

Spatial Structures in the Social Sciences 2015 Winter GIS Institute

Final Presentation Program

January 16, 2015 Population Studies and Training Center

9:30–9:45 am	Welcome
9:45–10:30 am	Session I: Mapping Landscapes of the Past
10:30–11:45 am	Session II: Spatial Analysis in the Social Sciences
11:45 am–12:30 pm	Session III: GIS and Spatial Analysis: Local Applications
12:30–1:30 pm	Lunch
1:30–2:30 pm	Session IV: GIS and Health
2:30–3:15 pm	Session V: Environment
3:15–3:30 pm	Certificate Presentation
3:30 pm	Close of Conference

PARTICIPANTS

Martha Bohrt (Visiting Scholar)

Laura Chilson (History of Art and Architecture)

Patrick Chung (History)

Diego Díaz Rioseco (Political Science)

Pinar Durgun (Archaeology)

Elizabeth Fussell (Population Studies and Training Center)

Jean-Yves Gérardy (Economics)

Linda Gosner (Joukowsky Institute for Archaeology and the Ancient World)

Mariam Irshad (School of Public Health)

Matt Margetta (IBES/Taubman Center for Public Policy)

Lisa Opdycke (Public Policy & American Institutions)

Aadia Rana (Medicine)

Hayden Reiss (Watson Institute)

Assaf Sarid (Economics)

Yeşim Sungu-Eryilmaz (Urban Studies)

Frances Terry (School of Public Health)

Becca Wang (Sociology)

John Zinda (Institute at Brown for Environment and Society)

PROGRAM

SESSION I: MAPPING LANDSCAPES OF THE PAST

Laura Chilson, *Stream and Forest: Carthusians in the Historic Landscape*

Pinar Durgun, *Intramural and Extramural Cemeteries in the Early Bronze Age Anatolia*

Linda Gosner, *Las Médulas as an Imperial Landscape: Settlement Shifts, Land Use, and Gold Mining in Roman Iberia (1st c. BCE – 2nd c. CE)*

SESSION II: SPATIAL ANALYSIS IN THE SOCIAL SCIENCES

Hayden Reiss, *Factors Influencing BIARI Applicants and Participants*

Assaf Sarid, *On the Origins of Future Tenses in Languages*

Jean-Yves Gérardy, *What It Takes to Be a Successful Taxicab Driver in NYC*

Patrick Chung, *The Geographic Distribution of U.S. AID to Industrial Projects in South Korea, 1954–1958*

Diego F. Díaz Rioseco, *Blessing or Curse? Understanding the Interplay of Oil and Politics in Subnational Settings*

SESSION III: GIS AND SPATIAL ANALYSIS: LOCAL APPLICATIONS

Yeşim Sungu, *Geographic Patterns of Home Buyers and Mortgage Lending in Boston*

Matt Margetta, *NFIP Payments in Rhode Island: Good Policy or a Reoccurring Problem?*

Lisa Opdycke, *Children's Mental Health Resources in Rhode Island*

LUNCH BREAK, 12:30–1:30

**SESSION IV:
GIS AND HEALTH**

Frances Terry, *Distribution of Health Care Utilization and Appointment Adherence in the Hasbro Healthy Communities Survey of Pediatric Clinic Families*

Becca Wang, *Mapping the Demographic and Epidemiologic Transitions in Nepal*

Aadia Rana, *Improving Retention in Care Among Postpartum HIV Infected Women in Mississippi*

Mariam Irshad, *Investigating Mortality after Surgery in Europe*

**SESSION V:
ENVIRONMENT**

Martha Bohrt, *Pollution without Borders: Environmental Quality along the U.S.-Mexico Border*

John Zinda, *Forest Regeneration and Livelihoods across Communities in Rural China*

Elizabeth Fussell, *Weather and Population Change*

PRESENTATION ABSTRACTS

Martha Bohrt – Pollution without Borders: Environmental Quality along the U.S.-Mexico Border

