The 2021 University of Chicago Undergraduate Research Symposium: Online Proceedings

Virtual Poster Session 2:

Social Sciences Collegiate Division
Using Police Calls for Service Data to Analyze Police-Citizen Interactions by Incident Type, Race, and Geography

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Mentor(s): Prof. John Brehm, Political Science

Following the murders of George Floyd and Breonna Taylor this past summer and subsequent protests, there have been increasing calls to scrutinize and reform policing methods in cities across the United States. Many cities of varying sizes, complying with an Obama administration directive, have released detailed accounts of how police officers use their time to respond to citizen complaints (herein referred to as “Police Calls for Service Data”). As calls for transparency and reform continue to grow, this data will serve as a unique and insightful lens into current police practices in cities large and small across the United States. I have obtained Police Calls for Service Data from approximately 20 cities across the United States from public records. The data, obtained for the year 2019, range from about 7000 to nearly 2 million individual observations. I am using this wealth of publicly available Police Calls for Service Data to identify how police departments in cities across America respond to citizen complaints, the types of incidents they tend to spend their time responding to, and the degree to which some neighborhoods are policed and others are not. By generalizing these incidents into categories comparable across cities, analyzing individual incidents against their geography (down to the Census tract level), and collecting detailed information on when and for how long the police spend responding to incidents, I believe we can develop insights into how the police across multiple cities spend their time. Among other things, this analysis could shed light on inequalities in policing practices, both within and between cities, differences in how neighborhoods are policed, and the relationship between the characteristics of community demand and how the police spend their time.
Family Conflict and Mental Health Outcomes in Chinese American Young Adults During the COVID-19 Pandemic
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Mentor(s): Prof. Miwa Yasui, Crown Family School of Social Work, Policy, and Practice

Studies have shown that family conflict is correlated with adverse mental health outcomes among youth. The COVID-19 pandemic has led to new work patterns and family dynamics that have increased household tensions among families worldwide. Among Asian Americans, family conflict may be further impacted by the acculturation gap between immigrant parents and their U.S. born children, as well as increases in racism against Asian Americans. The confluence of these sociocultural stressors during a pandemic places significant burden on Asian American families, likely affecting their mental health. This study will examine the association between increased family conflict and young adult mental health outcomes during the COVID-19 pandemic in a sample of 70 Chinese American young adults. We hypothesize that during the COVID-19 pandemic increased family conflict will be associated with poorer mental health, specifically higher levels of anxiety and depression. This study sampled 70 Chinese American young adults between the ages of 18 to 25. Each participant completed an online survey that assessed dimensions of stress response, mental health, and family conflict in addition to other measures. 30 participants were then selected from the broader survey sample to participate in one-hour semi-structured interviews which sought to elucidate the unique pressures and responsibilities incurred upon families during the COVID-19 pandemic. The findings of the study will seek to reveal links between family conflict and mental health outcomes during the COVID-19 pandemic, and illuminate the mechanisms by which this interaction occurs. Given that family conflict has been shown to be associated with adverse mental health outcomes, an understanding of the impact and nature of family conflict during the COVID-19 pandemic is important in helping to inform potential interventions seeking to improve mental health outcomes during and after the pandemic.
The college admissions process has been long-scrutinized as one that favors the wealthy and elite. In an attempt to mitigate some of these biases, many colleges have adopted policies in which applicants are not required to submit standardized test scores upon application. In this study, I examine the effects of test-optional policies on racial and socio-economic diversity using a mixed-methods approach. I perform a Difference-in-Differences analysis on quantitative data from over 1,000 institutions between the years 2010-2017. In addition, I analyze qualitative survey data from 96 current and former admissions counselors including personal interviews with 22 of these individuals. This study finds that test-optional policy adoption is not correlated with any meaningful change in minority enrollment, with the exception of a small increase in the percentage of Black students enrolled. Survey and interview responses provide insight as to why this is the case: once a school adopts a test-optional policy, underrepresented students feel incentivized to apply. I therefore recommend that schools adopt test-optional policies as an initial step towards increasing access; however, other action items are also recommended in order to more effectively combat the injustices inherent in the college process. Due to inaccessibility of testing sites during the COVID-19 pandemic, hundreds more institutions have adopted test-optional policies for the 2020-2021 admissions cycle, many on a trial basis. There is now an urgency to better understand the ramifications of test-optional adoption as these newly-test-optional schools determine if they will maintain the policy.
Gender Identification as a Predictor of Math Attitudes and Math Anxiety

