AZAVEA

SUMMER of MAPS

Arts & Culture

FringeArts

VISUALIZING AND ANALYZING PERFORMANCE ART DONORS AND AUDIENCE BY LOCATION

http://fringearts.com/

Spatial Analysis Project:

FringeArts is Philadelphia's home for contemporary performance, presenting progressive, world-class art that stretches the imagination, and boldly defies expectation. As the city's lead experimenter in the arts, FringeArts exposes audiences to unpredictable dance, theater and music performances by accomplished and emerging innovators who push the boundaries of art-making and redefine the artistic landscape worldwide.

The purpose of this project is to strengthen FringeArts' impact with its audiences and donors by visualizing attendee locations, donor locations and performance venues in order to gain understanding of how they relate to, and impact, each other. Of particular interest is learning more about the locations of our donor base in relation to the location of our programming.

Because this project spans the entire organization, fellows will work with a combination of our programming, marketing and development staff to understand the motivation for supporting performance art in new ways, through new venues and neighborhoods.

Data available:

FringeArts can provide the following for the years 2013-2015

- Addresses for
    - Ticket buyers
    - Performance venues
- Individual donors.
    - Donation data
    - Date of donations
    - Amount of donations
- Performance data
    - Show titles with ticket history
    - Performance dates with ticket history
    - Number of tickets purchased for each show in their ticket history
- Types of shows – Fringe Festival or Year-round program

- For additional depth of the analysis to understand our donor base, its relation to performance locations and ticket buyers, we would like to see certain public data layered in, such as:
    - US census data including income, age, neighborhood,
    - Transportation data – train, bus, trolley, bike, parking availability
    - External factors – for example (via via OpenDataPhilly, EveryBlock API, etc.):
    - Crime related to venue areas
    - Business & restaurants near venues
    - Neighborhood activity and other hyper-local factors

Maps and reports that will be created:

- Dynamic maps of ticket buyers and donors
    - By neighborhood
    - By performance venue location,
    - Ability to see the changes over time by locations
    - Filters for different, publicly available External factors
- Heat map of venue footprint based on tickets and donations nearby compared with
    - Demographics
    - Event type
    - Event location
    - External factors
- Simple web-based charts and reports of the donors and ticket-buyers
    - By supporter locations that can be filtered via single-point or geo-fence
- By venue location
    - With basic comparative analysis capabilities to
    - See how these supporter types relate to each other through location
    - See how these supporter types differ across shows and venues.

How the maps and reports will be used:

FringeArts has undergone a strategic shift to move from an annual festival to full-year programming with a venue and restaurant. We are an organization whose roots are in the neighborhoods with growth through a combination of national and international artists and a business model expansion through a new permanent home.

It is important, therefore, to understand our supporters in new ways compared to operating only an annual festival. By reviewing the geographic patterns of donor activity, audience draw and demographic correlations across venue locations and neighborhoods, FringeArts can create the necessary new approaches, new formats, locations and pricing.

The maps and analysis will, therefore, be used in all parts of the organization - promoting shows, recruiting artist participation in the festival, outreach efforts in neighborhoods across the city and marketing efforts for the FringeArts building and La Peg.

Greater Philadelphia Cultural Alliance

Analysis of the Students at Museums in Philly (STAMP) Program to Increase Participation

http://phillystamppass.org/

Spatial Analysis Project:

STAMP (Students at Museums in Philly) is a citywide collaboration with 17 cultural organizations, community partners, and schools. The goal is to increase engagement in arts and culture by Philadelphia teens ages 14-19 by breaking down barriers that would otherwise prevent teens from attending museums, including cost of admission, feeling unwelcome, and a lack of teen programming.

The primary purpose of this analysis is to increase participation in the program. We have over 14k sign ups, and about 4k actual users. We wish to increase the percentage of signups that actually walk into a museum. By understand the spatial difference between users and signups, and whether users are clusters by certain museums, neighborhoods, public transit routes, or schools we can better inform and tailor our marketing and outreach.

Data available:

During sign-up, teens provide a number demographic data points including age, home address, school, ethnic background, gender, and current level of arts participation and interests. The information they provide can be linked to their individual number in the SwipeIt system which captures STAMP attendance. When teens visit a museum, their pass is swiped, capturing the time, date, and location of use. So far over 14,000 students have signed up, and over 4,000 have used their card at least once.

- The 17 participating site locations (geocoded)
- School locations and catchments shapefiles (via OpenDataPhilly)
- American Community Survey demographic data (via the U.S. Census Bureau)
- SEPTA stop and route shapefiles (via OpenDataPhilly)

Maps and reports that will be created:

- Maps and tables of both signups and users by the self-identified demographics (including school, ethnic background, gender, and current level of arts participation and interests) and neighborhood - the goal being an understanding how signups and users differ.
- Analysis pertaining to the 17 museums that the Cultural Alliance could use to create a one sheet report for individual museums, including total STAMP usage and demographics, and top neighborhoods per organization.

