

# **Spatial Structures in the Social Sciences 2019 Summer GIS Institute**

## **Final Presentation Program**

May 31, 2019

John D. Rockefeller, Jr. Library  
Patrick Ma Digital Scholarship Laboratory (DSL)

<b>9:30 – 9:45 am</b>	<b>Welcome</b>
<b>9:45 – 10:45 am</b>	<b>Session I:</b> GIS and Health
<b>10:45 – 11:30 am</b>	<b>Session II:</b> GIS Applications in the Social Sciences I
<b>11:30 am – 12:00 pm</b>	<b>Session III:</b> Historical Geography
<b>12:00 – 1:30 pm</b>	<b>Lunch</b>
<b>1:30 – 3:15 pm</b>	<b>Session IV:</b> GIS Applications in the Social Sciences II
<b>3:15 – 4:00 pm</b>	Certificate Presentation & Closing Remarks
<b>4:00 pm</b>	Close of Conference

## **PARTICIPANTS**

**Anindita Adhikari** (Sociology)

**Anil Askin** (History)

**Katherine Bogen** (School of Public Health)

**Elliot A. Bosco** (School of Public Health)

**Ciprian I. Buzila** (History of Art & Architecture)

**Celeste Caviness** (Bio Med Psychiatry & Human Behavior)

**Seung-Ah Choe** (School of Public Health)

**Shekinah Fashaw** (School of Public Health)

**Nkem Ike** (Anthropology)

**Stephanie H. Kang** (Economics)

**Beenish Pervaiz** (Political Science)

**Chantel F. Pheiffer** (Sociology)

**Anthony C. Pratcher II** (Center for the Study of Race & Ethnicity in America)

**Von Marie Rodriguez-Guzman** (Bio Med Psychiatry & Human Behavior)

**Juan P. Uribe** (Economics)

**Dee Walls** (Anthropology)

## **PROGRAM**

### **SESSION I:**

#### **GIS AND HEALTH**

**Shekinah Fashaw**, *Assessing racial-, ethnic-, or socioeconomic-disparities in access to high quality Home Health*

**Elliot Bosco**, *Mapping The Burden of Pneumonia and Influenza Among U.S. Long-Term Care Facility Residents*

**Seung-Ah Choe**, *Spatial clustering patterns of hypertensive disorders in pregnancy and related environmental features in Rhode Island*

**Chantel Pheiffer**, *The Spatial Distribution of Non-Communicable Disease Risk in South Africa*

### **SESSION II:**

#### **GIS APPLICATIONS IN THE SOCIAL SCIENCES I**

**Beenish Pervaiz**, *Trends in Terrorism: Spatial Analysis of Terrorist Attacks and Drone Strikes in Pakistan*

**Stephanie Kang**, *Residential Mobility and Intergenerational Effects*

**Nkem Ike**, *The Tulsa Race Massacre and the Spatial Distribution of Wealth*

### **SESSION III:**

#### **HISTORICAL GEOGRAPHY**

**Anil Askin**, *Spatial Representation and Environmental Characteristics of Ottoman Imperial Farms in the Nineteenth-Century*

