issue of JUROS. The articles included within this JUROS issue span topics such as anti-tumor activity of silvestrol on the Epstein-Barr virus to exploration as to why states adopt environmental tax incentives. I would like to like to thank Elizabeth Winter, Bobby Burkhart, and Amogha Krishna, and their many collaborators and friends for creating this wonderful publication.

With best wishes,

Lorraine S. Wallace
Director of the Undergraduate Research Office

Letter from the Editor

Dear Reader,

We are honored to present to you JUROS: In Brief, an abbreviated, hard-copy review of the Journal of Undergraduate Research at Ohio State (JUROS).

The creation of JUROS has been an arduous process and a tremendous team effort. I am so thankful to everyone that has helped our journal come to fruition. Our journal is student-run and our staff is made up entirely of undergraduate researchers at Ohio State. The process of soliciting staff members, submissions, and completing the editing process is an enormous task to take on in addition to our school work and personal commitments. Fortunately, our small staff has worked hard and we have a wonderful partner, the Undergraduate Research Office (URO). Dr. Lorraine Silver Wallace and Jackie Lipphardt, our main URO correspondents and advisors, invested generous amounts of time and finances towards JUROS and JUROS: In Brief. We are endlessly appreciative of them.

On behalf of myself and the editorial board, we must thank everyone, including all the undergraduates, faculty members, and URO staff, who supported JUROS and helped us reach this success. We list many of them in our “Special Thanks” section, and want to express our heartfelt gratitude for their support. Lastly, we must thank you, our readers. The mission of JUROS is simple: Docendo discimus, or, “We learn by teaching.” With JUROS, we hope to create an elevated level of scholarly discourse that can expose ourselves and our audience to the review and publication process of a formal, academic journal. We hope that the publication of JUROS (online) and JUROS: In Brief (in print) will make undergraduate research at OSU more visible. We want to inspire interest in conducting undergraduate research and in publishing undergraduate research. I hope that you will enjoy the variety of undergraduate projects that we have collected here!

Sincerely,

Elizabeth Winter
JUROS Editor-in-Chief
A tool for diagnosing and staging synucleinopathies

Claire Erickson
Advisor: Dr. Jeffrey Kuret, Department of Molecular Biochemistry and Pharmacology, The Ohio State University

Synucleinopathies are neurodegenerative diseases characterized by the abnormal accumulation of α-synuclein protein aggregates in the brain. Parkinson's Disease, the leading movement disorder and synucleinopathy, encompasses roughly 9 million people worldwide and costs in the United States alone total $25 billion yearly (Parkinson's Disease Foundation, 2016). However, there are no standard diagnostic tests for a biological marker of Parkinson’s, such as a blood test or imaging scan. Difficulty in designing an imaging agent stems from the challenges of crossing the blood brain barrier, binding selectively to authentic lesions, and maintaining a low risk for human patients. This study aims to create an imaging agent that can detect and stage α-synuclein dispersion in vivo via positron emission tomography (PET). PET scans are imaging tests that convey how tissues/organs are functioning by utilizing a radioactive tracer, which will collect in areas with a higher concentration of activity and show up as bright spots on scans. In this study, a radioactive tag will be added to a molecule designed to bind to α-synuclein, thus revealing concentrated lesions in diseased brains as bright spots on scans. Using immunohistochemical methods, human tissue was stained using a commercially available polyclonal anti-α-synuclein antibody and imaged using a confocal microscope. Tissue stained with our small molecules tagged with a fluorescent ligand recapitulated the images of the positive control, validating that our molecule bound to the target. Preliminary data have provided promising results of the development of an imaging agent that binds authentically to α-synuclein and has the characteristics necessary to pass the blood brain barrier while remaining safe for oral consumption. To continue verification, further testing will be done against Tau and β-amyloid protein to ensure the molecule’s selectivity for α-synuclein. Successful completion of this project will provide an objective diagnostic tool for physicians and patients. This tool will be critical in earlier diagnosis and staging of disease, such as Parkinson’s and Alzheimer’s disease and other dementias, aiding patients and healthcare providers towards better medical treatment and disease outcome.

