

# 2018 Georgia Smart Communities Challenge

## City of Albany, Georgia

Albany Housing Data Analytics and Visualization  
Initiative

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FINAL REPORT

September 30, 2019



## Project Overview & Major Results

- From the beginning
- How and Why
- GA Tech Analysis of Utility Data
- Aggregating data from various datasets
- Normalizing data
- Housing Management Dashboard



# Project Leadership



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## Mayor

When You Think about Albany, think open, transparent shared information.

Albany's Geohub marks the beginning of a brand new era of open data government. By compiling the city's disparate datasets into a single platform, Albany GA is breaking down the barriers that cause inefficiency and is working toward becoming a smarter, safer city. With data available by way of intuitive apps and dashboards, City staff, as well as residents, can play a greater role in shaping our government. And by providing opportunities for collaboration, Albany can continue to solidify its place as the innovation hub of southwest GA.

I invite you to explore, analyze, and become more informed about the Good Life City of Albany, GA.

-Dorothy Hubbard

[City Webpage](#)

## Mayor Dorothy Hubbard





# Project Leadership



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## City Manager

Albany, GA is a thriving environment for the care, protection, and development of new and innovative ideas. We set the stage not just for southwest GA, but all of GA.

Now, the City of Albany, GA Tech and Esri have partnered on a project that will spur even more innovation in government, business, and other organizations. The Albany GeoHub, an initiative inspired by Mayor Dorothy Hubbard, gives city staff, businesses, app developers, nonprofit organizations, and the public access to the city's location-based data through a unique online portal. People can download datasets as shapefiles, KML files, or into spreadsheets to further analyze and determine their own opinions and hypotheses. They can also visualize the data as online maps using the tools we provide. The Albany GeoHub combines the city's geographic data into a location-as-a-service (LaaS) platform, allowing users to access live, continuously updated data directly from the city as a service—rather than as a static download—and create dynamic applications on the fly.

Visit us often as we continue to add new and exciting datasets.

