GIS Excellence Awards 2021

Cartographic Product or Presentation

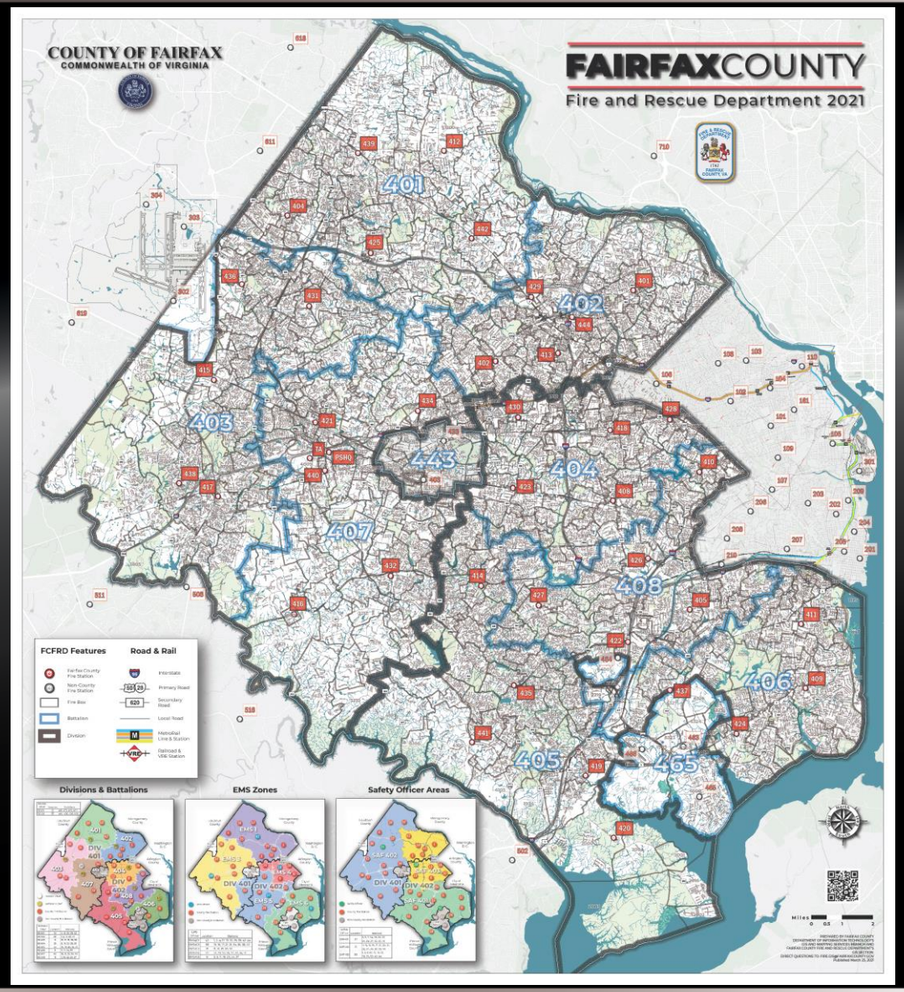
This award is intended to showcase the power of GIS tools in creating accurate, instructive, and visually-pleasing printed maps. The map must have been or plan to be used for Fairfax County business, and an original design is required.

Criteria used to evaluate the entries include:

- clarity of purpose and intent
- the use of GIS tools, methods, and operations to go beyond basic cartography
- visual balance and appeal
- inclusion of necessary map elements and conventions
- quality control for typos or other errors

GIS Excellence Awards 2021

Cartographic Product or Presentation



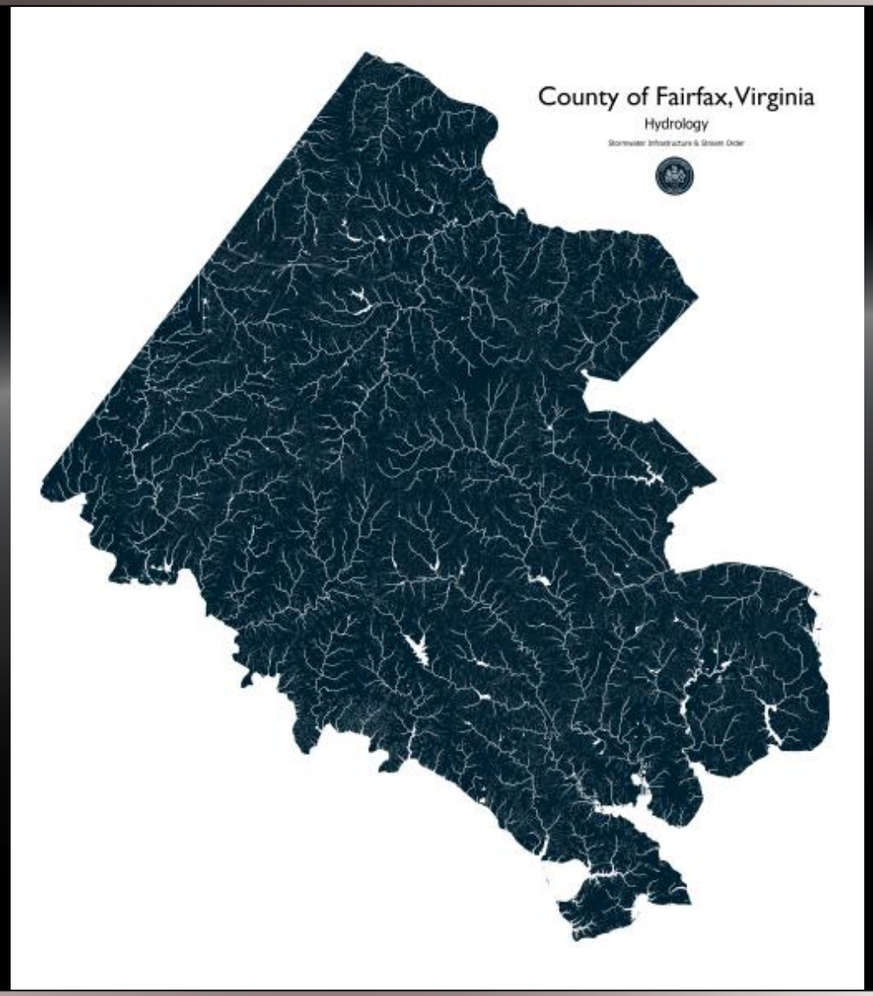
Fairfax County 2021 Fire and Rescue Reference Map

Department of Information Technology

Daniel Cabrera, Eric Fisher (FRD), Katherine Good (FRD), John Hanke (FRD), John Morrison (FRD)

GIS Excellence Awards 2021

Cartographic Product or Presentation



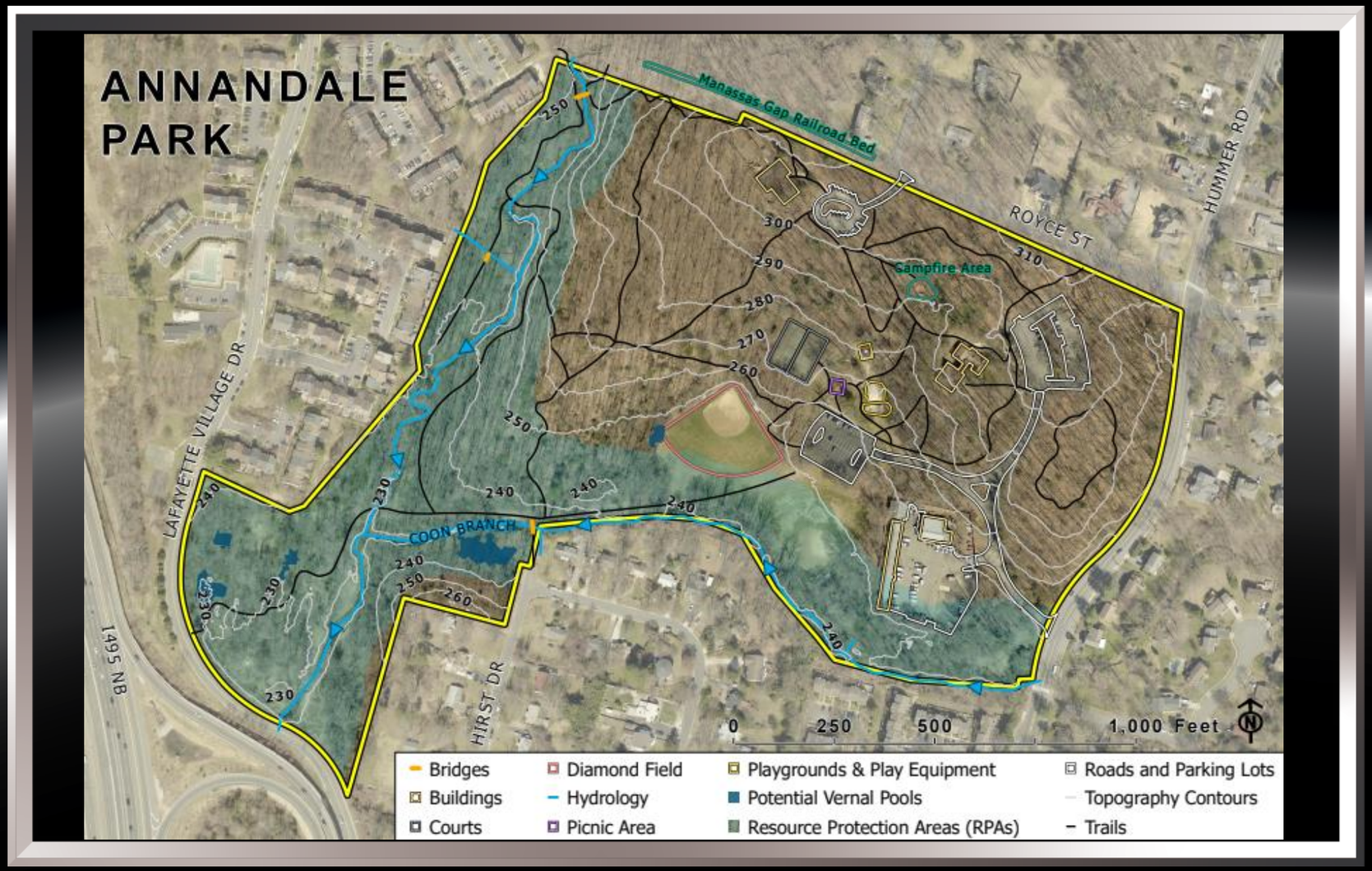
Fairfax Hydrology

Department of Information Technology

Chip Galloway

GIS Excellence Awards 2021

Cartographic Product or Presentation



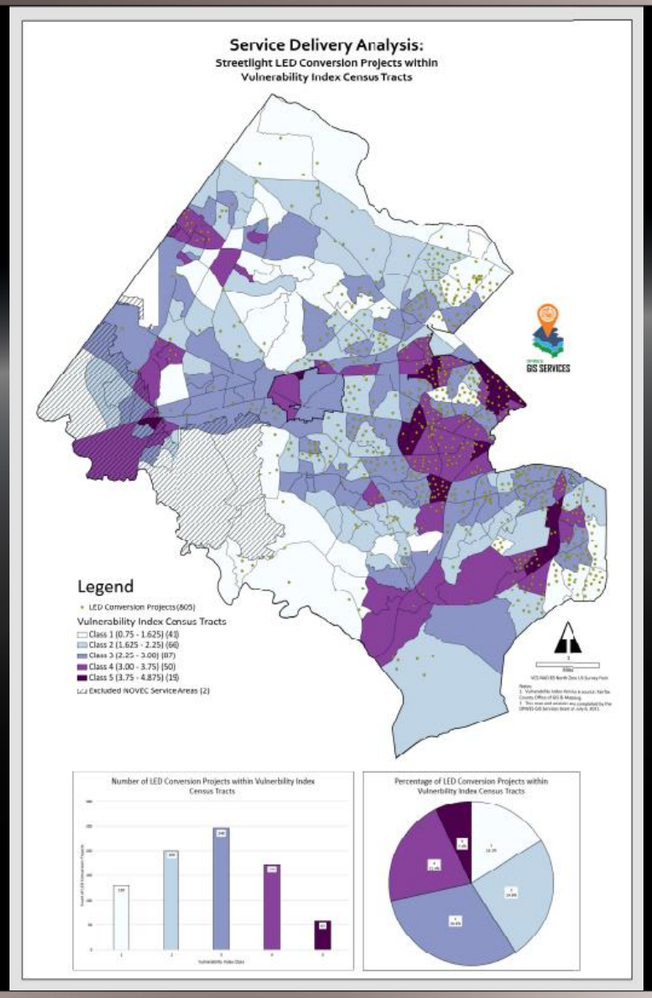
Hidden Oaks Nature Center's Nature Scorecard

Park Authority

Fariss Agatone, Suzanne Holland

GIS Excellence Awards 2021

Cartographic Product or Presentation



Service Delivery Analysis - Streetlight LED Conversions

Department of Public Works and Environmental Services Director's Office

Yeoanny Venetsanos

GIS Excellence Awards 2021

Use of GIS for Analysis

This award is intended to showcase the power of GIS tools in undertaking sophisticated spatial analyses that aid County operations and answer significant questions.

Criteria used to evaluate the entries include:

- complexity of analysis; use of tools, scripting, model-builder, etc.
- ingenuity/creativity/originality of GIS methods used
- project benefits to a team or department
- effective demonstration of the information and insight gained (e.g., diagrams, maps, presentations, report, text)

GIS Excellence Awards 2021

Use of GIS for Analysis

American Rescue Plan Act COVID-19 Recovery Index

Promoting Equitable Outcomes

While the pandemic has impacted the entire County, it has disproportionately impacted low-income families, communities of color, and other historically disadvantaged populations, and has exacerbated systemic health and economic inequities. Low-income and socially vulnerable communities have experienced the most severe health impacts. The Fiscal Recovery Fund is specifically intended to help address those disproportionately impacted by the COVID-19 pandemic.

Under the U.S. Department of Treasury's Interim Final Rule, the County may identify a disproportionately impacted populations and communities using either the U.S. Department of Housing and Urban Development (HUD) Qualified Census Tracts (QCTs) or "other households, businesses, and populations disproportionately impacted by the COVID-19 public health emergency." Due to limitations with the QCTs, the County has opted to define those populations, households, and geographic areas that have been disproportionately impacted by the pandemic. The County has developed an ARPA COVID-19 Recovery Index to show which areas of the County are disproportionately impacted by COVID-19 and where to target resources for recovery.

