AZAVEA SUMMER of MAPS

2017 Nonprofit Project List

Arts & Culture

PhillyCAM

COMMUNITY MEDIA AS INDICATOR OF SUPER ENGAGED NEIGHBORHOODS

http://www.phillycam.org

Spatial Analysis Project:

Community media centers play an important role as places where people from diverse backgrounds come together to learn to tell their stories through media. PhillyCAM's methodology fosters an environment that promotes public discourse, explores issues in-depth and seeks to build more informed and engaged communities by connecting people through media production and distribution.

When researchers from the University of Texas looked at the impact of public access TV on frequent viewers, they discovered that minority and less educated viewers had significantly more social capital as compared with those who didn't regularly view public access TV. This project will map data about PhillyCAM members, makers, donors, and viewers to attempt to show a correlation that in neighborhoods where high numbers of people are making or viewing hyper local media there is also an elevated level of engagement in community building activities and high voter turnout.

Data Available:

- CiviCRM database of over 4000 current/lapsed PhillyCAM members & donors.
- Database of PhillyCAM nearly 1000 pieces of member content tagged by zipcode and content type.
- 5000 responses from an online survey of Philadelphia residents re: their cable viewing habits
- Open Street Maps Data infrastructure, schools, libraries, rec centers
- Census/ sociodemographic data for each neighborhood
- 2017 Election results by ward

Maps and Reports that will be created:

PhillyCAM is committed to serving the entire city and building an engaged constituency of people often left out or misrepresented by mainstream media including people of color, working people, sexual minorities, people with disabilities and young people. We believe that people who make, watch and/or listen to locally produced community media are more civically engaged. We want a map that visually demonstrates our impact and indentifies neighborhoods where we need to do more. The proposed spatial analysis project, will help identify:

- Neighborhoods within Philadelphia that have the highest concentration of PhillyCAM producers and productions.

- What type of media content is being produced and how does it advance our mission.

- Which active PhillyCAM producers reside in each Council district.

- Analyze what the barriers (income, language, education) are in accessing our programs.

How the maps and reports will be used:

It is our assertion that PhillyCAM facilitates the creation and cablecast of locally produced public access television and low power FM radio that reflects the diverse social, political, ethnic, and artistic communities found in Philadelphia. Our programming gives a direct voice to all neighborhoods, groups, and points of view that exist in such a diverse and vibrant city.

There are no specific figures regarding viewership of our channel since we do not subscribe to costly services such as Nielson. In a recent authenticated phone survey, conducted by the City of Philadelphia related to cable television service, responses indicated that 14% of all respondents who were cable subscribers watched PhillyCAM at least once a week. ESPN typically rates a 33% in similar surveys. The map and report will help us refine our communications and engagement strategies to go deeper into neighborhoods where we have not yet had any impact.

Community & Economic Development

Human Computation Institute

CROWDSOURCED MAPPING TO SUPPORT SUSTAINABLE DEVELOPMENT IN RURAL TANZANIA

http://humancomputation.org/

Spatial Analysis Project:

Our project is based on crowdsourcing and open data as a way to support development in rural Tanzania, particularly to reduce gender inequality, prevent gender-based violence, and improve education and health. The project is run by volunteers with no GIS experience, but we realize the power of maps in tackling big problems and wish to expand our reach.

We have the following location-based data available: population density and poverty levels, incidences of female genital mutilation (FGM) and child marriage, educational achievement and various health aspects. We would like to generate maps to visualize regions or places that have the most immediate needs, allowing us to dedicate our resources to specific places & problems. For example, we are working to reduce the incidence of FGM by manually mapping incidents, and then improving maps of nearby regions on OpenStreetMap to support outreach work in poorly accessible areas & previously unknown settlements.

Data Available:

- FGM incidents by location and data for 2016 cutting season
- Open government data of schools, clinics, water points
- Income (poverty) and population data
- Education indicators for different schools
- Data on: maternal health, newborn health, childbearing age, pregnancies and births
- Number of people per clinic/doctor
- Birth and death rates

Maps and Reports that will be created:

- Maps showing number of girls subjected to FGM, rescued, and died by village and region.
- Maps showing incidences of child marriage by village and region.
- Reports on education indicators in different regions, with an ability to reference other factors such as population density, density of schools.
- Maps that allow visualization of areas in a certain region by population density or poverty, with an ability to cross these data.

- Coverage maps regarding health & educational services: populations served by clinics and schools and average distance traveled by users.

How the maps and reports will be used:

They will help to understand the development levels and identify specific needs of different regions, thus allowing us & similar organizations to allocate our resources to the regions with the most immediate needs. More specifically:

- Help plan intervention efforts before and during the cutting season & improve accessibility to rural settlements to better protect girls from FGM, as well as expand understanding and raise awareness of FGM activity.

- Help with need planning by visualizing how accessible clinics and schools are to different populations.

- Help to pin-point & analyze regions where the quality of health or education services should be most urgently improved.

- Help to identify the poorest regions and come up with solutions/development programmes that may best serve the geographical region.

- Help to plan ahead of health and humanitarian crises that are influenced by population density, and allocate resources to areas of need

Humanitarian OpenStreetMap Team

THE IMPACT OF OPEN MAPPING ON PEOPLE, COUNTRIES, AND THE SUSTAINABLE DEVELOPMENT GOALS

https://hotosm.org/

Spatial Analysis Project:

Visualize the impact HOT's projects have on the people participating in them, the people living there, and to encourage further use of the enormous amount of data collected as part of some of HOT's projects: "Ramani Huria" project in Dar es Salaam, "Mapping Financial Inclusion" in Uganda, and InAware in Indonesia. HOT proposes to develop geospatial analyses and thematic maps to evaluate, visualize and translate geodata for these areas and relate this to personal stories from students, team members and participants on our projects, and their relation to the Sustainable Development Goals.

These stories and maps could be used to showcase how open geospatial data (OpenStreetMap) can both affects people's lives directly, and at the same time be used to measure and assess progress towards the Sustainable Development Goals (focusing on selected goals, targets and indicators; specific attention to those where the disaggregated/granular nature of OSM data offers additional insights).

