"Redefining The Concept Of Food Deserts: A Case Study From Rutland, Vermont: A Study of Rural Food Deserts Rutland County, Vermont"

by Brandy Bunkley & Cody Currier,
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Poster

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Food deserts are generally regarded as areas with limited access to healthy, affordable food sources. The term was initially used in reference to a housing project and has since been applied to various urban areas, examining factors such as household income, and ethnicity with regards to food security. However, the concept of food deserts has not been examined thoroughly with regards to rural areas and distance traveled for access to healthy food. We explore the concept of food deserts within a single county of rural Vermont to evaluate the differences between access to food versus what we define as healthy food.

Rutland County has a well-developed food system based heavily on regional consumption and small, locally owned businesses. It is possible however, based on the fact the most of the county is comprised of sparsely populated towns rather than urban centers, that there are areas without sufficient food availability with respect to both quantity and quality. In order to evaluate food quality and availability, we identified the location of all convenience stores, grocery stores, supermarkets, village stores, farmers' markets, farm stands and CSAs in Rutland County. Each food source was ranked based on the quantity and quality of food they provided. This information was used to characterize the spatial relationship between the distance from individual residences in the county to sources of high, medium, and low, quality food sources.

The maps produced on the subject indicate that although all residences are within a reasonable distance of a food source, access to high quality food sources is inconsistent and unevenly distributed within the county.

An Updated Digital Geological Map and GIS Database For Clinton County, New York: Engaging Undergraduate Students in Geologic and GIS Based Mapping

Poster

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SUNY Plattsburgh and St. Lawrence University have initiated a project to produce a digital geological map and GIS database for Clinton County, New York that will be useful for regional-scale natural resource evaluation and management, engineering projects and long-term planning. The 1:250,000-scale Geologic Map of New York (Adirondack Sheet), published in 1970, and the Surficial Geologic Map of New York (Adirondack Sheet), published in 1991, currently provide the only countywide geologic coverages but ata scale that is not useful for many purposes.

Original sources of geological information for Clinton County include state and federal maps and reports, published literature and unpublished maps and reports in state and federal geological survey open-files. Much of this information predates the statewide compilations and thus the statewide maps do not include results from recent mapping, stratigraphic revisions or discoveries since their publication. First-year efforts focused on 7.5-minute quadrangles in the northern tier of the county. Geologic data from original sources and new field mapping to resolve conflicting interpretations form the basis for the new geologic compilation. Database tables cross-reference each map unit to its source. Original and derived geospatial data accompany the new maps as separate raster and vector files. The project simultaneously addresses the need for an updated regional geologic map and provides opportunities for undergraduate students to engage in field and GIS-based mapping. Components of the larger mapping effort can be tailored to fit the interests and academic backgrounds of individual students and thus is well suited for undergraduate research.

#3

Be Fit Westchester County

Poster

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Be Fit Westchester is Westchester County's countywide fitness initiative which encourages residents to live a healthy lifestyle by being active and eating healthy. The initiative highlights local activities such as hiking, biking and swimming locations available in Westchester. In addition, a food store survey has been conducted by the County's Department of Health to evaluate the availability of healthy food in the county.

"Be Fit Westchester" has been integrated into the Westchester County primary mapping application, Mapping Westchester County. Users can now easily locate fitness locations in the county.

#4

Experiments in visualizing historical census records: NYC 1790-1840

Poster

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Creating GIS maps that aid in the visualization of early census data can be challenging. While there might be numerous categories of data collected in these early years, the city was seen as a whole and thus it is difficult to identify changes by neighborhood or similarly restricted areas. In an attempt to address this problem, I have been creating digitized maps of early wards, and neighborhoods off of maps from the 1700s and later, and then attempting to link them to the census data in question where possible. This has permitted me to begin to chart changes in occupation and ethnic make-up during this important period that begins with the first census of 1790.