- An analysis of transit accesses, looking at the proximity of students to SEPTA routes. (To pair with this work we may survey on students on how they get to participating organizations)

How the maps and reports will be used:

STAMP's focus as the program grows is lowering the barriers to new participation and encouraging deeper engagement for those who already participate. By seeing where participants come from, we can make better decisions about how to market and reach out to eligible youths. The findings would inform how to market the program and improve community outreach. Should outreach focus on specific schools (leveraging teacher relationships), neighborhoods (recruiting additional community partners to transport students), or museums (assessing why some appeal more to youths)?

Additionally this analysis furthers our advocacy work by creating a narrative around STAMP and the ways it contributes to a well-rounded education for youths around the city. This narrative is crucial for local politicians, funders, and education advocates whose job it is to improve our city's education services.

Community & Economic Development

Economy League of Greater Philadelphia

TRACKING REGIONAL CHANGE THROUGH THE WORLD CLASS INDEX

http://economyleague.org/

Spatial Analysis Project:

The World Class Index tracks progress around aspirational goals and priority regional strategies. This World Class Index identifies approximately 30 key indicators to monitor, track progress, and assess on an ongoing basis. The data, collected every spring, allows our organization to explore what's driving progress for our region and what's holding us back. The spatial analysis project is a way for us to visualize the change in these indicators over time -- to depict growth, decline, and change in the areas of education and talent development, business growth, and infrastructure.

Why a World Class Index?

- To establish shared indicators for local leaders
- To provide clear-eyed analysis of metro trends
- To highlight collaborations leading to impact
- To point to where immediate action is needed

Our ultimate aim with the index is to drive conversation among leaders about where we should focus limited resources to spur regional improvement.

Data available:

Our datasets include both regularly-updated public datasets as well as a few reliable proprietary datasets. All raw data is organized into organized excel spreadsheets.

For population-based datasets including regional poverty rates and median household income, we rely the U.S. Census Bureau's American Community Survey. Our business-related data such as growth of businesses and small business employment comes from the U.S. Bureau of Labor Statistics' Quarterly Census of Employment & Wages, the U.S. Census Longitudinal Employer-Household Dynamics Quarterly Workforce Indicators, PricewaterhouseCooper's MoneyTree Report, and the Association of University Technology Managers' (AUTM) Statistics Analysis for Technology Transfer (STATT) database. For education and talent development data, we rely on our region's State Departments of Education, Measure of America's Opportunity Index, and the National Science Foundation's Higher Education Research & Development Survey. Infrastructure data is mainly derived from the U.S. Census trade statistics and American Community Survey, Amtrak, and local departments of transportation.

Maps and reports that will be created:

We would like the maps and analysis to focus on the following three priorities:

- Education and Talent Development
- Business Growth
- Infrastructure

We want to ensure that this project is a good fit for the 12 week timeline and so are flexible as to how many indicators are included in this analysis. What we are most interested in looking at:

1. How these indicators have changed over time (improvement or decline)
2. The spatial relationship between multiple indicators

The indicators below are examples of the total of approximately 30 indices for which we have collected data.

- Education and Talent Development:
    - Percentage of students proficient or advanced in Grade 3 Reading
    - On time high school graduation and graduation rates
- Business Growth:
    - Change in number of new businesses
    - Growth in small business employment
- Infrastructure:
    - Trade activity at Greater Philadelphia ports
    - Multi-modal employment centers

How the maps and reports will be used:

Every year in July, we host a World Class Summit to highlight the findings of the Index. Though the maps and reports will not be completed in time to serve as the focus of this year's summit, we would use the findings for a mid-year update. If possible, we would like to have this spatial analysis serve as a template for future years. We would like to continue to update the maps using annual data collected for years to come.

Heartland Alliance's National Initiatives on Poverty & Economic Opportunity

PATHWAYS TO SHARED PROSPERITY: MAPPING ACCESS TO ECONOMIC OPPORTUNITY IN THE UNITED STATES

http://www.heartlandalliance.org/nationalinitiatives/

Spatial Analysis Project:

Millions of Americans face barriers to employment and struggle to succeed in work. Supports available through social safety net policies and the public workforce system aim to help these individuals succeed in employment, but are there areas the safety net doesn't reach and where access to economic opportunity is scarce? Our proposed spatial analysis project is to map the relationship among where individuals and families facing barriers to employment live, the use of the social safety net and access to public workforce services, and the availability of good job opportunities across the nation. We think our project may reveal "economic opportunity deserts" where workers' employment needs don't align with available supports or access to jobs. By helping us understand these "deserts," this project will inform a national conversation about access to opportunity and fuel place-based and national policy solutions for ensuring more people facing barriers to employment can be successful.

Data available:

1. The American Community Survey, which contains data on the following by census tract: unemployment and labor force participation; poverty and extreme poverty; receipt of Supplemental Nutrition Assistance Program (SNAP, or food stamps) or Temporary Assistance to Needy Families (TANF, or welfare) benefits; educational attainment, race, and family structure; median age; growth of population; severe rent burden; and 16- to 19-year-olds who are not working or in school.
2. We are asking the U.S. Department of Labor if we can obtain a dataset of the locations of all American Job Centers. These data are compiled on a semi-annual basis and are currently searchable online by city, state, or ZIP code.
3. The Census Bureau's U.S. Economic Census and Longitudinal Employer-Household Dynamics program provides detailed local information about the location and types of businesses and jobs, which industries are growing or declining over time, and jobs by earnings level.