Subsidized energy and its effect on energy consumption in Saudi Arabia

Ezra Baker
Advisor: Dr. Ida Mirzaie, Department of Economics, The Ohio State University

As the top exporter of crude oil, the Kingdom of Saudi Arabia (KSA) accounts for almost a fifth of global oil exports. Large export earnings enable Saudi Arabia to keep domestic energy prices well below international benchmarks via subsidies. In 2012, the domestic price of gasoline, at $0.16 per liter, was eight times lower, and the domestic price of diesel, at $0.07 per liter, was eighteen times lower than the world averages. Such large subsidies on domestic energy prices are often criticized for resulting in domestic overconsumption of energy. However, the extent to which subsidized prices affect energy consumption in Saudi Arabia is debatable and difficult to estimate. Thus, it is also unclear how much energy consumption may change in the event of a subsidy reform, as is now underway in Saudi Arabia. The purpose of this study is to estimate the price elasticity of demand for refined petroleum products in Saudi Arabia, in order to quantify potential benefits of subsidy reform. Using data for the period 1990-2010 reported by the Saudi Arabian Monetary Agency (SAMA), I use ordinary least squares (OLS) to estimate the price elasticity of demand for refined petroleum products within Saudi Arabia. My model gives a price elasticity of demand of around -0.1, indicating that a 1 percent increase in price is associated with a 0.1 percent decrease in consumption of refined petroleum products. According to this estimate, the current subsidy reform in Saudi Arabia, which includes raising the price of gasoline by 50 percent, could decrease gasoline consumption by about 5 percent. Further, if Saudi Arabia were to continue to increase the price of gasoline to the average of the other five countries of the Gulf Cooperation Council (Bahrain, Kuwait, Oman, Qatar, and the United Arab Emirates), it could decrease gasoline consumption by almost 10 percent. This finding indicates that the current subsidy reforms in Saudi Arabia may succeed in restraining domestic energy consumption, and that the government should continue to raise prices on refined petroleum products in order to realize greater benefits.
La Spada dell’Islam: the Maghrebian reaction to fascist subversion of the inter-war period

Kaitlyn Rabe

Both academic and popular writers tend to agree that Italy failed in colonization and propaganda abroad—a failure most starkly explained by Italian military actions in Libya. Enough evidence exists, however, to conclude that subversion by the fascist regime helped to spread Mussolini’s “empire” in an unexpected way: by influencing social movements and nationalist regimes during the interwar period in certain Maghrebian countries, namely Tunisia and Egypt. The Tunisian anticolonial movement, for example, is not traditionally viewed as being strictly “fascist” until one considers the covert interactions between Tunisian nationalists and Italy. In this context, it becomes clear that Tunisian elites were taking advantage of the fascist regime, and may have even appropriated aspects of European fascism. Egyptian student groups and governments were, respectively, particularly important in openly appropriating aspects of Italian fascism and cooperating with the regime despite fascist brutalities in Arab countries. In Libya, however, fascism was highly unpopular, and Italian military actions there damaged fascism’s reputation in the Arab world in general. Given the outcomes of Italy’s presence in these three countries, my project answers the following questions: what was fascism, a European movement, doing in the Arab world? Why was it allowed to exist in Tunisia and Egypt but rejected in Libya? And what tangible effects did the influence of fascism have on the regimes of Egypt, Tunisia, and Libya? By using the interference of Italian fascism as a sort of case study, my project demonstrates that the nationalist movements in each respective country were the largest impetus in movements that interacted with European systems and were actually more significant than the Pan-Arab movement. The nationalist movements of the Maghreb, therefore, were neither “pro-Europe” nor “anti-Europe.” Rather, they could utilize aspects of whatever European system seemed most beneficial, which, to Tunisian and Egyptian elites, was fascism.

A practical framework for the scaling of social enterprise across developed and developing economies