#5

Geographically Weighted Regression and Visualization of Environmental Impacts of Brown Fields on Lung and Colon Cancer Incidents

Poster

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While cancer is one of the major causes of mortality, the environmental and health factors that impact the development of cancer remains unclear. Researches indicated that the impact of environmental toxins may cause mental diseases of newborn babies.(Shuang et al. 2010), lung and liver diseases (Kajekar 2007, Stanca et al. 2008), and breast cancer (Jun-Sheng et al. 2008, Kietz et al. 2009). Previously, GIS analysis was applied for health care demand and hospital services (Murad 2007, Faruque et al. 2003), and human exposure to urban air pollutions (Clougherty et al. 2009, Tang et al. 2010). The objective of current research is to analyze the environmental pollution impacts of brown fields (BF) on lung and colon cancer incidents in New York State. Kernel density of BF was analyzed. Geographically Weighted Regression (GWR) model was applied to compute the degrees of impacts of BF on the cancer incidents. GWR generates a localized regression for each of the observations across the study area in predicting the relations. Modeling results show that the high incidents of colon cancer per 1000 persons occur sporadically in the west side of Hudson River Valley, Adirondack region, and the east part of the Long Island; and those of lung cancer occur sporadically in the west side of Hudson River Valley and Adirondack region. BF density based GWR shows high local R2 in New York City and Rochester areas for colon cancer incidents, and that of New York City area only for lung cancer incidents.

Identification of Land Parcels with High Natural Resource Value in Clifton Park, NY

Poster

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The Friends of Clifton Park Open Space is a not-for-profit organization in Clifton Park, NY that aims to promote the development of a contiguous belt of open space in the western portion of the Town for recreational, agricultural, and ecological purposes.This project supports this aim by identifying land parcels in Clifton Park with high natural resource value. Priority parcels are identified through (1) the collection of natural resource data through GIS clearinghouses and field visits, (2) developing a workable rating criteria based on the natural resource data, by which each land parcel is evaluated, and (3) the presentation of the results through a user-friendly series of maps and spreadsheets. The project uses natural resource data from the New York State Department of Environmental Conservation, the National Hydrography DataSet, the U.S. Geological Survey, and the New York State Orthoimagery repository among other sources as well as data collected in the field and through literature review. Each parcel is evaluated based on is value in an individual natural resource category such as habitat potential or water resource value as well as its cumulative value for all categories. The hope is that parcels of high natural resource value could be added to the Town's already existing open space "anchor" points.

#7

Indexing State Failure as Function of Social, Economical, and Political Indicators

Poster

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A failed state is a product of societal pressures that build up overtime resulting ultimately in chaos. A careful, or even casual, observer of international affairs can easily develop a sense of discomfort with certain countries where instability is the norm rather than the exception. The sources of instability and unrest are numerous and vary in different societies. The organization of Fund for Peace collects and compiles data to quantify what is referred to as Failed States Index (FSI). This index is based on social, economical, and political indicators assessed from thousands of articles and reports processed from electronically available sources. The social indicators include: 1) mounting demographic pressures, 2) massive movement of refugees or internally displaced persons creating complex humanitarian emergencies, 3) legacy of vengeance-seeking group grievance or group paranoia, and 4) chronic and sustained human flight. The economic indicators include 5) uneven economic development along group lines, and 6) sharp and/or severe economic decline. The political indicators include 7) criminalization and/or delegitimization of the state, 8) progressive deterioration of public services, 9) suspension or arbitrary application of the rule of law and widespread violation of human rights, 10) security apparatus operates as a “state within a state", 11) rise of factionalized elites, and 12) intervention of other states or external political actors. Although the stated goal of the FSI was to develop ideas forpromoting greater stability worldwide, this paper will thoroughly examine the given indicators to look for symptoms leading to early identification of alarming signs pointing to a potential failed state. This early detection can help mobilize the international community into providing preventive measures to promote stability.

#8

Leveraging Annotated and GeoReferenced Aerial Photographs For Infrastructure Management

Poster

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Westchester County GIS benefitted from a project undertaken by Westchester County Department of Environmental Facilities (DEF) to scan and georeference over 1100 annotated aerial photos depicting the Westchester County Sanitary Sewer Trunk lines.

The scanned images are classified by sewer district, contract number, and title, in a searchable database. In addition to the county trunk lines and manholes, municipal sanitary sewer connections are also shown. Annotations include the size of the sewer main, the manhole number, and the direction of flow. The image set (and the County sanitary sewer system itself) covers a majority of the county, including the Blind Brook, Mamaroneck, New Rochelle, Ossining, Peekskill, Port Chester and Yonkers districts. Nearly half of the scanned images cover the Yonkers district (the largest), which extends into 20 municipalities.

