# **GIS Property Assessments and Taxes**



### A Case Study on Summit County, Co.

Presented by Esri, Inc. State of Vermont Senate Economic Development, Housing, and General Affairs



Richard Leadbeater Director, State & Local Government Industry Solutions

Email:rleadbeater@esri.comOffice:909-369-4448Twitter:@PolicyMapper

"My goal is to move the application of geographic analysis further into the conversations that define government policy and its operations."

"The data governments generate must be considered a valued resource that wants exploitation. I believe that data in the 21st century is what timber, iron, and coal were to the 19th century. Today, we talk about producing and mining data, but the real value is in the creation of finished goods."

# The Many Elements of GIS...

### Data

GIS integrates many different kinds of data through spatial location.

### **Spatial Analysis**

Location provides new perspectives to your insight and decision-making.

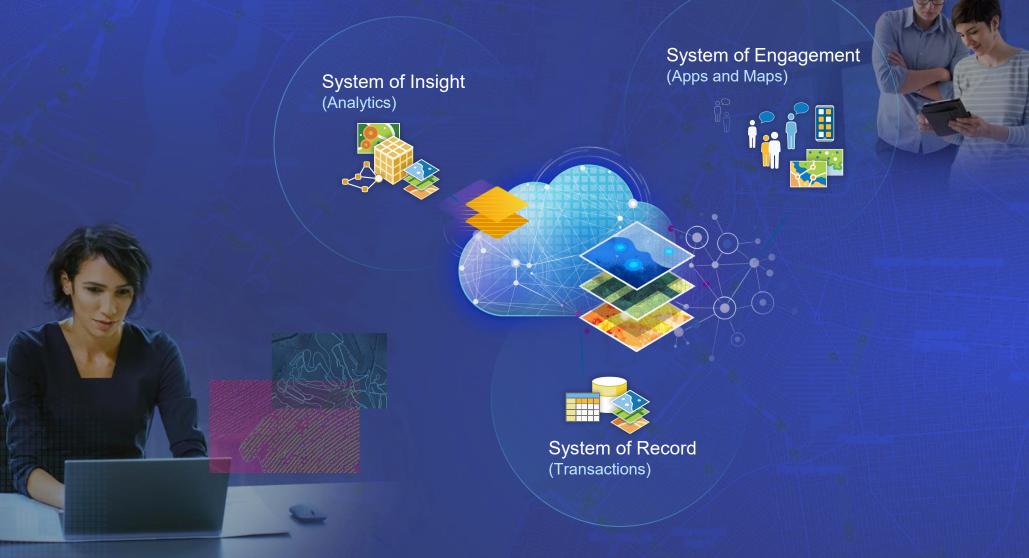
### Apps

Apps provide focused user experiences.

### Maps

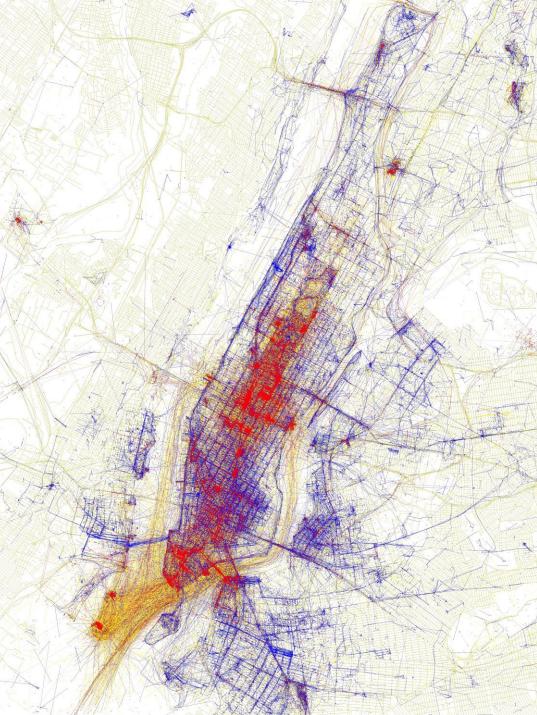
Maps are the geographic container.