Kelsey Rumburg

Social enterprise is an emerging field focusing on the use of entrepreneurship and earned income to run a business with a social focus and mission. While the idea is certainly not new, academic analysis, coursework, and degree programs are a recent development in this interdisciplinary subject. Prominent research in the field currently focuses on the key traits of a social entrepreneur, case studies for specific countries, and the sectors in which social enterprise develops and thrives. However, very little research has been done on social enterprise as it spans different economies. As social enterprises seek to solve major societal issues, such as poverty, poor education, and lack of empowerment, understanding the most effective growth strategy for social enterprise is key in maximizing impact of the organization. This research will focus on the scalability of social enterprise models that transcend both borders and stages in economic development. Through qualitative case study analysis and review of the current commercial and social enterprise scaling literature and methodology, a framework has been developed for designing social enterprises that seek to scale in a way that they can operate in both developed and developing countries. Key findings show that differences do exist in social enterprise development in different economic situations, and that scalability is a matter of leveraging core competencies that provide economic and social value and understanding and adapting the business model as fit. This framework, designed for social enterprise practitioners, has been validated with case study comparison of social enterprises that operate in both economies. This is significant because the social enterprise sector is expected to grow rapidly over the next decades, thus understanding and implementing scale effectively is imperative for continued success of many social enterprises.
The Epstein-Barr virus (EBV) is one of the most common viruses in humans, infecting more than 90% of people worldwide. While most people infected with EBV gain adaptive immunity, immunocompromised patients that are exposed to EBV can end up developing Hodgkin’s lymphoma, non-Hodgkin’s lymphoma, Burkitt’s lymphoma, post-transplant lymphoproliferative disease (EBV-LPD), and nasopharyngeal and gastric carcinoma. Many vaccines and chemo-immunotherapeutic approaches directed against EBV have been studied and developed in clinical trials. None have been successful because they most often lead to either immune suppression, EBV reactivation, or increased risk of lethal infection. The purpose of this study is to identify a vaccine that can deliver direct anti-tumor activity while preserving host-immune surveillance. Silvestrol, a unique agent that is attributed to the inhibition of translation initiation, was tested to see how it interferes with the normal recruitment of mRNA to the eIF4F initiation complex, an important step to the synthesis of pro-survival and pro-growth of proteins. Current progress in the research shows that Silvestrol’s efficacy is dependent on the presence of CD8+ T cells while interferon responsive factors proteins are lost with Silvestrol treatment. Silvestrol’s ability to deplete lymphoblastoid cell lines, possess unique anti-tumor activity, and preserve the host anti-tumor immune function gives it a unique niche in terms of chemotherapeutic medication. This study helps change the future landscape of treatments for patients with EBV-positive malignancies through immune-sparing drugs.

Why do states adopt environmental tax incentives?

In the past few decades there has been an increased interest in energy efficient technologies and renewable forms of energy for power generation. Many U.S. states have adopted various forms of tax incentives to remove cost barriers and to encourage the use of energy efficient technologies and renewable energy. A large literature has examined the effectiveness of these tax incentives; however, this literature has placed little emphasis on the factors associated with adoption of these policies. The purpose of this study is to establish a precursor to the analysis of these types of policies’ effectiveness on the state level: an investigation into the reasons states adopt these tax incentives. Relevant tax incentive data for each of the 50 states was obtained from the Database of State Incentives for Renewables & Efficiency (DSIRE), while information about each state’s adoption factors was obtained from various federal government websites. The relationships between these variables for the 50 states were explored using a cross-sectional regression analysis. The findings reveal that the ideology of a state’s citizenry is associated with having more tax incentives for energy efficiency and renewable energy. In contrast, a state’s energy prices, wealth, and carbon dioxide emissions do not influence the number of these types of incentives adopted. Finally, states with a higher average annual percentage of sunny days adopt a greater number of tax incentives for solar power. The results provide evidence that Democratic-leaning states are more likely to adopt environmental tax incentives. In terms of democratic governance, this suggests that elected officials’ behavior is shaped by the beliefs of the citizens they represent, as well as the environmental factors imposed on the state.
Coming into school at Ohio State, I had every intention of getting my bachelor's degree and going to veterinary school. Half way through my junior year, I realized that my childhood dream of being a vet wasn’t what I wanted anymore. I was inspired by a professor I had in one of my biology classes to consider a career in research. The lecture that day was on a gut bacteria which may be responsible for causing Crohn's disease, which is near to my heart as two of my best friends suffer from it. After meeting with this professor to discuss what a research career would entail, I began looking into possible labs I could join to begin garnering experience. I chose to apply to Zakee Sabree's lab because his work dealt with gut bacteria (in cockroaches, but I figured some gut bacteria was better than none at all!) I started working in his lab March 2014.

Working in the lab was a good experience for me. I learned lots of techniques that were only glanced upon in my microbiology classes, which enabled me to become much more proficient in a laboratory setting. I also learned that I liked the work, which is important as I was starting a new career path. Being in a laboratory also helped me to better my skills in regards to reading research papers. I learned the expectations that come with working in a lab, and that tests and procedures probably aren't going to work the first time around. Failure is okay, and almost expected at some points.