#9

Madison County GIS Conversion Project

Poster

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Madison County, NY is undertaking an ambitious Geographic Information System (GIS) upgrade of the tax mapping database. This project includes data conversion from PC ARC/INFO 3.5.2 ©1998 to ArcGIS 10, edge matching of the tax map sections and datum conversion from NAD27 to NAD83. New tax map templates and various macros supporting map maintenance are being developed. Special districts (school, fire, sewer, etc.) review and corrections are being performed on the approximately 37,000 active parcels. Survey maps filed with the County Clerk's office are being cross referenced to the tax parcels and digital copied are hyperlinked to the data. The hard copy property information will be scanned and linked to the parcels. At the conclusion of this project the tax mapping maintenance process will be more efficient, more accurate and better able to serve the needs of our clients.

Mapping Soil Potassium Supplying Power in New York State Using Soil Geographic Databases

Poster

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Potassium (K) is an important soil nutrient for production of high quality crops in New York State (NYS). Knowing the status and spatial distribution of soil K supply potential of NYS mineral soils is important to determine fertility needs prior to crop establishment. Soil K supplying power is primarily a function of clay content, soil depth, rooting depth, organic matter, coarse fragments, and mineralogy. Generally, soil K supplying power is ranked from highest to lowest: well-drained clayey soils, well-drained silt loam surface soils with a silt loam to silty clay loam subsoil, coarser textured silt loams that have less clay in the subsoil, sandy loam soils, and low-organic matter, sandy soils. Based on existing soil K supplying power rankings associated with soil series occurring in NYS, area-weighted estimates were derived and mapped using SSURGO for selected counties and using the U.S. General Soil Map (aka STATSGO2) for a statewide assessment. Field trials are ongoing to estimate soil K supplying power under various cropping systems and to validate spatial estimates using the above-referenced soil geographic databases. Additional spatial analysis is anticipated where selected soil properties are estimated from these soil geographic databases and combined to predict the spatial distribution of soil K supplying power independent of soil series designation.

#11

Mapping Westchester County Application

Poster

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Westchester County GIS, in collaboration with Bowne Management Systems, Inc. has migrated it's legacy public facing ArcIMS Mapping Westchester County application to ArcGIS Server.

The updated application includes a variety of new user functions including the ability to type in an address or to select a place of interest to find the nearby facilities and get the driving directions using Google Maps. The application also includes nine sub-applications including Solar Power Property Finder, Indian Point Evacuation Zone, Hurricane Evacuation Zone, County Sewer Districts, Livable Community, Green Facilities/Services, and Community Facilities. The new ArcGIS Server version also includes the ability to access traffic camera feeds, the new Be Fit Westchester component and a series of historical aerial photos into the new application.

The application is developed using ESRI's ArcGIS Server 9.3.1 JavaScript API. The map catches for the aerial photos are also built to increase the performance. The Google Maps and Bing Maps technologies are integrated into the application.

NYSDEC Fishing Access and Artificial Reefs: No reason to say, “The one that got away…”

Poster

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Recreational fishing and diving in NY are not only leisure activities but support local economies with the purchases of fuel, bait, lunches, tackle and dive gear. A portion of these sales support the federal Sport Fish Restoration program which is responsible for creating ramps and recreational fishing opportunities. The NYSDEC Fishing Access and Artificial Reefs unit is tasked with acquiring property for ramps and building reefs that all NY residents may use.

Finding an access ramp to launch a boat on Long Island is not always easy. There are many jurisdictions, including state, county, township, village and private, and knowing which ramps are open to the public can be confusing. We created maps which focus on the township level and show locations of boat ramps in Nassau and Suffolk counties. Along with the maps are descriptive tables which boaters can refer to in order to learn which entity has jurisdiction, applicable fees, available amenities and a brief description of each ramp.

By mimicking natural habitat and taking advantage of life strategies of desirable fish, reefs are created to enhance fishing opportunities. Divers enjoy artificial reefs as well, especially those constructed of derelict fishing vessels or military vehicles. The NYSDECcontracted georeferenced side scan SONAR images of the state managed reefs. From these images we verified individual patch reefs by comparison with known coordinates from when each structure was deployed. Once we located and identified all of the patch reefs we made graticule based maps and constructed accompanying information tables for distribution.