Maps and Reports that will be created:

Using geospatial analysis, this project will assess the relationship among the location of jobseekers facing barriers to employment, and, among those jobseekers, who is accessing the safety net; the location of American Job Centers designed to help these jobseekers connect with work; and the location of job clusters. This visualization will help us draw insights into how well the

employment needs of jobseekers facing barriers align with the safety net's reach and access to employment and economic opportunity. The analysis should seek to identify "economic opportunity deserts" where there is significant physical distance and disconnect among people facing barriers to employment, the reach of the safety net and available public workforce services, and potential jobs. The final deliverable will be threefold: an economic opportunity desert map that reflects the spatial analysis, a series of thematic maps of each dataset, and a memo outlining what we can learn from the findings.

How the maps and reports will be used:

2016 will see a new Administration and mark the 20th anniversary of welfare reform legislation that has largely failed to be a springboard to opportunity for low-income jobseekers. There's growing federal momentum to reform welfare again, and communities are in the initial implementation of the Workforce Innovation and Opportunity Act, which reorients the public workforce toward serving jobseekers facing barriers. Building on this energy, and harnessing the idea that place matters when it comes to accessing economic opportunity, we'll be releasing big policy ideas to shape the future of safety net and jobs policy and reimagine how to connect low-income jobseekers to work. We'll use the analysis and maps to inform our policy analysis and to spur robust, national-level conversations about the employment needs of low-income jobseekers, the reach and limitations of the safety net, inequitable access to economic opportunity, and what's needed to help more people succeed in work.

Participatory Budgeting Project

ASSESSING EQUITY OUTCOMES FROM PARTICIPATORY BUDGETING IN NEW YORK CITY

http://www.participatorybudgeting.org

Spatial Analysis Project:

The Participatory Budgeting Project seeks to understand the extent to which participatory budgeting results in more equitable and effective capital spending in New York City. Participatory budgeting (PB) is a democratic process in which community members directly decide how to spend part of a public budget. In New York City, over 50,000 residents in 28 city council districts have decided how millions of dollars are invested in their communities each year by coming together to brainstorm ideas, develop these ideas into real projects, and vote to decide which projects get funded.

PBP would like to work with a GIS Fellow to visualize locations of capital projects funded through PB in New York City, to analyze the degree to which winning projects cluster in neighborhoods with low socioeconomic indicators, and to compare the spatial distribution of PB-funded projects with that of capital projects funded by other means.

Data available:

PBP can provide:

1. Shapefile of geocoded winning projects from recent cycles of PB in NYC,
2. Shapefile of NYC council district boundaries including information about which districts implemented PB throughout the past five years,
3. Shapefiles of ACS and Census data aggregated at the block group level to derive key socioeconomic indicators.

While we do not yet have it on hand, we can also provide a spatial dataset of capital projects funded by means other than PB in selected NYC council districts for the comparative part of the study.

Maps and reports that will be created:

We request that the Fellow will develop:

1. Maps of proposed and winning capital projects funded through PB overlaid on socioeconomic indicators,
2. Maps of capital projects funded by other means overlaid on socioeconomic indicators,
3. A metric or index to summarize socioeconomic characteristics of census block groups, tracts, or neighborhoods,
4. Statistics to measure the degree of clustering in areas with low socioeconomic index values, and
5. A written report describing the methods, assumptions, and conclusions of the study.

6. We expect that the Fellow will use clear independent judgement in choosing research methods, defining assumptions, and identifying new directions for research. The Fellow will work closely with PBP and select members of the North American PB Research Board, which advises and supports research efforts on PB.

How the maps and reports will be used:

The report and maps will be used in PBP's publicity materials (online and print), statements of impact, and grant applications and reports, as well as those of partner organizations who support PB in North America. We hope that the analysis will serve as an initial model to help researchers and local governments in other North American cities to conduct similar evaluations of their PB program's equity outcomes.

Education

Free Library of Philadelphia

Analyzing the Free Library of Philadelphia's Service and Program Delivery and its Effects on the People on Philadelphia

http://freelibrary.org

Spatial Analysis Project:

The Free Library offers library, literacy and information services at more than 60 locations throughout Philadelphia, including our Parkway Central library, three regional libraries, and more than 50 neighborhood libraries and digital literacy Hot Spots. Promoting and expanding our children's and family literacy programming, as well as deepening our reach into neighborhoods, is one of our top strategic goals; as part of this work, we have recently moved from a regional model of organization (with 4 regions) to a nimble, neighborhood-focused cluster model (with 9 clusters). We seek a spatial analysis that would describe the myriad ways the Free Library serves Philadelphians (children's programs, school partnerships, book, DVD and other material lending, job fairs and workforce development, computer and internet access, etc.) and demonstrate how deeply and effectively we reach into our communities, and suggest ways, places and spaces where we can adjust and expand to reach more Philadelphians.