I graduated from The Ohio State University in the spring of 2015 with a Bachelor of Science in Biology. Presently I’m a first year student in the Master of Science in Biomedical Sciences program at the University of Toledo, studying microbiology. I’m working in the lab of Jason F. Huntley PhD, studying bacteria from Lake Erie and trying to determine if there are natural lake microbes with the capability to degrade the toxin which is released by the blue-green bacteria during the summer algae blooms. The skills I learned during my undergraduate research have been most beneficial in my new lab, and allowed me to easily start working on a new project.

Nitrogen fixation is the mechanism of taking atmospheric nitrogen (N2) and transforming it into ammonium (NH4+). This process is crucial for organisms, especially those which grow in anaerobic environments, as it provides the essential nutrients required to synthesize the basic building blocks of life. Building blocks include such necessities as nucleotides for DNA and RNA, amino acids for proteins, and formation of fatty acids. Converting atmospheric nitrogen to ammonium is done by the nitrogenase enzyme, which is encoded by the nif gene. The aim of this study was to determine whether nitrogen-fixing bacteria were detected in the bacteria residing in the gut of the American cockroach Periplaneta americana. This was done by isolating bacterial cultures from the gut (foregut, midgut, and hindgut) and surrounding fat body. Confirmation of the presence of the nif genes was to be done using Polymerase Chain Reaction (PCR) detection, along with liquid growth culture experiment and acetylene reduction assays. The project did not move past the PCR detection and gel electrophoresis analysis as nif genes were not detected in any of the isolates obtained from the cockroach. This may have been due to the media used, or because the primers were for a different nif gene that was present in the bacterium. Further testing could be done using different primers, or growing them on different media.

Advisor: Dr. Zakee Sabree, Evolution, Ecology and Organismal Biology, The Ohio State University
Effects of consensus and construal on certainty and attitude stability

Ambria Carpenter, Sumi Patel, Soumi Dey, Brooke Olsen
Advisor: Brittany Shoots-Reinhard, Department of Psychology, The Ohio State University

We all look at the world in different ways. Construal is characterized as either “high” or “low,” and is the approach one takes to their outlook on the world. Specifically, individuals who are likely to decipher the world in an abstract, individualistic way are using high construal, and individuals who lean towards a concrete, collectivistic perspective are using low construal. Consensus falls into either a “positive” or “negative” category, and can be described as the feedback one gets that either supports or opposes an individual’s position. Consensus mainly takes cues from the world and society around us, while construal affects how we interpret and think about that world. Our research team was curious about the effect of mindset on a person’s certainty of belief. Further, we wanted to examine the likelihood of a person’s certainty to change their opinion when categorized by different world views (either abstract or concrete) and social responses (either positive or negative), as well as individual differences between these specific cases. As researchers, we determined individual construal on the basis of hypothetical situations, looked for possible interactions with high and low consensus data, and then sought to find how those two conditions affected levels of certainty. Paired with relevant consensus, we believed that if an individual had a higher level of construal, they would also have higher levels of attitude certainty, while individuals with low construal would have lower levels of attitude certainty. We found that low construal, or concrete thinking, had the most significant effect on certainty and that consensus and construal had a moderate interaction. This directed us to believe that certainty was more easily manipulated for low construal thinkers.

The cross-domain priming of language and motor rate

Lindsey Rike
Advisor: Dr. Julie M. Hupp and Dr. Melissa K. Jungers, Department of Psychology, The Ohio State University

Previous research has indicated that the language domain is involved in domain-general processing of temporal information. The current research investigates a connection between the motor and language domains in temporal processing. Participants were primed with a specific rate (fast/slow) in the tactile domain only, or the tactile and motor domains, and were asked to produce speech; rate of speech was recorded and measured. It was expected that participants would adjust their speech rate to match the rate of the prime. A significant interaction of Gender and Rate was found, such that females were influenced by the rate of the prime in the expected direction (e.g., fast prime led to faster speech), while males were influenced by the motor prime in the opposite direction (e.g., fast prime led to slower speech). Previous research has found gender differences in the human mirror system. This may account for the gender differences in the current study, such that females may have been more likely to synchronize with the rate of prime, therefore rendering the expected effect on speech rate. These results may have implications on social and linguistic research on gender differences in communication, and the future directions of cross-domain processing.
Factors influencing consent rates in a sleep medicine randomized control trial