Parcel-based Land Use

Poster

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This map is a composite of 234,170 unique tax parcels, comprising all the municipal tax parcels of Westchester County. It was created from a land use data layer in which every tax parcel is coded for its specific land use. For the purposes of this map, land use codes were condensed into 18 "generalized" categories. Parcel land uses were originally derived from municipal assessment data containing ORPS (Office of Real Property Services) codes which define specific land use as assigned by local assessors. The data was reviewed in-house and selectively edited for completeness, consistency and currency. Proof maps were provided to each municipality for review.

Produced by the Westchester County Department of Planning, February 2010.

Producing Local Community Health Indicators

Poster

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Background: Environmental Health Indicators have been produced at the county level for the Centers for Disease Control and Prevention (CDC) Environmental Public Health Tracking Program. However, counties are large and have environmental health indicatorswhich vary widely between local areas within the county.

Developing indicators at the local community level is challenging. Sub-county data are available at disparate geographic scales such census tract, ZIP code, water district or grid cell. Sincethese scales differ, it is difficult to compare indicators. In addition, when data are presented for small areas, problems arise, including fluctuations in rates due to small numbers and increased risk of disclosing confidential health information.

Objective: Develop methods to provide local community health indicators at the same geographic scale while providing stable health outcome rates and protecting patient confidentiality.

Methods: We developed a Geographic Aggregation Tool (GAT) to stabilize rates of disease due to small numbers by merging small areas into larger areas until an appropriate population is reached. GIS overlay methods were employed to move data from one scale to another. Finally, we used ranking procedures to avoid the disclosure of confidential data and to facilitate the comparisons across indicators.

Results: We present examples using health data to show how these methods can be used to produce indicators at the census tract level. Although there is no ideal solution to developing community health indicators on a consistent geographic scale, the GIS methods developed are useful in providing indicators relevant to local communities.

St. Lawrence County GIS On-Line -- Comparing and Contrasting how County Data is Served Up on the Web

Poster

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St. Lawrence County, located on New York's northern border, is the State's largest county in land area, covering 2,822 square miles. Mapping such a large county has always been a challenge, but providing spatial information in such a rural area is as critical as anywhere else.

Two organizations, the County's Planning Office and the Libraries GIS Program at nearby St. Lawrence University (SLU), have separately created online map viewers of the County. SLU has been publishing maps on the Web for six years, while recently a partnership was formed between the County and Bryan R. McBride, GISP, of Geoserving.net. Bryan developed the County's Open Geo Portal using open source GIS software, as a cost saving alternative for the County.

This poster compares and contrasts on-line spatial data served on a proprietary platform with an open source platform for the same geographical area. Information presented will include types of data sets available, maintenance, life span, and intended audiences.
SLU has developed its web map server using ARCIMS software. The WMS (http://stlawu.edu/gis/mapserver.html) offers maps for disciplines taught at the university, specifically geology and biology; provides a campus map with numerous geographical, social and recreational layers; and offers historical maps of the area. The County's Open Geo Portal (http://www.opengeohost.com/maps/stlawrence/) uses open source technologies including GeoServer, OpenLayers and ExtJS. Users can query individual parcels and overlay a variety of political boundaries and natural features with base map layers from Google, Bing, Yahoo, OSM, ESRI, MyTopo, and NYSDOP.

Westchester County GIS Georeferencing Historic Aerial Images from 1976

Poster

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Through the regular acquisition of aerial photography, Westchester County has documented its land use, history and physical development. Captured in a series of 12 campaigns flown between 1925 and 1995, the Planning Department's twentieth-century program produced nearly 6,300 original single-frame black-and-white contact prints.

Until recently, these images were only available for the public to view or order copies, on a walk-in basis in the White Plains County office building. Then through a New York State Archives (SARA) grant, the Westchester County Archives and Records Center scanned the original prints to digital format (TIF, 300 dpi), and through a contract, developed an ArcIMS application to allow users to search images by year, browse image center points on a map, and print.

But until the scanned images were geo-referenced, they couldn't be viewed side-by-side, in context of other GIS datasets, or easily compared with imagery from other eras. GIS staff undertook a pilot to do this, selecting the high-quality, spatially complete 1976 series.

Using ESRI's ArcGIS v9.3 georeferencing toolbar, control points in each 1976 image were assigned to their corresponding point in the County's 2004 orthophotos. With LizardTech GeoExpress v7 software, a Fishnet grid was used to crop all 485 images, to edge-match them. After reviewing for spatial consistency, the cropped images were color-balanced and output to a new mosaic.