Fairfax County ARPA COVID-19 Recovery Index

The Fairfax County ARPA COVID-19 Recovery Index (Recovery Index) includes data from three areas individually and as a composite index by Census tract. They are as follows:

1. Fairfax County ARPA COVID-19 Vulnerability Index

   The ARPA COVID-19 Vulnerability Index helps us understand which areas of the county are vulnerable to COVID-19 due to factors such as poverty, crowding, and job type. The Fairfax County COVID-19 Vulnerability Index is based on the Centers for Disease Control and Prevention's Social Vulnerability Index. The ARPA version of the Fairfax County COVID-19 Vulnerability Index has 12 indicators; the original COVID-19 Vulnerability Index developed in May 2020 had 21 indicators. These 12 indicators were chosen due to their focus on the economic impacts of COVID-19. Individual indicators were ranked into 5 classes using natural breaks and given a score of 1 to 5, with 5 being the most vulnerable. The individual indicators were combined, using equal weighting, to create the ARPA COVID-19 Vulnerability Index. The data sources are the American Community Survey 2015-2019 and the Centers for Disease Control and Prevention Behavioral Risk Factor Surveillance System.

2. COVID-19 Cases in Fairfax County

   Cases of COVID-19 by Census tract in the Fairfax Health District as of July 2021. The source is the Virginia Electronic Disease Surveillance System.

3. Estimated Low-Income Job Loss (Where Low-Income Jobs Are Being Lost to COVID-19 from the Urban Institute)

   According to the Urban Institute, the neighborhoods hardest hit by COVID-19 job losses are home to workers in industries like tourism and transportation. Urban Institute estimates how many low-income jobs have been lost by workers living in each Census tract or are at risk when stay-at-home orders are in place. Please note that these numbers are estimates. The Urban Institute recommends interpreting the results as relative job loss levels, which can be used to inform investments that alleviate some of the economic burden in hard-hit neighborhoods. Read more about the methodology used at Where Low-Income Jobs Are Being Lost to COVID-19 | Urban Institute. Data from August 6, 2021 was used.

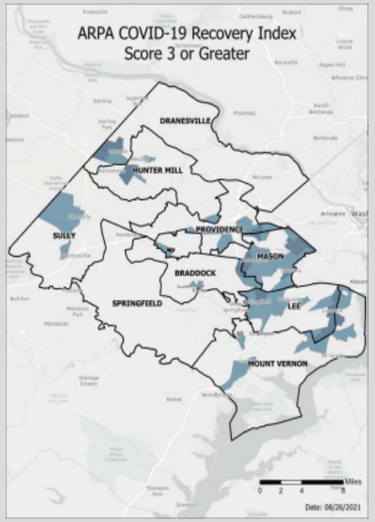
Individual indicators were ranked into 5 classes using natural breaks and given a score of 1 to 5, with 5 being the most impacted. The overall ARPA COVID-19 Recovery Index was created using the three sub-indices (Fairfax County ARPA COVID-19 Vulnerability Index, COVID-19 Cases in Fairfax County, and Estimated Low-Income Job Loss) and applying the following weighting:

- 50 percent – Fairfax County ARPA COVID-19 Vulnerability Index
- 33 percent – COVID-19 Cases in Fairfax County
- 17 percent – Estimated Low-Income Job Loss

Recovery Index In-Action

The areas shaded in blue in the map to the right show the areas of the County that have been defined as those disproportionately impacted by the COVID-19 pandemic.

Programs will be designed to target both businesses and households in the Recovery Index. These disproportionately impacted populations and communities will be prioritized wherever possible.

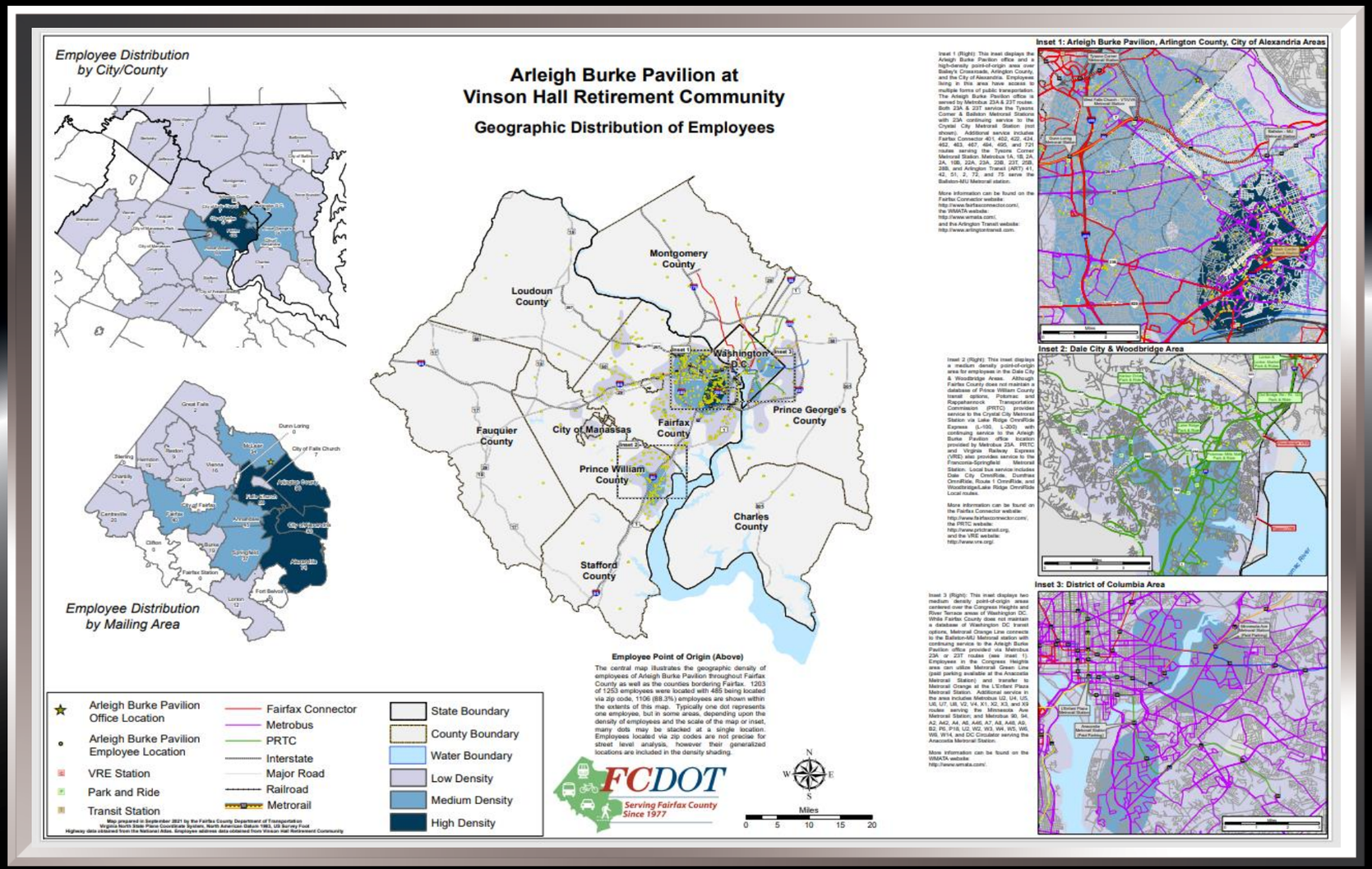


Office of the County Executive

Katherine Miga, Robin Wilson

GIS Excellence Awards 2021

Use of GIS for Analysis



Arleigh Burke Pavilion Employee Density Analysis

Department of Transportation

Thomas Wampler, Marcus Moore

GIS Excellence Awards 2021

Use of GIS for Analysis

Census Tract Level Index: Identifying Areas of Concern for COVID-19 Disease and Vaccination

Health Department

Amanda Burton, Jennifer Brophy, Rene Najera, Benjamin Klekamp

Census Tract Level Index: Identifying Areas of Concern for COVID-19 Disease and Vaccination

Amanda Burton, MPH; Jennifer Brophy, ScM; Ben Klekamp, MSPH; René Najera, DrPH

Fairfax County Health Department - Division of Epidemiology & Population Health

Introduction

- COVID-19 risk differs among population and geographic areas. Targeting response resources to areas of greatest need maximizes disease prevention.
- Previously, targeted outreach and intervention was based on ZIP code-level analysis of COVID-19 cases and vaccination coverage.
- Given substantial heterogeneity within ZIP codes, analysis of smaller units can better inform Health Department and partner COVID-19 resource allocation decisions. Moreover, we recognize that areas with less testing may have artificially low case numbers and higher need than apparent from case and vaccination data alone.
- The inclusion of multiple indicators will best identify emerging hot spots where high case rates and low vaccination and test rates create an ideal setting for increased disease transmission.

Methods

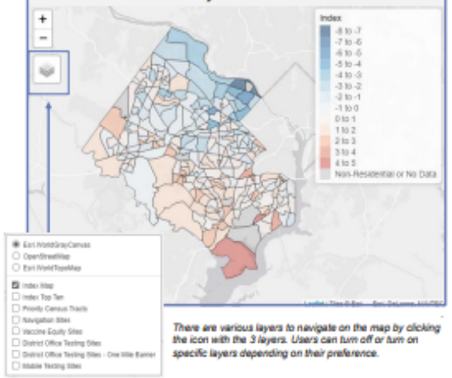
- We performed all analyses and geographic visualizations in RStudio Pro (v1.4.1717-3).
- We geocoded COVID-19 case and testing data obtained from August 19, 2021, through September 19, 2021, from the Virginia Electronic Disease Surveillance System (VEDSS) and linked them to census tracts. We then calculated case and testing rates per 10,000 residents by census tract using data from the previous four-week period to identify recent disease and testing trends.
- We calculated vaccination coverage among those aged 12 to 64 years by census tract using data from the Virginia Immunization Information System (VIIS). An individual was considered vaccinated if they received at least one dose of COVID-19 vaccine. We excluded vaccination data from persons aged 65 years and older as coverage was uniformly high and coverage was artificially elevated in census tracts with more long-term care facilities.
- We calculated Z-scores for case rates, vaccination rates, and testing rates by census tract to create a census tract level index equally weighting case, vaccination, and testing Z-scores:

$$Index = Z_{case} + (-1)Z_{vaccination} + (-1)Z_{testing}$$

- We visualized our index with higher values (warmer tones, see Index by Census Tract) indicating census tracts of greater concern (i.e., higher case rates, lower vaccination rates, and lower rates of testing).

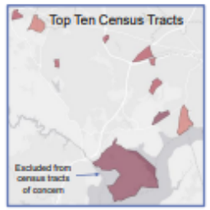
Presented at Fairfax County GIS Day November 2021

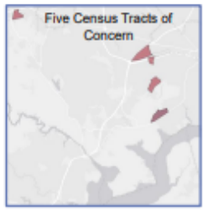
Index by Census Tract



There are various layers to navigate on the map by clicking the icon with the 3 layers. Users can turn off or turn on specific layers depending on their preference.

- Next, we evaluated the ten census tracts with the highest index values to determine which five to prioritize for outreach and targeted intervention.
- We excluded the census tract with the second-highest index value as its low population density is not ideal for maximizing resource allocations. Most of the land in this census tract is protected parkland.
- All other census tracts in the top six were selected as census tracts of concern. These census tracts all included areas with high value opportunities such as apartment and townhome complexes.





Results

- The resulting index ranged from -7.98 to 4.35 with higher index values in the southern region of the health district.
- The five census tracts of concern identified by the index were areas of the health district where recent outreach efforts had not been heavily focused. They also included high proportions of individuals from racial and ethnic groups that have experienced a higher burden of COVID-19 disease such as African American and Hispanic populations.
- We shared the index visualization with outreach teams as an interactive html webpage along with a detailed report including driving factors and specific location recommendations for vaccination, vaccine navigation, and testing events.

Visualization includes past-month outreach events, vaccine clinics, and Health department testing sites with a one-mile radius indicated to show areas with local access to testing. The one-mile radius was not added to mobile clinics as they are held intermittently.

Census Tract GEO ID	Location	Case Rate (per 10,000 Residents)	Vaccination Rate (Percentage with at least one dose)	Testing Rate (per 10,000 Residents)	Index
510594XXXXX	Woodlawn	59.37	53.08	552.73	4.35
510594XXXXX	Springfield	73.29	58.60	704.64	3.87
510594XXXXX	Springfield	72.82	49.20	1106.80	3.17
510594XXXXX	Kingstowne	93.17	69.71	858.82	3.12
510594XXXXX	Fair Oaks	84.13	64.05	905.27	3.06

Rates in red are driving factors for index value (e.g. highest Z-score). Complete census tract ID omitted for privacy concerns.

Conclusions

- The indicators included in the index, which reflect a high burden of COVID-19 (high case rate), a high risk of infection (low vaccination coverage) and a high probability of under-detection (limited testing), are amenable to intervention through Health Department outreach to increase testing and vaccination.
- This index allows for rapid, objective selection of target areas. Ease of replication allows us to sustainably update geographic targets for intervention as the COVID-19 pandemic evolves.
- This interactive tool facilitates data driven decisions as outreach teams can easily visualize activities already completed and identify areas to prioritize for future community interventions.

Acknowledgements

Health Department Outreach and Navigation Teams for providing information on events; The Virginia Department of Health for maintaining and providing COVID-19 case, testing, and vaccination data.

GIS Excellence Awards 2021

Use of GIS for Analysis

Continuity of Immature Mosquito Operations during the COVID-19 Pandemic

Health Department

Lauren Lochstampfor, Rachel Kempf, Joshua Smith

Continuity of Immature Mosquito Operations during the COVID-19 Pandemic

Using historic inspection records to prioritize sites for inspection and maximize efforts towards West Nile Virus prevention during staffing reductions due to the COVID-19 pandemic

Objective:

Utilize mobile data collection software to track inspection and laboratory results of immature mosquito surveillance and control. Use those results to make operational decisions and changes due to COVID-19 impacts to operation resources.

Background:

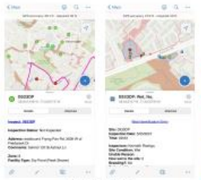
- The Health Department's Disease Carrying Insects Program (DCIP) helps protect County residents from illnesses spread by mosquitoes, ticks, and other insect pests.
- West Nile virus (WNV) is endemic in Fairfax County and found in mosquitoes every year.
- There are more than 40 species of mosquito found in Fairfax County.
- Not all mosquito species are vectors (transmit disease). Monitoring where and when the vector mosquito are present is important for disease prevention. *Culex pipiens* and *Culex restuans* are the main vectors of West Nile Virus in Fairfax County, thus identifying locations where they develop is important to WNV prevention.
- Routine site and species collection data from immature mosquito surveillance has been collected by DCIP since 2016.
- Prior to the COVID-19 pandemic DCIP used 8 technicians to perform larval mosquito surveillance and control at 1400+ County-maintained stormwater ponds during mosquito season (April through October), resulting in thousands of inspections each summer.