### ArcGIS Supports Three Fundamental Types of Systems



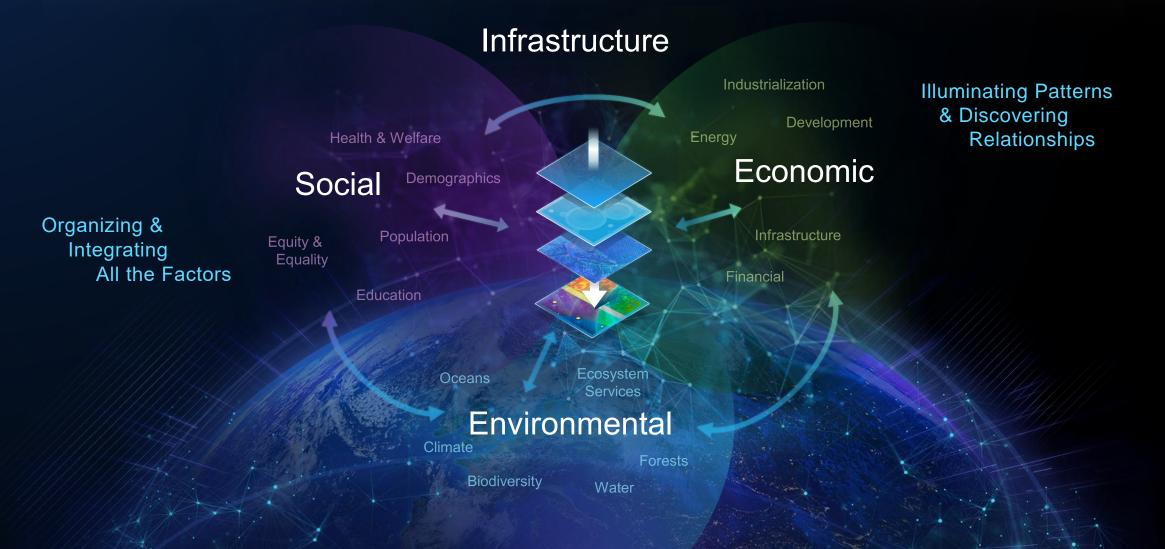
# GIS is An Enabling Framework





# Policy is a Geography Problem. . .

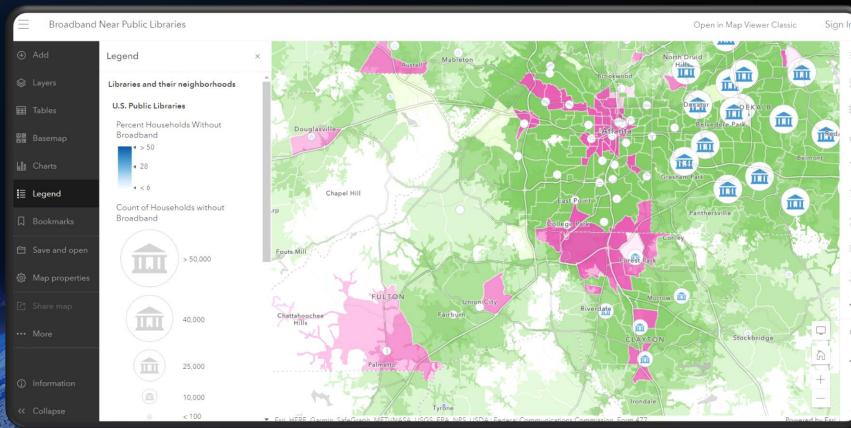
Geography Provides the Science & Fundamental Language



# Making Data Actionable

Knowing What Data is Available

Broadband is a critical infrastructure that supports effective economic growth, education, workforce development, telehealth, and more. Strong broadband is a requirement for cities to compete in the global economy and provide equitable opportunities for their residents.



Where could dollars be spent to make an impact?

VS.

Where should dollars be spent to make the biggest impact?

### Summit County Addresses Short-Term Rental Boom with Data

As home to popular vacation destination Breckenridge, Summit *County, Colo., turned to GIS and data to create long-term policy* solutions to issues around short-term rental properties.