The new 1976 image, along with 1947 and 1960 (to be completed next), will be a valuable addition to the GIS warehouse of aerial photography.

#17

Westchester County GIS Municipal Tax Parcel Viewer

Poster

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Westchester County GIS developed a "Municipal Tax Parcel Viewer", which was designed and developed entirely in-house. This application was deployed over the internet and made available to local governments. The application utilizes ArcGIS Server JavaScript API and cached map services for both tax parcel layers and aerial photos that increase the performance significantly and give users much better experience with the application. Leveraging the County's existing web mapping environment (ArcGIS Server REST services) the application requires no specialized GIS mapping software for end users.

This application will enable citizens to identify a parcel by simply clicking on any parcel, or search a parcel by owner's name, property's address or print key. Citizens and assessor's office are able to query surrounding parcels by entering a buffer distance and create mailing labels, which will be a PDF file in Avery standard format, directly from the program, or export the result to an Excel file for further editing. Users can switch to aerial photos to see the property's photograph or see the parcel layers overlay on top of the aerial photos in a transparent manner. Users are also able to view the property on Google Maps or Bing Maps by simply clicking on the links that generated programmatically when the parcel is indentified.

City of Ithaca New York, Sign Inventory

Poster

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The City of Ithaca Sign Inventory Project successfully mapped 7,386 signs and 4663 posts in the City of Ithaca. The project required a team of two data collectors, two mobile GPS units, and 48 days of field work. Project planning began April 12, 2010, and a pilot study was completed in the beginning of May. Field work began May 5, 2010 and concluded August 10, 2010; a total of 14 weeks of data collection. Sign data was collected over 80 miles of City of streets and parks. The data was collected primarily on foot or bicycle which allowed this project to be very environmentally friendly. Vehicles were used only when necessary, less than two gallons of gas were used to complete this project.

Watertown, New York Pavement Condition Index Analysis

Poster

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In 2006, Gene Hayes (City of Watertown Superintendent of Public Works) wanted to start tracking pavement and assets digitally by using GIS. The City of Watertown had Transmap collect 100 miles of asset and pavement distress data. The data was integrated into Cartegraph Asset Management Software (PaveView, Work Orders, FlexView, etc.). Sidewalk, curbing, and PMS distresses were also integrated into an ArcGIS environment.

In 2010, Watertown wanted to keep up with pavement management by a 4-year re-inspection process. Transmap re-inspected the 100 miles of pavement distress data, and the data was again integrated into Cartegraph. This was done to help Watertown understand how their pavement is deteriorating over time.

"Transmap was able to provide the data in such a format that allows us to use this information when compiling our paving and street maintenance budgets. If you are considering the implementation of GPS/GIS based roadway asset inventory and management systems that can be quickly implemented... I would strongly recommend Transmap. The folks at Transmap have always been helpful whenever we call and are on a first name bases with our people in IT and Public Works," said Hayes.

This map represents Pavement Condition Index (PCI) data that the City of Watertown is using to determine pavement funding criteria. Pavement maintenance and rehabilitation dollars are best spent before pavement drops below a fair condition rating. Pavement Management is all about extending the life cycle of your pavement.

A Comparison of Spatial and Non-Spatial Methods for Determining Exposure Point Concentration

Poster

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The exposure point concentration (EPC) is an estimate of the arithmetic mean concentration of a constituent that may be potentially contacted by a receptor over a period of time that can be associated with an adverse health effect. Typically, an EPC is calculated from a set of samples from an area that represent the potential habitat or home range of a receptor population. To reduce the chance of underestimating the true mean, a 95 percent upper confidence limit for the mean (95UCL) is used for the EPC. The assumption when calculating EPCs is that an unbiased sampling design is used and each observation is independent and identically distributed. In practice, these assumptions are often violated due to targeted sampling efforts, and because many environmental contaminants exhibit positive spatial autocorrelation. Therefore, simply pooling data without accounting for spatial information can lead to an estimate of the mean that is biased towards subareas that are oversampled or disproportionately represented. Spatial weighting of a sample can yield estimates of an EPC with more favorable statistical properties. While the risk assessment literature provides many examples of the application of spatial weighting methods, their performance has not been systematically studied for a range of conditions. In this poster, we present the results of a simulation study comparing statistics with and without spatial weighting. Results suggest that relatively simple declustering with Thiessen polygons can be expected to yield more reliable EPCs under a wide range of contamination scenarios and sampling designs.