Data Available:

All of the data HOT collects is already available as open data on OpenStreetMap. We will provide participants with a full data model, and a snapshot of the OpenStreetMap data (in a preferred format, shapefiles possible) for each project/story we'd like to include.

For example, the data (according to a granular defined data model) that is available for Dar es Salaam, Tanzania via OpenStreetMap, contains data on at least the following:

- Buildings, including (where available) street names and house numbers, often also building materials, number of stories, and primary use (residential, commercial, etc)

- Roads, including information on topology, surface, and often width and condition.

- Amenities, such as schools, health facilities, etc.

- Water and drainage systems

Other work that can be used as input:

- Thematic maps on drainage
- Health and sanitation

Maps and Reports that will be created:

Several (3 to 7) stories/maps/analyses that translate specific types of OSM data collected for some of our projects to specific SDG goals, targets and indicators.

For example, these could be a story on flooding and urban planning (SDG 11), education (SDG 4), or on health and Sanitation (SDG 3, 6)

Ideally, these would include a web map, which allows for filtering/drill down to a specific SDG, target and indicator, a specific narrative per analysis, the ability to generate static maps on the basis of exported datasets, and the ability to compare datasets for different timeframes (to allow for visualizing/measuring data and change on specific goals/targets/indicators).

A description of the process of arriving at these maps and analyses, including the translations and transformations performed, and a replicable method for performing these on OSM datasets for other areas.

How the maps and reports will be used:

The deliverables for the Summer of Maps would be a key part of both several of HOT's current initiatives, visualizing outputs of our projects, and would help greatly in raising the potential impact of these projects. Additionally, they would be incredibly helpful in establishing a better public understanding of the different parts of HOT's operations are integrated and reinforce each other, such as remote mapping with the global volunteer community on the one hand, and ground survey and mapping projects with local volunteers and partners on the other hand.

Jane Place Neighborhood Sustainability Initiative

MAPPING NEW ORLEANS' EVICTION CRISIS

http://www.jpnsi.org

Spatial Analysis Project:

New Orleans is facing a growing displacement crisis; as the city becomes more expensive, many low income families are struggling to find stable, affordable housing. Over the last 10 years, rents have risen 40% without any similar rise in wages to help families avoid significant rent burdens. Neighborhoods are transforming, racially and economically, as they become prohibitively expensive for the majority of our city's residents. Aspects of the crisis remain hidden as poverty and housing issues are de-prioritized politically. In particular, data about the eviction rate in New Orleans and its' impacts on individuals and neighborhoods has never been analyzed. Davida Finger, a lawyer with Loyola University's Community Justice Section Law Clinic, spent the past year building a dataset that seeks to answer questions about evictions in New Orleans, including how many evictions are occurring city-wide, where they are geographically concentrated, and why individuals and families are being evicted.

Data Available:

Data surrounding the evictions in New Orleans and its' impacts on individuals and neighborhoods has never been analyzed on a comprehensive, case-by-case basis; prior to 2013, there was no comprehensive datasets available to lawyers, researchers, or community members. Court records were buried in individual case files, making it hard to analyze trends. Ms. Finger's dataset, which includes information on over 11,000 individual court cases, offers the first opportunity for advocates and policy-makers to truly understand where and why evictions are occurring in Orleans Parish. Jane Place will use this data set in conjunction with historic red-lining maps of New Orleans, data sets from the American Community Survey, and additional information from the Housing Authority of New Orleans to complete this mapping project.

Maps and Reports that will be created:

We are interested in mapping the following data points:

- Evictions ordered by zip code/neighborhood, alongside poverty and gender ACS data
- In cases where evictions were caused by non-payment of rent, mapping the monthly rent amount and amount in controversy in the eviction case across neighborhoods
- Overlaying the eviction data with data around substandard housing conditions
- Overlaying the eviction data with data around rent increases
- Overlaying the eviction data with data around transportation access
- Overlaying the eviction data with historical maps around redlining

Beyond mapping, we plan to issue a report on how various interventions might improve eviction outcomes for tenants, including comparing and contrasting different legal systems to demonstrate specific ways tenants could have better outcomes. We also want to create a set of infographic tools explaining what

tenants can expect when faced with an eviction and what resources exist to help them during this time of stress.

How the maps and reports will be used:

Evictions can cause lasting damages to individuals and families that stretch far beyond the initial crisis, and can plunge individuals and families deeper into poverty and stress. Studies show that evictions can lead to job-losses, health crises, and limit future housing options due to negative impacts credit scores. In order to develop and advocate for policies that will protect tenants and prevent an escalation of the eviction crisis, we need to better understand how, where, and why evictions occur. The ability to identify the number of evictions occurring, identify neighborhoods where families are most at-risk, and analyzing the root causes driving evictions will help community advocates and policy-makers design better interventions to prevent unnecessary evictions and support tenants most in need with appropriately targeted programs that address root causes of the eviction crisis.

Legal Assistance of Western New York, Inc.

HOUSING CONDITIONS AND SUBSTANDARD HOUSING ENFORCEMENT IN RURAL WESTERN NEW YORK

http://www.lawny.org

Spatial Analysis Project:

This project will analyze factors associated with substandard rental housing, and regulatory agency engagement efforts to address the issue across our organization's 13 rural counties. Millions of Americans live in substandard housing conditions, which can have radiating effects on other facets of their lives. For many people, particularly those with lower incomes and other vulnerable populations, substandard housing is often the only readily available and affordable option.

The project will investigate various aspects of the substandard housing market, including the extent to which substandard housing correlates with geographical isolation, subsidized housing properties, eviction rates, proximity to community resources, and various demographic categories. It will also evaluate the effectiveness and consistency of regulatory agency activities (including code enforcement and department of health), including outcomes of regulatory efforts.

This project will identify the pressure points in the substandard housing system that can be addressed to provide better access to safe, affordable housing.

