



MONMOUTH
UNIVERSITY

HONORS
SCHOOL



THE HONORS SCHOOL

RESEARCH CONFERENCE

FALL 2021

With great pleasure,
The Honors School presents its

**FALL 2021
RESEARCH CONFERENCE**

Students will be presenting their
research in the following fields:

BIOLOGY

BUSINESS ADMINISTRATION

CHEMISTRY

ENGLISH

MATHEMATICS

MUSIC

POLITICAL SCIENCE

SOCIOLOGY

FALL 2021

HONORS SCHOOL RESEARCH CONFERENCE SCHEDULE

Friday, December 10, 2021 - Anacon A

SESSION A: 1:30PM-2:40PM

Opening Remarks:

Dr. Nancy J. Mezey, Dean of the Honors School

Mitchell J. Hendricks, *Music & Political Science*

Odalys Barrientos Pantoja, *Mathematics*

Chyna Walker, *Political Science & Sociology*

Jennifer M. Losavio, *Business Administration*

Mia A. DeMagistris, *Business Administration*

BREAK 2:40PM-3:00PM

SESSION B: 3:00PM-4:00PM

Lauren Feaster, *Chemistry*

Sydney A. Hess, *Biology*

Morgan Kelly, *English & Sociology*

Emily D. Pawelek, *Business Administration*

Closing Remarks:

Dr. Nancy J. Mezey, Dean of the Honors School

EVALUATING POLITICAL TRENDS THROUGH THE RISE AND FALL OF POPULAR MUSIC

While not often associated, a person's political ideology and taste in music share a surprising number of similarities, including an appeal to moral and ethical ideals. Both political ideology and taste in music originate from a person's socialization, and are heavily influenced by the agents of socialization often discussed in political science. Since the two factors originate from similar sources, they could provide political scientists and musicologists with a unique opportunity to merge fields. Various other choices in a person's preferences relate to their political ideology, and music is no exception. Based on research conducted at Monmouth University in the Fall of 2021, various statistical tests reveal that there is indeed a relationship between a person's political ideology and their taste in music. Specifically, genres such as Rock, Pop, and R&B tend to appeal to those with more liberal ideologies, and Country music tends to appeal to those with more conservative ideologies. These findings could provide political scientists with another means of predicting political events based on the trends observed in popular music.

COMPARING USER BEHAVIOR AMONG TIKTOK USERS

TikTok is a social media app that has quickly gained popularity with over one billion users and counting. TikTok users can use the platform to post short content videos that consist of users dancing, acting, or lip-syncing to music. Using the TikTok public database, we collected data from 136 users using a TikTok API. In this study, we placed TikTok users into three categories: "famous users", "viral users", and "foryou users". "Famous users" are users who have more than 20 million followers, "viral users" are users who have a least one viral video, and "foryou users" are the average user who used the hashtag #foryou on their video. We used ϵ -machines and generalized additive models (GAMs) to model the binarized posting behavior of the TikTok users. By estimating the ϵ -machines and GAMs from the observed user behavior, we created models that captured the behavior of a given user and inferred if they were self driven or seasonally driven. The ϵ -machine will best fit users whose future behavior depends on their recent activity and the GAM model will fit users who typically post videos on a specific day of the week and time of day. Using the cross entropy loss function, we determined which category of users are more seasonally driven or self driven. From the data collected, we can say that within our sample of users both "famous" and "foryou" users are more self driven. Thus, their behavior is better explained by their past activity than the time-of-day and day-of-week. Using other metrics of information theory, confidence intervals suggest "famous users" appear more random than "foryou users". Additionally, "foryou users" have more complicated ϵ -machines compared to "famous users". While there are no statistically significant differences between "famous" and "foryou" users' behavior on TikTok there are small differences that could be more obvious with a larger sample size.

CHYNA WALKER (PS & SO) | FIRST READER: DR. JENNIFER MCGOVERN

THE LONG-TERM EFFECTS OF SCHOOL SEGREGATION

There are many studies about racial segregation of schools and its effect on students; however, the focal point of the majority of this research pertains to students in grades kindergarten thru twelfth grade. Scholars know much less about how these experiences in schools translate to why students have different experiences when they attend college. This study uses data collected from semi-structured interviews to examine how the racial compositions of schools prior to college affect how a student performed academically and socially once enrolled in college. Utilizing the perspective of W.E.B. DuBois through his theory of double consciousness, the analysis found that students who went to majority white schools before attending college performed better academically in college while minority students who enrolled in predominantly white institutions (PWIs) for college felt high levels of alienation, irrespective of the racial composition of their schools prior. Students felt more accepted and comfortable when they attended a school with students and faculty that looked like them in both high school and college, promoting better social and academic experiences. As a whole, the study concluded that the racial composition of schools prior to college enrollment did indeed have an influence on how well a student did once enrolled.