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Mentor(s): Prof. Susan Levine, Psychology, Cognitive Development Lab

The STEM gap is one of the most glaring examples of gender inequality, and although gender differences in math attitudes have been identified as a possible cause of the gender STEM gap, there have been few studies that have decomposed gender into a more complex variable, instead imposing a binary gender construct in studies of math attitudes. The purpose of this study was to investigate the relation between gender identity and math attitudes, with an updated definition of gender as a spectrum rather than a binary. Adult participants (N=500) completed a survey with a combination of heavily validated measures of math anxiety, gender-math stereotype, trait anxiety, math self-concept, and gender, defining gender in a novel and complex way in order to understand if certain gendered identities, attributes, and experiences are correlated with math attitudes. By defining gender as a continuous variable on a spectrum as opposed to a binary and discrete variable through the combination of four measures of gender, notions of gender can be seen with more nuance. Preliminary results suggest that math anxiety varies on a spectrum rather than as a binary and ongoing research is expected to confirm that these results are reflected in the general population. Ultimately, the results of this study are the first to examine the math experiences of individuals who identify within non-binary gender in comparison to mainstream binary gender, and results elucidate how the STEM gap can be addressed not only with respect to women but also for those across the gender spectrum.
Community and Opportunity: The Experience of 2nd Generation Immigrants in Ethnic Enclaves
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Mentor(s): Prof. Robert Vargas, Sociology

How do second generation immigrants perceive opportunity and community in ethnic enclaves? Using 26 interviews of second generation Latinx immigrants from the ethnic enclaves around the Chicagoland area, this paper seeks to understand how the assimilation process, specifically opportunities of socioeconomic advancement and a sense of belonging with the mainstream community, are perceived by second generation immigrants. Previous scholars have heavily theorized the trajectories of first-generation immigrants in terms of these conditions, suggesting that the assimilation into white, middle-class spaces is desirable. The following study seeks to interrogate these assumptions by looking at the experiences and perceptions of the second generation living in ethnic enclaves. I find that participants experience exclusion from the mainstream community through institutional and individual forms of surveillance, which undermines their sense of belonging with white, middle-class communities. Participants find relief from this type of discrimination through cultural identification within their ethnic communities, which can become a catalyst for organizing and forming ethnic solidarity. Furthermore, I find that most participants define opportunity in terms of education and employment opportunities, which are severely lacking in their communities. There exists a tension in the way the participants view the assimilation processes, in the way they strongly identify with their ethnic heritage as opposed to white spaces, and the way they value opportunities for socioeconomic advancement even though the opportunities are not quite present in their own ethnic communities. These findings have implications in the trajectory of the second generation in ethnic communities, demonstrating the value of both cultural background and economic advancement.
Climate change presents many challenges for municipal planning across the nation. Changing weather patterns add new strain to infrastructure around the country. Pressure to develop infrastructure that is more resilient to climate change, have prompted some cities to announce the development of green infrastructure plans. One such plan is Chicago’s Green Alley Program, which started in the early 2000s. A green alley would serve as an auxiliary storm water management system, reducing storm water induced flooding by redirecting excess rain away from the MWRD sewer system. Green stormwater infrastructure throughout the country presents a new mode of sustainable urban infrastructure. One that integrates local ecosystems with built infrastructure in urban environments. Green alleys offer numerous co-benefits in line with the ecosystem services framework of environmental management. Little research has been done on Chicago’s green alley infrastructure. This paper quantifies the spatial distribution of Chicago’s green alleys and identifies spatial correlations with factors around the city which could affect the development of future sustainable infrastructure systems; factors such as patterns of rainfall and flooding, the distribution of existing green space, and socioeconomic indicators such as per capita income and building age. This paper also analyzes the implications of spatial correlations in terms of the broader history and context of infrastructure development across Chicago and what this means for the future of green infrastructure plans.
American Mass Incarceration in Comparative and Historical Perspectives: The Legacy of Mass Incarceration in the US
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Jeanette (Jenna) Wong, 2nd-Year, Philosophy & Law, Letters, and Society
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Mentor(s): Prof. John Clegg, History; Prof. Adaner Usmani, Sociology, Harvard University