GIS Application:

- In 2018, DCIP began to utilize Collector and Survey123 to track details of immature mosquito inspections and control measures in stormwater ponds located through the County.
- The geodatabase contains multiple feature layers with a one-to-many relationship built between the static "Sites" layer and the "Inspection" layer. The inspection layer has an additional one-to-many relationship built between that layer and a table containing pesticide application data.
- Collector for ArcGIS is used to navigate between sites, to update site inspection status symbology, and to maintain consistent site-specific details such as parking areas, nearby trails, site addresses, and site access comments. Custom URL call-outs in the pop-up for each site in Collector will launch either the Inspection or Identification survey in Survey123.
- Survey123 for ArcGIS mobile application is used in the field to record inspection specific details such as wet/dry status, immature mosquito presence, pesticide application details, habitat description, site photos, and stormwater-related issues. Survey123's web-based forms are used to record numbers and species of larval mosquitoes identified in positive inspections.
  - The Inspection survey opens in the mobile application and creates a feature for the inspection.
  - The Identification survey opens from inspection features into Edit mode in the web application. This survey will edit the inspection record to add the species-specific immature mosquito identification results.

Field Inspectors "dipping" for immature mosquitoes

DCIP staff identifying immature mosquitoes



Collector Application

Inspection Survey

Identification Survey

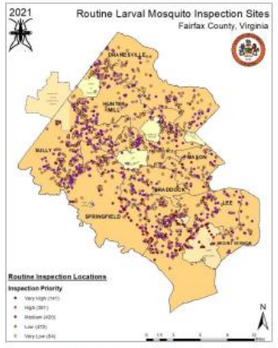
COVID-19 Program Impacts:

- Routine WNV surveillance and prevention activities (adult mosquito trapping; immature mosquito inspections and control) were scaled back in 2020 and 2021 due to Environmental Health staff deployments to the COVID-19 response and limitations on hiring seasonal employees. Full time DCIP staff was reduced to 1 staff member from 5, and overall seasonal staff from 16 employees to 4.
- To ensure continuity of operations, staff identified ways to scale back operations while still providing a meaningful service to the residents of Fairfax County. The previous plan of routinely inspecting 1400+ sites monthly and setting 175+ adult mosquito traps in the County weekly was no longer feasible. Program staff developed a strategy to prioritize WNV monitoring at trapping locations and inspections of stormwater ponds based on site inspection history.

Analysis:

- Databases and data collection schema for larval inspections had a lot of variation from pre-GIS data collection to beginning GIS use to the current model being used.
- Historical inspections, pesticide applications, and species-specific identification data were joined in ArcMap and then exported to Excel. Multiple years of non-GIS data were then combined with the downloaded GIS data set and cleaned up to be able to compare inspection and treatment details over time at each routine inspection location.
- This new dataset of roughly 34,000 inspections was then analyzed with Pivot Tables in Microsoft Excel to create counts of the following records for each routine inspection site: total number of past inspections, wet inspections, and dry inspections, number of times immature mosquitoes were present, number of times a pesticide application was made, and if the presence of vector species of West Nile Virus was ever detected during an inspection.
- Using the counts created from the Pivot table analysis, the site-specific information was summarized by calculating percentages of occurrence (ex. Percentage of wet inspections or percentage of inspections resulting in pesticide application).
- After reviewing those results, sites were then assigned a priority based on the criteria present in the chart located below.
- Inspection sites were then filtered by priority to focus resources on productive sites with historical presence of WNV vector species
  - Early season inspections and periods after heavy rainfall focused on Medium, High, and Very High priority sites.
  - Mid and later season inspections focused on High and Very High priority sites(WNV activity peaks during August and September).
  - All 1400+ sites are inspected annually to confirm priority level as sites will change over time due to environmental and site conditions.

Inspection Priority	Criteria
Very High	• Presence of WNV vector species • > 50% of all inspections with immatures present
High	• Presence of WNV vector species • 20-49% of all inspections with immatures present • All newly added sites
Medium	• Presence of WNV vector species • 0-19% of all inspections with immatures present
Low	• No historical presence of WNV vector species at site
Very Low	• 0% of all historical inspections are Wet



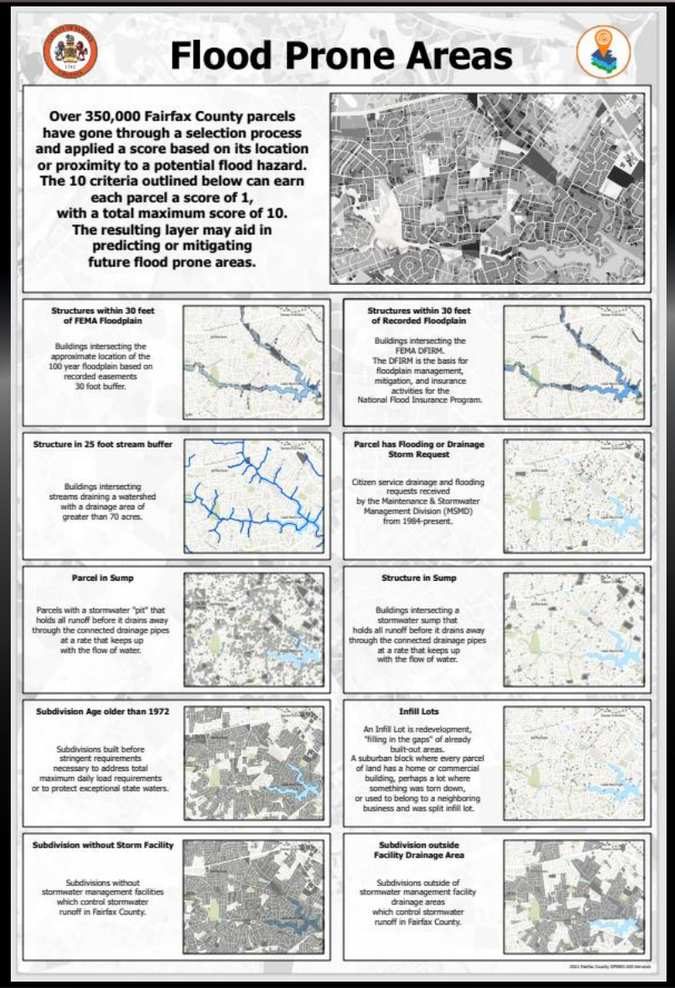
Summary:

- **During 2020 and 2021 larval inspection staffing was reduced from 8 seasonal staff to 2 seasonal staff members. During that time, roughly half of the total inspections made during a "normal" season were performed (~5000 vs ~10,000).**
- **Thus, by prioritizing our inspections with a greater focus on more productive sites, our inspection effort was only reduced by roughly 50% even when faced with a 75% reduction in staffing.**

Presented by: Lauren Lochstampfor, Senior Environmental Health Specialist, Disease Carrying Insects Program, Division of Environmental Health, Fairfax County Health Department

GIS Excellence Awards 2021

Use of GIS for Analysis



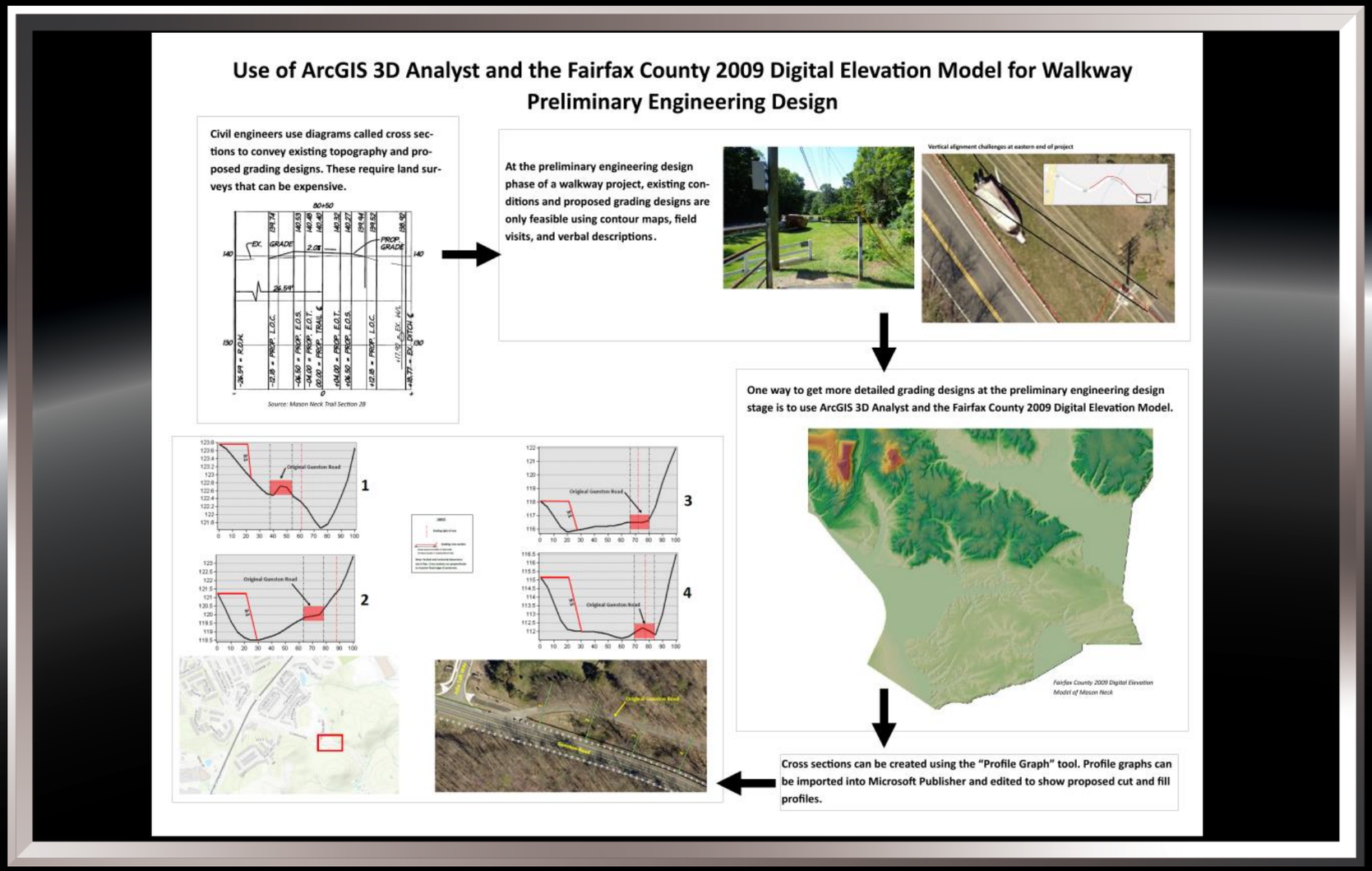
Flood Prone Areas

Department of Public Works and Environmental Services Director's Office

Chip Galloway, Catherine Torgersen (SWM), Saurabh Raje (SWM), Matthew Meyers (CEX)

GIS Excellence Awards 2021

Use of GIS for Analysis



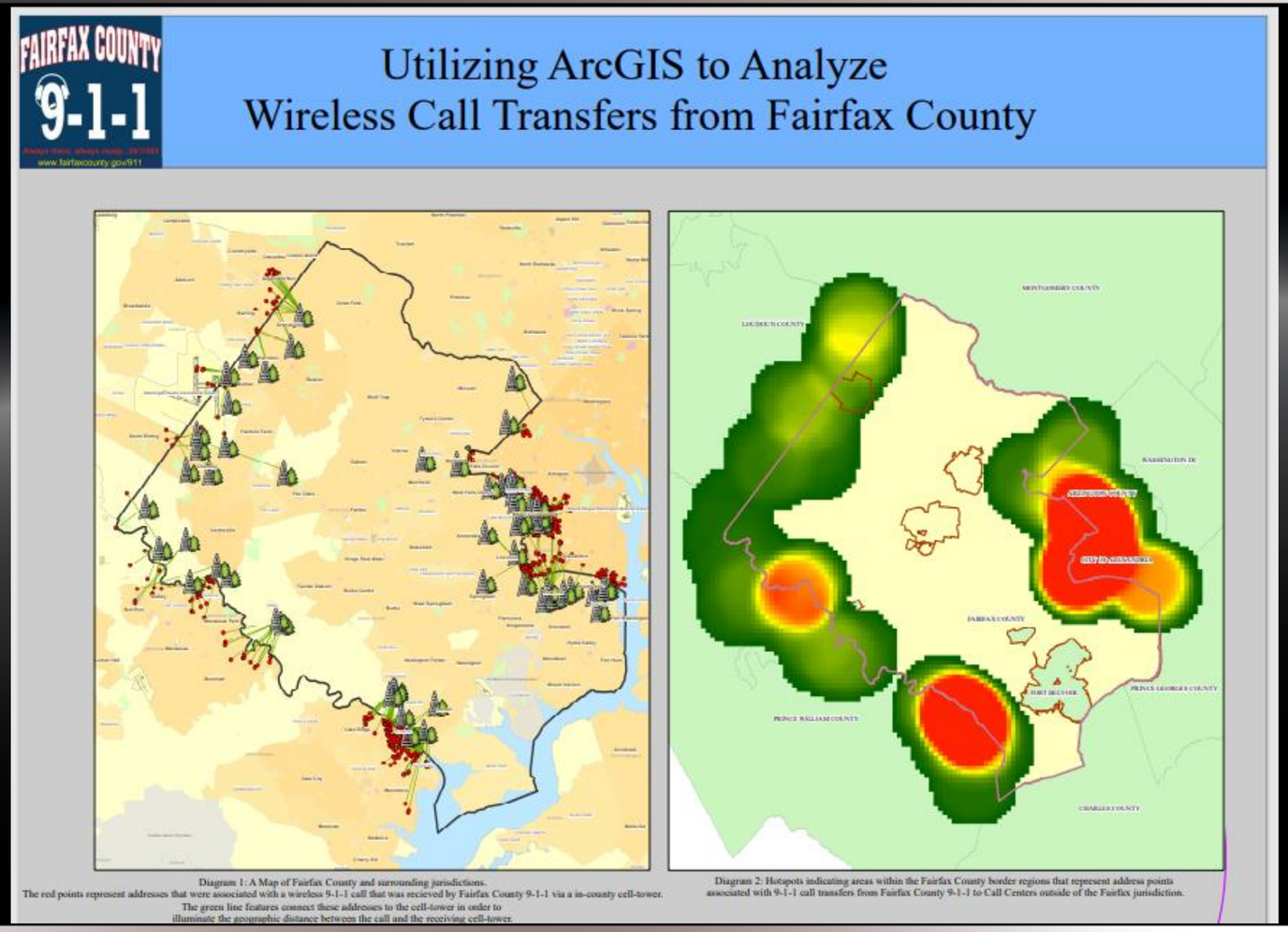
Use of ArcGIS 3D Analyst and the Fairfax County 2009 Digital Elevation Model for Walkway Preliminary Engineering Design

Department of Transportation

Daniel Stevens

GIS Excellence Awards 2021

Use of GIS for Analysis



Utilizing ArcGIS to Analyze Wireless Call Transfers in Fairfax County

Department of Public Safety Communications

Raleigh Maier, Timothy Menda

GIS Excellence Awards 2021

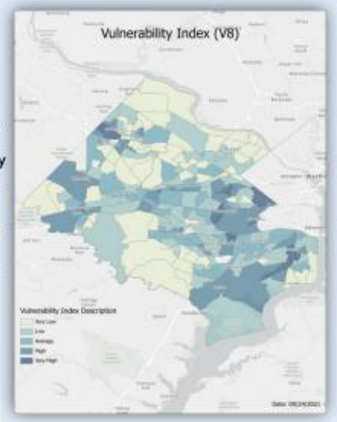
Use of GIS for Analysis

Vulnerability Index (V8) Applications

Vulnerability Index (V8) Applications

Background
The Fairfax County Vulnerability Index (V8), shown to the right, was created in summer 2019 to show areas of the county that have the highest levels of vulnerability based on race, language, income, education, housing, transportation, and health insurance (see table below). Vulnerabilities are factors which put a population or area at risk and affect its capacity for resilience when confronted by threats and stressors.