Air and water quality in international borderland regions are impacted by the actions of people on both sides of the border and their respective governments. Due to the complexity of these areas, policy makers must work together to develop international treaties and laws to ensure the needs of their populations are met. The U.S.-Mexico border provides an interesting opportunity to observe differences in environmental quality between border and non-border regions. For my project, I will use data from the County Health Rankings and Roadmaps project and a map from the U.S. census to look at county-level air and water quality in all the U.S. states that border Mexico. I will use GIS to generate two new variables: one that identifies all the border counties and one that estimates distance of all counties from the border. I will then examine whether proximity to the Mexico border has an effect on water or air quality, net of other factors. This map will not analyze the impact of policies on transnational environmental quality. Rather, it will show whether there is a difference on the environmental quality of counties close to the Mexico border and those far from it. I believe this information will prove useful to policy makers in the development and evaluation of border region policies.

Laura Chilson – Stream and Forest: Carthusians in the Historic Landscape

In more recent years, scholarship on medieval monasticism has shifted toward a more holistic approach to understanding. Among these developments the importance of the building's resource management and situation within the landscape has increasingly come to the fore. Water in particular has proved an interesting study given the consistent role of monasteries within the development of medieval water technology. Advanced water technology proved doubly important for Carthusian Charterhouses. Due to the order's more eremitic practices, which focused on isolated prayer rather than communal living, each monk received his own house. Each of these houses required plumbing, as did the kitchen and other areas in the shared spaces of the complex. Archaeological evidence for Carthusian water use as a whole remains scant, though the few studied sites have proven that the Carthusians had sophisticated water-usage systems that provided for these large complexes. By plotting these monasteries within the historic landscape, I will analyze the distance from water sources to see what evidence can be found for the importance of water in the choice of a new location. Situating these monasteries will also allow for an analysis of the natural surroundings, in particular the physical manifestation of the monks' desire for isolation. In order to accomplish this analysis, I shall primarily focus on the amount of tree cover within a certain radius of the monastery itself. I expect to see a consistent placement of monasteries near sources of water and a common situation of monasteries within wooded areas. The analyses will thus provide a deeper understanding of the order's priorities within the physical landscape.

Patrick Chung – The Geographic Distribution of U.S. AID to Industrial Projects in South Korea, 1954–1958

My project will map the distribution of U.S. funding to industrial projects in South Korea during the middle of the 1950s. Throughout the Cold War, the Agency of for International Development (more widely known as USAID) served as the primary channel of non-military economic assistance to South Korea. Thus, I employ USAID data from a report on USAID funding of industrial projects in the country between the fiscal years 1954 and 1958. The data set includes observations of 199 different projects, each of which has a location (city), sponsor, the financial contributions directly from USAID and from counterpart funds (which consisted of money raised by the sale of aid-financed commodities), date of completion/expected completion, project coordinator, and miscellaneous notes specific to individual projects. In mapping the locations of these projects, I hope to answer two questions. First, are there any spatial patterns in the locations of projects and in the amount of funding different locations received? Second, is there a correlation between the concentration USAID-funded projects (either at the municipal or provincial level) and later industrial development (i.e. expansion of railway lines, road, industrial zones, per capita-GDP)? In answering these questions, I hope to examine the spatial relationship between U.S. economic assistance during the early Cold War (1950-1960) and the industrialization of South Korea two decades later (1970-1990). It must be noted that this data set is limited in two ways. First, it covers a relatively short time period and does not account for the funding of projects during the 1960s, which scholars have identified as a critical period for South Korean industrialization. Second, this data set does not account for industrial project funded by the U.S. military.