It is a well-known fact that the United States has the highest incarceration rate in the world, incarcerating a disproportionate number of people of color. However, scholars have typically studied mass incarceration in the U.S. by examining the U.S. alone. Our research attempts to address this gap by studying mass incarceration in a comparative historical context. It examines punishment and policing statistics across Latin American countries and advanced capitalist countries through the collection of homicide, prison population, police employment, and governmental spending data. While our project is focused on incarceration in a global context, our team is focused specifically on gathering U.S. gender and race-based data from 1700 to the present. Additionally, we are examining the racialized origins of mass incarceration in the US by analyzing state and county level incarceration rates in the South during the Reconstruction period using Census data. We also catalogued the flow of convicts in and out of state penitentiaries during the same time period. Ultimately, by examining incarceration in a global context, we hope to better understand U.S. mass incarceration over time and the evolving demographics of incarcerated populations.
The 2021 University of Chicago Undergraduate Research Symposium: Abstract

Drawings Reveal Accurate Visual Information in Memory After Just 100 ms of Exposure
Rebecca Greenberg, 3rd-Year, Psychology, Neuroscience
Mentor(s): Prof. Wilma Bainbridge, Psychology

When we view an image for the first time, we rapidly capture its gist, followed by more detailed visual information. Most studies have employed visual recognition or verbal recall tasks to quantify the contents within the gist and details of a visual memory. However, utilizing drawings as a memory measure could reveal more about these representations and their timescales. Here, we conducted three different experiments through Amazon Mechanical Turk to test gist and detail content through drawn memories. The main experiment consisted of a drawing task, where participants (N=120) were exposed to real-world scene images for different lengths of time, varying from 100 ms to 10,000 ms. After a 500 ms delay, they were then asked to draw the image from memory in as much detail as possible. Drawings were monetarily rewarded based on number of objects present in their drawings, to motivate participants. Two separate scoring experiments asked for different participants to determine whether drawings included objects present in the original stimulus (N=410), and whether there were false object insertions not present in the original stimulus (N=91). First, we observed that participants were able to successfully complete memory drawings across all time scales, with no differences in number of successful drawings between the 100 ms and 10,000 ms conditions. Second, false objects were found to be rarely present, with only one false object added to drawings on average in the fastest condition of 100 ms. However, we also observed that more correct objects were drawn from memory in the longest exposure condition, 10 seconds, for all tested images, and retention drastically improved for exposures greater than 500 milliseconds. In sum, while people were generally quite good at conveying the gist of the image at all presentation time scales, the exact accuracy of their stimulus recreation improved with longer exposures.
Toward Birangona Counter-Memory: Envisaging Alternative Memorial Spaces for Women Sexual Violence Survivors of the 1971 Liberation War of Bangladesh
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Mentor(s): Dr. Amelia Klein, Crown Family School of Social Work, Family, and Practice