JENNIFER M. LOSAVIO (BU.BA) | FIRST READER: DR. STUART ROSENBERG
SECOND READER: PROFESSOR JOE RAPOLLA

SPOTIFY CASE STUDY: HOW SPOTIFY IMPACTS THE WAY MUSICIANS CREATE AND RELEASE THEIR MUSIC

This thesis revolves around how Spotify is impacting the music industry. I analyzed how Spotify's business practices impact the way artists create and release their music. To do this, I looked at the payment rates per stream that Spotify and other streaming services pay. I also analyzed Spotify's financial data, the "Spotify: A Product Story" podcast, and data relating to the length of pop songs released within the past few years. This case study helps assess how much of an impact Spotify has on the creativity and income of musicians, with the creativity referring to the length of songs released and how that may be changing over time.

MIA A. DEMAGISTRIS (BU.BK)

FIRST READER: DR. NGUYEN T. PHAM
SECOND READER: PROFESSOR ANDREW S. PEDERSEN

PREVENTING TEENAGERS FROM FAST FOOD ADVERTISING TRAPS

When creating fast food commercials, advertisers have several techniques that they use to target teenagers. These include characters/celebrities, jingles/slogans, product placement, emotional appeals, and color. Teenagers and young adults are an ideal demographic to target due to their undeveloped cognitive abilities, as well as their impulsivity and level of independence. Without being aware of the implemented techniques, teens are likely to fall into the traps of the advertisements and have an increased likelihood of purchasing fast food products. This poses threats to their health and wellbeing. Fast food consumption can have physical effects, such as obesity, and can also impact academic performance and everyday life. Through my creation of a public service announcement (PSA), teens are made aware of the health risks involved with heavy fast food consumption and how advertisers are persuading them to purchase it. PSAs are commonly based around promoting health, improving undesired behavior, and providing solutions for the viewer. The purpose of the PSA is to inform teenagers and create a desire for healthy habits and provide them with the tools to recognize the advertising techniques they are being exposed to.

LAUREN FEASTER (CE)

FIRST READER: DR. DANUTA SZWAJKAJZER

THE ROLE OF DIET, ENVIRONMENTAL FACTORS AND COVID-19 ON THE GUT MICROBIOME OF INDIVIDUALS WITH INFLAMMATORY BOWEL DISEASE (IBD)

There is some research on Inflammatory Bowel Disease (IBD), but there is no definitive cure or origin of this disease. This study established a holistic approach by incorporating multiple health factors and how they affect an individual who has IBD. This study explored the impact of IBD dietary recommendations, environmental factors and the Covid-19 pandemic on the gut microbiome of individuals with IBD. After conducting a survey for individuals with IBD from around the world, many similarities and differences were found. Common symptoms of IBD include abdominal pain/cramping, diarrhea, constipation, fatigue and weight loss or gain. Individuals with IBD have tried many different treatment options, diets and lifestyle changes in order to improve their symptoms. Although none completely diminished symptoms, the diets that were found to be most effective were elimination/food intolerance diets and dairy free diets. Most individuals with IBD have used medication to improve their condition, but many have tried different types of medication such as Prednisone, Budesonide and Remicade. In addition, individuals with IBD did not get COVID-19 as much as the general population and if individuals did contract COVID-19, then they did not require hospitalization. IBD is also associated with other comorbidities and puts patients more at risk to acquire new chronic diseases because of the effect IBD has on the immune system. The goal in managing IBD is to control the symptoms that an individual experiences so that they can live a normal lifestyle in addition to maintaining the integrity and functioning nature of their gastrointestinal system. The purpose of this study is to bring awareness to different aspects that can be used in order to improve quality of life and the overall gut microbiome in patients with IBD.