- Sharon Subadan

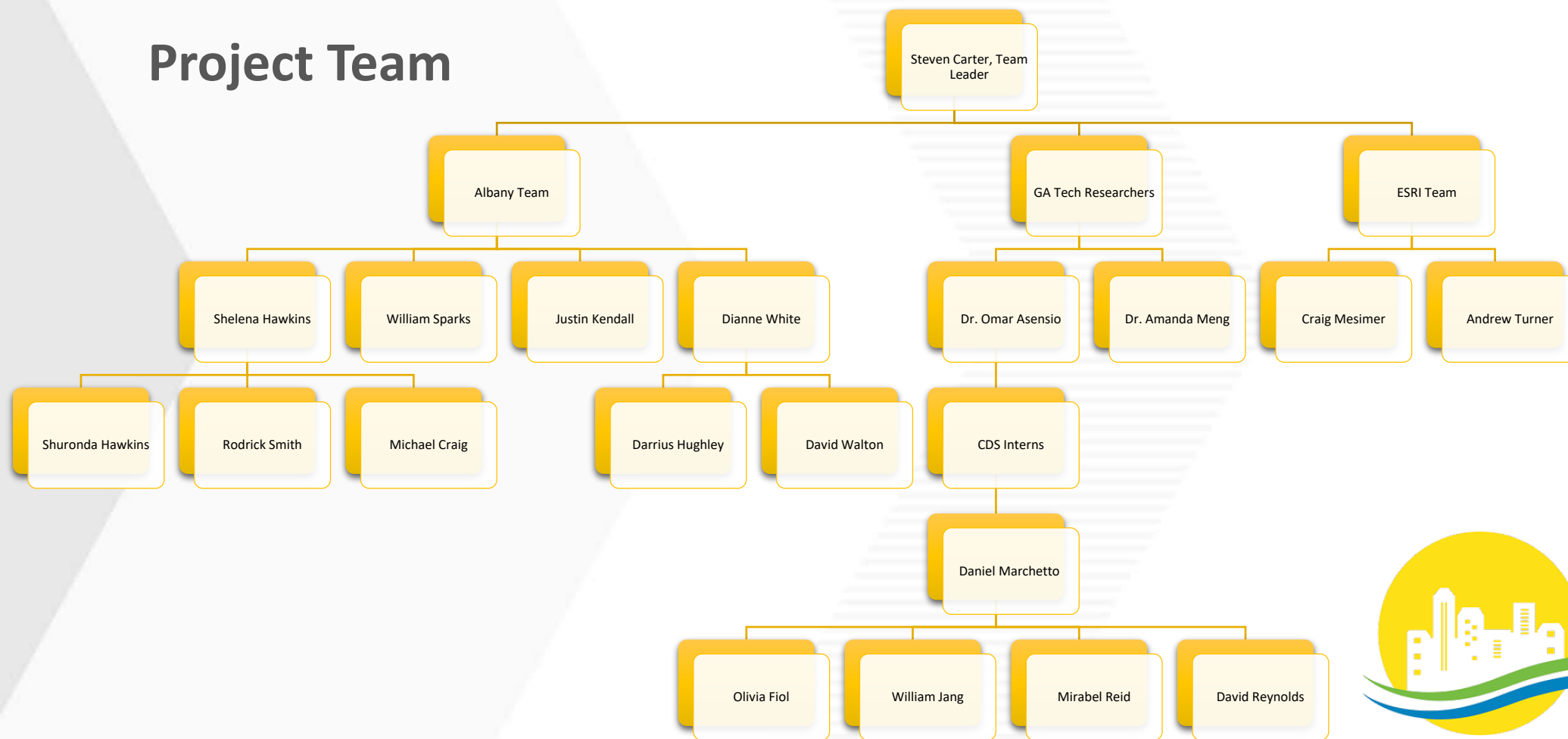
City Webpage



City Manager  
Sharon Subadan



## Project Team



## Project Timeline

### Planning

- (July 2018 – October 2018) Brainstorming possibilities, GA Tech Smart Communities Challenge

### Organizing

- (November 2018 – April 2019) Evaluate presentation platform, Select ESRI GeoHub, Gather and review data

### Design

- (March 2019 – August 2019) ESRI to the rescue!, automating and normalizing initial datasets,

### Control & Execution

- August 2019 – Ongoing) Obtain Community feedback, Citizen engagement/design  
Dr. Amanda Meng, GA Tech

### Implementation

- (July 2019 - Ongoing) Preliminary presentation to stakeholders and Albany Leadership, ESRI assisted with design of Crime Analysis, public release

### Documentation

- (July 2019 – Ongoing) City of Albany (Open Data Policy)



## Project Motivations & Goals



- The Albany Housing Data Analytics and Visualization Initiative seeks to:
  - Tell the story of the impact of housing investments with use of federal and state funds;
  - Bridge the gap between available and disjointed community data;
  - Introduce a comprehensive, innovative data collection method to inventory housing stock, neighborhood and community conditions, and other relevant data;
  - Promote housing sustainability and cohesive strategic planning for the future; and
  - Promote citizen engagement





# Improving Our Community Through Housing Investment

Community and Economic Development's Impact on Housing in Albany

City of Albany | September 04, 2019

[Click Here to view](#)



## Albany Housing Initiative Story Map



## Process Improvement, Data, & Automation

The overall impact of the project is positive

- Excitement within Community and Economic Development
- Programs are improving the quality of life
- Improved efficiency of data access
- Dashboards that contain analytics and information
- Retire the Excel spreadsheets
- Enhanced transparency
- Connection to the community
- Improved decision-making based on data



## WHAT OUR CUSTOMERS ARE SAYING



"When you think about CDBG overall and funding given to the City, it truly makes an impact within our City."



How **Community Development Block Grants** Bring Investment to Our Community -City of Albany Ga

[smartcities.gatech.edu](https://smartcities.gatech.edu)