Diego F. Díaz Rioseco – Blessing or Curse? Understanding the Interplay of Oil and Politics in Subnational Settings

In some countries, mineral wealth –or part of it– remains in the regions where it originates, creating subnational rentier units, that is, mineral-dependent governments which rely fiscally on mineral rents instead of local taxes. Recent studies argue that subnational rentier units suffer from the same non-democratic tendency as their national counterparts. However, worldwide evidence does not suggest a clear relationship between rents and subnational political regimes. This project asks why some subnational rentier units are politically competitive whereas others are not, focusing on units located in non-rentier national governments. Here, the lack of salience of mineral rents to the national economy eliminates the tension over resources among the central and provincial governments. Consequently, I argue that the rent-sharing regime –the institutional arrangement for sharing or not sharing resource revenues among political units– between the provincial and municipal levels determines political competitiveness at the provincial level. Where rent-sharing regimes concentrate rents at the provincial level, incumbent governors are able to build hegemony, as they are fiscally independent from national governments and richer vis-à-vis economically dependent mayors. Conversely, rent-sharing gives mayors fiscal independence from the provincial government, enabling them to challenge the hegemonic party. In short, rent sharing creates political competition by breaking the governors' monopoly over economic resources, leveling the playing field between the provincial and municipal governments. The project tests the argument using spatial regression for the 24 Argentine provinces observed from 1983 to 2011 –the first and last gubernatorial election available. Since, theoretically, the errors for one rentier unit are expected to be related to the error of other rentier units, the project tests for spatial correlation, and if found, corrects for it. The project also uses

the Morans statistic to assess spatial patterns of subnational democracy; in particular, the existence of clustered distribution of non-competitive regimes across provinces. It also aims to create spatial variables to integrate in the model, measuring distance from the Buenos Aires (the Capital city). The goal is to analyze as to whether distance affects levels of subnational democracy, given that governors from remote or poor-connected provinces might be more successful to hide their authoritarian practices from the political center, thereby establishing non-democratic regimes. Finally, the project creates maps for the spatial distribution of subnational democracy and levels of mineral dependence in the Argentina provinces.

Pinar Durgun – Intramural and Extramural Cemeteries in the Early Bronze Age Anatolia

The transformation in mortuary traditions in ancient societies can tell us a lot about the deceased and the concept of death, but also about the social, economic and political circumstances of the living populations. The Neolithic and Chalcolithic periods of Anatolia¹ which are periods when villages consisted of closely connected houses, witnessed the burial and deposition of human remains within these villages, right underneath house floors where people continued their daily living. This tradition started to change at the end of the Chalcolithic and by the Early Bronze Age², when extended cemeteries outside the settlements started to emerge in different regions in Anatolia. This transition is usually attributed to the social, economic and political transformations taking place during the urbanization process in the EBA; the shift from villages to cities, from closely connected settlement plans to citadels, and from egalitarian lifestyles to the emergence of social complexity. However when we look closely we can see that the tradition of intramural burials continued to be practiced in the EBA even in places with extramural cemeteries. In this project, by mapping these intra- and extramural cemeteries, I want to see if there are common characteristics that these cemeteries (and burials) share, and eventually I want to try to find out if there are regional and/or local patterns. This will feed my research paper³ where I want to answer the question what these burials and cemeteries can contribute to our understanding of the social changes in the EBA.

Elizabeth Fussell – Weather and Population Change

My project is a first step in a larger research project on climate and population. For this first project I ask, is there a statistical relationship between weather or environmental factors and demographic characteristics of places, specifically U.S. counties. The first step in establishing a causal relationship between weather and population change is to demonstrate a spatial statistical correlation and temporal order in which a change in the environment precedes a change in the population. The next step is to introduce other explanations for the observed population change. These other explanations may be mechanisms by which environmental change produces population change. The ultimate question is whether counties with “worse” weather or environmental conditions are losing population through out-migration and mortality. During this week I hope to identify issues in conceptualization and measurement validity. For my population data I will use county-level American Community Survey data, focusing specifically on age and sex distributions and median age for men and women. I will also use other measures that demographers have developed to represent distinct age-sex distributions. For my weather data I will use a gridded weather data product, or a reanalysis product, available

¹ roughly between 9500-3000 B.C.