Fairfax County Vulnerability Index Indicators	
Median household income	Population of color
Housing cost-burdened renter households (spend more than 30% of gross income on rent)	Severely burdened renter households (spend more than 50% of gross income on rent)
Population that speaks English "less than well"	Low educational attainment (ages 25+ with no Bachelor's degree)
No vehicle	Uninsured population

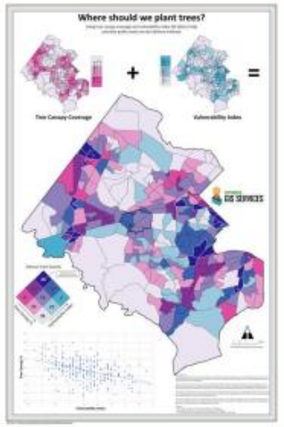


Methodology & Data Source
Related indices were benchmarked from other areas of the country to choose the 8 indicators that comprise the V8. To create a score for each indicator, the data was classified into 5 classes using natural breaks. A score of 1 - 5 was given to each census tract for each indicator, with 5 representing the most vulnerable. The index was calculated by adding all scores together and dividing by 8, the total number of indicators. The source of all the data is the American Community Survey (ACS) 2015 – 2019. The V8 application can be seen here.

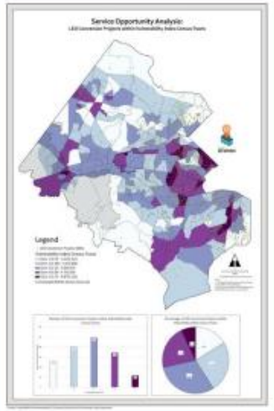
Applications and Uses
The V8 was created as a tool for Fairfax County leadership and staff to visualize vulnerability across the county. It provides a data-driven view of disparities in the county allowing for equitably guided decision making and informed policy decisions. Multiple county agencies have utilized the V8 to make programming decisions. Applications from the Fairfax County Park Authority and Department of Public Works and Environmental Services are described to the right.

Poster submitted by: Katie Miga, Office of the County Executive
Contributions from: Fariss Agatone, FCPA and Yeoanny Venetsanos, DPWES

Fairfax County Park Authority (FCPA)
FCPA uses the V8 in completed project reports to indicate where FCPA is achieving equity goals to know that FCPA is making a difference in parts of the county that are typically underserved or have unequitable access to parks and open space. This tool gives FCPA an indicator of how we are meeting our goals.
The V8 has also been added to the FCPA work plan to indicate how FCPA is meeting One Fairfax equity goals of distributing FCPA investment of financial resources and staff time equitably across the county and specifically targeting investments in underserved areas through planning the FCPA annual work plan.
The FCPA Planning and Development Division is working to incorporate the V8 values in their Trail Development Strategy Plan (TDSP) prior to the 2024 Bond selection. The TDSP has historically included the following set of criteria used by staff to evaluate potential trail projects for development: connectivity, service level, stakeholder interest, environmental impact, technical challenge, initial unit cost, sustainability, and maintenance unit cost. In the future, the V8values will be added to this list so that staff can identify and recommend a list of trail projects for funding by also taking equity into consideration.



Department of Public Works and Environmental Services (DPWES)
DPWES has used the V8 to inform decisions across the department including tree planting, flooding, Fats, Oil and Grease (FOG) outreach, and LED conversion streetlight program.
In the map on the left, an analysis was performed to determine areas of low tree canopy coverage and high vulnerability. Twenty-four census tracts were identified as high impact service opportunity tracts.
An analysis of flooding complaints and the V8 was performed to determine tracts with a high number of flooding complaints per population and highly vulnerable.
The V8 was also used to determine undersized subdivisions for outreach efforts around proper disposal of FOG (waste cooking oil).
Finally, the V8 was used to analyze how many LED conversion projects occurred in the different V8 classes, shown in the map on the right.



Office of the County Executive
Katherine Miga, Fariss Agatone (FCPA), Yeoanny Venetsanos (DPWES-DO)

GIS Excellence Awards 2021

Web Application

This award is intended to showcase the ever-increasing presence of GIS web applications. These applications are a significant foundation for bringing maps, geospatial data, and analysis/data collection tools to a varied audience of County staff and residents.

Criteria used to evaluate the entries include:

- effectiveness of the web application in meeting stated purpose
- benefit to the public and/or agency
- incorporation of application into business practices
- aesthetics and ease of use
- use of well-thought-out cartography
- inclusion of innovative and unique tools

GIS Excellence Awards 2021

Web Application

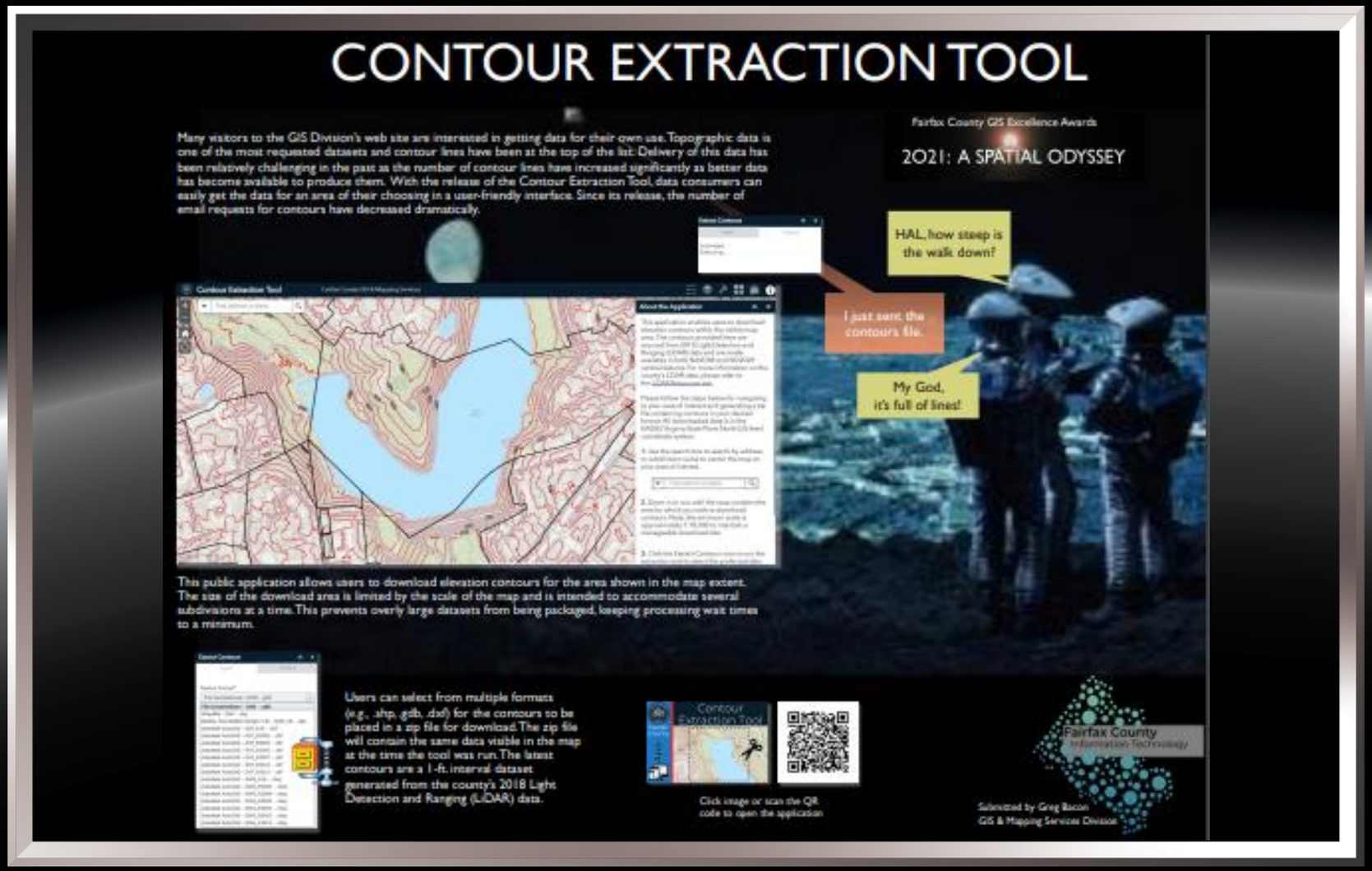
Commercial Apartment Assessment Web Application