Maria L. Espinosa
Advisor: Dr. Jay Balachandran, Department of Medicine, University of Chicago

The success and timeliness of clinical research studies depends on the enrollment of eligible participants. Various demographic factors such as race, education level, socioeconomic status, and gender have been found to influence a person’s decision to consent for participation in clinical trials, however, the effect of each of these factors have been found to vary among each study. The purpose of this quality improvement study was to analyze the effect of age and other demographic factors such as gender, race, education level, and insurance type on consent rates in the SAVE CPAP trial, a sleep medicine randomized control trial. We retrospectively reviewed the medical records of 558 patients that had been eligible for SAVE CPAP over a year span. We found that age did not have an effect on consent rate whether it was treated as a categorical or continuous variable, and that the demographic factors that were collected also did not have a statistically significant effect on consent rates. In addition, we collected the reasons why patients did not consent and found that they provide insight on how to remove obstacles that impede consent. Our study also identified that standardizing the consent process across technicians, and changing paperwork delivery may increase patient satisfaction and participation in the SAVE CPAP trial.

YouTube™ as an instructional source for appropriate metered dose inhaler use

Sarah Richards & Mitchell McMurray
Advisor: Dr. Lorraine Wallace, Department of Family Medicine, College of Medicine and College of Public Health, The Ohio State University

A metered-dose inhaler (MDI) is commonly used for treatment and management of asthma, chronic obstructive pulmonary disease, and other respiratory diseases. When used appropriately, an MDI is highly efficacious in aiding patients with respiratory disease. To date, the content, comprehensiveness, and accuracy of YouTubeTM videos covering a wide variety of topics have been mixed. The purpose of this study was to evaluate English language MDI instructional videos available on YouTubeTM. The YouTubeTM platform was used to create a sample of 58 unique videos which were scored for overall video quality and audio quality as well as inclusion of established MDI instructional criteria: (1) remove cap and shake inhaler, (2) exhale slowly and fully, (3) place mouthpiece between lips, (4) actuate MDI at onset of inhalation, (5) inhale at less than maximal rate, (6) hold breath for at least 5 second, and (7) recap mouthpiece. 72.4% of the videos were rated as “good” visual quality and 74.1% of the videos were rated as “good” audio quality, indicating that the majority of videos that were scored for overall video quality and audio quality as well as inclusion of established MDI instructional criteria: (1) remove cap and shake inhaler, (2) exhale slowly and fully, (3) place mouthpiece between lips, (4) actuate MDI at onset of inhalation, (5) inhale at less than maximal rate, (6) hold breath for at least 5 second, and (7) recap mouthpiece. The lower inclusion rates of step (5), inhaling at a less than maximal rate, and step (7), recapping the mouthpiece, could hinder a viewer’s understanding of how to correctly use an MDI. However, most of the videos still teach viewers how to use an MDI with a satisfactory degree of accuracy. Most clinicians in the United States could confidently refer asthma patients to YouTubeTM to find instructions on how to correctly use a metered-dose inhaler (MDI).
This paper examines how Herman Melville’s Benito Cereno presents the focalized perspectives of white authority figures in order to deconstruct different forms of racism, even from authority figures who exhibit sympathy for black slaves. I argue that Benito Cereno’s message resonates with the current efforts of activists to bring attention to the ways in which authority figures translate the activities of black citizens. America is increasingly debating the biases among our authority figures, specifically those involved in law enforcement. For instance, recent attention to law enforcement discrimination towards black Americans has spawned the group #BlackLivesMatter, which fights for justice in such cases. Benito Cereno is riddled with translations that create crises for the characters and readers forced to interpret ambiguous signals that serve to reveal prejudiced perspectives. I suggest that the text, especially in its deposition section, undermines the authority of law enforcement narratives by subtly revealing the cultural biases that guide them.

William Shakespeare’s Sonnet’s were written from an autobiographical point of view that represents his personal struggles with love. Most notably defining this idea is the use of the word “thou”, that which indicates identity, ownership and things one is owned. Shakespeare uses the friendship with the Lovely Young Man to showcase his desires for love and an everlasting saga for the young man. The spirit of the relationship between the two was perfectly normal for the time period, and a very strong relationship as Shakespeare’s strong language suggests. A relationship that reaches its climax in Sonnet 18, “Shall I compare thee to a summer’s day…..” Was the end of Shakespeare’s struggle with love truly defined in the end of The Sonnets? The world will never know, but poetic art and love can both be present in an autobiographical work, one which truly encompasses the word “thou”.

