DIVERSITY FELLOWSHIP
MINNESOTA POPULATION CENTER

Summer 2015 - Projects

Terra Populous:
Baishali Bakshi & Luisa Silva Lelis

Climate Change and Mortality in Africa: Climate change may lead to increased mortality rates through sudden-onset events (e.g., storms, floods, etc.) as well as through slow-onset processes (e.g. desertification, sea-level rise, etc.). Theoretically informed by the sustainable livelihoods framework, the goal of this research project is to explore the association between climate change and mortality in five countries of the African continent, using a combination of demographic data and spatial environmental data from the TerraPop databases and various other data sources. As the set of key predictor variables, we computed measures of climatic extremes (heat wave, cold spell, drought, excessive precipitation) based on gridded high resolution monthly climate information from the University of East Anglia Climate Research Unit (CRU-TS). To account for the influence of other environmental determinants of mortality we made use of a Geographical Information System (GIS) to compute measures of conflict prevalence, access to natural resources (NDVI), population density, agricultural dependence, occurrence of diseases, and access to health infrastructure (e.g., hospitals). Controlling for a host of socio-demographic predictors (e.g., physical assets, age, gender, dependency ratio), we employed multilevel logit models (R package lme4) to estimate the influence of climate change on household-level mortality. The research project and resulting publication will contribute to the quantitative research literature on the impacts of climate change on livelihoods and health among low-income communities in developing countries.

IPUMS Historical & USA
Besu Alemu & Thu Vien

Immigration: A classic and important question in American history and social science research is how immigrants settle in the United States, where do they move and what are their social and economic outcomes. Answering these questions has often been hindered by the difficulty of gathering information on representative groups of immigrants. New databases of the complete census enumerations of the United States allow a new approach to this question. We linked Swedish and Norwegian immigrants from immigration registers to the 1920 and 1930 population census, where the census provided us with information on both individual outcomes (e.g. Occupations and home ownership) and community characteristics (e.g. How many people from the same ethnic group were in the same location). The links between the different sources was done using a probabilistic matching algorithm, as the number of people being traced was too large to review by hand. The project demonstrated the feasibility of using external sources with the census to study important social science questions.

Information Technology – TerraPop Project:
Shoumith Jeyakumar & Wen Jing

Web mapping: Terra Populus is a data dissemination platform for researchers studying human-environment interactions. Terra Explorer is an interactive data visualization tool that allows users to explore the spatial and statistical relationships between datasets through web mapping. The application provides dynamic linking between the datasets and the interactive map. The application uses Ruby on Rails to provide seamless interactions between the Leaflet, PostgreSQL, and Geoserver via API. Additional JavaScript libraries are used to develop custom functions for querying and visualizing data. Students have been charged with the development and maintenance of the code found within github as repository. They are responsible for keeping track of commits which may come from other developers.