Data available:

Our recently created Data Strategy & Evaluation Unit will offer data sets that include library locations, anonymized user data of many kinds (number of checkouts, type of checkout, home addresses, checkout location, user age), in addition to program records, school/preschool/daycare visits and other outreach data to show FLP's current reach.

Maps and reports that will be created:

Reports that demonstrate and concretize Library impact, potentially including: user maps that visualize and compare children's program and materials usage in and across clusters; maps of underserved neighborhoods in terms of particular usership categories; heat maps of children's and family programs that show areas of greatest need and possibility, as well as the impact of our current service; reports that show our school and preschool/daycare partner impact and also demonstrate and identify unmet needs from schools we do not currently reach; reports that compare libraries and/or clusters in terms of travel times or public transit routes, and that show library usage in relation to particular public transit line usage

How the maps and reports will be used:

These maps and reports will help us demonstrate and evaluate our impact. We will use them to advocate for more private and public resources, but most importantly, these maps and reports will become management tools the Free Library can use to understand and recommend changes in staffing, hours, program availability, materials availability, supports for school partnerships, etc. In addition, they will guide how we deploy our mobile services (including our Techmobile, a digital literacy training vehicle) and possible expansion of services through new or renovated library branches or Hot Spots. We are currently completely renovating and reenvisioning five of our neighborhood libraries. This spatial analysis project will also help us select the next four neighborhood libraries to be renovated and reenvisioned. In addition, the outcomes and products of these maps and reports may encourage the Free Library to develop its own GIS capacity for future such analyses.

Elections & Politics

Illinois Campaign for Political Reform

MAPPING VOTER REGISTRATION NEEDS AND GAPS IN ILLINOIS

http://ilcampaign.org

Spatial Analysis Project:

In the State of Illinois, no superset of data has been compiled that shows how many eligible versus registered voters exist side-by-side. Political campaigns can access the voter file, which includes granular data on where each voter lives and how they have voted in previous elections. Any analyst can see the US Census data for Illinois, and view how many "eligible" voters exist in the state. Unfortunately, there is no resource that stacks these two data sets. This means that many of the voter registration efforts across the state are driven by political campaigns, leaving out voters who are not politically expedient to register. We believe it is time to change that, and provide grassroots organizations with the data they need to reach communities across the state that have been missed by normal voter registration drives. Everyone deserves an equal chance to vote and participate in the political process.

Data available:

We have the Illinois voter file from the Illinois State Board of Elections, which includes the names and addresses of all registered voters in Illinois. We also have US census data for the state of Illinois available. These two data sets will be overlaid with GIS maps of Illinois separated by political jurisdiction. We will have some flat maps completed by this summer, but would like to create a detailed, interactive mapping tool that extends all the way down to municipalities, and ideally election precincts. This would show voting trends in various communities, as well as identify areas that voter registration efforts have missed.

Maps and reports that will be created:

We plan to create an interactive map with multiple views that show both registered and eligible voters by state, county, and municipal political jurisdictions. This data could be used to show voting trends for each area, including the age of voters, voting trends by political party, and historical voter turnout statistics.

How the maps and reports will be used:

The maps will be used by grassroots organizations and nonprofits across the state to identify areas in need of increased voter registration efforts. Universities and nonprofits will also use the data to analyze voter participation across the state.

IMPACT, Inc.

POLLING PLACE LOCATION IN MILWAUKEE, WISCONSIN: DOES IT MATTER?

http://www.impactinc.org

Spatial Analysis Project:

Research suggests that locations of polling places influence voter turnout likely due to availability of transportation and the ability to search for a location. In Wisconsin, with the voter ID law being enforced this year, the ability to obtain a valid ID could also influence voter turnout. Groups such as Citizens Action of Wisconsin have gone door-to-door in parts of Milwaukee providing voters without transportation a ride to their polling place. However, less data-driven methods have been used to identify specific neighborhoods in the City of Milwaukee that experience challenges to voting.

The purpose of this project is to describe and visualize challenges to voting in the City of Milwaukee for advocacy groups. This project is an opportunity for fellows to conduct sophisticated analyses while being innovative and thoughtful with data visualization. The fellow will receive an enriching, high-quality professional experience working with IMPACT on an intriguing and timely project.

Data available:

Several datasets will be provided to conduct this project. For this project, fellows will not need to collect or gather any data. Demographic data from the United States 2010 Census for the City of Milwaukee will be provided. Data on location of voting wards and polling places will be retrieved from the City of Milwaukee. Data on registered voters, those who meet voting age requirements by ward, and voter turnout in the 2012 presidential election are available. Ideally, data on eligible voters taking into account citizenship and felony status will be ascertained by the start of the fellowship and used in lieu of data on those meeting voting age requirements. Locations of Department of Transportation Service Centers are available from Milwaukee County. Finally, GIS files for roads are available, but we are still searching for bus routes and stops.

Maps and reports that will be created:

Deliverables of the fellow will be:

1. A map to describe the demographics for the City of Milwaukee by voting ward
2. A map to visualize polling places and voting wards in relation to population density of eligible voters. Analysis will include buffers around each polling place to capture the density of eligible voters within that buffer.
3. A map using roads, bus routes, and bus stops data to perform a network analysis to determine service area of each polling place.
4. A map to show polling places and voting wards coupled with voter turnout data from the 2012 presidential election. This map will include the same buffers as the second map.