# The Albany Open Data GeoHub

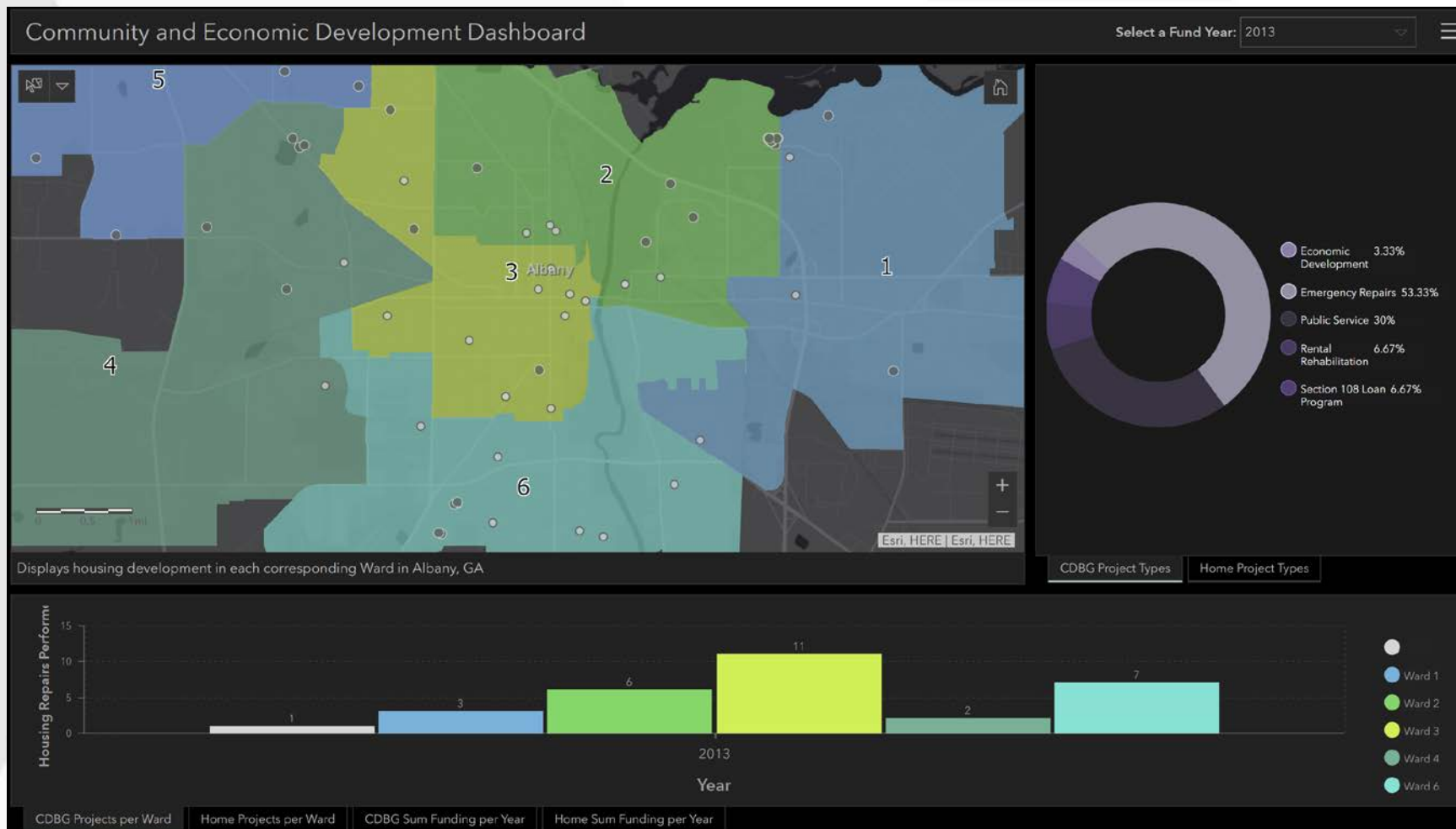


[Click image to view](#)