**Ciprian Buzila**, *Mapping the former sacred spaces in Rome*

**LUNCH BREAK, 12:00 – 1:30 PM**

**SESSION IV:**

**GIS APPLICATIONS IN THE SOCIAL SCIENCES II**

**Katherine Bogen**, *Utilizing GIS Tools to Map Twitter Discourse regarding Sexual Assault*

**Anthony Pratcher**, *The Colored Metropolis: Racial Integration as a Negative Skew in Metropolitan Development*

**Von Marie Rodriguez-Guzman**, *Social media disclosures at the anniversary of Hurricane María in Puerto Rico*

**Juan Uribe**, *The Effect of Location Based Subsidies on the Housing Market*

**Anindita Adhikari**, *State, Society and the Right to Welfare in India*

**Celeste Caviness**, *Cigarette retailer density, sociodemographics, and smoking cessation in Providence County, RI*

**Dee Walls**, *An Initial Investigation of Community Food Security in Providence, Rhode Island*

## **PRESENTATION ABSTRACTS**

### **Anindita Adhikari – State, Society and the Right to Welfare in India**

India's welfare state has significantly expanded over the last decade with the introduction of a number of socio economic rights that guarantee employment, food security, education and governance rights that guarantee freedom of information and grievance redress. While the justiciability of these rights and substantial financial allocations mark a shift in social policy in India, the distinctive feature of this emerging welfare state is not just the legal entitlement to public good provisioning but its commitment to delivering welfare in a manner that is transparent, accountable and participatory and expands social citizenship through a range of state-society interfaces at the local level. As the Indian welfare state embeds itself in the social and political lives of its citizens more deeply than ever before, with the potential to reconfigure relations between the state and social groups more dramatically than ever before, we know little about whether welfare outcomes improve as a result and under what conditions. In order to answer these questions, I will study these elaborate state-society interfaces across local administrative units called blocks in one subnational region of India (Bihar) using a mix of qualitative and quantitative methods. In addition to the ethnographic fieldwork, I will examine spatial variations in the presence and functioning of these state-society interfaces as well as variation in welfare outcomes and patterns of association between the two. To do this I will use a combination of administrative, census and geospatial data collected through preliminary fieldwork and accessed online. I will draw on approaches within political sociology and extend them by bringing a more micro-sociological and comparative lens to then answer the following questions: how do citizens and bureaucrats interact through these new accountability mechanisms? how are cultures and capacities of bureaucracies and civic action shaped in the process? do variations in these interactions and capacities explain variations in welfare outcomes?

### **Anil Askin – Spatial Representation and Environmental Characteristics of Ottoman Imperial Farms in the Nineteenth-Century**

The Ottoman Empire made huge investments in agriculture and infrastructure to modernize imperial economy with respect to changing global political economic dynamics in the nineteenth century. One of these investments aimed to breed foreign sheep in the Eastern Mediterranean, mostly around the Western Anatolia. I will benefit from the historical account books of particular imperial state-run farms which were not necessarily adjacent to each other but still dispersed across the plain of Mihalic. I will be (re-)arranging produce, land, and animal data to make it spatially analyzable. In so doing, I will first georeference several historical maps of the region and draw respective polygons sensitive to different areas occupied by each farm. Second, alongside production data for each farm and with respect to each farm's location vis a vis river network, I will check for production density and distribution for each crop by using raster for each. Third, I will calculate relative distance of each farm to the river port. Fourth, I will also complicate this picture by adding grazing needs of animals. I hope this project and presentation to be more conducive than conclusive, especially for asking further questions concerning geography.

### **Katherine Bogen – Utilizing GIS Tools to Map Twitter Discourse regarding Sexual Assault**

Twitter has recently emerged as a site for discussing sexual and gender-based violence. Whereas survivors of violence have utilized the platform to disclose their own victimization experiences, others have responded to victims with positive reactions (providing emotional support, validation, belief, tangible aid, informational aid, advocacy, or a call to action) as well as negative reactions (expressing disbelief, victim blame, distracting responses, trolling, and egocentrism). The present study created exploratory maps of tweets including the hashtag #MeToo. The NVivo software addition NCapture allowed collection of latitude and longitude points associated with specific Tweets available via Twitter's public API. Maps were created for three major theme groups – disclosures of victimization ( $n = 292$ ), positive reactions to disclosure ( $n = 320$ ), and negative reactions to disclosure ( $n = 165$ ) – in order to establish geographic areas of competency versus need. Outcomes of this project justify the assertion that these specific regions could tangibly benefit from targeted health interventions, increased survivor support and rape crisis resources, and prevention efforts. Localities in which Twitter users respond positively to victim disclosures may provide examples of particularly effective health campaigns or existing interventions to improve survivor support. Results will inform the incorporation of GIS analysis into future Twitter research regarding maximizing efficacy of support provided to sexual assault survivors.

### **Elliot Bosco – Mapping The Burden of Pneumonia and Influenza Among U.S. Long-Term Care Facility Residents**

Between 2015-2016, 50% of influenza-associated hospitalizations and 64% of deaths related to pneumonia and influenza (P&I) occurred among adults aged 65 or older. Risk of P&I infection is increased in long-term care facilities (LTCFs), due to close proximity of residents and waning immune systems. Though the negative effects are substantial, limited evidence has documented the burden of P&I among LTCF residents. Using Medicare fee-for-service claims from 2013-2013 linked to Minimum Data Set assessments and LTCF data, we offer the first perspective on the geographic distribution of P&I infections in short-stay and long-stay LTCF residents. The objectives of our study were *i*) to determine how P&I rates from LTCFs varied across U.S. counties, and *ii*) identify the characteristics of counties with elevated and reduced rates. Knowledge gained from this analysis can help to target resources for efforts to prevent infections among frail older adults in LTCFs.