DETERMINING THE EFFECTS OF LAVENDER ESSENTIAL OIL ON THE SKIN MICROBIOME BY 16s rRNA GENE SEQUENCING

The human microbiome is made up of all microorganisms that inhabit the body. The skin microbiome contains all of the microbes that live on the skin surface. These microbes play a crucial role in maintaining healthy skin and serving as an immune system defense. Seven different areas of the body were swabbed in order to sample the bacterial species that are part of the human skin microbiome, and the samples were plated on nutrient rich agar. The areas tested were the top of the right and left hand, the palm of the right hand, between the fingers, inside the elbow, the back of the knee and between the toes. Bacterial genomic DNA was isolated from two bacterial colonies that resulted from swabbing the skin samples on nutrient agar and an 880 bp fragment from base pair 27-907 of the 16s rRNA gene was amplified by PCR. The 16s rRNA PCR products from each bacterial gDNA sample were ligated into a pCR 2.1 TOPO cloning vector. Competent *E. coli* cells were then transformed with the recombinant vectors. A plasmid mini prep procedure was then done to isolate the recombinant plasmid DNA containing the 16s rRNA genes from two colonies from each of the transformation reactions, thereby sampling an increased number of possible cloned 16 s rRNA genes from different bacterial species. To check that the 16s rRNA gene had been inserted into each isolated plasmid, a restriction enzyme digest was performed using the *EcoR1* enzyme because there are *EcoR1* sites flanking the 16s rRNA gene insert site in the cloning plasmid. The recombinant plasmid DNA containing the 16s rRNA genes from various bacteria isolated from the various skin samples were then sent to GeneWiz to undergo 16s rRNA gene sequencing. The resulting 16s rRNA DNA sequences were then analyzed using DNASTAR software. The sequences were queried against the NCBI BLAST database to determine the most likely skin bacterial species the gene was isolated from. Then, the same seven areas of the body were then treated with lavender essential oils once daily for two weeks to determine if lavender essential oils had an effect on the bacteria that was part of the skin microbiome that had been isolated in those specific areas. The results showed that prior to essential oil treatment, the most prominent bacterial species found on all areas of the hand were *Moraxella osloensis* with *Micrococcus aloeverae*, *Kocura arsenatis* and *Acinetobacter ursingii*. After essential oil treatment, there was no *Moraxella osloensis*, *Kocura arsenatis* and *Acinetobacter ursingii* growth on any of the hand areas swabbed. The dominant species after treatment on the hands was *Micrococcus aloeverae* with *Micrococcus luteus*, *Kocuria palustris* and *Staphylococcus xylosus* also found. The first swabbing of inside the elbow resulted in the growth of *Micrococcus aloeverae* only, after essential oil treatment the bacteria found inside of the elbow was *Micrococcus luteus* only. Prior to treatment, the back of the knee skin microbiome contained *Pseudomonas luteola* and following treatment only *Micrococcus luteus* was cultured. The original between the toes culture isolated *Bacillus zanthoxyli*, *Staphylococcus hominis* and *Bacillus megaterium*. Following the two week treatment with lavender essential oil, *Staphylococcus hominis* and *Bacillus megaterium* were the only two species isolated from between the toes. From the small sampling size tested, it seemed that the lavender oil affected the bacterial species that were part of the specific skin microbiome. Longer treatment times with the essential lavender oil and increased sampling size for sequencing the recombinant plasmids would obtain a clearer picture of the effects the essential oil has on the skin microbiome.

ADDRESSING THE MISREPRESENTATION OF THE LGBT+ COMMUNITY ON THE BIG SCREEN

Despite living in the 21st century where same-sex marriage has been legalized and normalized for over five years, there remain practices of discrimination that affect the LGBT+ community daily. Some discrimination is harder to see than others; microaggressions oftentimes go unnoticed while the lack of LGBT+ representation in entertainment media is harder to ignore. This isn't to say that representation is non-existent, but rather, to say that it is often far and few between and that what is present, is often highly stereotypical, discriminatory, and dangerous to the individuals of this vulnerable community. This Honors Capstone project sought to address the misrepresentation of the LGBT+ community on television and in movies and sought to bridge three of the gaps I found present in what we see—or don't see—on big and little screens based on extensive research into the topic and under a queer theoretical lens. The three main gaps present in LGBT+ media representation centered themselves around a lack of character identity (including but not limited to character sexual orientation, race, age, etc), an increase in stereotypical behavior (the feminized gay man and masculinized gay woman), and an increase in typically overused plotlines (the repercussions of coming out at a young age). To combat and address these themes, I drafted a screenplay of my own where characters vary in race, ethnicity, sexual orientation, age, biological sex, etc, break the boundaries of LGBT+ gender and relationship stereotypes, and attempt to navigate real-life as "out" members of the community at large.

MASS MIGRATION: WHAT CAN NEW JERSEY DO TO ATTRACT RETIREES TO STAY?

It is a common trend for individuals over the retirement age to find their way out of New Jersey. This paper will observe the changes in the percentages of the retiree population in New Jersey, as well as find a tax structure that would entice these individuals to remain in New Jersey post-retirement. Living on a fixed income is hard, but living with higher tax rates, like in New Jersey, is even more difficult. Through using the most recent Census data and creating a tax plan geared towards helping seniors stay in the state, trends may begin to change in the future based on the findings. Following age groups of individuals born in specific age ranges, it was found that the percentage of these individuals relative to the entire population of the state of New Jersey decreased as time went on. From the 2000 Census to the 2010 Census, there was an 18% decrease in the population that was born between 1936-1945. This same age group experienced approximately a 28% decrease in the population from the 2010 Census to the 2019 American Community Survey (ACS) results. These results are similar for states within the tri-state area, however notable differences are seen in states where retirees find themselves migrating to. New Jersey could also find ways to financially attract retirees to stay in the state, which would also help the economy of the state, as well. The tax structure of New Jersey has seen slight modifications over the previous few years, but there is more that the state could do to entice their residents to reside in the Garden State after retirement.

OUR MISSION

The Honors School promotes transformative learning in a collaborative community of student leaders and faculty mentors both inside and outside of the classroom. Students challenge one another to maintain the highest standards in their own discipline and across all fields of interest. Student scholars in the Honors School are expected to develop a great depth of understanding within their field of study, while appreciating intellectual inquiry in a broad context. Participants in the Honors School raise students' cultural, ethical, and social awareness as they develop into well-rounded scholars and citizens of a global community.