Department of Tax Administration

Yorka Crespo, Wanda Graham

GIS Excellence Awards 2021

Web Application



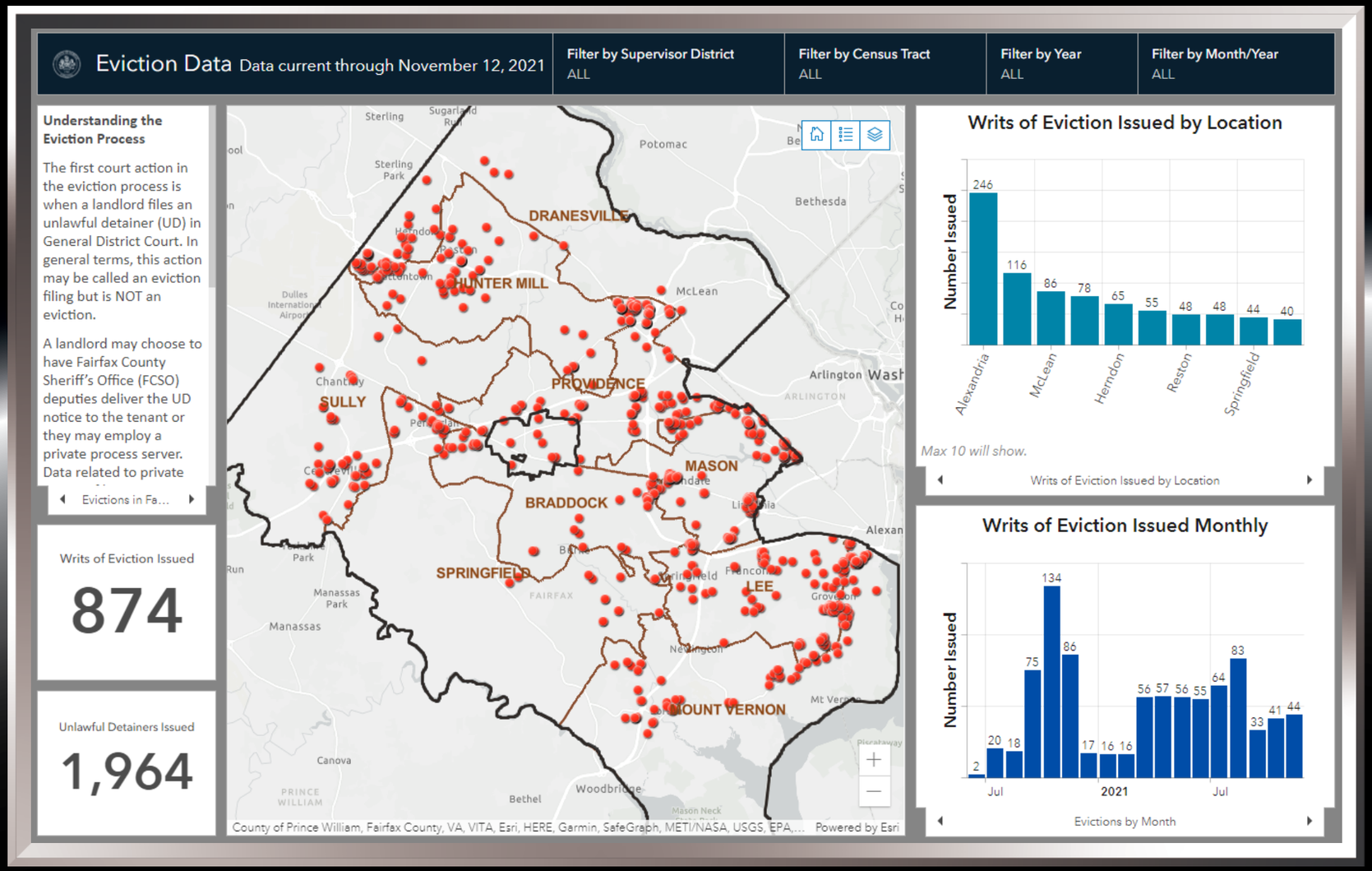
Contour Extraction Tool

Department of Information Technology

Gregory Bacon

GIS Excellence Awards 2021

Web Application



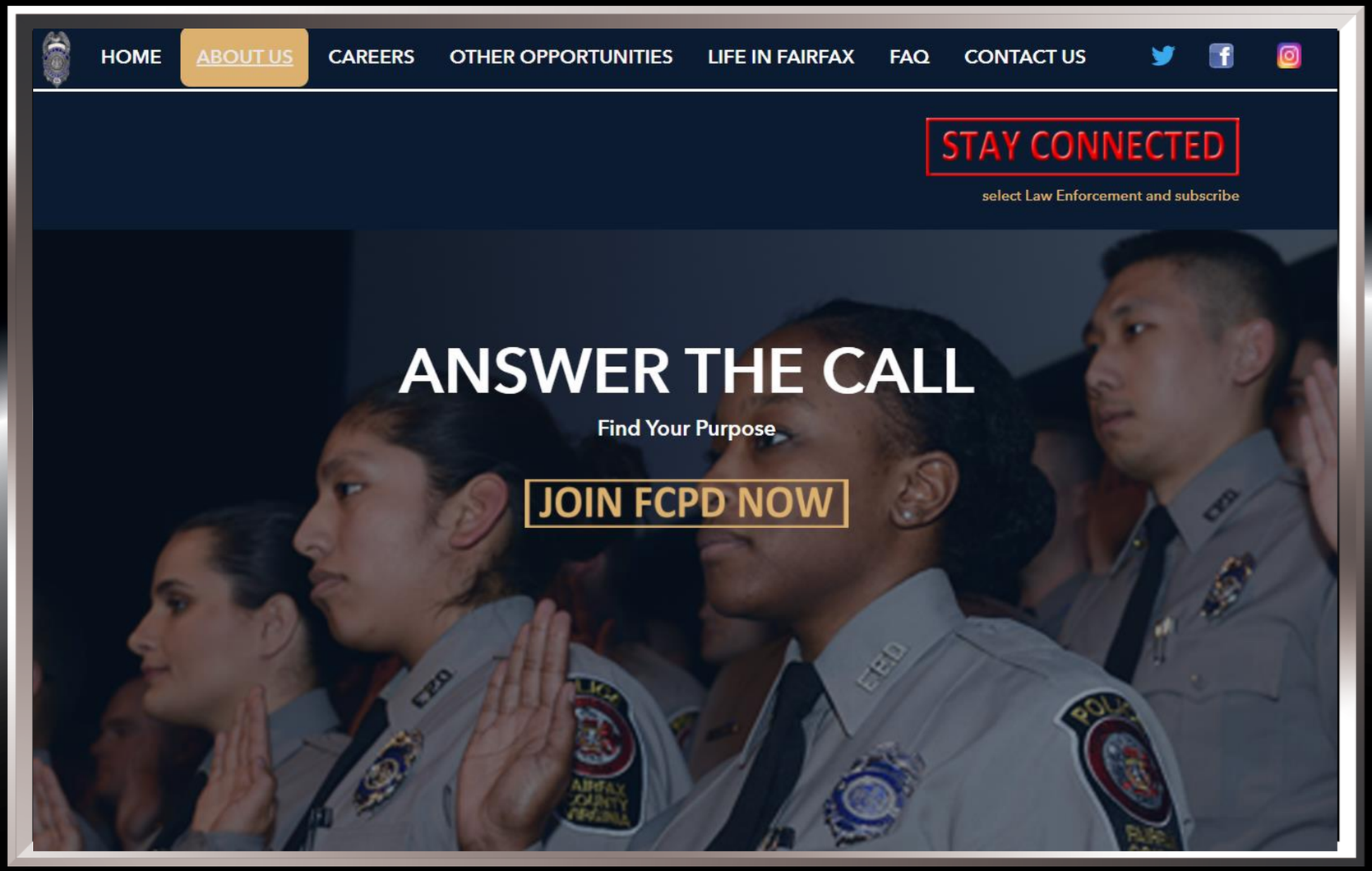
Eviction Prevention Dashboard

Department of Management and Budget

Terry Reardon, Stephannie Calderon Yanez (DIT)

GIS Excellence Awards 2021

Web Application



Fairfax County Police 2021 Recruitment Campaign

Police Department

Jeffrey Gallagher, Joe Davis, Veva Wallace, Tammy Russell, Tajwaar Beaufort

GIS Excellence Awards 2021

Web Application

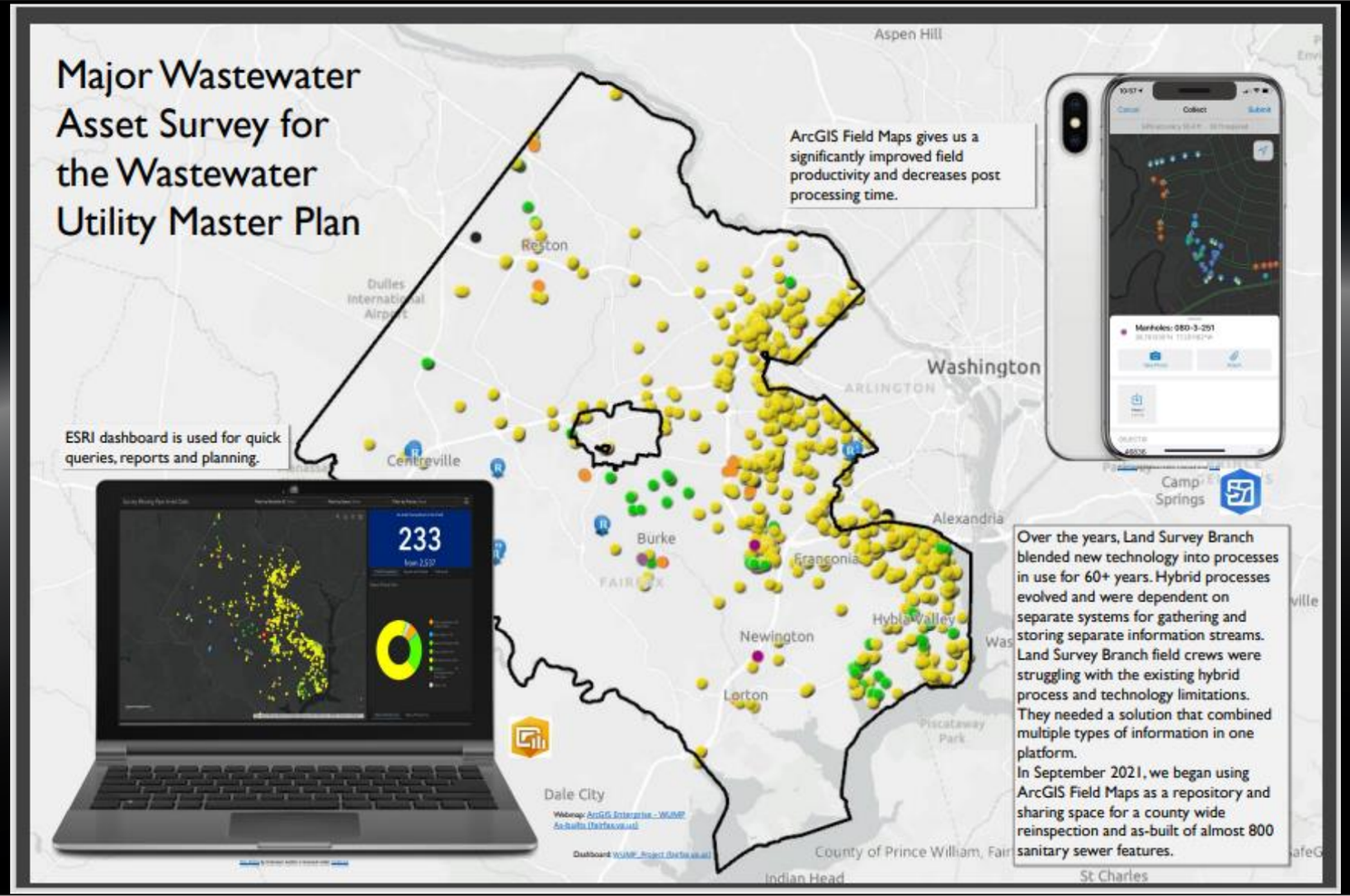
Locating New Public Urban Parks in Reston

Park Authority

Jasmin Kim, Daniel White (DPD), Justin Roberson

GIS Excellence Awards 2021

Web Application



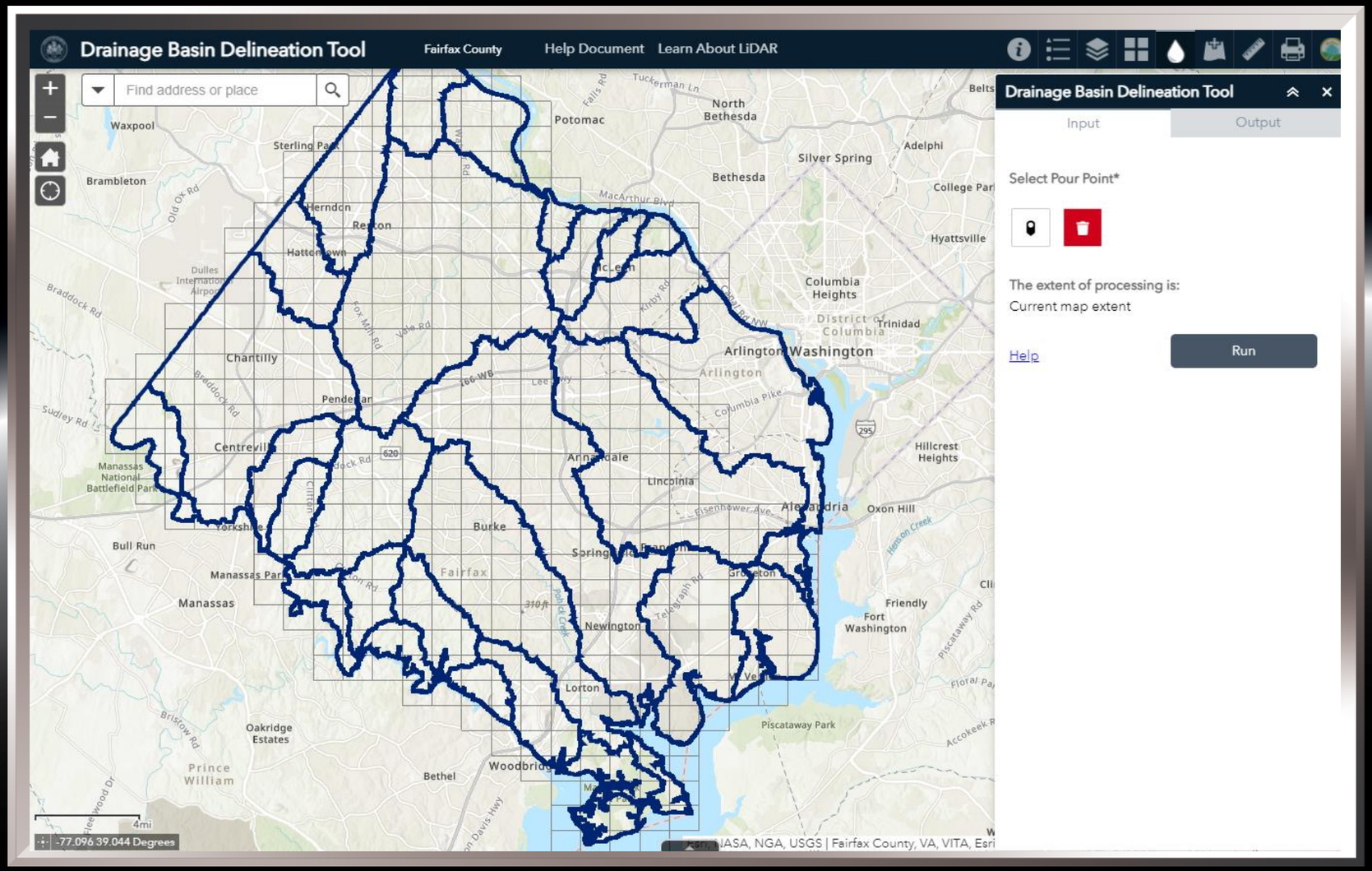
Major Wastewater Asset Survey for the Wastewater Utility Master Plan

Capital Facilities

Benjamin Neal, Vickie McEntire Anglin, Christopher Jensen, Cody Allen Harp-Taylor, Christian Alfonzo, Matthew Kocvara, T M Islam, Sujan Dhungana, Larry Randall, Michael Perry, Gregory Harper, Yilia Vega-Claudio, Yeoanny Venetsanos (DPWES-DO)