5. A map to display Department of Transportation Service Centers with network analysis done to calculate service area.
6. A PowerPoint to present observations, other potential barriers or things to consider, and recommendations for next steps.

How the maps and reports will be used:

The maps and reports will be used for learning around challenges to voting in the City of Milwaukee and, to improve the impact other nonprofits and advocacy groups can have. It will be important to observe if any racial disparities to voting exist given Milwaukee's history of segregation and racial tension. If it is discovered that there are challenges to voting, the findings could help identify residents, groups, programs, and agencies at the neighborhood level that could work on them. Other members of the NNIP, which consists of local government agencies, nonprofits, and academic institutions among others, have expressed interest in voter turnout, voter rights, and barriers to voting, and this would be an opportunity to bring more attention to voting at the neighborhood level and to share our methodology and findings with other cities looking at the same issue.

Environment and Ecosystems

Chemical Heritage Foundation

A VISUALIZATION OF NATIONAL, REGIONAL, AND LOCAL AIR QUALITY IN THE U.S.

http://www.chemheritage.org/

Spatial Analysis Project:

The Chemical Heritage Foundation's Museum is applying for an Azavea Summer of Maps GIS student to create a potentially interactive visualization that showcases compelling and meaningful air quality data to the public. This is the first in a series of prototype, digital reinterpretations of scientific instruments designed to test how to make the stories and relevance of these instruments more accessible to the public using digital approaches. The project will provide an opportunity for the fellow's work to be showcased in various public settings.

This data visualization will accompany interpretation of a historic smog sensor built by legendary instrument maker Arnold Beckman in Los Angeles in 1952. Data is available from the EPA and Philadelphia's Air Management Services from air quality sensors around the US at the national, regional, and local levels. Data from local, mobile air quality sensors may also be available to provide an additional, live data stream.

Data available:

Three datasets will be available to support this GIS-based analysis and visualization project:

1. National EPA air quality data – EPA air quality data over time from their sensors located throughout the US, including information on over a dozen chemicals from hundreds of sites. We could compare our work to the EPA's existing online air quality mapping system as well.
2. Regional EPA air quality data –A (possibly unique) subset of the national air quality data (e.g., Pennsylvania, the Delaware Valley, etc.), plus local data managed by Philadelphia's Air Management Services.
3. Local air quality data – In addition to the local data available from EPA and Air Management Services, the dataset may also include "live" data from mobile sensors that we plan to purchase and deploy during the summer of 2016 in and around Philadelphia, targeting areas where the EPA currently does not have air quality sensors or data.

Maps and reports that will be created:

The student will be responsible for producing either three separate data visualizations at three different scales (national, regional, and local), or one data visualization that transforms dynamically as users change the scale. In the visualization, users will be able to access air quality information

for a variety of pollutants over time and as far back as data is available. At each scale, users have the opportunity to change the types of chemicals displayed as well and also depending upon the available data.

This spring, the EPA is releasing portable air quality sensors, of which we plan to purchase four or five. If these portable sensors become available and produce a datastream into which we can tap, the student will be responsible for creating a visualization that adapts dynamically to data as the locations of the portable sensors change from week to week for exploration by the public.

How the maps and reports will be used:

The visualizations (maps) will be used in the CHF Museum gallery to test and evaluate how effective the interactive digital presentation of air quality over time is in connecting historic research with the use and application of scientific instruments and data today. The maps and visualizations will be set in the context of significant historic artifacts and interpretive information associated with air quality research. This interpretive information includes graphic panels, photos, text, and scientific instruments that describe and display tools associated with research into air quality in the US and London at the time Arnold Beckman devised his original smog sensor (1950s). Feedback and results from the testing and evaluation of visitor engagement with this initial prototype will be used by the Chemical Heritage Foundation to inform future digital interactives and experiences in the gallery.

Ecotrust

Ongoing Change in Portland's Urban Forest Canopy and Looking Ahead in the 2035 Comprehensive Plan

http://www.ecotrust.org

Spatial Analysis Project:

Change detection using aerial photography from ~2005-2015 will help quantify the rate of tree removal and planting across Portland. Change detection from aerial imagery in 2014 and 2015 will also help identify the extent of tree removals (but without targeting individual landowners) occurring outside of the City's permitting process, to inform City strategies for outreach and engagement in particular neighborhoods. More advanced analysis could assess zoning and land-use allocations in Portland's emerging 2035 Comprehensive Plan with City on-site tree density standards, and be applied to estimate and visualize future urban forest attributes for comparison with ongoing urban forest trends. The extent (% cover), composition (tree form), and geographic distribution of trees may inform priorities for retaining and planting trees, particularly large form trees, and consider the intersectionality of development planning and environmental justice in terms of equitable distribution of urban canopy and contribution of trees to Portland's Climate Action Plan.