² 3000-2000 B.C., henceforth “EBA”

³ will be presented at UCLA Cotsen Institute of Archaeology Graduate Student Conference on Jan. 30 2015.

from the U.S. National Center for Environmental Prediction (Auffhammer, Hsiang, Schlenker, and Sobel 2013). I will construct variables that measure variation in temperature and precipitation. Alternately, I will use a drought index measure from the U.S. Drought Monitor housed on the University of Nebraska-Lincoln (<http://droughtmonitor.unl.edu/Home.aspx>). The drought index may be preferable because it measures the effect of weather (temperature and precipitation combined) on the natural environment. I expect that these weather trends will affect natural resource-based livelihoods and may result in out-migration, especially of young adults searching for viable employment.

Concept	Measure
Demographic measures	Median age for men and women, elder and child dependency ratios, migration age distribution “signatures”
Temperature variation	Mean and standard deviation, minimum, maximum, days of extreme highs and lows (1 or 2 standard deviations above mean)
Precipitation variation	Mean and standard deviation, minimum, maximum, days of extreme highs and lows (1 or 2 standard deviations above mean)
Drought index	Drought intensity and duration

Reference

Auffhammer, Hsiang, Schlenker, and Sobel. 2014. “Using Weather Data and Climate Model Output in Economic Analyses of Climate Change.” *Review of Environmental Economics and Policy* 7(2): 181-198.

Jean-Yves Gérardy – What It Takes to Be a Successful Taxicab Driver in NYC

Using NYC taxicab data from 2010 to 2013, I first want to study whether dishonesty pays for taxi drivers in NYC. Given that a trip fare is a function of a flat rate, distance and time spent in traffic, taxi drivers face a trade-off between taking a longer road to increase revenue of a particular trip and taking short roads to increase the number of fares they can pick up per shift. I assume that experienced drivers choose one or the other option based on their expectation of the current demand for taxis. Second, I would like to determine what characteristics successful drivers share. For example, do drivers learn where and when to go to pick up profitable fare? How do most likely risk averse drivers respond to an increase in the fare variance? For that last question, I will exploit the September 2012 change in the fare schedule, which suddenly gave distance and time spent in traffic a heavier weight in the fare function. This means that the expected fare the driver will receive from a trip is more affected by traffic conditions and road choice than before. Finally, I can use the increasing influence of Uber and Lyft to determine whether the whole taxicab industry became more efficient over time.

Linda Gosner – Las Médulas as an Imperial Landscape: Settlement Shifts, Land Use, and Gold Mining in Roman Iberia (1st c. BCE – 2nd c. CE)

In the final years of the first century BCE, Emperor Augustus and the Roman army conquered northwest Iberia, finally bringing the whole of the peninsula under Roman political control and catalyzing dramatic changes in the social and economic organization of the region. Roman desire to access gold from these metal-rich landscapes—encompassing northern Portugal, Galicia, Asturias, Cantabria, and parts of Castilla y León (Spain)—has long been considered one of the primary incentives for their conquest of this remote, mountainous territory. In this project, I

consider the impact of large-scale Roman gold-mining on settlement patterns and landscape use at both the regional and site-level in the two centuries following Roman conquest. I trace the abandonment of many large-self-sufficient hilltop settlements called castros, common in the Iron Age, and the resettlement of local communities into smaller settlements near gold resources, as well as the introduction of Roman cities, military camps, roads, and other infrastructure. Turning to the UNESCO World Heritage site of Las Médulas (Léon, Spain), I examine the distribution of settlements, hydraulic infrastructure, and gold mines and assessing the relationship of this key gold-mining site to new Roman political structures and economic networks in the wider region. Ultimately, a close examination of changes in settlement patterns and land use from the Iron Age to the first centuries after Roman conquest can shed light on the impacts that Roman imperialism had on the social and economic organization of local communities.