Data Available:

We have or will have the following datasets for the years 2015 and 2016, or the most current available:

- Code Enforcement violation locations by address
- Department of Health violation locations by address
- Certificates of Occupancy data by municipality
- Subsidized housing locations by address
- Evictions filed in town and village courts that resulted in a) warrant of eviction; b) dismissal
- Race/Ethnicity by address and/or census tract
- Primary Language by address and/or census tract
- Household Income by address and/or census tract
- Select Human Service provider locations
- Regulatory agency locations by address
- Mobile home park locations
- Outcomes of regulatory complaints/violations, including number of condemnations, number of repairs, number of fines
- Rates of condemnations for specific violation types

Maps and Reports that will be created:

We would like the Fellow to produce:

1. Maps to display the number of regulatory complaints by geographic distribution, and showing correlation if any to:

    a. distinct demographic features such as race, income, and primary language of residents

    b. distinct geographic features such as mobile home parks, and subsidized housing locations

    c. proximity to regulatory agency or select human service providers

2. Map(s) to display the number of regulatory complaints and show correlation if any with eviction cases being brought, cases resulting in evictions, and/or eviction dismissals

3. A memo with analysis and visualizations as needed of regulatory complaint outcomes, including whether regulatory complaints are more/less likely to result in condemnations, fines, repairs in areas with particular geographic feature (mobile home parks, subsidized housing) or areas with particular demographic features

We would also like to work with the Fellow to identify other work product that may arise during the project.

How the maps and reports will be used:

We believe strongly in the power of data visualization to convey messages to stakeholders and to analyze problems in new ways to guide accurate and effective decision making. We will use the results of the project to have better conversations with internal staff, community partners, potential funders, and local decision makers about the condition of our housing stock, and concrete steps that can be taken to make meaningful change in our communities. We will also use the maps and reports as part of an internal analysis of the scope and features of the substandard housing problem in our region. This analysis will guide our agency in decision-making on advocacy efforts, including outreach, individual case selection, litigation, and funding applications to pursue legal avenues to solving the problem. We will also share the information with community partners as part of awareness campaigns to target areas in need of economic redevelopment.

Education

Hillsborough County School Readiness Coalition DBA Early Learning Coalition of Hillsborough County

ELCHC BUILDING SUCCESS FOR YOUNG CHILDREN

https://www.elchc.org/

Spatial Analysis Project:

The Early Learning Coalition of Hillsborough County proposed project is to utilize spatial analysis to analyze the efficiency and services available in the system of care for young children and to develop strategies that will lead to an increase in the percentage of young children ready to enter kindergarten. ELCHC's project will use spatial analysis to help understand the supply of childcare options available for families in Hillsborough County Florida in relation to population of families with young children integrating both home and work addresses. In addition, we will layer community demographics, connections to elementary schools, quality ratings for child care providers, kindergarten readiness scores, and other early care and education supports available to families into the analysis.

Data Available:

We have the following datasets:

- basic Hillsborough County demographics available through the census
- addresses of early care and education locations
- elementary school addresses
- kindergarten readiness rates per school
- quality measure for child care providers and addresses
- school boundary areas
- major employers and addresses
- public transportation routes
- data regarding reports child abuse and neglect
- County/City crime data

Maps and Reports that will be created:

Maps that show relationships among early care and education providers and supports in relation to population (including demographics such as income, dual language learners), present school readiness score at elementary schools, school boundary areas, disbursement of quality child care services, rates of

child abuse and neglect, crime, access to public transportation, and major employers. Statistics and resulting reports that link data from maps and data to our desired outcomes. Reports with identification and analysis of best practice sites/communities relative to school readiness and reports that would suggest solutions to communities with substantial deficits.

How the maps and reports will be used:

ELCHC will work with our community partners including Hillsborough County Public Schools, Department of Children and Families, Work Force Alliance, Head Start, City of Tampa, Hillsborough County, United Way Suncoast, Community Foundation of Tampa Bay, Children's Board of Hillsborough County, Chamber of Commerce, and other local funders to develop a strategic plan for the County to systematically improve the early care and education system of care to increase the rates school readiness across the County.

Elections & Civil Rights

Legal Services of Greater Miami/Community Justice Project

MIAMI-DADE EVICTION MAPPING

http://legalservicesmiami.org/

http://communityjusticeproject.com/

Spatial Analysis Project:

We propose to map evictions in Miami-Dade County, Florida. Specifically, the project would analyze the degree to which tenants being evicted have due process with actual court hearings in evictions (as opposed to defaults with no hearing), and the degree to which disparities in access to the courts differ based on the racial and economic make-up of the different areas of Miami.

Our vision is to ascertain the demographics of the different zip codes of Miami. We would then use the detailed data provided by the clerk of the Miami Courts to compare and contrast the level of access to the courts that residents are afforded in evictions based on zip code. This would allow us to map how much due process tenants in evictions get in Miami, and also see the role that the racial and economic make-up of the different areas play in that level of due process.

Data Available:

We would provide comprehensive data sets from two years of eviction records in Miami, from 2013 and 2014. This data, which was purchased through a public records request from the Miami Clerk of Courts, includes more than 47,000 evictions. The data details the record of the case, including whether; the tenant filed an answer or had an attorney, whether the tenant had a hearing in front of a judge or was defaulted without a hearing, and whether the tenant resolved the case or was actually thrown out of their home. The data includes the names of the parties as well as the zip code of the case. Also, we have data from March of 2016, where AmeriCorps is tracking similar data. For information regarding the racial and economic make-up of the different areas, we would rely on census data to obtain demographic information for the particular zip codes.

Maps and Reports that will be created:

We hope to generate easily digestible neighborhood and county-wide maps, as well as key statistics to be used as talking points. Ideally, the maps would be interactive and able to be displayed on a capsule website or electronic report. Besides the general facts about the eviction, we are hoping to highlight patterns of disparate impact in communities of color, poor areas, and areas under threat of gentrification.

Key issues we want to highlight are geographic concentration of evictions, the relationship of evictions and race, and the revolving door of evictions. We would also highlight geographic areas where landlords evict their tenants without the tenant getting a court hearing. More broadly, we are also focusing on the impact

of laws which allow landlords to obtain an eviction judgment without a hearing, and how that correlates with displacement. (though how this would play into a map might require more creative thinking).

How the maps and reports will be used:

The final product will be used for grassroots community education, educating stakeholders and elected officials on the crisis in our community, and potentially as evidence in litigation to challenge unconstitutional practices. The data generated through this project will be paired with first-person stories from those directly impacted by eviction and displacement.