### **Ciprian Buzila – Mapping the former sacred spaces in Rome**

The project looks at the adaptive reuse of former religious buildings in Rome, Italy. This research focuses on small buildings and complexes which are often neglected and not part of the architectural canon, such as the small oratories and convents/monasteries. Based on the GIS data and other type of data collected in situ, the project maps the former churches in Rome. It will be suggested that the owners and the contemporary usage of some of these buildings, in connection with their geographical position, can be linked in order to form a cultural tour. Such network will speak about the memory of the former religious patrimony and, sometimes, about their idiosyncratic status.

### **Celeste Caviness – Cigarette retailer density, sociodemographics, and smoking cessation in Providence County, RI**

Extant literature shows lower income neighborhoods, especially majority racial and ethnic minority neighborhoods, are disproportionately targeted by point of sale marketing by the tobacco industry. Additionally, these neighborhoods often have a higher density of locations displaying this advertising, such as convenience stores and gas stations. The current study seeks to explore differences in the census tracts of Providence County, RI by race and ethnicity, socioeconomic status, and density of retailers selling combustible tobacco cigarettes.

Additionally, the current study will utilize data from a recently completed smoking cessation trial ( $N=192$ ) through Butler Hospital to analyze differences between those who successfully quit smoking combustible tobacco cigarettes to those who did not by census tract data and cigarette retailer density.

### **Seung-Ah Choe – Spatial clustering patterns of hypertensive disorders in pregnancy and related environmental features in Rhode Island**

Hypertensive disorder in pregnancy is a leading cause of perinatal morbidity and mortality, presents in 3-10% of all pregnancies. Growing evidence indicates that specific features of the natural, built and social environment around the maternal home may influence the risk of complications of pregnancy. However, little is known about how this association is different throughout the state. Herein I explore the geospatial distribution of hypertensive disorders in pregnancy. And then I performed a geographically weighted regression with census tract-level covariates and determined which environmental and socioeconomic factors are associated with hypertensive disorder in pregnancy.

### **Shekinah Fashaw – Assessing racial-, ethnic-, or socioeconomic-disparities in access to high quality Home Health**

It is known from prior research that neighborhoods with predominantly minority and low-income individuals have decreased access to high quality hospitals, primary care physicians, and nursing homes. Literature on assisted living, another home and community based option, shows that fewer of these options are available in more disadvantaged neighborhoods. For Home Health (HH) specifically, literature reports that Blacks and Medicare/Medicaid dually eligible beneficiaries are less likely to receive care from 4- and 5-star rated HH Agencies (HHAs) and more likely to receive care from lower- and un-rated HHAs. We know very little about why this is. One possible explanation could be that the available choices for minorities and low-income older adults are only lower quality HHAs. The purpose of this work is to determine if high quality Home Health Agencies (HHAs) serve neighborhoods disproportionately dependent upon their racial, ethnic, and/or socioeconomic makeup. I characterize neighborhoods by racial and ethnic composition, and the proportion of residents below the federal poverty line. HHAs are considered to be high quality if they have 4-5 stars according to the 5 Centers for Medicare and Medicaid Services star ratings. I use nationally publically available data from the 2017 Home Health Compare website and the American Community Survey Census Data. The knowledge gathered here may help inform reimbursement and incentive practices.

### **Nkem Ike – The Tulsa Race Massacre and the Spatial Distribution of Wealth**

During the early 20th century, there was an influx of racial and domestic terrorism committed against Black people in the United States. The violence was so bad that the year 1919 was deemed the Red Summer by NAACP field secretary James Weldon Johnson because more than two dozen race massacres took place (McWhirter 2011). Despite this, however, many more massacres took place well into the century. These attacks took place in almost every facet of the country and had dangerous results. Oftentimes self-sufficient black communities were leveled, many never rebuilt and murder in the form of lynchings and other means were also prevalent. This, sadly, resulted in constant states of fear by Black people. Scholars attribute this dark time in history to what is referred to as structural strain theory. This theory, refuted by other researchers, attributes race massacres and anti-black violence to changing demographics, the influx of black people into white spaces and lastly, white economic anxiety (de la Roche, 1990).