Catharine Shipps
Advisor: Matthew Connolly, Department of English, The Ohio State University

Gregory Scott Wobser II
Advisor: Jennifer Higginbotham, Department of English, The Ohio State University
It’s all Greek to me: The love triangle of Shakespeare’s Sonnets and its parallels in the social anxieties of gender, homoeroticism and fidelity in Ancient Greece

Jaclyn Serpico

Advisor: Jennifer Higginbotham, Department of English, The Ohio State University

This paper refutes the common interpretation of the sonnets as a revelation of Shakespeare’s homosexual desires, and instead posits that they are better read as an endorsement of hierarchical conceptions of sex and gender dating back to Ancient Greece. From Antiquity to Renaissance, gender was seen as a social and cultural role, not a medical or biological category. Furthermore, social structures relied on regulating female sexuality and shoring up the masculinity of powerful men, so Ancient and Renaissance societies developed huge anxieties surrounding the female libido, echoed in Shakespeare’s dark lady. The lust of women posed the issue of illegitimate births, while the lust for women destabilized reason and distracted from manly pursuits such as war and civic duty. This framework rendered women inherently dangerous, resulting in general acceptance of, and even preference for, homoeroticism. Sonnets 129, 135, and 147 clearly demonstrate the anxiety surrounding the danger of lust, while Sonnet 116 endorses male homosocial and homoerotic relationships. Viewed through this historical framework, concern about the speaker’s sexual orientation is hugely misguided—the homoerotic desire for the lovely young man and the shame and disgust associated with the dark lady clearly uphold the social and sexual anxieties of Shakespeare’s time.

The manipulation of perception: Barbara Probst’s Exposure #106

Kate Sherman

Advisor: Dr. Amanda Gluibizzi, Department of Art and History of Art, The Ohio State University

My thesis analyzes a series of photographs entitled Exposure #106, by contemporary photographer Barbara Probst, through the lens of understanding visualized information. In the viewers’ attempt to discern the information within Probst’s photographs, they begin to “map” the space visually. I demonstrate, however, that the viewers come to find their attempts to map the space ineffective due to Probst’s use of camera angles, color, and the grid installation. Instead, viewers must find an alternative to grasp the space. Thus, I evaluate Exposure #106 by employing urbanist Kevin Lynch’s concept of cognitive mapping, or our ability to orient ourselves in the external world by mentally locating and organizing our surroundings. I argue Probst’s Exposure #106 may only fully be accessible to viewers via this method of cognitive mapping, in that it allows them to create their own cognitive map utilizing the content of Probst’s photographs as landmarks and boundaries in order to navigate visually the seemingly unmappable space of Probst’s fictitious world.
Spatial mismatch: Understanding differences in income mobility between cities

Max Mauerman

Advisor: Dr. Sara Watson, Department of Political Science, The Ohio State University

Why do some American cities appear to be havens of opportunity while others remain stratified? Recent studies illustrate large differences in intergenerational income mobility between American cities, especially for low-income individuals. These differences are difficult to explain through economic productivity alone – for example, some booming cities, like Atlanta, GA and Columbus, OH, exhibit low levels of income mobility. I argue that differences in city policy are at the root of disparities in income mobility. In particular, I examine the effect of accessible public transportation on income mobility. I make a case that physical separation from jobs perpetuates intergenerational poverty, and that effective public transportation alleviates this separation. I conduct my analysis in two parts: First, a national statistical study of urban intergenerational income mobility from 1980 to 1996, using public transit accessibility as an explanatory variable. Second, a case study of the politics of public transportation in Columbus using interviews and historical sources. Synthesizing these two parts, I argue that public transit’s social efficacy depends on the structure of local institutions: In cities with fewer veto points for regional planning and greater municipal fiscal autonomy, local governments are more likely to prioritize democratic goals in transit planning over technocratic ones.