GIS Excellence Awards 2021

Web Application



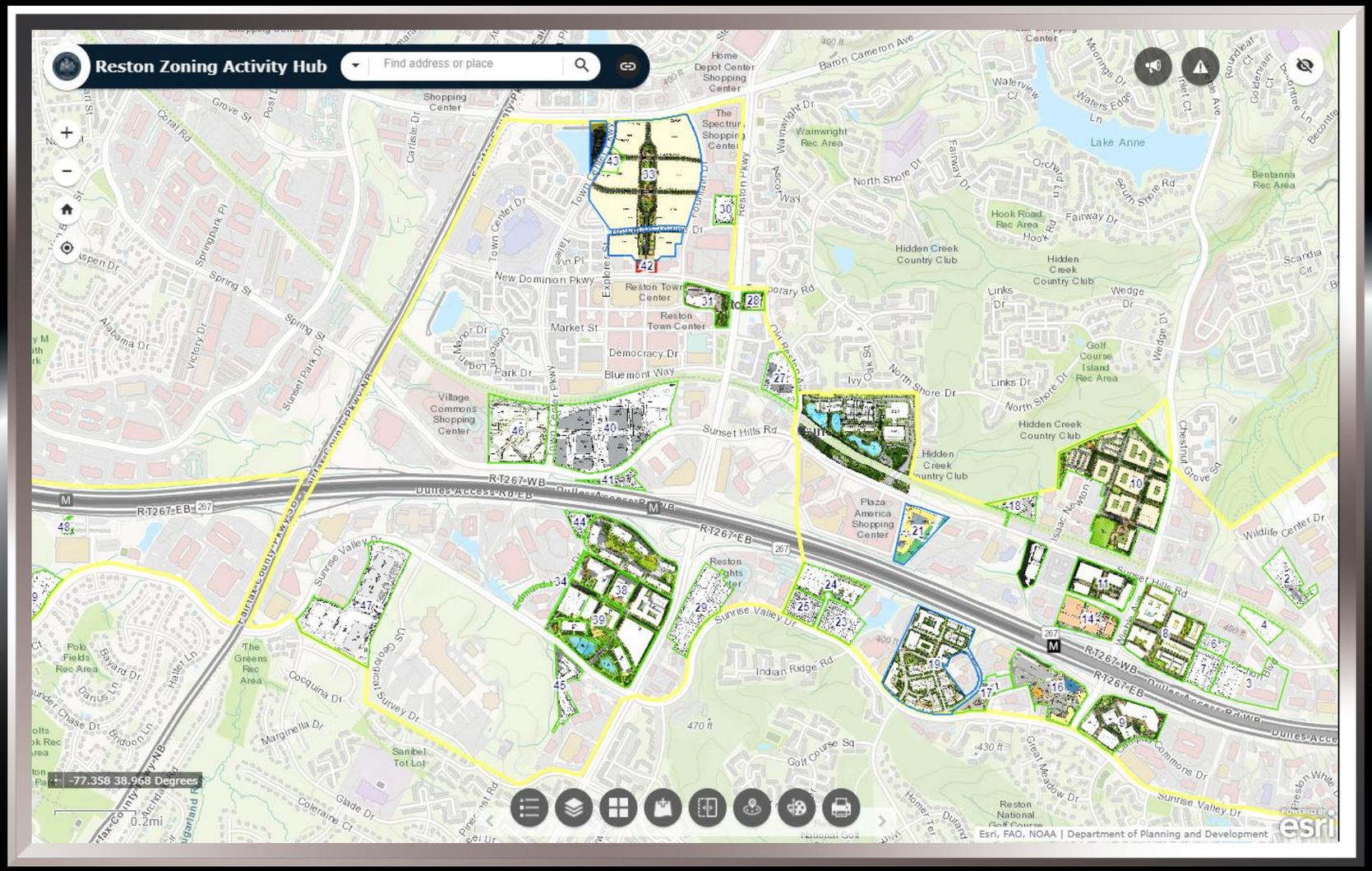
Public Drainage Basin Delineation Tool

Land Development Services

Brett Martin

GIS Excellence Awards 2021

Web Application



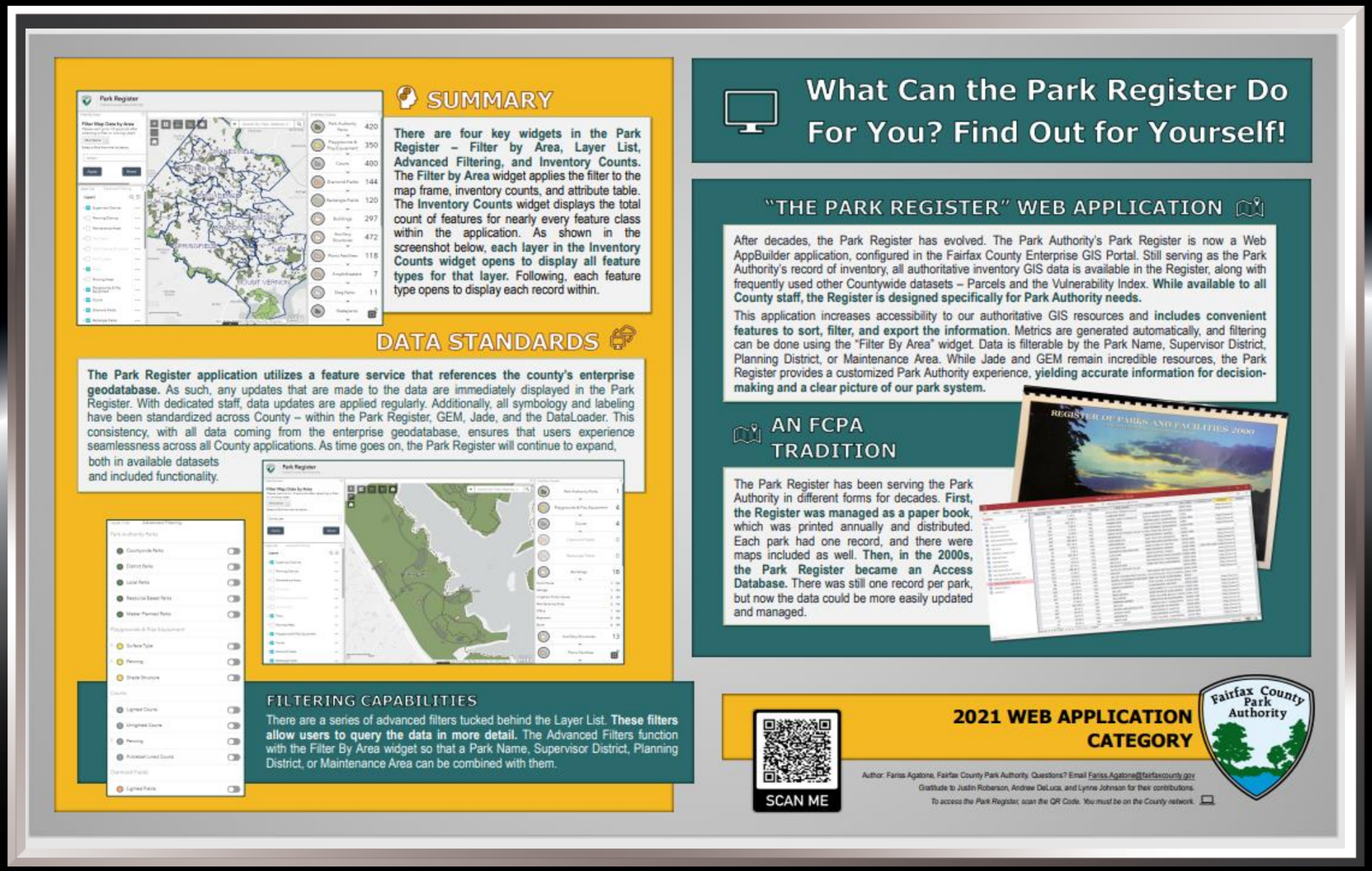
Reston Zoning Activity Hub

Department of Planning and Development

Daniel White, Beth Elliott, Suzianne Battista

GIS Excellence Awards 2021

Web Application



SUMMARY

There are four key widgets in the Park Register – Filter by Area, Layer List, Advanced Filtering, and Inventory Counts. The Filter by Area widget applies the filter to the map frame, inventory counts, and attribute table. The Inventory Counts widget displays the total count of features for nearly every feature class within the application. As shown in the screenshot below, each layer in the Inventory Counts widget opens to display all feature types for that layer. Following, each feature type opens to display each record within.

DATA STANDARDS

The Park Register application utilizes a feature service that references the county's enterprise geodatabase. As such, any updates that are made to the data are immediately displayed in the Park Register. With dedicated staff, data updates are applied regularly. Additionally, all symbology and labeling have been standardized across County – within the Park Register, GEM, Jade, and the DataLoader. This consistency, with all data coming from the enterprise geodatabase, ensures that users experience seamlessness across all County applications. As time goes on, the Park Register will continue to expand, both in available datasets and included functionality.

FILTERING CAPABILITIES

There are a series of advanced filters tucked behind the Layer List. These filters allow users to query the data in more detail. The Advanced Filters function with the Filter By Area widget so that a Park Name, Supervisor District, Planning District, or Maintenance Area can be combined with them.

What Can the Park Register Do For You? Find Out for Yourself!

"THE PARK REGISTER" WEB APPLICATION

After decades, the Park Register has evolved. The Park Authority's Park Register is now a Web AppBuilder application, configured in the Fairfax County Enterprise GIS Portal. Still serving as the Park Authority's record of inventory, all authoritative inventory GIS data is available in the Register, along with frequently used other Countywide datasets – Parcels and the Vulnerability Index. **While available to all County staff, the Register is designed specifically for Park Authority needs.**

This application increases accessibility to our authoritative GIS resources and **includes convenient features to sort, filter, and export the information**. Metrics are generated automatically, and filtering can be done using the "Filter By Area" widget. Data is filterable by the Park Name, Supervisor District, Planning District, or Maintenance Area. While Jade and GEM remain incredible resources, the Park Register provides a customized Park Authority experience, **yielding accurate information for decision-making and a clear picture of our park system.**

AN FCPA TRADITION

The Park Register has been serving the Park Authority in different forms for decades. **First, the Register was managed as a paper book,** which was printed annually and distributed. Each park had one record, and there were maps included as well. **Then, in the 2000s, the Park Register became an Access Database.** There was still one record per park, but now the data could be more easily updated and managed.

SCAN ME

2021 WEB APPLICATION CATEGORY

Author: Fariss Agatone, Fairfax County Park Authority. Questions? Email Fariss.Agatone@fairfaxcounty.gov

Gratitude to Justin Roberson, Andrew DeLuca, and Lynne Johnson for their contributions.

To access the Park Register, scan the QR Code. You must be on the County network.

Fairfax County Park Authority

The Park Register Web Application

Park Authority

Fariss Agatone, Justin Roberson, Andrew DeLuca, Lynne Johnson

GIS Excellence Awards 2021

Use of GIS for Public Outreach

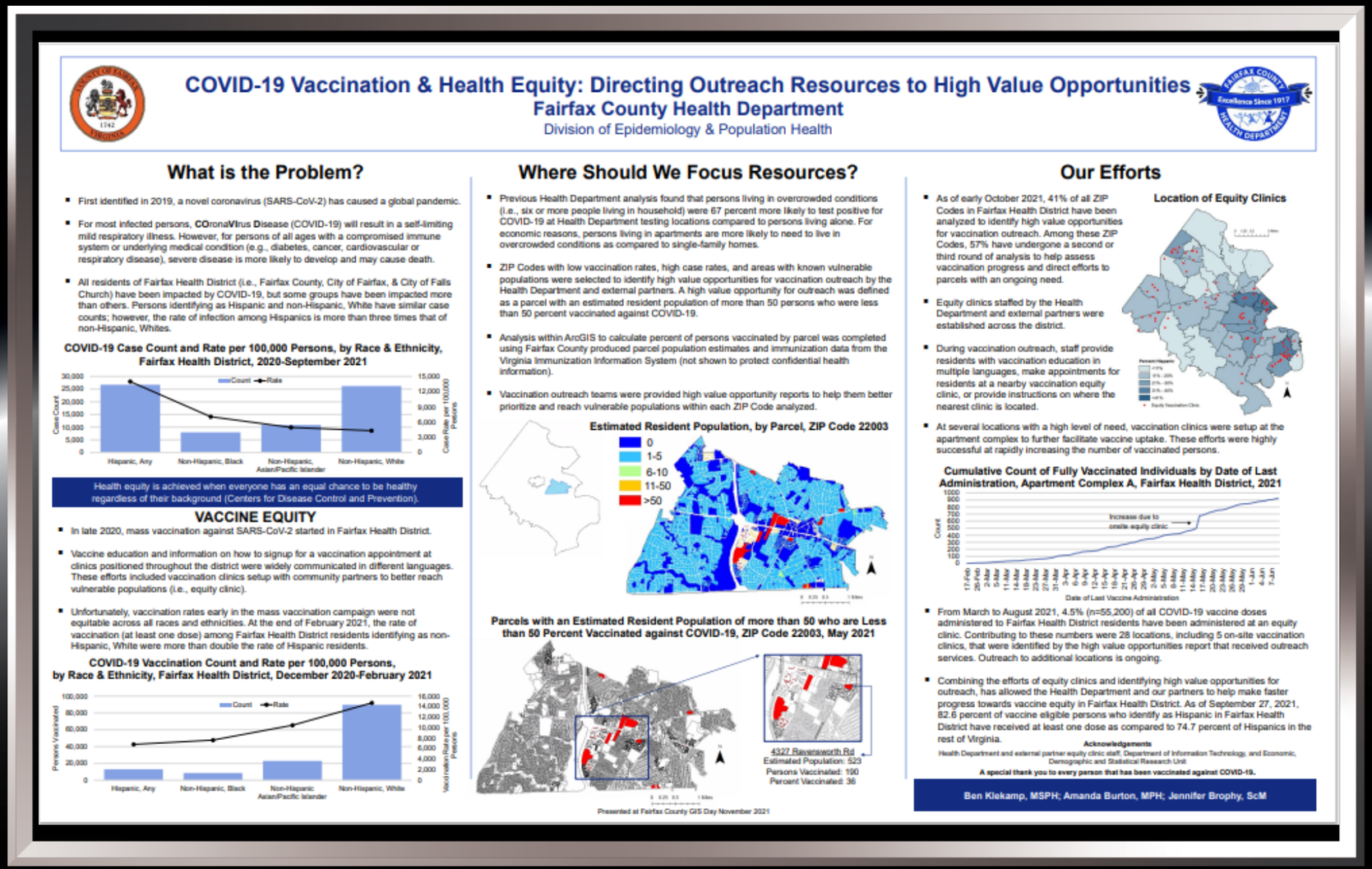
This award is presented to the agency that best utilizes GIS to serve the public with map documents, customer service operations, press relations, or public events.

Criteria used to evaluate the entries include:

- effectiveness of the GIS work to the outreach effort
- degree to which a difficult message was clearly communicated
- complexity of cartography, data analysis, customization and/or programming
- adaptability to future expansion/modification
- contribution of GIS as a planning tool for the outreach effort

GIS Excellence Awards 2021

Use of GIS for Public Outreach



COVID-19 Vaccination & Health Equity: Directing Outreach Resources to High Value Opportunities

Fairfax County Health Department

Division of Epidemiology & Population Health

What is the Problem?

- First identified in 2019, a novel coronavirus (SARS-CoV-2) has caused a global pandemic.
- For most infected persons, **CO**rona**VI**rus **D**isease (COVID-19) will result in a self-limiting mild respiratory illness. However, for persons of all ages with a compromised immune system or underlying medical condition (e.g., diabetes, cancer, cardiovascular or respiratory disease), severe disease is more likely to develop and may cause death.
- All residents of Fairfax Health District (i.e., Fairfax County, City of Fairfax, & City of Falls Church) have been impacted by COVID-19, but some groups have been impacted more than others. Persons identifying as Hispanic and non-Hispanic, White have similar case counts; however, the rate of infection among Hispanics is more than three times that of non-Hispanic, Whites.

COVID-19 Case Count and Rate per 100,000 Persons, by Race & Ethnicity, Fairfax Health District, 2020-September 2021

Health equity is achieved when everyone has an equal chance to be healthy regardless of their background (Centers for Disease Control and Prevention).

VACCINE EQUITY

- In late 2020, mass vaccination against SARS-CoV-2 started in Fairfax Health District.
- Vaccine education and information on how to signup for a vaccination appointment at clinics positioned throughout the district were widely communicated in different languages. These efforts included vaccination clinics setup with community partners to better reach vulnerable populations (i.e., equity clinic).
- Unfortunately, vaccination rates early in the mass vaccination campaign were not equitable across all races and ethnicities. At the end of February 2021, the rate of vaccination (at least one dose) among Fairfax Health District residents identifying as non-Hispanic, White were more than double the rate of Hispanic residents.

COVID-19 Vaccination Count and Rate per 100,000 Persons, by Race & Ethnicity, Fairfax Health District, December 2020-February 2021

Where Should We Focus Resources?