Data available:

Tax lot boundaries in Portland metro area, Comprehensive Plan zoning, land-use, and street designations, and geodatabase of Portland's current street tree inventory. If this project is accepted, we would make a public records request of tree removal and planting permits for the City for 2015. Census data would also be helpful for socioeconomic metrics of interest, particularly income and racial and ethnic composition. Other permit data on demolitions, crime, and new construction permits can also be gathered.

Maps and reports that will be created:

Maps showing historical tree removals and appearances from aerial imagery, rates of change, as well as current and future tree canopy and composition. Corresponding maps with relevant demographic, economic, and urban development indicators to enable visual assessment of equitable distribution of green and gray infrastructure and investments. Graphs and/or tables showing these metrics as well. Exploratory analysis of geospatial data identifying geographic areas with unique or relevant trends, hotspots, etc. to be covered with brief narrative reporting and supporting graphs and maps as needed to illustrate these findings.

How the maps and reports will be used:

In February 2016, Portland City Council begins emergency rulemaking regarding removals of large healthy trees in development situations. Recently-adopted tree preservation policies have proven

wholly inadequate while real estate values are rising dramatically inside Portland's Urban Growth Boundary. Several blockades of properties and tree-climbing by protesters occurred in 2015. In late 2016-2017, the City expects to re-open the Tree Code for comprehensive revision. In this same timeframe, Portland's City Forester will prepare a new Urban Forest Management Plan. This GIS analysis could directly inform and help shape these policies. To date, most policy discussions have occurred with little-to-no basis in data that is increasingly available and useful (if analyzed to provide meaningful information). These results will likely be used by the Portland Urban Forestry Commission, the Tree Code Oversight and Advisory Committee, Portland's Urban Forestry program, and various stakeholders to advocate for more effective and equitable urban forest policies.

Urban Tree Alliance

Analysis of Yahara Tree Canopy and Prioritization of Planting Conditions

http://urbantreealliance.org

Spatial Analysis Project:

The Urban Tree Alliance (UTA) is a Madison, Wisconsin based not-for-profit that performs planting projects, research, and educational outreach focused on preserving and growing the local urban tree canopy.

The work proposed through the Summer of Maps program is intended to elaborate a GIS we are developing through the Yahara Canopy Project (YCP), a strategic planning and planting program funded through the Wisconsin Department of Natural Resources (DNR) Urban Forestry Division. The YCP includes a GIS spatial analysis of the urban forest canopy within the Yahara River watershed, which roughly surrounds the Madison, WI metropolitan area. Our current spatial analysis is modeling the eco-service effects of the urban canopy on the watershed and mapping prioritized planting sites. The proposed work through the Summer of Maps program will determine, analyze, and classify planting conditions within high priority areas. There is also potential to conduct parcel-based analysis with the final modeling product(s).

Data available:

Primary Data Sets:

- Wisconsin & Dane County: parcels, hydrology, soils, civil boundaries, streets, topography, stormwater infrastructure, 2008 aerial photos
- I-Tree Canopy, I-Tree Hydro, I-Tree Landscape data for: watershed, subwatershed, and urbanized area
- UTA produced data: Madison canopy cover map, street tree inventories, YCP project shapefiles
- The Wisconsin DNR is soon to release Urban Tree Canopy maps and shapefiles that will be integrated into the GIS as available.

Due to the proximity of the University of Wisconsin, Wisconsin Department of Natural Resources, and local county and municipal governments, Madison enjoys unusually rich GIS data.

Maps and reports that will be created:

The primary product will be a series of maps depicting detailed land uses and environmental conditions in high priority planting areas. We propose that the subsequent analysis will classify these areas based on appropriate planting programs.

For instance, this project posesgeneral questions such as:

1. What are the prevalent land uses found in prioritized planting areas, and what are canopy coverage statistics therein?
2. What are the planting conditions found in prioritized planting areas and can these conditions be generalized into project types, e.g. urban stream corridors or residential yards?

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 maps will help guide the UTA's future planting programs. To date, we have planted approximately 475 free-of-charge trees in the Madison area. About 75% are on private property in under-canopied neighborhoods; the remainder are on public lands and schools. We intend to direct, and modestly expand, these planting programs to sites where tree and understory plantings have the greatest opportunity to positively affect water and watershed quality. The primary uses of the maps will be to shape outreach strategies and to plan physical planting projects in prioritized areas. The maps will also be used as a component of the larger YCP goal of examining and promoting urban forestry issues within the watershed.

We have formally partnered with the Madison-based Clean Lakes Alliance for the YCP. We intend to openly share our work with local not-for-profits concerned specifically with water resources.

Food & Agriculture

Delaware Center for Horticulture

FROM SEED TO SALE - WHAT IS THE MARKET FOR URBAN FARM PRODUCTS?

http://www.thedch.org

Spatial Analysis Project:

An important program of the Delaware Center for Horticulture (TheDCH) is its effort to encourage and improve the availability of fresh, locally-grown food for the citizens of Wilmington, Delaware. TheDCH operates an urban farm in cooperation with local residents in one of city's areas of most need, to help address this issue and improve access to locally-grown food. As part of broader efforts through the Delaware Urban Farm & Food Coalition, a partnership-based, participatory framework focused on outreach and information-sharing, next steps for this movement involve finding markets for urban agricultural products which may contribute to economic development, job skills training, local marketing and neighborhood empowerment. This project will utilize existing data to analyze and prioritize opportunities for market development and revenue generation of Wilmington's urban farm and network of community gardens.