Mariam Irshad – Investigating Mortality after Surgery in Europe

Over 230 million major surgical procedures are performed each year worldwide with reported hospital mortality between 1% and 4% (1). Complications following surgery are a leading cause of morbidity and mortality. In the overall population, the incidence of post-operative complications and death is low, however, studies suggest the existence of a high-risk sub group, which account for 80% of surgical deaths. A preventable death rate of 1% would result in 2.3 million avoidable deaths each year (1). A recent study provided the first report of postoperative outcomes at the European level (EuSOS). The EuSOS described mortality rates of patients undergoing surgery across several European nations. The findings suggested that post-operative mortality may be higher than before and that mortality may vary between countries, suggesting need to improve care in these regions. Compared to other hospitals, teaching hospitals provide clinical education and training to healthcare providers in addition to delivering medical care to patients, have commitment to research and technically sophisticated services. More training and services produces higher standard of care and improved postoperative outcomes. The objective of this project is to (1) compare post-operative mortality rates across 28 nations in Europe and (2) determine if teaching hospitals correlate to decreased post-operative mortality rates. Data was collected on patients inpatient surgery in 498 hospitals across 28 European countries. GIS spatial analysis involving geographic scan statistics was used to identify multiple layers of geographic distribution including (1) post-operative mortality rates by country in Europe (2) total hospitals included in study by country, (3) teaching hospitals compared to mortality rates.

Reference

Pearse RM, Moreno RP, Bauer P, et al. Mortality after surgery in Europe: a 7 day cohort study. *Lancet* 2012;380(9847):1059-1065. doi:10.1016/S0140-6736(12)61148-9.

Matt Margetta – NFIP Payments in Rhode Island: Good Policy or a Reoccurring Problem?

My broader research question is: In Rhode Island, how do flood insurance subsidies distort property values relative to their flood-risk exposure? For my GIS presentation, I will display current market value and the distribution of flood catastrophes in Providence by street address in order to provide the audience with a visual representation that is easy to understand. Flooding is the most costly and reoccurring natural hazard in Rhode Island. Often, the losses occur at the same address time after time. However, the entire tax base, whether in a floodplain or not, pays into a fund that indemnifies a homogeneous cluster of properties. The research topic and GIS presentation is not to vilify floodplain residencies and commercial properties but rather provide a

graphical depiction that each Rhode Island citizen can look at and formulate their own opinion on whether or not the state should continue its current policies. In addition to the map simply displaying property value and losses, I will also incorporate average household income. From a policy perspective, I believe there is also a question of vertical equity and whether or not the current policies are fair relative to household income.

Lisa Opdycke – Children's Mental Health Resources in Rhode Island

In the past few months, rising concern regarding Rhode Island's Department of Children, Youth, & Families (DCYF) has highlighted the impact of state funding cuts and shortcomings of a system of care intended to control costs and improve services. Specifically, government officials have scrutinized the Department's placement of children requiring high-level mental health care in out-of-state residential treatment facilities. However, these discussions of DCYF's presumed failures have not included a contextual view of the problem. As Family Court Chief Judge Haiganush R. Bedrosian has testified, mental health resources and programs focusing on adolescents and youth are limited in Rhode Island; Consequently, youth requiring specialized or high-level treatment often must seek care outside of Rhode Island.

Aadia Rana – Improving Retention in Care Among Postpartum HIV Infected Women in Mississippi

Young HIV-infected African-American women in the southern United States are disproportionately impacted by the HIV epidemic and continue to experience inherent disparities in accessing and benefiting from medical care. Increasing numbers of HIV-infected women are giving birth each year with limited resources available to navigate consistent engagement with medical care postpartum, a delicate time when competing responsibilities and psychosocial stressors may result in women preempting their own medical care. In Mississippi, African-American HIV-infected women are already marginalized in their ability to access HIV care likely due to factors such as poverty, stigma, and rural location.