- Previous Health Department analysis found that persons living in overcrowded conditions (i.e., six or more people living in household) were 67 percent more likely to test positive for COVID-19 at Health Department testing locations compared to persons living alone. For economic reasons, persons living in apartments are more likely to need to live in overcrowded conditions as compared to single-family homes.
- ZIP Codes with low vaccination rates, high case rates, and areas with known vulnerable populations were selected to identify high value opportunities for vaccination outreach by the Health Department and external partners. A high value opportunity for outreach was defined as a parcel with an estimated resident population of more than 50 persons who were less than 50 percent vaccinated against COVID-19.
- Analysis within ArcGIS to calculate percent of persons vaccinated by parcel was completed using Fairfax County produced parcel population estimates and immunization data from the Virginia Immunization Information System (not shown to protect confidential health information).
- Vaccination outreach teams were provided high value opportunity reports to help them better prioritize and reach vulnerable populations within each ZIP Code analyzed.

Estimated Resident Population, by Parcel, ZIP Code 22003

0
1-5
6-10
11-50
>50

Parcels with an Estimated Resident Population of more than 50 who are Less than 50 Percent Vaccinated against COVID-19, ZIP Code 22003, May 2021

4327 Ravensworth Rd
Estimated Population: 523
Persons Vaccinated: 190
Percent Vaccinated: 36

Presented at Fairfax County GIS Day November 2021

Our Efforts

- As of early October 2021, 41% of all ZIP Codes in Fairfax Health District have been analyzed to identify high value opportunities for vaccination outreach. Among these ZIP Codes, 57% have undergone a second or third round of analysis to help assess vaccination progress and direct efforts to parcels with an ongoing need.
- Equity clinics staffed by the Health Department and external partners were established across the district.
- During vaccination outreach, staff provide residents with vaccination education in multiple languages, make appointments for residents at a nearby vaccination equity clinic, or provide instructions on where the nearest clinic is located.
- At several locations with a high level of need, vaccination clinics were setup at the apartment complex to further facilitate vaccine uptake. These efforts were highly successful at rapidly increasing the number of vaccinated persons.

Location of Equity Clinics

Cumulative Count of Fully Vaccinated Individuals by Date of Last Administration, Apartment Complex A, Fairfax Health District, 2021

Increase due to onsite equity clinic

Date of Last Vaccine Administration

- From March to August 2021, 4.5% (n=55,200) of all COVID-19 vaccine doses administered to Fairfax Health District residents have been administered at an equity clinic. Contributing to these numbers were 28 locations, including 5 on-site vaccination clinics, that were identified by the high value opportunities report that received outreach services. Outreach to additional locations is ongoing.
- Combining the efforts of equity clinics and identifying high value opportunities for outreach, has allowed the Health Department and our partners to help make faster progress towards vaccine equity in Fairfax Health District. As of September 27, 2021, 82.6 percent of vaccine eligible persons who identify as Hispanic in Fairfax Health District have received at least one dose as compared to 74.7 percent of Hispanics in the rest of Virginia.

Acknowledgements

Health Department and external partner equity clinic staff, Department of Information Technology, and Economic, Demographic and Statistical Research Unit

A special thank you to every person that has been vaccinated against COVID-19.

Ben Klekamp, MSPH; Amanda Burton, MPH; Jennifer Brophy, ScM

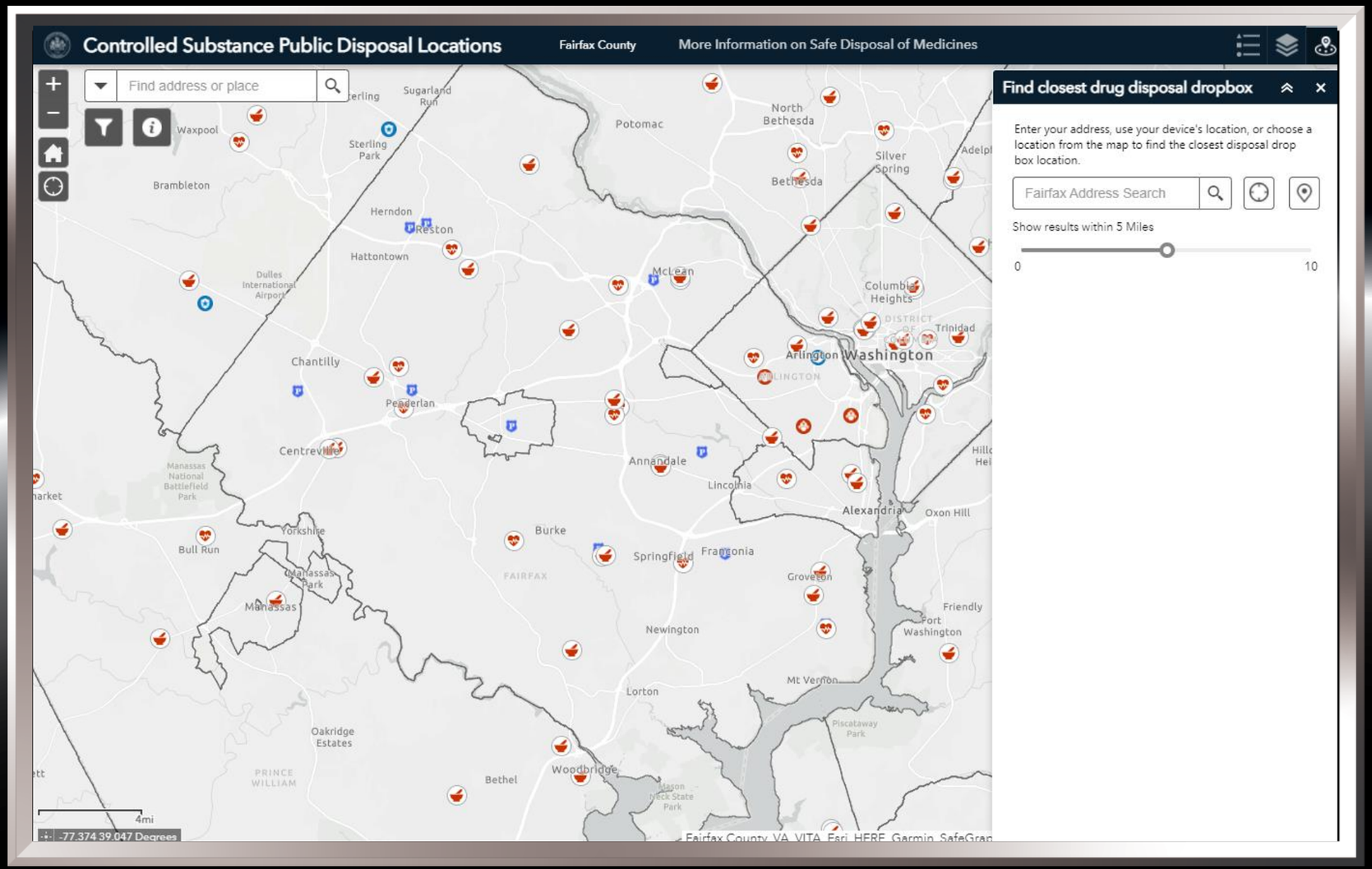
COVID-19 Vaccination & Health Equity: Directing Outreach Resources to High Value Opportunities

Health Department

Benjamin Klekamp, Amanda Burton, Jennifer Brophy

GIS Excellence Awards 2021

Use of GIS for Public Outreach



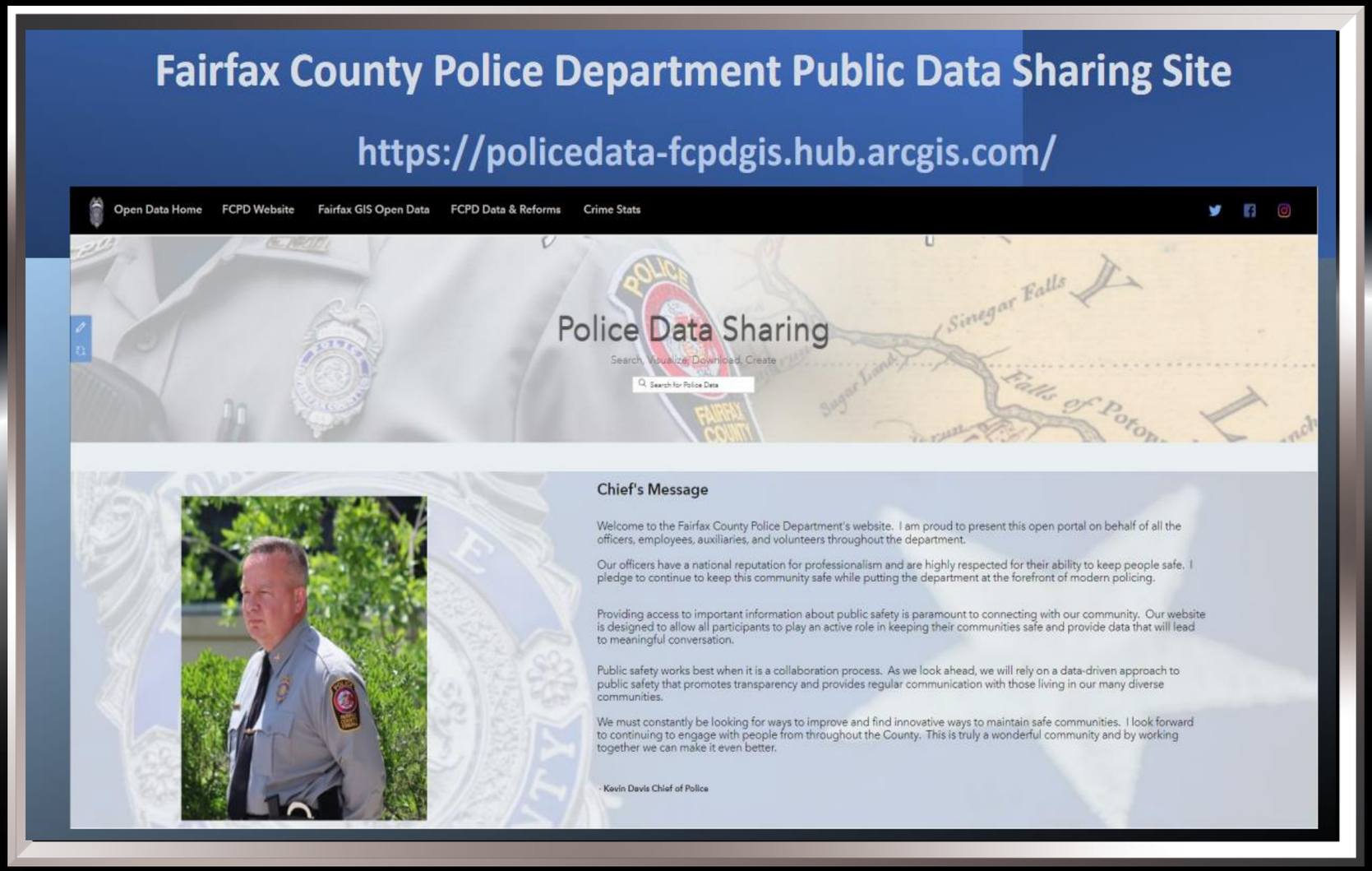
Drug Disposal Dropbox Locator

Community Services Board

Ellen Volo, Judy Lamey-Doldorf (DIT), Matthew Miller (DIT)

GIS Excellence Awards 2021

Use of GIS for Public Outreach



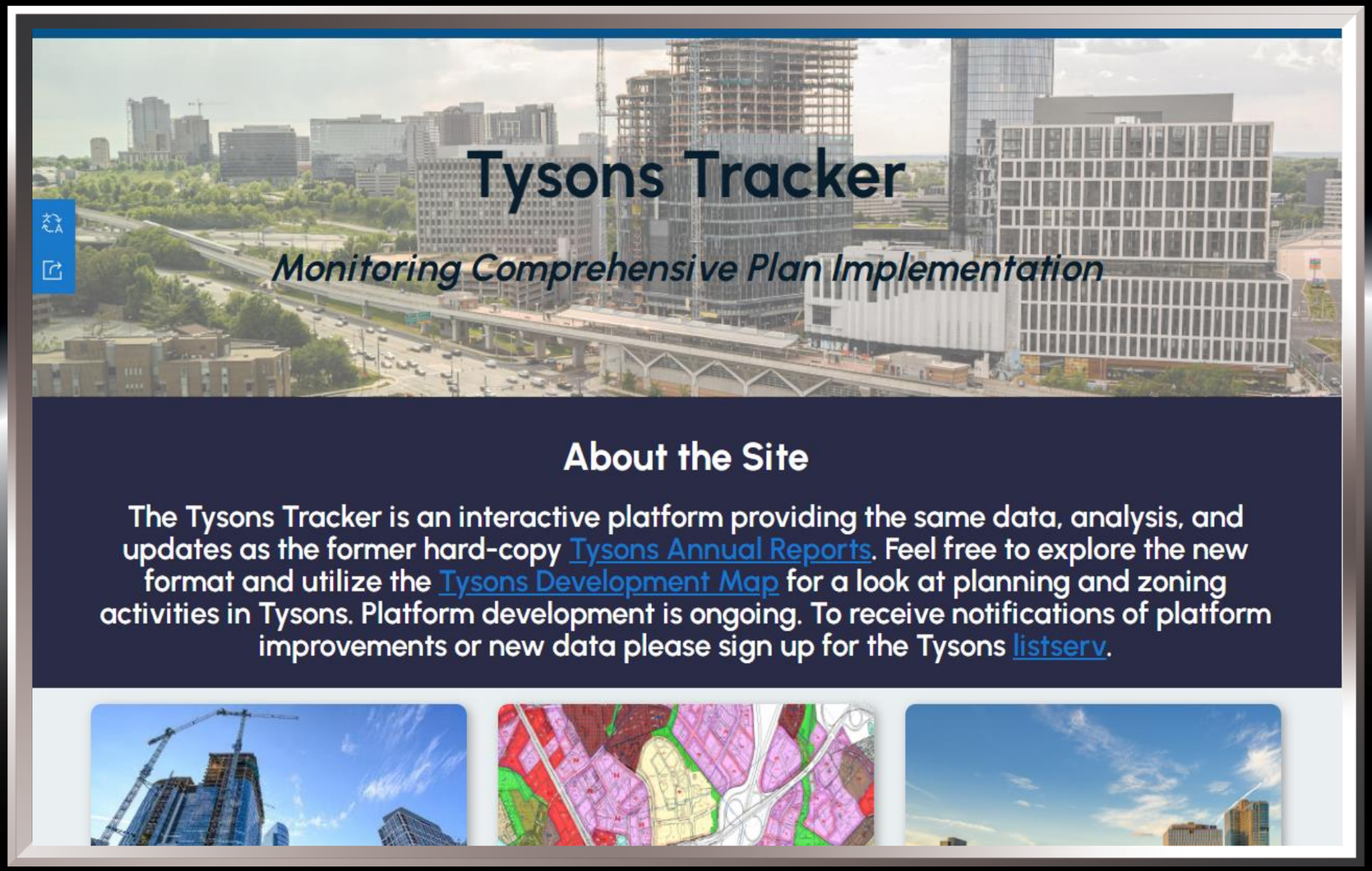
Fairfax County Police Department's Voyage Into Citizen Outreach

Police Department

Jeffrey Gallagher, Kathy Pham, Carolyn Kinney

GIS Excellence Awards 2021

Use of GIS for Public Outreach



Tysons Tracker

Department of Planning and Development

Daniel White, Beth Elliott, Suzianne Battista, Christopher McCarthy

GIS Excellence Awards 2021

Data Contributor

This award is presented to the agency that has created or refined the most significant spatial data for the County in the last 12 months.