Data available:

TheDCH offers multiple datasets to support the project in table format and ArcGIS layers. These include specific urban agriculture data such as urban farms, community gardens, and school gardens, including data on water access, type of growing space, crop types, and community leadership. These datasets will serve to represent "supply." We also have datasets that represent "demand" - these include locations and services such as corner stores, groceries, and farmers' markets, as well as demographic data such as federal SNAP program participants, access to vehicles, and public transportation. Available base layers include municipal boundaries, land use, water features, census and demographic data, and various infrastructure. Through the FirstMap project (http://firstmap.delaware.gov/), the state of Delaware offer many datasets for free download. The three Delaware counties (New Castle, Kent, and Sussex) also offer free and downloadable GIS data for specific land use, parcel, and planning themes.

Maps and reports that will be created:

TheDCH is proposing maps that will incorporate information about existing urban farms and area gardens, as well as land available for this program and outlets/markets for sale of urban products that create opportunities for economic development. Important to the success of this program is community awareness, ease of access and availability of food as well as mechanisms for transporting food produced for sale. Statistical analysis could include information on the location of each farm and/or garden, size of each producing area, crops grown and annual harvest. Additionally, it would

be beneficial to the success of this program to have analysis of community participation in the various gardens to include number and age of volunteers, hours worked and daily sales.

How the maps and reports will be used:

The maps and reports will be used for PLANNING, COORDINATION and PROMOTION. The work will provide TheDCH with the ability to better plan its urban agriculture efforts including the selection of sites, improving awareness of the program and increasing the local availability of fresh food. Additionally, it will help in the planning of educational programs including cultivation, nutrition and cooking. It will support increased participation by clearly defining the urban agriculture resources available in the City of Wilmington, and will help in coordination with other coalition partners by avoiding duplication, encouraging more on-the-ground partnership, and engaging new markets.

The Food Trust

DEFINING CONTEXT AND PRESENCE: FOOD ACCESS IN PHILADELPHIA

http://thefoodtrust.org/

Spatial Analysis Project:

Working with neighborhoods, schools, grocers, farmers and policymakers, The Food Trust has developed a comprehensive approach to improve food access that combines nutrition education and greater availability of affordable, healthy food. As part of our comprehensive approach we run 27 farmers' markets in low and mixed-income areas, developed a Healthy Corner Store Network with over 500 stores, and provide nutrition education lessons at over 150 sites across the city. For Summer of Maps, we propose a three phase project

- First, the fellow will define a set of community categories based on socioeconomic and geographic factors such as access to public transportation or income.
- Second, create a comprehensive list of locations where we program and attach a score to each location based on the amount and type of programming provided at each site.
- Lastly, create an index for each community category based on how much programming is provided to each community.

Data available:

- The Food Trust programming layers, including corner stores, farmers' markets, schools, community sites.
- US census data including income, age, race and ethnicity, transportation to work
- Comprehensive list of supermarkets, corner stores and farmers' markets in Philadelphia (Nielsen and Open Data Philly)
- Maps and reports that will be created:

We would like both static and dynamic maps that illustrate the community categories and our programming presence. The dynamic map should contain all produced layers so it can be explored later to inform future programming and used to conduct further analysis.

Static map products should:

- Display communities with their associated category, paired with a report explaining the reasoning behind each category (the data used to create the community categories).
- Display programming sites with associated values that indicate the intensity of our presence, paired with a report explaining the reasoning behind the index (the data decisions used to rate the intensity of programming / create the program location index).

How the maps and reports will be used:

We intend to use the maps and information in the following ways

- Make them available on a website for internal decision making, public policy makers and the general public
- Provide them to stakeholders as part of the reports and grants we produce on a regular basis to track our impact
- Use these reports/maps to identify areas where more or less programming is needed
- Guide us in a follow up study which will examine how much nutrition education dosage community members are receiving and how far community members travel to certain destinations. This will inform our understanding how saturated an area is with programming.

Health

American Red Cross

IDENTIFYING PRIORITY COMMUNITIES FOR WEST AFRICA HEALTH INTERVENTIONS

http://www.redcross.org

Spatial Analysis Project:

As part of Ebola recovery efforts, ARC has just launched a project to map ~5,000 communities within 15 km of the border regions of Liberia, Sierra Leone, and Guinea. This spring, volunteers will use mobile data collection methods to map each community's buildings, roads, water points, health/public resources. We are also working with government agencies and NGOs to gather secondary data about the communities.