The 1971 Liberation War of Bangladesh saw the systematic employment of genocidal rape by West Pakistani forces against anywhere between 200,000 and 400,000 women. Post-independence, the left-liberal Awami League government venerated these women as ‘Birangona,’ or war heroines. Despite this public acknowledgement, the ‘Birangona’ label has invited great stigma and communal ostracization that persist to the present-day. Therefore, the public memory of Birangona women is a novel case study to examine the gendered memorialization of atrocity – whereas the predominantly male Bangladeshi soldiers from the War continue to be celebrated as martyrs and freedom fighters, Birangona women have been relegated to the sidelines of popular discourse about the 1971 Liberation War. To investigate this disparity, I turn to anthropological theories of gendered nation-building, as well as existing scholarship on the memorialization of atrocity. I will also draw from existing records of Birangona testimony to investigate the public afterlives of traumatic wartime violence in present-day Bangladesh, as felt by Birangona women themselves. Finally, I employ James Young’s formulation of the counter-monument (1992) to turn to alternate, dynamic ways of envisaging the public memory of Birangona women. I propose the formation of women’s circles around Bangladesh that center the lived experiences of Birangona women while also fostering horizontal and intergenerational bonds of solidarity among women in Bangladesh. Beyond redressing the gender gap of public memory about the 1971 War of Liberation, this research can hopefully address the immense difficulty that victims of sexual violence face worldwide in engaging with public memory in an equitable, trauma-informed manner. Moreover, these research findings may be a springboard to engage with the scant scholarship surrounding the memory of male survivors of wartime rape, both within Bangladesh and without.
Anatolian Atlas Project: Mapping Ancient Turkey
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Mentor(s): Prof. James Osborne, Near Eastern Languages and Civilizations, CAMEL Lab, Oriental Institute

The Anatolian Atlas Project is a landscape archaeology project that utilizes remote sensing tools such as Geographic Information Systems (GIS), satellite imaging, and aerial photography in the Oriental Institute’s CAMEL Lab (Center for Ancient Middle Eastern Landscapes) to carry out integrated analyses of archaeological regions and sites that are often studied in very localized contexts. The benefit of using these remote sensing tools for archaeological research lies fundamentally in their potential to leverage survey information from diverse regional and temporal scales by drawing them into a single framework that can be used to assess overarching spatial trends. In its current stage, research on the Anatolian Atlas Project consists primarily of transforming information from archaeological publications into spatial data that can be manipulated through GIS technologies. This process requires several steps including: data entry, database construction, map making, historical referencing, and identifying archaeological sites from a remote perspective. So far, the Anatolian Atlas Project has led to the creation of unique spatial data for hundreds of archaeological sites and features across a research area covering most of present-day Turkey. The most tangible outcome of this research to date has been the creation of an extensive database that is accessible online and which allows for multiregional and temporal analyses to be carried out across the ancient Anatolian landscape. This research constitutes one of the first major attempts to make robust landscape data more widely accessible in the hopes that it can be used to raise a host of archaeological questions about the complex relationships of humans across the ancient landscape. Future work will consist of identifying more sites and integrating them into this growing database.
The goal setting process can be separated into two phases: first, people deliberate which of their many goals to pursue and second, they plan how, when, and where to take action on their chosen goal. Because success in the first phase of this process entails choosing a goal that is feasible, individuals in this phase tend to become open-minded and realistic (a deliberative mindset). In the second phase, however, success entails taking action on one’s goal, which is why individuals in this phase tend to become focused and optimistic (an implemental mindset). While people naturally adopt both a deliberative and implemental mindset as temporary states when pursuing their goals, no research has assessed whether these mindsets can be characterized as stable personality traits. To test this hypothesis, we developed a self-report scale to assess how often people deliberate or plan in their everyday lives. If a deliberative mindset can be characterized as a personality trait, we expect people who frequently deliberate to be more open-minded and realistic than those who do not. Similarly, if an implemental mindset can be characterized as a personality trait, we expect people who frequently plan to be more focused and optimistic than others. Assuming the data supports these hypotheses, “deliberative” and “implemental” people might differ in ways other than how they set goals. It is not unreasonable to think that “implemental” people – who are optimistically planning the implementation of their goals – might be happier while “deliberative” people who weigh the pros and cons of their decisions might exhibit greater existential humility. This research could therefore reveal how the way we set goals shapes how we approach and interact with the world and people around us.