Criteria used to evaluate the entries include:

- significance of the data for the county and/or agency
- importance to agency's long-term business processes
- level of effort required to create/maintain the data
- sophistication of process to create/maintain the data

GIS Excellence Awards 2021

Data Contributor

Department of Animal Sheltering – Growing Our Data to Increase Our Reach

Beginning in late 2019 the Department of Animal Sheltering (DAS) started working with the GIS Division, gathering data to better understand our reach within the county and to identify gaps. In 2020 we developed datasets that enable us to easily find communities that utilize our spay/neuter surgery and vaccine services and Community Rabies Clinics, and those that do not. In 2021 we have been able to grow and refine our use of spatial data to further ensure we are proactively reaching all Fairfax County residents, both under normal operations and, more recently, COVID-driven operations. Working with our Shelter staff and APP to provide consistent intake data for strays, along with the addition of Vet Clinics and Virtual Humane Education Tours data, has helped us further expand and target our reach into the community.

Virtual Tours

Prior to COVID we conducted many tours of the shelter each week for Girl Scouts, Boy Scouts, and other organizations for children, enabling them to meet our animals, learn about the animals, and see how we care for them. COVID actually opened up an opportunity for more involvement for children who have not generally participated in these types of programs. Children attending school virtually have shared in "Virtual Tours" of the Fairfax County Animal Shelter. Our Humane Education programs are a great way for teachers to introduce their students to companion animals. Using data that identifies underserved areas in the county we have targeted schools for these "tours." The response has been overwhelming.

Veterinary Clinics

Fairfax County has 73 Vet Clinics. These Clinics have varying services – some provide care for all types of companion animals, others specialize in just one or two species, some care for large animals, etc. There are also differences in the level of care provided – some are 24/7 while others are only open part of the day. We have gathered data on all on these Clinics and now have a tool to easily determine the closest Clinic that provides the necessary care. This data has been instrumental in identifying areas in the county that can benefit from our Pet Services Events, a program that brings veterinary care to underserved communities.

Enhanced Stray Animal Data

DAS currently has a dataset that includes information about the stray animals that come into our care. Multiple organizations provide information on where the animals were found but the format of the data was not consistent. Working with our own teams and GIS staff we have designed a standard way of reporting the data, resulting in a much more accurate tool. We have started the process to gather another layer of this information to help us better understand which of these animals are reclaimed by their owners. This information will enable us identify gaps in our outreach to the community. For example, do residents know to contact us when their pet is lost, do residents have the means to come to us if their pet is with us, is cost a barrier? We can then reevaluate our marketing, contact methods (email, phone, FB, etc.), and requirements to reclaim.

Department of Animal Sheltering

Melanie Leopold, Stephannie Calderon Yanez (DIT), Diane Bentley (DIT), Irene Tang (DIT)

GIS Excellence Awards 2021

Data Contributor

Locating New Public Urban Parks in Reston

Park Authority

Jasmin Kim, Daniel White (DPD), Justin Roberson

GIS Excellence Awards 2021

GIS Integration

This award is presented to the agency that has integrated GIS into their operations to the greatest degree in the last 12 months. Agencies that have a long history of GIS, as well as agencies that are in the beginning stages of GIS integration, will be evaluated separately.

Criteria used to evaluate the entries include:

- effectiveness of the integration in meeting its stated goal
- increased use of GIS in the agency, either directly or through agency-generated GIS products
- increased agency efficiency as a result of GIS
- demonstration of significant effort to train staff in GIS
- ingenuity/creativity/originality of GIS methods utilized
- ability to gain insights into data/project/issue as a result of the integration
- potential for further GIS-related growth

GIS Excellence Awards 2021

GIS Integration

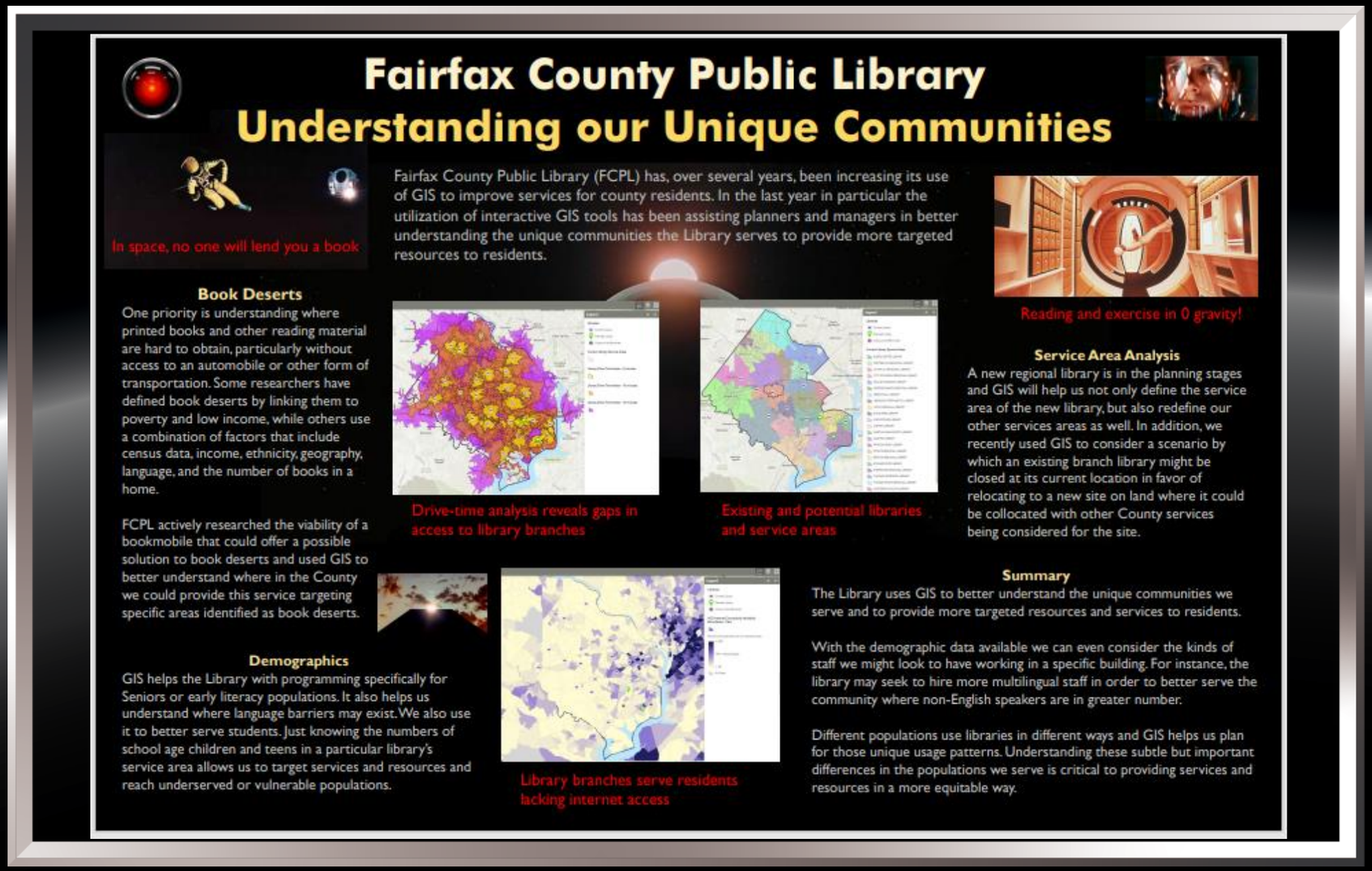
2021: A Green Sheet Journey - Streamlining Drainage and Erosion Assistance to Property Owners

Soil and Water Conservation District

Laura Grape, Daniel Schwartz, Gregory Bacon (DIT)

GIS Excellence Awards 2021

GIS Integration



Fairfax County Public Library
Understanding our Unique Communities

In space, no one will lend you a book

Fairfax County Public Library (FCPL) has, over several years, been increasing its use of GIS to improve services for county residents. In the last year in particular the utilization of interactive GIS tools has been assisting planners and managers in better understanding the unique communities the Library serves to provide more targeted resources to residents.

Reading and exercise in 0 gravity!

Book Deserts

One priority is understanding where printed books and other reading material are hard to obtain, particularly without access to an automobile or other form of transportation. Some researchers have defined book deserts by linking them to poverty and low income, while others use a combination of factors that include census data, income, ethnicity, geography, language, and the number of books in a home.

FCPL actively researched the viability of a bookmobile that could offer a possible solution to book deserts and used GIS to better understand where in the County we could provide this service targeting specific areas identified as book deserts.

Drive-time analysis reveals gaps in access to library branches

Existing and potential libraries and service areas

Service Area Analysis

A new regional library is in the planning stages and GIS will help us not only define the service area of the new library, but also redefine our other services areas as well. In addition, we recently used GIS to consider a scenario by which an existing branch library might be closed at its current location in favor of relocating to a new site on land where it could be collocated with other County services being considered for the site.

Demographics

GIS helps the Library with programming specifically for Seniors or early literacy populations. It also helps us understand where language barriers may exist. We also use it to better serve students. Just knowing the numbers of school age children and teens in a particular library's service area allows us to target services and resources and reach underserved or vulnerable populations.

Library branches serve residents lacking internet access

Summary

The Library uses GIS to better understand the unique communities we serve and to provide more targeted resources and services to residents.

With the demographic data available we can even consider the kinds of staff we might look to have working in a specific building. For instance, the library may seek to hire more multilingual staff in order to better serve the community where non-English speakers are in greater number.

Different populations use libraries in different ways and GIS helps us plan for those unique usage patterns. Understanding these subtle but important differences in the populations we serve is critical to providing services and resources in a more equitable way.

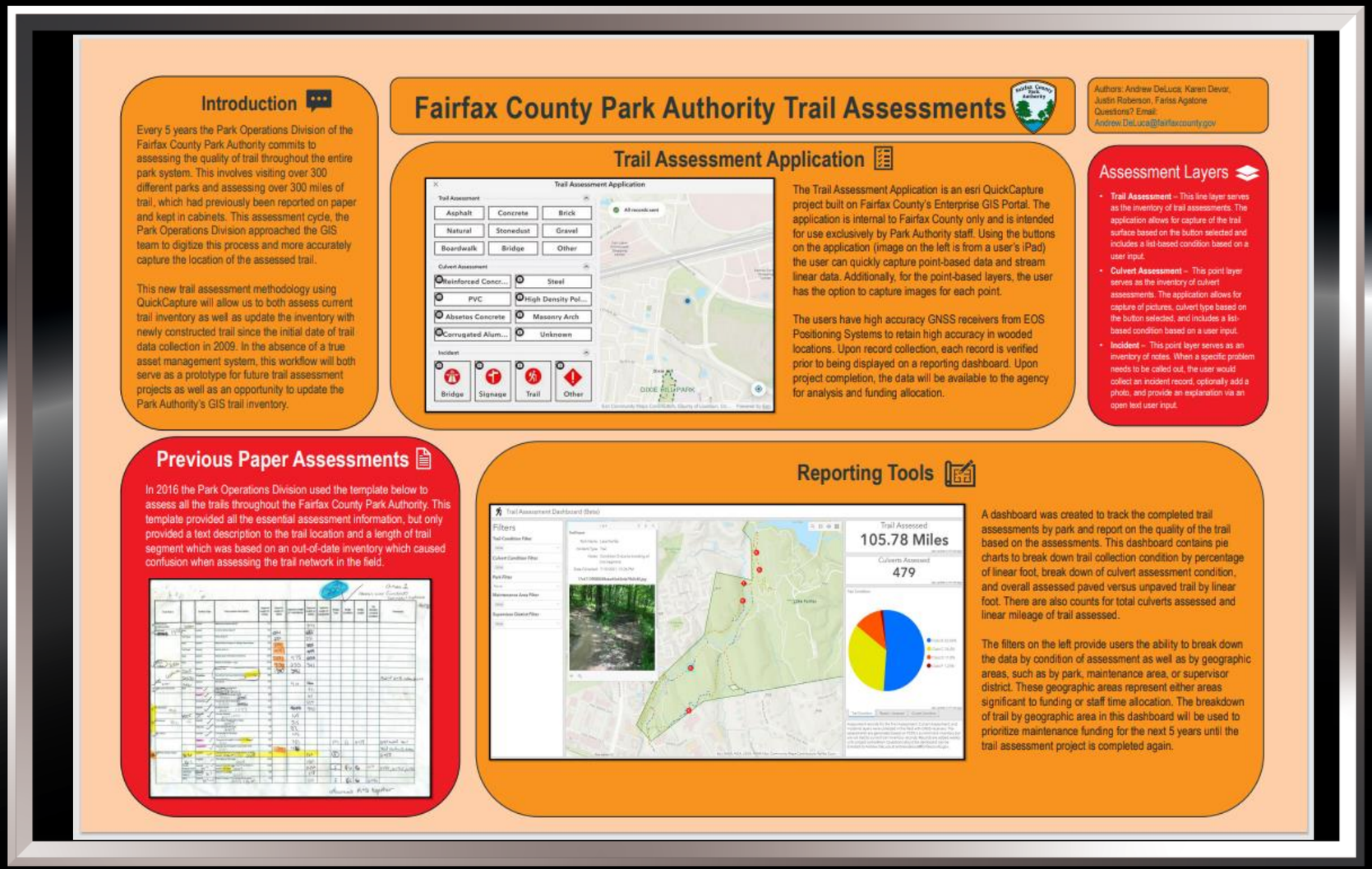
Fairfax County Public Library - Understanding our Unique Communities

Public Library

Douglas Miller

GIS Excellence Awards 2021

GIS Integration



GIS Trail Assessments

Park Authority

Andrew DeLuca, Fariss Agatone, Justin Roberson, Karen Devor

GIS Excellence Awards 2021

GIS Integration

Locating New Public Urban Parks in Reston

Park Authority

Jasmin Kim, Daniel White (DPD), Justin Roberson