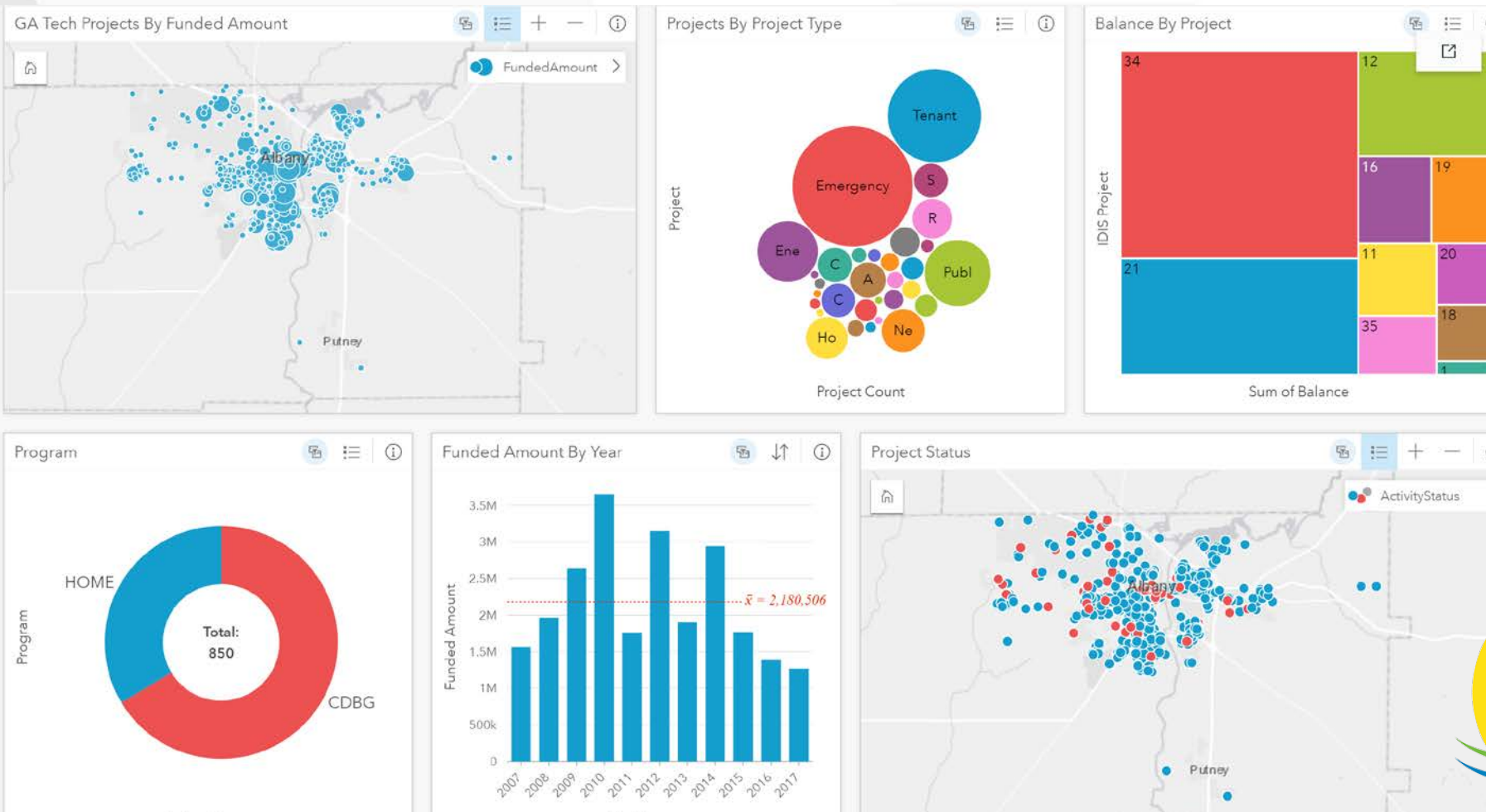


## Housing Management Dashboard



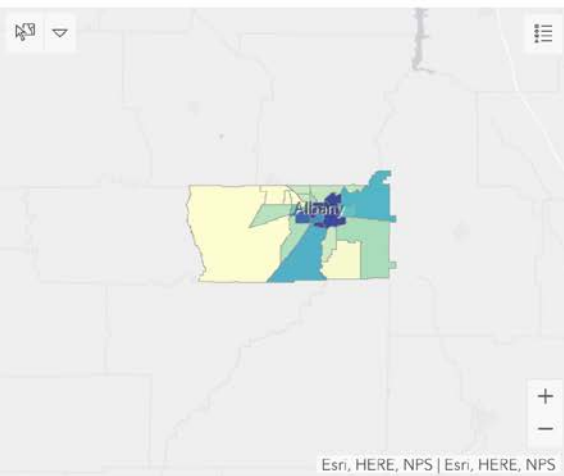
# GEORGIA SMART COMMUNITIES CHALLENGE

CREATING THE NEXT\*



## Housing Management Dashboard

Dougherty County Census Tracts Visualized by Rate of Households in Poverty



Esri, HERE, NPS | Esri, HERE, NPS

Population

91,152

Households

35,380

Avg Size Household

2.465

Median Age

36.79

Median Household Income

\$39,923

Diversity Index

38.07

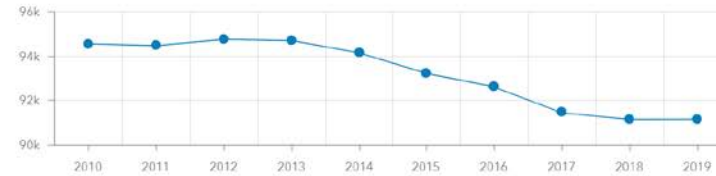
Avg Spent on Mortgage & Basics

\$5,799

% of Income for Mortgage

14.4

Historical Trends: Population



Median Home Value

\$116,323

Home Value



Households

Below Poverty Level

9,387