My central hypothesis is that HIV-infected postpartum women have a low perceived need for self-care that is magnified by competing child-care, social, economic priorities and psychosocial stressors. **To comprehensively describe linkage and retention to HIV care following delivery** by examining time from delivery to linkage, and the socioeconomic, demographic and structural determinants of linking and retaining in HIV care, I will conduct retrospective analyses using data from the Mississippi Department of Health (MSDH) of all HIV-infected women who between 2002-2013 by accessing clinical and health care utilization information from state-wide databases. The outcome of primary interest is the retention in HIV care defined as the HRSA HIV/AIDS Bureau performance measure. The predictor model will include demographic variables available in databases (age, race/ethnicity, poverty level, housing status, insurance status, distance to clinic) and clinical variables (HIV risk factors, CD4 at entry to care, HIV plasma viral load, AIDS status, prescription of ART). As we are also interested in the structural features of the health care delivery system that are associated with retention in HIV care, we will include in the predictor model the MSDH Health District (1-9) as well as their HIV Community Service delivery Network area (1-10) by converting county and census tract data.

Hayden Reiss – Factors Influencing BIARI Applicants and Participants

I work on BIARI (Brown International Advanced Research Institutes) which is a program for International Postdocs. The program receives about 1,000 applications per year and we have about 140 participants. We aim for an internationally balanced applicant and participant pool. We are reasonably successful in having a balanced group of participants, but the applicant pool is usually lopsided. I aim to discern the reasons behind the lopsided applicant pool. The factors that I will be mapping are as follows for applicant citizenship, country of highest degree and current position: 1. Countries with English as an official language; 2. Countries with Santander University linkages; and, 3. GDP of the country of applicant citizenship.

I predict that I will find a higher number of applications from countries, which have English as an official language, a Santander linkage or a low GDP. I am using English as a predictor, because our institutes are conducted in English. Applicants who feel comfortable communicating in English are more likely to apply. Santander Universities is our sponsor for the program and they advertise our program within their many universities across the world, so numbers from these countries should be higher than average. GDP is useful because our program is fully sponsored, making it more appealing to applicants who would otherwise be unable to visit the US due to the high cost of flights and other needs. By examining these variables I hope to provide solid data for targeting publicity and outreach in the future, ensuring a more balanced applicant pool.

Assaf Sarid – On the Origins of Future Tenses in Languages

A recent paper (Chen, 2013) argues that people who speak languages with explicit future tense tend to discount more the future, and as a result to save less and to be less healthy. His analysis is based on present data on languages, saving rates and different health characteristics. Yet his research does not address the question on the origins of the future tense, and hence it is vulnerable to reverse causality, namely that the emergence of the future tense in certain languages stems from omitted variables which affect the culture of people in the present. In this research I would like to investigate the origins of the future tense in general, and a more defined time structure in general. I intend to test whether languages with more defined time tenses, are the languages which are spoken by ethnic groups that historically practiced occupations which required planning for a longer period. In order to do so, I will look at data of 222 languages from Dahl (1985), and map them into the regions (rather than countries, as done previously) they are spoken today. I will then match this data with agricultural data on the suitability of the soil to different crops with different life cycles.

Yeşim Sungu – Geographic Patterns of Home Buyers and Mortgage Lending in Boston

This study is part of a larger project about place diversity, the guiding planning policy in cities in the 21st century. From a city planning point of view, place diversity refers to not only socially and economically diverse neighborhoods [mixed in income, race, ethnicities], but also mixed in land use. For the Winter GIS Institute, I will focus on one important contributor to racial and income diversity in neighborhoods |the geographic patterns of mortgage lending and homebuyers. I ask two basic questions about the mortgage lending trends. First, what is the racial and income composition of the applicants/borrowers? I will combine the mortgage lending data with census data to examine the type of neighborhoods accessible to different borrowers. Second, are there differences in access to home purchase credit by race and income? To measure

the ability of different racial and income groups to obtain loans, I calculated loan denial rates by race, income category, and race-income combinations for census tracts. This study will be conducted for the city of Boston using the 2013 data.