Legal Services of Greater Miami will use the material in accordance with their LSC funding restrictions, which prohibits lobbying. Community Justice Project is not subject to such restrictions and may use the materials for advocacy purposes, including advocating for improved tenant's rights laws on the local and state level, and fighting displacement in neighborhoods of color.

Most importantly, we want to make these tools accessible to not only be seen by, but used by and owned as tools, for tenant leaders in their own work fighting for the preservation of their homes and communities.

Philadelphia 3.0

RE:WARD- REMAPPING PHILADELPHIA'S POLITICAL GEOGRAPHY FOR A 21ST CENTURY CITY

http://www.phila3-0.org

Spatial Analysis Project:

Wards are the geographic building blocks of the city's electoral infrastructure, as every Philadelphian's place of residence determines his or her voting location.

We are proposing a spatial analysis to visualize inequalities due to the lack of regular, systematic ward and division remapping. Although legislative districts are updated every 10 years to reflect population changes, Philadelphia wards and divisions have not been updated in over 60 years, resulting in boundaries that reflect the population in 1950, not 2017. These outdated boundaries impact polling locations, representation in special elections, and voter turnout. Due to the lack of remapping, wards range from 8,000 residents to over 45,000. Likewise, divisions range from 100 residents to over 5,000. Using existing data sets, we believe this Summer of Maps project can highlight the need for remapping of wards and divisions to better represent the citizens of Philadelphia. This project could catalyze a legal remapping effort.

Data Available:

The core datasets to perform this analysis are publicly available and have already been digested by Azavea for the FixPhillyDistricts project in 2011:

- Ward and Division boundaries
- 2010 population
- Census blocks

Additional datasets, which are publicly available on OpenDataPhilly, include:

- Polling Locations
- Voter Registry
- Voter Turnout

Historical population datasets are readily available from the Census bureau.

Additional datasets from the City Commissioners may assist in analysis.

Maps and Reports that will be created:

Azavea may have additional ideas for maps and statistics based on experience and we are interested in collaborating on unique visual representation of this data. The following are some initial map ideas that we would like to see:

- Visual representation of population count by ward / division
- Heatmap of distance from polling location

- Heatmap of voter turnout relative to the population and compactness of each ward

- Number of polling machines per division vs voting age population

- Potential redrawn boundaries for wards and divisions based on equal population and compactness

How the maps and reports will be used:

The purpose of this Summer of Maps project is to initiate a broader conversation about the ward system and, potentially, catalyze a push for a ward remapping effort. As we have discovered, the legal process that dictates how ward maps are redrawn is accessible, reasonably low cost, and easy to explain.

To that end, the maps and analyses will be used primarily via our website, www.philadelphia3-0.org, as a point of departure for a discussion about the current maps and the reasons why they have not been updated, despite a population loss of nearly 500,000 residents. We will start with a question: What criteria are most important when drawing ward boundaries? From there, if there is an appetite for a ward remapping project, we can use the maps to connect with voters in the wards with the most out-of-date boundaries in an effort to push for a legal remapping.

Environment & Ecosystems

Audubon Alaska

INFRASTRUCTURE ANALYSIS OF ALASKA'S NORTH SLOPE

http://ak.audubon.org/

Spatial Analysis Project:

Alaska's North Slope region, located between the Brooks Range and the Arctic Ocean, provides critical habitat for a variety of wildlife including a globally significant abundance of waterfowl, shorebirds, and raptors. However, the region is also home to the sprawling Prudhoe Bay industrial complex, the largest oil field in North America. Industry infrastructure covers thousands of acres with wells, gravel roads, air strips, gravel pads, and pipelines. This network of infrastructure and human activity has significant ecological impacts, especially as operations continue to expand.

The Summer of Maps fellow will leverage remote sensing and database management skills to identify areas of potential conflict between key wildlife areas and industrial infrastructure. The fellow will develop and apply remote sensing algorithms to extract roads, gravel pads, pipelines, and other tundra disturbance from orthoimagery. These data will be integrated with historical infrastructure to generate a comprehensive depiction of Arctic oil development.

Data Available:

Audubon has an infrastructure geodatabase updated through 2014. Datasets include:

- ice roads
- rolligon trails
- gravel roads
- air strips
- gravel pads
- drill sites
- equipment-storage sites

Audubon Alaska has access to 2.5m-resolution orthoimagery hosted by the State of Alaska, and has generated key wildlife areas for caribou, fish, and birds as part of previous analyses.

Maps and Reports that will be created:

The final products of the North Slope infrastructure analysis would include a current geodatabase of point, line, and polygon features containing data on the construction date and owner. A series of maps would

highlight areas of conflict between existing and planned infrastructure and ecological impacts to habitat, birds, and other wildlife. A map or series of maps would be developed at fine scale of the Teshepuk Lake region, an area providing habitat for tens of thousands of molting geese, rendered flightless as they regrow primary feathers.

How the maps and reports will be used:

The maps will be used to inform oil and gas development decisions through public comment periods for proposed developments and changes to management plans. The maps may help relocate future infrastructure development away from critical caribou calving grounds or key molting goose areas around Teshepuk, as well as inform Audubon Alaska's landscape-scale strategy. The proposed maps would complement a literature review recently completed by Audubon on the ecological impacts of roads and aircraft in the Western Arctic.

National Aquarium

MARINE DEBRIS ADVOCACY AND PREVENTION

http://aqua.org/

Spatial Analysis Project:

This project will demonstrate the effectiveness of legislation aimed at reducing marine debris. Each year in all levels of politics, multiple pieces of legislation are introduced with the hope of reducing certain types of waste at their source. Though countless studies have shown the negative effect of marine debris on our environment, these types of legislation are met with resistance and are rarely passed. Through this project, we hope to provide valuable data analysis for supporters of these types of legislation. By examining the amount of marine debris found in different areas of the United States relative to legislation that has been implemented to reduce it, we can show the effectiveness of these important measures. We also hope to look at the composition of marine debris in our region to get a better idea of what is there, and the best way to address and reduce it.

Data Available:

The National Aquarium is the state coordinator for all International Coastal Cleanup (ICC) events in Maryland. The ICC, organized by Ocean Conservancy, has the largest collection of item-specific marine debris data available over time displayed in their Ocean Trash Index. This incredible database can provide marine debris data down to the number of each type of marine debris removed during cleanups for the entire world.