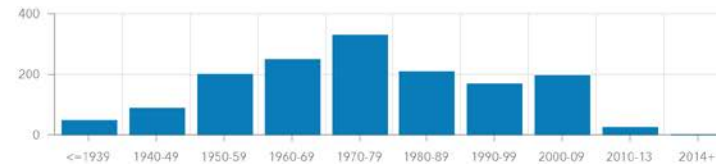
With 1+ Persons with a Disability

10,093

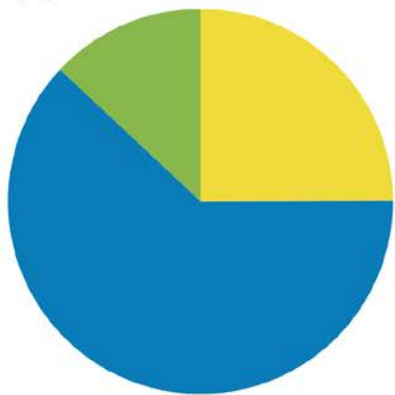
Receiving Food Stamps/SNAP

9,774

Housing: Year Built



Population By Age





## Georgia Tech Research and Collaboration



Left to right: David Reynolds (Missouri), Olivia Fiol (Vassar), Daniel Marchetto (GT) Omar Asensio (GT) Mirabel Reid (Pitt) Billy Jang (Amherst) Amanda Meng (GT)

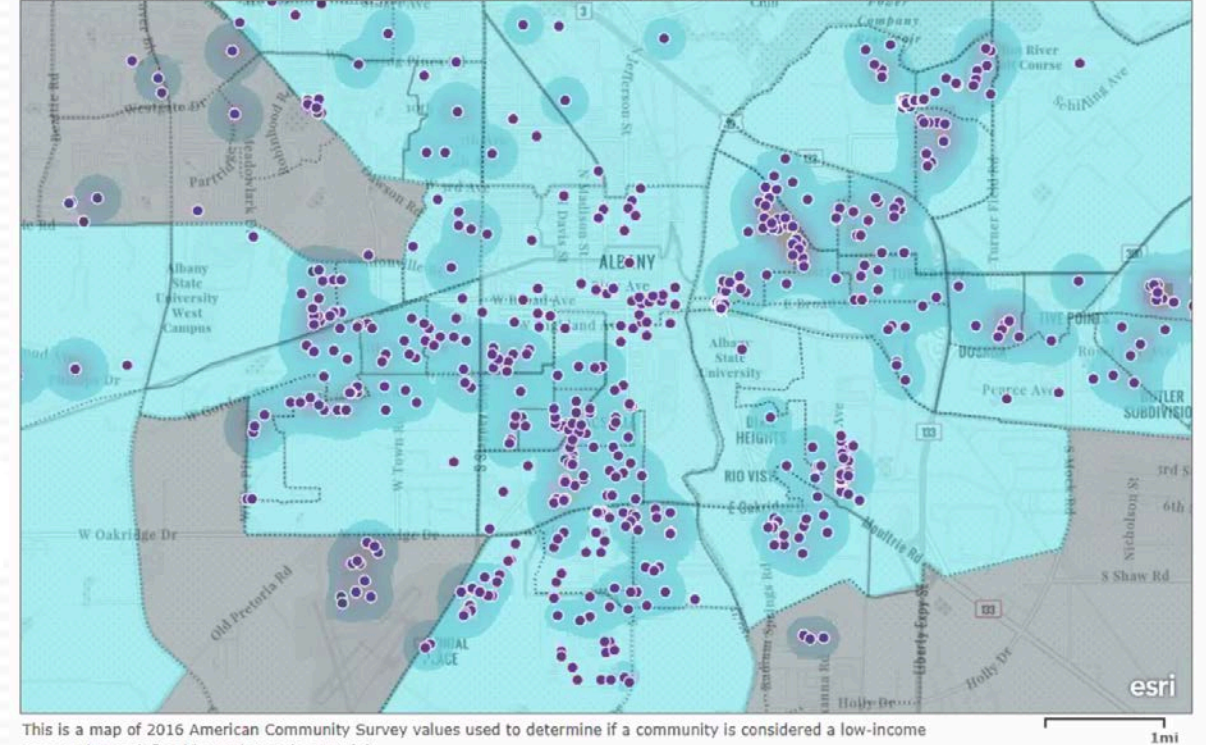
- Policy Analysis & Program Evaluation
  - Expertise in housing data analytics and policy analysis
  - 4 Civic Data Science REU students
  - 1 Graduate Student in Public Policy, GA Smart Community Corps fellow
  - 1 Research Scientist, Community Engagement