To highlight the economic stress associated with the structural strain theory, this project will examine the spatial distribution of wealth and where it existed within the context of the race massacre in Tulsa, Oklahoma. The 1921 race massacre was and continues to be a defining moment in the history of the city. This occurrence altered the way of life for many Black Tulsans due to their displacement and the erasure of their once vibrant and bustling enclave, known as Black Wall Street (Greenwood). Therefore, it also had a lasting impact on where wealth was distributed across the city. To fulfill this project's goal of determining the massacre's economic impact, it will use census data from 1920, the year before the massacre, and 1970, a few short years after Tulsa began the process of urban renewal to its downtown center and Greenwood to examine this topic.

### **Stephanie Kang – Residential Mobility and Intergenerational Effects**

This project looks at the impact of household residential mobility on the adult outcomes of children such as educational attainment, earnings, incarceration status, and marriage status. This work contributes to understanding the side effects of a type of household financial constraint, namely residential immobility. To circumvent the selection issue on residential mobility, I explore the historical event of mortgage rate hike and state- and year-level variation in mortgage assumability in the U.S. during the years 1971 through 1982. As the first step of the research, I use the U.S. census data and separately analyze residential mobility and adult outcomes to obtain preliminary results.

### **Beenish Pervaiz – Trends in Terrorism: Spatial Analysis of Terrorist Attacks and Drone Strikes in Pakistan**

Over the past two decades Pakistan has been one of the hardest hit countries by terrorism as it continues to be at the forefront of the global war against terror. From 2000 to 2017, the country has seen 12,551 terrorist attacks which according to some estimates have killed a minimum of 20,500 people. While recent years have seen a decline in the number of terrorist attacks and casualties, as of 2018 Pakistan still continues to be in the top ten most impacted countries by terrorism as its economic, social and human capital development suffers adversely. Given this context, the goal of this study is to spatially analyze trends in terrorist activities across Pakistan using the Global Terrorism Database from the University of Maryland as well as the drone

strikes data as captured by the Bureau of Investigative Journalism. This research will use spatial analysis tools like hotspot and cluster analysis to study how the geography of terrorist attacks and different terrorist groups has moved over time and how this impacts the casualty rates, terrorist targets and the choice of tactics used. It will also help produce insights that can improve how counter terrorism campaigns are structured and implemented in countries that operate in vulnerable threat landscapes.

### **Chantel Pheiffer – The Spatial Distribution of Non-Communicable Disease Risk in South Africa**

The non-communicable disease (NCD) burden is rising alongside the urban population in Low and Middle Income Countries (LMICs). And, while urbanization has long been conceived to be an underlying determinant of non-communicable disease, few studies have examined the spatial distribution of NCD risk in a LMIC like South Africa. In this project I employ data from South Africa's 2016 Demographic and Health Survey to describe the spatial distribution of two major metabolic risk factors of NCDs—hypertension and obesity. I ask, what is the spatial distribution of NCD risk in South Africa? Is there evidence of risk hotspots in urban areas, and is there variation in NCD risk within major metropolitan areas? I finally examine whether the prevalence of NCDs correlate with the availability of healthcare services in a particular DHS survey cluster.

### **Anthony Pratcher – The Colored Metropolis: Racial Integration as a Negative Skew in Metropolitan Development**

Urban scholars of all stripes have struggled to agree on a workable definition for racial integration in metropolitan communities. In many cases, racial integration exists as a transient state—a moment in time between demographic transformation. Using ArcGIS to spatially represent demographic data, this paper demonstrates the value of a self-referential formula to identify racial integration in metropolitan space. Policy analysts often seek to develop a “stable” praxis for racial integration; sociologists have similarly sought to determine what mixture of racial integration is acceptable for members of different racial backgrounds. Historians have often studied racial integration within institutional environments, but utilize models which identify racial transition as the penultimate outcome of racial integration. Scholars have not settled upon a universal definition for racial integration. Using census data from 1970 until 2010, this paper advances a system which determines, in relation to other census tracts, where there are zones of relative racial integration within one metropolitan area. I argue racial integration exists in areas with a racialized population which ranges between the median census tract and the county average. This range is created by a negative skew in demographic distribution due to racism. This approach, as opposed to identifying area which met constant criteria, treats racial integration as a statistical anomaly among census tracts to identify relative zones of inclusion. Moreover, through its exploration of zones for racial integration, this paper explores how socio-economic relations correlate racial integration along with heightened social segregation. In conclusion, this paper uses negative skew to provide a method to quantify racial integration as part of metropolitan growth across space and time.