Similarly, the National Oceanic and Atmospheric Administration tracks marine debris items removed through its Marine Debris Tracker program.

We have strong partnerships with both organizations to utilize the data for this project. Statewide and regional marine debris data bases will also be incorporated. Our political experts on staff can assist with gathering the data about current legislation. Maps from the EPA, Maryland DNR's Coastal Atlas and the Chesapeake Bay Program can provide regional land use data.

Maps and Reports that will be created:

As a result of this project, we would like to see a U.S. map created that compares the different types of legislation regarding marine debris versus the decrease in targeted debris removed from relevant areas over time. This may be displayed on one map with multiple layers, or in two separate maps. We would also like a regional map focused on the Chesapeake Bay watershed showing the highest concentrations of marine debris with details by item, and how that compares to the surrounding land use. A brief analysis regarding the findings of this data should accompany the maps created.

How the maps and reports will be used:

The maps and reports generated from this project will assist legislators and environmental organizations in advocating for legislation that will reduce marine debris at its source. Showing these maps will create a stronger case for marine debris legislation, providing evidence of positive impacts created in areas that

already have legislation in place. We know that many of our partners will be interested in using this data to create targeted outreach programs or behavior change campaigns addressing the most common types of marine debris. The map created will provide a clear view of the areas that are most in-need of marine debris outreach. In addition, many organizations including the National Aquarium apply for grant opportunities to fund marine debris removal and outreach activities, and the information from this project will strengthen grant proposals using the data to support related requests.

Sierra Streams Institute

TRANSLATING BEAR RIVER WATERSHED PRIORITIES INTO ACCESSIBLE MAPS

http://www.sierrastreamsinstitute.org/#

Spatial Analysis Project:

Sierra Streams Institute (SSI) is a non-profit based in Nevada City, California. Currently, SSI is working in the Bear River Watershed completing a Disturbance Inventory and drafting a Restoration Plan. In the Restoration plan document, we outline the primary issues of concern in the Bear River Watershed and define potential restoration projects.

The work proposed for the Summer of Maps fellow will support identifying, prioritizing and developing potential restoration projects within the Bear River Watershed. These projects will address the watershed's many pressing demands, which include coordination of land management, cleanup of legacy mining contamination, improvements to water quality, restoration of ecologically important habitat, and addressing climate change and wildfire pressures. While completing the Disturbance Inventory, numerous datasets were collected and several informational maps were developed. The Summer of Maps fellow would be responsible for conducting spatial analysis and modeling on this information to inform and develop restoration projects.

Data Available:

The following data is currently available and will be provided to the fellow:

- watershed and subwatersheds boundaries
- basic hydrology
- groundwater basins and subbasins
- groundwater quality monitoring
- groundwater elevation monitoring
- California Statewide Groundwater Elevation Monitoring (CASGEM) groundwater basin priorities
- wetland locations
- active, inactive, underground and surface mines
- surface water quality monitoring
- 303(d) listed areas
- elevation and topography
- slope steepness
- vegetation communities
- soil classification
- special-status flora and fauna species
- threatened and endangered flora and fauna species

- permitted toxic release and cleanup sites
- disadvantaged and severely disadvantaged community boundaries
- human population density
- land ownership
- land use and crops
- major roads
- county planning designations
- county parcel boundaries

Maps and Reports that will be created:

The fellow will be responsible for producing maps and models accompanied with a brief written summary to address the following tasks:

1. Analyze linkages between Disadvantaged Communities and poor water quality to identify strategic project areas.

2. Identify endangered plants, animals and habitat (i.e. giant garter snakes, tricolored blackbirds, black rails, western pond turtles, and/or coast horned lizards, Scadden Flat checkerbloom, Pine Hill flannelbush, Stebbins' morning glory, and Vernal Pools) locations needing protection by comparing special status species and soil type information to county parcel, land use and ownership data.

3. Create a prioritization model that ranks potential projects and project areas.

We are excited to have discussions with Azavea and the project fellow about how we might further utilize models produced through the project.

How the maps and reports will be used:

The final product will be a series of maps and models that will help guide stakeholders in developing restoration projects, identifying project areas, and prioritize projects. This deliverable will synthesize and translate the information discussed in the disturbance inventory to help develop a comprehensive restoration plan with ready – to – implement project plans, prioritized list of projects and possible project collaborators. Spatial analysis will help address emergent challenges including examining the ecological diversity represented within the watershed as a whole, the larger scale and scope of projects resulting from this sub-watershed diversity as well as consequences and/or future mitigation of a controversial proposal to build a major dam on the Bear River. Maps and models developed will support grant applications by providing data to identify the importance and anticipated effect of the proposed restoration work. Overall, this will guide future restoration work in the most logical and strategic manner.

The Climate Trust

INVESTING IN CARBON SEQUESTRATION POTENTIAL: USING GEOSPATIAL ANALYSIS TO IDENTIFY NEW CARBON MARKET PARTICIPANTS

https://www.climatetrust.org/

Spatial Analysis Project:

The analysis will identify and map forestlands that have high potential to sequester and store carbon over the near-term (ten years), where landowners are uniquely situated to value carbon over timber revenue. Multiple constraints like distance to export and domestic log markets, high operations costs, low species value, soil productivity, and FIA data, will be considered. The initial analysis will identify forestlands at or below regional baseline values (average initial carbon stocks) but are well-suited to generate offsets over the near-term. This map will expand on and update currently outdated resources, like the Woods Hole Research Center National Biomass & Carbon Dataset created in 2000. The second analysis will identify the economic factors that are likely result in new carbon market participants. This aspect of the project is unique because it will illustrate those regions that are better suited for payments to sequester carbon rather than traditional harvesting operations.