## Community Benefits of Housing Investments are difficult to quantify

- Data silos
- Policy silos (co-benefits public investments often not part of the original design)
- Comprehensive community data is hard to access

Opportunity Zone Qualification-Dougherty, County, GA for Electricity (Working Version)



Case Study:

# Do Public Housing Investments Have Spillover Benefits for Energy Efficiency?





Case Study:

# Do Public Housing Investments Have Spillover Benefits for Energy Efficiency?

Evidence from 10 years of public housing assistance programs in Albany, GA



## HUD-Funded Programs with Possible Spillovers to Utility Consumption

- **The HOME Program**
  - Designed to increase home ownership and affordable housing
  - exclusively for low income populations
- Administers several programs
  - New construction
  - Financing
  - Homeowner Rehabilitation
  - Rental Rehabilitation
- **Community Development Block Grants (CDBG) Program**
  - prevention or elimination of slums or blighted properties
  - local economic development opportunities
- Administers several programs
  - Emergency Repairs
  - Energy Efficiency/Weatherization



## Projects include activities such as

- Homeowner rehabs
- Rental rehabs
- Emergency repairs
  - roof replacement
  - HVAC installation
  - electrical/plumbing upgrades
  - lead-based paint abatement
  - accessibility improvement
- Financing  
(Affordable Home Ownership Program (AHOP))





## The evaluation challenge for evaluating HUD Funded Programs

- Voluntary programs are subject to **strong self selection biases** in observational studies and data visualization tasks
- Program participants are not a random draw from the population!
- Albany properties receiving public funds:
  - ↓ Lower assessed property values
  - ↓ Smaller homes (measured by sq. ft.)
  - ↑ Higher baseline electricity use per sq. ft.



## Impact Evaluation via Matching techniques

Main Results – Electricity use per sq. ft.

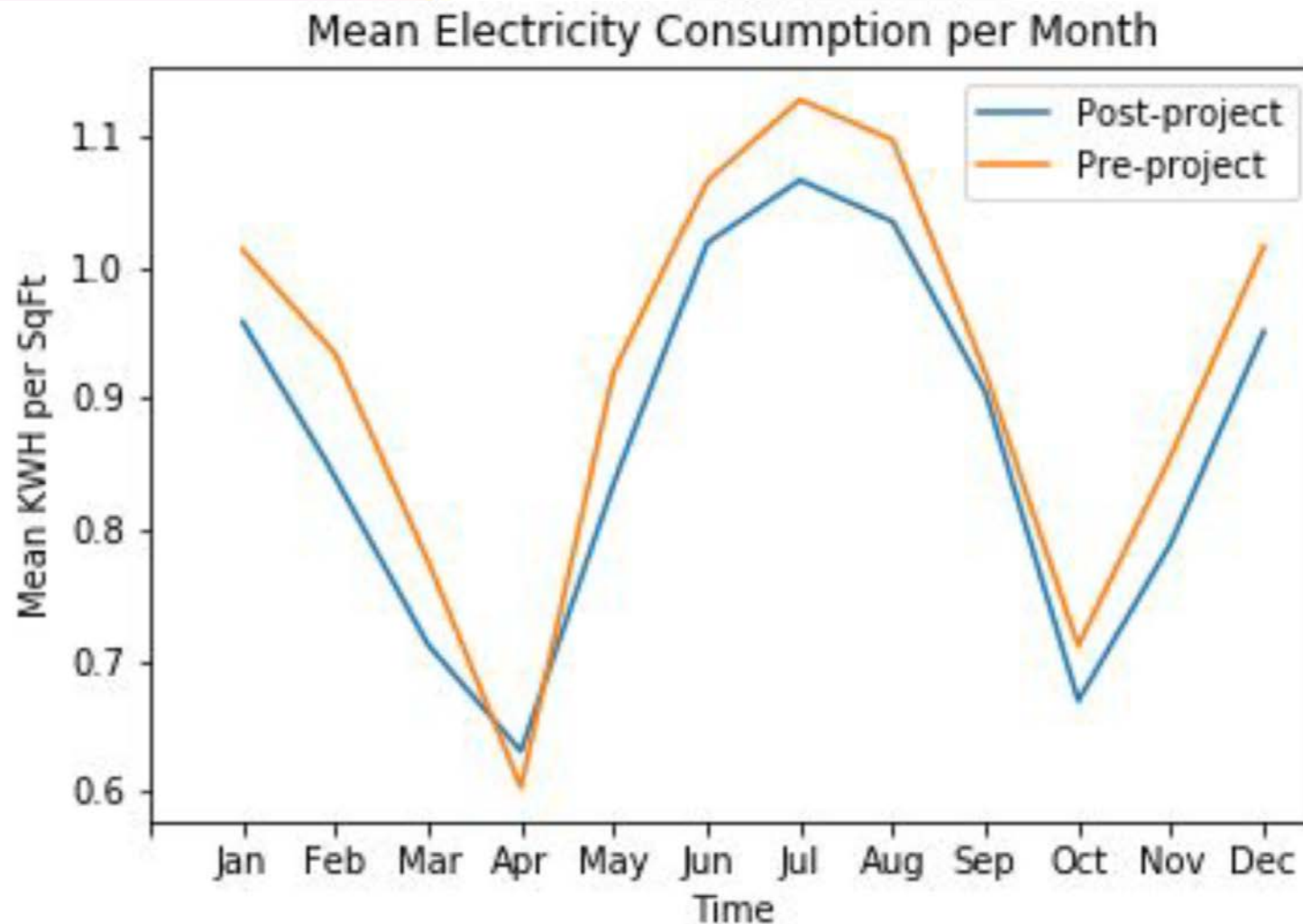
Program	ATE (%)	St Error	p-value	Matched clusters	Panel Observations
All HUD funded projects (2007-2017)	-7.21	0.80	0.00***	109,609	~1.5M
CDBG Projects	-4.28	0.79	0.00***	109,609	~1.5M
HOME Projects	-6.92	1.48	0.00***	109,609	~1.5M