## **Von Marie Rodriguez-Guzman - Social media disclosures at the anniversary of Hurricane María in Puerto Rico**

In September of 2017, Puerto Rico was hit by Hurricane María, a category-5 hurricane. The hurricane caused major floodings, damaged the island's infrastructure, and interrupted communication channels and power supplies. The hurricane was widely discussed on the popular social media site Twitter, with users sharing their reactions to the hurricane and its impact. Notably, social media plays a critical role in the comprehension of, reactions to, and dynamics of public crises such as natural disasters, including mobilization of volunteers and facilitation of community coping (Bruns & Liang 2012). Social media has been recognized by researchers and practitioners as a key channel of communication that can complement traditional methods of support during regional crisis situations, including natural disasters (Takahashi, Tandoc Jr. & Carmichael, 2015). However, there is limited research on linguistic analysis of social media communication following a natural disaster. As such, the present study aims to characterize online communications that unfolded on Twitter one-year after Hurricane María made landfall in Puerto Rico, describing patterns that emerged from English language tweets from Puerto Rico relative to English language tweets from the mainland United States (U.S.). Researchers utilized the NVivo software addition NCapture to collect tweets containing the hashtags #María (n=253) and #PRSeLevanta (n=52). Tweets were collected over five consecutive weekdays at approximately 11 AM during the week of the one-year anniversary of Hurricane María in Puerto Rico. After cleaning data, removing irrelevant tweets, and tweets that were not in English, a final dataset was established containing 305 codable tweets. The researcher will use Linguistic Inquiry and Word Count (LIWC) software to quantitatively analyze tweets. LIWC will categorize each word of the tweet into different categories (See the LIWC dictionary below). Researcher will utilize GIS software to geo-map tweets based on theme group, thereby visually representing whether tweets aligning with emergent affective processes originated from the island of Puerto Rico or the continental U.S.

## **Juan Uribe – The Effect of Location Based Subsidies on the Housing Market**

This paper uses a regression discontinuity design, and rich administrative data for Bogota, Colombia, to study the effect of a location-based policy on the housing market. The policy is a subsidy to utilities and property taxes targeted using the characteristics of the block and their urban context. Using a score that summarizes observable characteristics, each house receives a subsidy code- a *estrato*- that determines the price for utilities and the tax rate. As predicted by standard urban models, I find a capitalization of the subsidy on the housing market. Houses receiving a small subsidy are cheaper than those receiving a bigger subsidy. This result has implications regarding the incidence of the subsidy. The increase in rent implied by the capitalization of the subsidy and the deferential property tax is at least 2 times higher than the subsidy to utilities received by household living in the heavily subsidized areas. Almost half of the households receiving a high subsidy, rent their homes and therefore are worse-off because of the policy. I also find that blocks receiving a higher subsidy have newer houses. These results show that location-based redistributive policies may distort the housing market and affect city growth and urban density. Therefore, using location as a targeting tool may be inefficient. I use the geographic location of each house to identify where these distortions have been generated and to compare my baseline results with a geographic discontinuity design.

## **Dee Walls – An Initial Investigation of Community Food Security in Providence, Rhode Island**

This project explores the context of community food security in Providence, as well as which entities compose the network of cultural and political institutions that respond to food security concerns within the Providence community. It examines the institutional network, the community, and the interface between the two. Community food security is defined as a situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice. Institutions that rely on the corporate neoliberal food regime propagate barriers to establishing community food security. These institutions, which include banks and supermarkets, apply structuring pressures that have caused various “metabolic rifts” through mechanisms of capitalist “accumulation by dispossession”. Through the use of network and spatial analysis on transportation and supermarket data from the city, I hope to generate a working answer to the question: Where is “a healthy balanced diet” most inaccessible in the Providence community? This preliminary information will inform the next phase of my Master’s thesis project, where the remaining research questions seek to identify (a) where the most frequented food retail establishments are for the community members living in vulnerable areas, and (b) which retail food establishments are most at risk of distributing contaminated or unsafe food products to consumers.