Data Available:

The datasets we have on hand at the time of application are limited, but our GIS staff will assemble the following if selected:

- spatial biomass estimates
- forest inventory data from US Forest Service FIA program
- soil types and productivity from NRCS SSURGO database
- aerial and satellite imagery
- topography
- land use and land use change from USGS landcover database

Maps and Reports that will be created:

First, we hope to create a nation-wide map showing biomass stocks as they compare to the California Air Resources Board's assessment of carbon stocks. ARB has developed an assessment dataset that stratifies carbon stocks by ecoregion, then site class, then forest type. This is a fairly general classification and can be refined down to the county level using Forest Service Inventory and Analysis Program datasets. If time and resources allow, a second layer of maps would account for economic constraints such as distance to market or manufacturing facilities, relative value of native species, and other economic constraints that will make managing for carbon sequestration and conservation more competitive than traditional forest management.

How the maps and reports will be used:

By definition, average baseline carbon stocks implies that there are forested properties within assessment areas that are at or slightly below baseline levels. Where these areas intersect with moderate to high forest

productivity, and economic constraints such as distance to markets, that make traditional forest management less profitable, there is opportunity for landowners to explore alternative sources of revenue. Our goal is to create a nation-wide map of these areas to help inform where forest managers should prioritize carbon sequestration versus more traditional forest management. TCT will use these maps in tandem with local consulting foresters to conduct focused landowner outreach and education about emerging opportunities to participate in ecosystem service markets. Our ultimate goal is to provide upfront financial incentives to landowners with substantial sequestration potential and encourage new market participants.

The Fair Tech Collective, Drexel University*

PETROCHEMICAL POLLUTION FOOTPRINT

http://fairtechcollective.org

Spatial Analysis Project:

Five oil refineries, each emitting millions of tons of air toxins every year, cast an invisible cloud over the northern parts of the San Francisco Bay area. People living near the refineries and other petrochemical facilities want to be able to understand and communicate about the impact of pollution on their communities. There is thus a great need for accessible visualizations of air pollution, particularly ones that can show the cumulative impact of multiple polluters spread across the region. This project will combine air emissions and air monitoring data with meteorological data, especially wind speed and direction, to create maps that show the size and shape of refineries' pollution "footprint." Census data will additionally be used to map the concentrations of "sensitive receptors"--namely, the very young and the very old--living and learning within the pollution footprint.

Data Available:

- Data from fenceline and community air monitoring stations at 2 area refineries (Chevron in Richmond and Phillips 66 in Rodeo), obtained from fenceline.org. These include meteorological data.

- Data from air monitoring stations operated by the Bay Area Air Quality Management District

- Toxics Release Inventory data on emissions from refineries and other petrochemical facilities

- U.S. Census data for demographic information

Maps and Reports that will be created:

We are looking for maps of the North Bay that visualize the amount and reach of air emissions for several pollutants of concern (e.g. particulates, SO2, benzene). Each map will overlay pollution information on a visual representation of sensitive receptor populations.

Because these are time series data, we would hope that the visualizations created would not only represent moments in or periods of time, but also be dynamic.

We would expect the creation of the maps to generate statistics such as the land area affected by pollution from one refinery, area affected by two or more petrochemical facilities, number of people living within the area affected by each refinery (or combination of facilities), number of elderly residents living within the affected area, number of school children being educated in the affected area.

How the maps and reports will be used: The maps and reports will be used to raise awareness of the impact of petrochemical pollution in the Bay area, through presentations to community interest groups,

hospitals and health non-profits, and other civic organizations. They will also be presented to regulatory agencies, city councils, and other policy-makers as part of advocacy for health-protective policies and regulations. Finally, the maps and reports will be used as a model for visualizing and making sense of complex air emissions and monitoring information in other areas affected by air pollution.

*Note: The proposed project is part of "Meaning from Monitoring," a collaboration between the Fair Tech Collective, Crockett-Rodeo United to Defend the Earth, Good Neighbor Steering Committee (Benicia), Benician

World Resources Institute

DATA DRIVEN CONSERVATION IN SALONGA NATIONAL PARK

http://www.wri.org

Spatial Analysis Project:

This project seeks to understand the variables that lead to successful conservation efforts in Salonga National Park, the largest protected area of forest in Africa and home to many threatened species, including bonobos and forest elephants. Despite its importance and status as a World Heritage Site, Salonga has been plagued by poaching and poor governance for decades. This project would use socio-economic information collected from communities in and around Salonga to link poverty levels, education and cultural influences of villages to illegal activities in the park, including poaching, forest loss and fire occurrence. Using overlay analysis and spatial statistics, we hope to better understand the factors which lead to conservation threats in protected areas and monitor the success and effectiveness of ongoing conservation efforts. If successful, this project would be scaled to other conservation areas in the Congo Basin where these datasets are also available.

Data Available:

We have all of the necessary datasets on hand to support this project. This includes the following data:

- Basic Necessities Surveys administered to local communities
- Illegal activity and wildlife sightings from regular ranger patrols in Salonga National Park (SMART data)
- GIS base layers such as land cover, settlements, roads and rivers
- Weekly forest loss data
- Daily fire activity

Documentation on conservation efforts in Salonga are also available.

Maps and Reports that will be created:

This project would create online and static maps that visualize the link between poverty levels, education, and cultural habits of villages with illegal activities in and around Salonga National Park. This analysis will start with an overlay of all the different variables, focusing on how best to visualize and filter the data. Spatial statistics, such as Geographically Weighted Regression or Emerging Hot Spots would also be used to quantify and further examine the relationship between all variables. Ultimately we would like to synthesize which combination of factors encourage the best conservation practices Salonga and which lead to worsening conditions. This work would be made available on the Landscape Application online portal and depending on timing, we would also ask the fellow to assist with the cartographic design of the portal.

How the maps and reports will be used:

The study and associated web tools will be used by our conservation partners and government authorities to support improved protected area management and biodiversity conservation. Our conservation partners include the African Wildlife Foundation, Wildlife Conservation Society, and the World Wildlife Fund, among others. The Landscape Application will be used by these partners to manage data, conduct analyses, communicate results, and inform decision making on protected area management. This project will help our partners to prioritize outreach efforts to Salonga area communities and understand which socio-economic factors have the highest influence on successful conservation efforts.