Notes: Matched on baseline electricity use per sq.ft. 2004-2006, house size, and assessed property value. Includes year fixed effects. Standard errors clustered at the property level.

\*p<0.05, \*\*p<0.01, \*\*\*p<0.001



## GA Tech Analysis of Utility Data





## Energy Savings in Context

- HUD-funded properties in Albany saved an estimated [ **5.6% to 8.8%** ] in electricity bills for programs that affect utility usage. (or **88 kWh per month**) versus a matched statistical control group.
- Per recipient, this is between **\$6.30 and \$9.80** saved per month on power bills, back to the community
- From the EPA, an 88KWH reduction per month in power consumption is equivalent to:
  - 95,220 smartphones charged per year
  - 284 incandescent bulbs switched to LED bulbs
  - 1,826 miles driven per year

<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>



## Process Improvement, Data, & Automation

### Tax Department

- The early stages of this project prompted an examination of how our tax and addressing data was being kept. We made efforts to normalize our addresses, bringing it in line with our GIS department, who we mutually agreed should set the standard.
- Merging tax, housing and utility datasets allowed us to see the correlation between CED federally-funded projects and tax valuation increases, and changes in electric utility usage.



# GEORGIA SMART COMMUNITIES CHALLENGE

CREATING THE NEXT\*

This Sales Analysis Dashboard can be used by the tax assessors, city personnel, and the general public to find various types of sales in Dougherty County.

Use the options below to find sales by property type, building type, date and sale price range.

All Sales

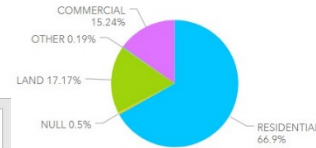
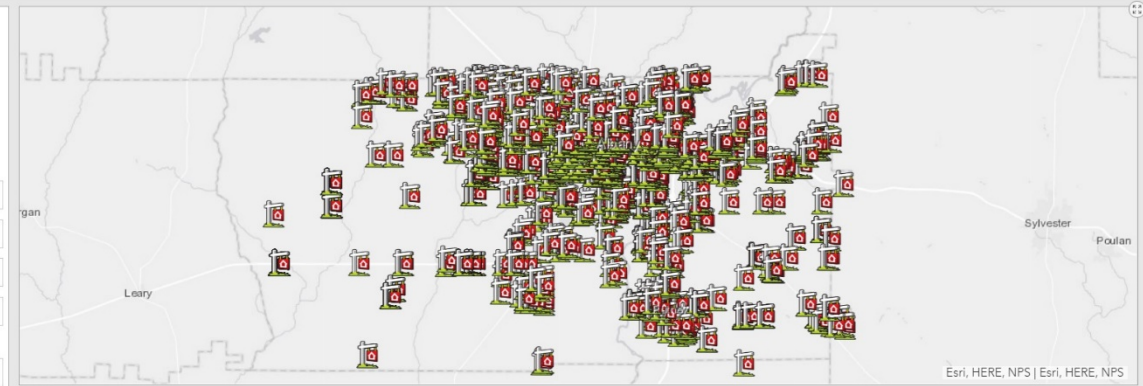
All Sale Types