The next steps for this project are to analyze the various datasets to determine actionable outcomes - we are interested in an fellow who can sift through, analyze, and visualize the data in order to make sense of it. Specifically, we want to understand where are the highest-priority areas for water/sanitation, health, and education interventions, and where we can focus our own recovery efforts (and encourage other NGOs to use this info for data-driven program decisions)

Data available:

On hand: census datasets, Ebola case information, heath and education facilities (including Ebola Treatment Unit locations), admin boundaries, village and hamlet locations, OSM roads

To be collected by mid-May: detailed building locations, water points and conditions of the points, more detailed and up-to-date health/education/public service locations

Maps and reports that will be created:

1. We would like the fellow to review data and health literature and generate a list of communities and their attributes: size, location, health and other resources, Ebola cases, isolation, proximity to other services, etc. From this list, the fellow should create a weighted index to calculate the vulnerability and priority level of each community, as well as the type of intervention (health, education, water, sanitation, etc) most needed.

2. The fellow will create maps and visualizations to show levels of vulnerability and resources across the West African border regions. We are particularly interested in having the fellow create maps of what *does not* exist - where are there pockets of communities lacking services and isolated from resources? What are they lacking most?

How the maps and reports will be used:

Within the American Red Cross, program teams will be using the results to make decisions about which West African communities to operate in, and what sort of interventions we should make. We will share this information with other Red Cross societies and NGOs and advocate for them to use it, as well.

Transportation

Bicycle Coalition of Greater Philadelphia (BCGP)

FATAL ROAD CRASHES AND EQUITY

http://bicyclecoalition.org

Spatial Analysis Project:

We know that pedestrians are disproportionately represented as victims in Philadelphia road crashes. This project would delve deeper into the analysis of fatal crash data and correlate it with census data to determine what other groups may be over-represented in traffic deaths. A statistical analysis of demographic data of crash victims will reveal any inequity in crash distribution.

Data available:

We have complete crash data sets and census data for the last 5 years.

Maps and reports that will be created:

Products:

Maps: fatal crash data and census demographics. Each crash would be mapped with the statistics listed below associated with each crash location. Depending on what the data reveals, there could be maps of individual characteristics.

Statistics: Crash location, victim type (pedestrian, bicycle, etc.), age, sex, vehicles types, seatbelt use; Census data including: income, race, median house price, poverty levels, etc.

The report would describe in detail any statistical correlations that would indicate over-representation of fatal crash victims within any of the census demographic categories.

How the maps and reports will be used:

The maps and reports would provide a deep analysis of the nature of crashes in Philadelphia and would guide Vision Zero efforts to reach those most affected by fatal crashes. In lobbying for support for a robust Vision Zero policy, BCGP has found that City Council is very interested in knowing how crashes affect their constituents. While there has been extensive analysis of the crashes, we are not aware of any reports, to date, have delved into the census data to find correlations and potentially highlight inequities. This data driven approach would inform both Vision Zero policy and action items to make Philadelphia streets safer for all users.

Transportation Alternatives

THE ROAD TO VISION ZERO: TRAFFIC CRASHES AND POVERTY LEVEL IN NEW YORK CITY

http://transalt.org

Spatial Analysis Project:

While recent national studies have found that traffic crashes occur at disproportionately higher rates in low-income and high-poverty neighborhoods, TransAlt is interested in examining whether this statement holds true in New York City. Understanding who is most affected will help inform policy as we work to achieve Vision Zero – the Mayor's goal of zero traffic deaths and serious injuries, and to achieve a more equitable city. In order to make the strongest possible case for interventions from lawmakers and city agencies, we need strong data analysis.

The goal of this project is to examine the correlation between poverty level and crash density in New York City. Using community board-level income and poverty data and NYPD crash statistics as data sources, this spatial analysis will determine whether New York City's low-income neighborhoods experience disproportionately higher injuries or fatalities due to traffic crashes.

Data available:

We have access to all the data for this project, including:

- Geocoded traffic crash data publicly available via the NYPD Motor Vehicle Collisions open data portal
- Income/poverty level data publicly available via the 2011-2013 U.S. Census Bureau's American Community Survey for each community board in NYC
- Relevant community board statistics such as population and square mileage via the NYC Department of City Planning's Community Portal
- Shapefile and dataset exports, etc.

Maps and reports that will be created:

We anticipate that the fellow will produce a series of calculations, maps and analyses we will use to publish a comprehensive report:

1. Spreadsheet aggregating crashes in each community board with income/poverty data, normalized by population size and square-mileage. The spreadsheet would rank community boards by the percentage of each population living below the poverty-level borough-wide and citywide.
2. Maps illustrating crash density by income/poverty citywide and borough-wide. We would also like maps of community boards with strong correlations between crash density and income. We envision a "heat map" format but are also interested in any other creative data visualization ideas.

3. Beyond these outcomes, we'd like a short report including initial analysis of these findings.

How the maps and reports will be used:

We will build on the fellow's analysis to produce a full-length report exploring the connection between income and crash density. The report will be published on the TransAlt website, distributed to press, and used to inform briefings to policymakers in the City Council and the state legislature to shape policy. Our organization has been at the forefront of Vision Zero and is highly influential thanks to our emphasis on evidence-based policymaking, to which the Fellow's work will contribute. This analysis will help shape the city's investment in transportation infrastructure, ultimately bringing us closer to eliminating traffic deaths/injuries, and creating a more equitable city.