Food & Agriculture

The Common Market

REGIONAL ECONOMY, FOOD SECURITY, AND AGRICULTURAL SUSTAINABILITY IMPACT OF THE COMMON MARKET

http://www.thecommonmarket.org/

Spatial Analysis Project:

As engineers of a sustainable, equitable food system, The Common Market has impact on various levels, which the fellow will map and analyze. Economic: visualizing the geography of sales and purchases correlated to income and poverty tracts and understanding the regional scope of foodsheds created by The Common Market. Food security: displaying the geographic reach and sales depth of our food distribution, particularly with correlations to low-income, food insecure, or communities of color. Additionally, since The Common Market strives to serve good food in the institutions where low-income people work or attend school, analyzing the "target customers" we serve compared to the ranges which exist, for example the schools participating in Farm to School programs. Finally, agricultural sustainability: the fellow will map our producers' locations and sizes and correlate this to regional land uses, in order to determine The Common Market's impact on reversing commercial development trends.

Data Available:

We catalogue significant amounts of data daily on our sales and purchases, categorizing product transactions from the customer or to the farmer with addresses. On the customer side, this data is further broken down into the customer type, including hospitals, public schools, private schools, retailers, etc., which allows us to narrow in on "target customers." This dataset exists over the past three years at least. This data will be used to map the foodshed, sales, purchasing depth, and economic impacts of The Common Market.

On the producer side, we collect data on the acreage supported by each producer we buy from.

Additional data sets that will be utilized by the fellow include:

- ERS catalogue of Major Land Uses
- ERS Food Access Atlas
- Farm to School Census
- Pennsylvania Bureau of Health Statistics and Research Hospitals database
- Demographic and economic census tracts

Maps and Reports that will be created:

We expect to receive maps in six sets: the three levels of impact (regional economy, food security, agricultural sustainability) across the two geographies (Mid-Atlantic and Georgia). The fellow should be prepared utilize various visualization techniques such as displaying though dot color or size, polygon color gradients, line density, and heat maps. Because each of the three levels has both a visualization component of our current reach and an analysis component of our impact compared to the need, fellows may need to produce more than one map in each set. While a formal report is not necessary, accompanying descriptions with analysis and statistics for each map will assist us in utilizing and sharing the results. Maps should be of publishing quality. Interactive webs maps would be a welcome addition/ alternative, though we do not require it.

How the maps and reports will be used:

We will use the maps and resulting analysis to visualize and measure the impact of our work compared to the mission. Moving into new geographies, it is essential for us to understand the successes and shortcoming of our model, so that we know which components to hone in on and which to re-strategize. Our theory of change is focused on institutional food distribution. We are particularly curious to see if within this theory of change our geographic and demographic reach is meeting the needs of farming and urban communities: how are we preventing land loss, reversing the trends of urban food insecurity in low-income and communities of color, and stimulating rural communities? Where are we falling short? We will also use the maps to communicate our growth potential with funders as well as the success of our current work.

Health

Community Legal Services

MAPPING THE INCIDENCE AND FREQUENCY OF HOMES WITH WATER SHUTOFFS IN PHILADELPHIA

http://clsphila.org

Spatial Analysis Project:

CLS's Energy Unit has fought for 40 years for the rights of low-income families to maintain affordable water service. More than 30,000 families have their water service shut off each year in Philadelphia, presenting risks to health, family unity, and housing. In recognition of epidemic levels of shut offs, CLS advocated successfully for groundbreaking water affordability legislation which will be implemented in Fall 2017. Our water affordability work has drawn nationwide interest and forged our partnership with the National Human Rights to Water and Sanitation Coalition.   As we approach implementation of a new water affordability program, we are examining strategies to help focus further attention and outreach to serve those most in need. This project will assess the frequency and location of water shut-offs in Philadelphia, determining where affordability assistance will be most vital. Mapping shut offs may also provide important indices of racial and economic disparity in water access.

Data Available:

CLS has obtained an Excel spreadsheet identifying the addresses for all water shut-offs conducted from July 2013 through March 2016. This will be the primary dataset. CLS also has geographic information about the Philadelphia Water Department's outreach for Safe Drinking Water Act testing. This data will help to identify locations of risk for lead contamination in drinking water and may show a correlation with concentrations of families at risk for water conatmination and water shut off.

CLS would like to explore the addition of "overlay" datasets concerning the likely location of lead water service lines, receipt of water assistance grants, American Community Surveys, and City property records.

Maps and Reports that will be created:

CLS anticipates an interactive presentation, such as a "heat map," depicting the incidence of shut-offs over time, broken down by smaller geographic boundaries such as zip codes, City Council districts or Congressional districts. We would also like to map race and income by neighborhood as an overlay.

How the maps and reports will be used:

The success of the new first in the nation Philadelphia water affordability program turns on its ability to reach those customers who are unable to afford basic household expenses, and who would otherwise have their water shut off. Being able to assess where the need is greatest will provide us and other stakeholders the ability to provide targeted outreach, advocacy and community education to ensure the success of this new program. We foresee this information being of interest to City Council members, Philadelphia Water

Department personnel, utility financial assistance providers, and members of the National Coalition on the Human Rights to Water and Sanitation We all share a stake in the success of this groundbreaking affordability program, and these maps would provide a baseline against which to measure.

Speak to Your Health! Community Survey

MAPPING IMPACT OF THE FLINT WATER CRISIS ON COMMUNITY HEALTH

http://speak.gchd.us

Spatial Analysis Project:

In April 2014, the municipal water source for Flint, Michigan was changed from Lake Huron to the Flint River. Inadequate water treatment resulted in water contamination and resident complaints about the smell, taste, and appearance of their tap water. In September 2015, reports of lead contamination in the water supply and elevated levels of child lead poisoning became public and attracted international medial attention. This project will assess the impact of the Water Crisis and related issues on the health of local adults using spatial analyses of data on the water infrastructure and a community-wide health survey.

Data Available:

The survey results can be analyzed by gender, race, age, and across time, and mapped to determine trends by neighborhood, ZIP Code, or county.

The survey includes an extensive range of health indicators, including the physical and mental health items from the National Center for Chronic Disease Prevention and Health Promotion's (CDC) Behavioral Risk Factor Surveillance System (BRFSS), the nation's premier system of health-related surveys and the largest continuously conducted health survey system in the world.

The survey also includes brief scales and items on stress, depressive symptoms, sleep quality, disease diagnoses, and a wide range of health related behaviors.