All Residential Building Types

All Commercial Building Types

Sale Price Between

0  50,000



**\$200,000**  
Address: 1007 E OGLETHORPE BLVD  
Parcel ID: 000EE/00043/03A  
Sold: 2/20/2019

**\$15,000**  
Address: 1423 MULBERRY AVE  
Parcel ID: 000EE/00022/012  
Sold: 4/15/2019

**\$139,000**  
Address: 0 MARTIN LUTHER KING JR DR  
Parcel ID: 00204/00001/09B  
Sold: 3/29/2019

Sales  
🏠 **2,598**

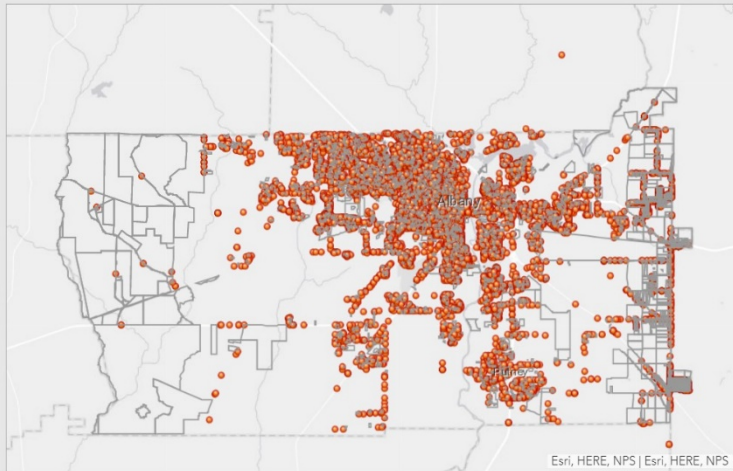
## Tax Digest Summary

This Tax Digest Analysis tool allows you to visualize the current tax information and get valuable insights.

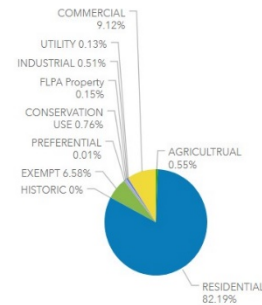
The pie chart shows the percentages for each property class that make up the total County digest. You can click on a specific property class in the pie chart to filter.

You can also filter the tax information by choosing a Subdivision below.

All Subdivisions



## Property Classifications



Total FMV  
🏠 **\$5,218,024,438**

Total Assessed Value  
🏠 **\$1,655,780,034**

As you filter the information, you will notice that the **Total Fair Market Value (FMV)** and **Assessed Value** totals will adjust based on your filters.

Last update: 6 minutes ago

Last update: 6 minutes ago

Last update: 6 minutes ago





## Process Improvement, Data, & Automation

### Police Department

- Collecting Data from noncompatible systems
- Automating address normalizing
- Ultimately, our goal is to automate the upload process from the SQL database to a holding file for screening, with the ability to edit out sensitive data then release into ArcGIS for HUB updating.



## Challenges

- Lack of standardization between datasets
- Departmental buy-in
- Human resource constraints
- Product Knowledge
- ETT/Vendor/Customer expectations
- Communication Change in data collection and systems evolving during the project - Crime system – NIBRS conversion





## Recommendations to Other Cities

- Research and analysis is only as good as the available data.
- Determine the relevance of project to your audience
- Clearly defined goals
- Avoid scope creep





## Lessons Learned & Future Plans

- Do not assume
- Quality data is paramount
- Continue working with GA Tech & ESRI
- Introduce new initiatives
- Crowdsourcing data

**"The only  
mistake in life  
is the lesson  
not learned"**



*Albert Einstein*



### Georgia Smart Budget Spend Details

[illegible][smartcities.gatech.edu](http://smartcities.gatech.edu)

## Project Team Contact Information

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