Frances Terry – Distribution of Health Care Utilization and Appointment Adherence in the Hasbro Healthy Communities Survey of Pediatric Clinic Families

Missed pediatric appointments may result in fewer opportunities for family health education, disruption of health care delivery at the provider office level, and the delay of needed care for vulnerable pediatric patients. From pediatrics to geriatrics, it is clear in health care that place is a critical factor determining how patients access and receive care. This analysis will describe the geospatial distribution of pediatric patient families across Rhode Island who did not keep [scheduled] appointments (DNKA) in the 12 months following the Hasbro Healthy Communities Survey administered to ~400 families in November-December 2010. Preliminary review of the literature suggests that several factors covered in this survey, including parent's education, socioeconomic status, behavioral beliefs, general health of child and parent, work status of parent, primary language and race of parent and child, may be critical information to include in a model designed predict DNKA rates in pediatric populations. A visual representation of spatial distribution of these characteristics may reveal patterns otherwise unrecognizable in two-dimensional tabular data. Taking advantage of geographical resources available at RIGIS, one or more variables relating to transportation, isolation, independence, and [road or geodesic] distance to the clinic will also be constructed and evaluated for their contribution to better prediction of appointment keeping.

Becca Wang – Mapping the Demographic and Epidemiologic Transitions in Nepal

The overarching goal of my project is to analyze the epidemiologic transition in Nepal through a spatial lens. More specifically, the primary purpose is to examine the geographic distribution of overweight and underweight females in Nepal over a ten year period. Epidemiologic transition theory posits that as countries undergo the demographic transition and move towards low fertility and mortality rates, the patterns of health and disease observed in the population also shift. Countries gradually see undernutrition and infectious diseases replaced by degenerative and man-made diseases as the leading cause of death (Omran 2005). For many developing countries in the midst of this transition, this has meant the emergence of the paradoxical situation of both undernutrition and overnutrition (Turi et al. 2013). I am interested in determining whether this public health paradox is an issue in Nepal, and if so, do we see a spatial clustering of underweight and overweight women? I plan to conduct a cluster analysis by calculating a Getis-Ord G_i^* statistic in ArcGIS. My primary data source is the Nepal Demographic and Health Surveys (DHS) from 2001, 2006, and 2011. The DHS is a rich data source for individual and household-level characteristics as it is a nationally representative household survey that collects data indicators on maternal and child health. Additionally, the data include latitude and longitude coordinates for the location of surveyed places.

References

Omran, Abdel. 2005. "The Epidemiologic Transition: A Theory of the Epidemiology of Population Change." *The Milbank Quarterly* 83(4): 731-757.

Turi, Kedir N., Mary J. Christoph, and Diana S. Grigsby-Toussaint. 2013. "Spatial Distribution of Underweight, Overweight and Obesity among Women and Children: Results from the 2011 Uganda Demographic and Health Survey." *International Journal of Environmental Research and Public Health* 10: 4968-4981.

John Zinda – Forest Regeneration and Livelihoods across Communities in Rural China

Policies intended to afforest rural landscapes depend on complex social and environmental processes. China's forest recovery programs have dramatically increased forest area over the past two decades, but the quality of the new forests and the causes of heterogeneous outcomes are poorly understood. This study examines household and community factors that may influence land cover change outcomes in 12 rural communities. We have gathered data on socioeconomic attributes and forest use through a household survey, focus groups, and intensive qualitative interviews. We have conducted quadrat measurements in forest plots associated with selected households and plan to obtain remote sensing data for comparisons of land cover change.

This week, I will make a display map of the study area and a schematic presentation of maps of the twelve communities. For the latter, I will resolve some issues in georeferenced maps of community borders and forest use. Using forest change data from Hansen et al.

(<http://earthenginepartners.appspot.com/science-2013-global-forest/>), I will make a map of forest cover change at the provincial level. Finally, I will generate a cost distance layer estimating the difficulty of access from settlements to points in the surrounding landscape, for use in estimating resource use pressure in analysis of forest quadrat and land cover change data.