The Survey Committee decided to address the water issue in the 2015 STYH Survey, as previous health policy efforts were aided by results from earlier survey waves. New items assessed self-reported tap water quality, water cost, and water sources utilized by residents (e.g., tap water, bottled water, filtered water, etc.).

Maps and Reports that will be created:

Our project will include spatial analyses of Speak To Your Health! Community Survey data and existing spatial data on water infrastructure, including age and type of water pipes, age of water at delivery (the longer the time water is circulating in the system, the more contamination is evident), and objective measures of contamination. Other water infrastructure data may be available by the start of the project. Anticipated analyses include predictions of physical and mental health outcomes in the 2015 survey wave by water infrastructure properties, as well as comparisons of outcomes using spatially related data from survey waves conducted prior to the change in the municipal water source. A map library will be created that geographically displays survey and complementary data.

How the maps and reports will be used:

The reports and maps will be shared locally through community partnerships, presentations, and on-line dissemination. This information will be used to inform local policy makers, agencies, and programs. We will also submit abstracts for professional conference presentations and publications in peer-reviewed journals.

UNIFIED - HIV Health and Beyond

HIV OUTREACH AND TESTING EXPANSION

http://www.miunified.org

Spatial Analysis Project:

The proposed spatial analysis project seeks to develop mapping of available HIV/STD testing services overlapped with HIV prevalence rates to help identify gaps in services in the Metro Detroit area. While there are apps and online tools for finding local HIV/STD testing sites, community residents often don't know how to access these services or have transportation to get to the sites. This would help UNIFIED - HIV Health and Beyond determine priority areas for expansion of outreach and HIV/STD testing services into areas that lack these resources and experience high rates of HIV infection.   Ideally, the project could also incorporate data on availability of public transportation services to further define areas that should be prioritized for outreach services and linkage to HIV/STD testing due to limited access.

Data Available:

We have extensive epidemiological data related to HIV and other STDs through the Michigan Department of Health and Human Services, including the ability to request special data sets as needed.

There are already existing HIV/STD testing site locators that can be used to map these resources.

Public transportation routes can be mapped easily with information from the City of Detroit and other municipalities.

Finally, existing programmatic data would be available to determine zip codes and neighborhood where current outreach and HIV/STD testing services are provided.

Maps and Reports that will be created:

The project would result in maps of various counties the make up the Metro Detroit area, showing the location of HIV/STD testing sites overlapped with HIV prevalence rates. A third overlay would include public transportation routes and their proximity to the areas with high HIV prevalence, as well as any connection to the identified HIV/STD testing sites. In addition, we expect this project to also develop a report that would outline recommendations for outreach and HIV/STD testing service expansion based on finding from the mapping. This would help identify priority geographic areas for service expansion.

How the maps and reports will be used:

The maps and reports would be reviewed and shared with key staff involved in outreach and HIV/STD testing services. They will be used to develop service expansion strategy based on prioritized geographic areas, including the identification of potential community partners that can increase capacity for service delivery. In addition, depending on the result of the project and size of prioritized areas, these maps and reports might also be shared with funders and used in grant proposals to request funding to support service expansion. Finally, the maps and reports might also be shared with local government officials to advocate for additional resources and/or to educated them about the gaps in services and challenges with accessibility to these important health resources.

Transportation

Clean Air Council

AN ANALYSIS OF BIKE PARKING DEMAND IN CENTER CITY PHILADELPHIA

http://www.cleanair.org

Spatial Analysis Project:

The Council's project would build on the City of Philadelphia's bike parking capacity study to gain a better understanding of how to predict adequate bike parking facilities. This would be used by employers, developers, government, and nonprofits. The Council is interested in identifying what factors lead bicyclists to demand for bike parking.

This project would be an analysis of how factors such as proximity to bike paths and trails, employment density, land use, and type of bike rack influences the demand and use of bike parking.

An ideal end result would be a formula that identifies how much bike parking is necessary to serve a particular location, based on these factors. If successful, this formula will be used to advocate for proper facilities in both new development projects and existing locations that lack adequate parking. The Council might also advocate that a formula like this be adopted into zoning regulations.

Data Available:

- Bicycle parking data for Center City was last compiled as part of the Mayor's Internship Program in 2013. This study includes formal and informal bike parking, type of rack, and use.

- The University of Pennsylvania has an interactive bike rack web map for the campus.

- A Google map was crowd sourced in 2013 in response to the Philadelphia Magazine article, "Where is covered bike parking in Philadelphia?"

- Employment data including commute type exists for Census block group. In some cases more specific data is available through organizations like Building Owners and Managers Association, Center City District, and University City District.

- The City and DVRPC both have bike infrastructure data containing bike lanes and trails. The City has land use data, and can identify commercial corridors.

- Indego bike share statistics can be used as a baseline information of bicycle commuters to Center City and could help estimate demand for bicycle parking.

Maps and Reports that will be created:

A successful project would help us visualize bike parking demand based on employment, land use, transportation infrastructure, and other relevant factors, matched with existing bike parking infrastructure, and highlighting locations where there are gaps. An ideal map or set of maps would include existing bike rack infrastructure differentiating type of bike parking and level of use, supplemented with an employee density layer showing concentrations of employment throughout Center City, an infrastructure layer that details bike lanes and trails, and a land use layer identifying commercial corridors and type of business.

This would be accompanied by a report outlining gaps in bicycle parking infrastructure as well as recommendations for bike racks installation in high demand areas.

Ideally a formula would be created as a guide to the City and private businesses recommending what bike parking capacity is needed based on conditions such as employment, land use, and transportation infrastructure.

How the maps and reports will be used:

Maps and reports will be used to inform government, businesses, and NGOs such as Center City District, University City District, and Building Owners and Managers Association on bicycle parking needs in Philadelphia. Analysis will be used as a catalyst to spark private and public investment to install bike parking based on need. Data will illustrate to businesses the gaps in bicycle parking around them and supplement existing studies. This will strengthen the Council's argument to businesses about the economic value of providing bicycle parking to potential consumers and their employees.

Maps that illustrate where adequate bike parking does exist could be included in regional bike maps as an additional educational outreach tool.

Maps and reports can also be used as a guideline for places outside of Center City such as the Navy Yard and other commercial corridors to guide how much bike parking is necessary in those areas.