Lean In in Poland: Psychological determinants of women’s labor market success

Polina Zvavitch

Advisor: Dr. Kazimierz Slomczynski, Department of Sociology, Political Science, The Ohio State University

In 2013, Sheryl Sandberg, published her book Lean In: Women, Work, and the Will to Lead. Her goal was to empower women to be assertive and ambitious in the workplace regardless of institutional and psychological barriers. There are few studies featuring panel data that examine the psychological factors of occupational attainment. The purpose of this study is to determine if belief in ambition and self-esteem determine women’s success in higher level occupational positions. There is a panel survey called POLPAN which looks at various aspects of people’s lives that provides a wide perspective about social mobility and psychological factors. I found that when comparing women who have a high belief in ambition versus women who do not, there is a higher chance for women who do believe to be in higher level occupations. When the regression is repeated with men, the level of ambition is not statistically significant when it comes to reaching a higher occupation. But, self-esteem is not an indicator for a higher status occupation. I was able to support part of Sandberg’s theory, women who believe ambition is important when it comes to success are more likely to become successful versus women who do not.
**Highlighting for reading comprehension: Is two better than one?**

*Stephani Fuson-Newsome & Samantha Metzger*

*Advisor: Dr. Fábio P. Leite, Associate Dean, Lima Campus, The Ohio State University*

Reading Comprehension is a crucial part of our everyday lives. Reading is the most commonly utilized mode we use to obtain knowledge. If we are unable to comprehend what we read, then we are unable to learn the information we read. Regardless of how critical the skill of comprehension is to our education, there are few known ways to improve our competence in this area. Highlighting is a popular method among college students of marking material that they feel they need to memorize in order to perform well in their courses. However, it has been shown that highlighting does not improve comprehension unless the material is considered difficult, and only when the specific piece of information that is inquired about is physically highlighted (Dunlosky, Rawson, Marsh, Nathan, & Willingham, 2013). The purpose of the current study was to determine if dual color highlighting could help to improve comprehension more than that of the traditional single color highlighting method. The hypothesis was that highlighting text in two colors would force the reader to understand the text enough to make a judgment as to which color should be used to highlight each segment, if any. Presumably, this form of active reading would be expected to create meaning and organization of the material that would aid in the comprehension of that material, as well as simplifying the review of material. Contrary to that hypothesis, we found that dual highlighting did not improve or decrease comprehension compared to single color highlighting of text—although we found improved comprehension for the highlighted information regardless of highlighting method. Additionally, we concluded that training people to highlight effectively is necessary to improve the comprehension of texts.

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**The conundrum of cohesion: France’s North African question**

*Tyler Brice Parker*

*Advisor: Dr. Kevin Cox, Department of Geography, The Ohio State University*

The level of social polarization between native French and North Africans in France in an enduring dilemma. The prospect for effective social cohesion is challenged by factors including staunch French secularism, laïcité, and the deep wounds of the Algerian Revolution. In order to understand the situation, this paper employs two interpretive frameworks: the politics of difference and the politics of home. In the former, a long-held notion of colonial superiority manifests itself in structural and interpersonal modes of social subordination aimed towards North Africans. In the latter, many native French lash out against North Africans for the threat that they pose to established French values. In response to both, a heightened sense of communalism permeates North Africans communities, often resulting in pronounced instances of fundamental backlash. The goal of this thesis is to view the reasons behind polarization in equitable housing, economic inclusiveness, and religious expression, and posit whether the myriad of outlooks, from the French Left and Right to North Africans themselves, can resolve France’s social woes.
Why is healthcare so expensive: A discussion about the future of healthcare reform

Xinhe He

Advisor: Ranajoy Ray-Chaudhuri, Department of Economics, The Ohio State University

The United States healthcare system is known as expensive but not effective. This paper aims to find a possible solution for the current healthcare affordability difficulties in different areas. The paper examines four existing issues with the current healthcare system including unnecessary usage of technology, non-uniform pricing system, lack of preventative measures, and insufficient insurance coverage. It proposes the following solutions: entrepreneurial innovations, standardized pricing systems, selected preventative measures and regulated insurance coverage respectively. The next stage of the research is to quantify the research through financial modeling and find the most optimized public funding allocation.

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The image is from her research project, which was presented at the 2016 Denman Undergraduate Research Forum. Vessels is an exploration of portraiture and an investigation into the act of commemoration. With an interest in the act of collecting as a significant part of the artistic process, she collected the delicate histories of the past and present women of her life, as well as physical objects. She will be graduating with Honors and a BFA in Drawing and Painting.

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