Summit County, Colo., knew as early as 2018 that big changes were afoot in terms of homeownership and residency patterns. The county includes Breckenridge, one of the ountry's most popular vacation destinations. Complaints started to come from locals ing land use noise and garbage in certain residential areas with a high concentr

New Tech Used to Thwart Ancient Predators Along New York Beaches

Summit County Addresses Short-Term Rental Boom with Data (govtech.com)

People

Process

Technology

Understand

### Summit County Short-Term Rentals Case Study

- Keeping up with Development required a change in Housing Policy
- Ownership and Residency patterns were changing.
- Increased complaints about land use, noise, garbage collection, traffic...
- Neighborhoods moved from 10% to 27% quickly
- Hosing Avg: \$500K 2019 vs >\$1M 2021
- Convince the State Law Makers that the county needed the ability to license STRs

Tæèféæ Thèåæii Üæåçëèéèck

Plan

### Summit County Short-Term Rentals Case Study

- The new ordinance required:
  - Caps on STRs to 18% of Housing Stock
  - Owners / Property Managers obtain licenses before advertising STRs
- Issues:
  - More Parking vs. Mass Transit
  - How to Tax the rental property

"Data is the key to everything we do. Without this data, it would be really difficult to show people what is happening," she said, "and to be able to overlay other services such as bus stops and environmental concerns gives us a much more complete foundation for our decision-making."

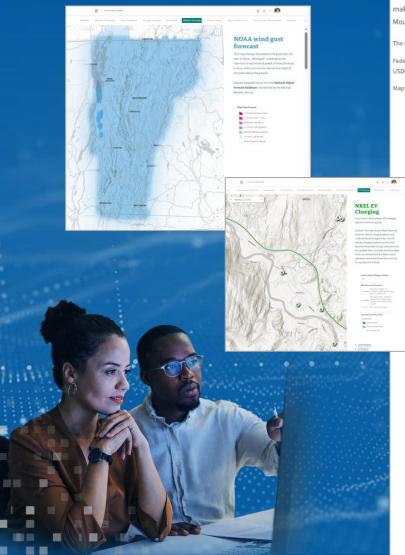
County Commissioner Elisabeth Lawrence

People Process Technology

Understand

Plan

### Esri Living Atlas ArcGIS Living Atlas of the World



### Vermont Map Portfolio

×

This collection of Vermont maps enables decisionmakers to monitor current conditions in the Green Mountain State.

The map portfolio contains information from:

Federal sources - USGS, EPA, NOAA, NWS, NWC, Census, FCC, USDOT, CEQ, DOE and EIA

Maps are Compiled and Published by Esri.













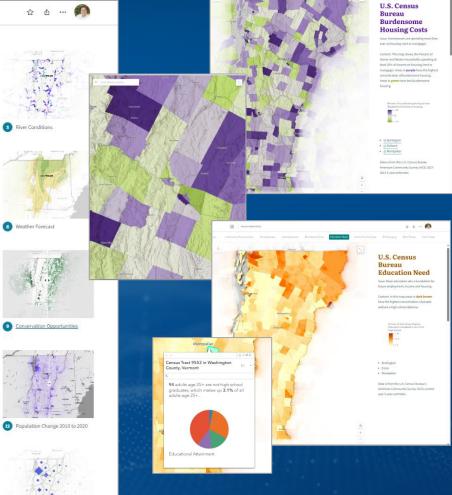
Orought Intensity

Climate Impact



...

13 Homelessness



2 0 - 🗭

Vermont Map Portfolio (arcgis.com)

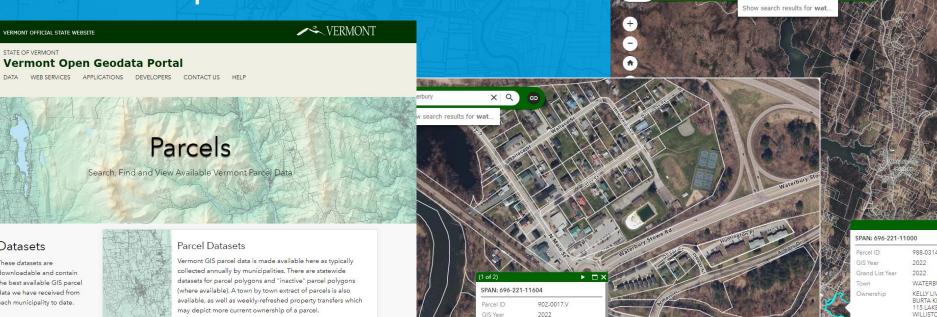
# Vermont Center for Geographic Information

Maps

✓ VERMONT An Official Vermont Government Website Agency of Digital Services Q **Vermont Center for Geographic** Information **VT Interactive Map Viewer** Use the Vermont Interactive Map Viewer to create maps in your browser. Learn More 2 of 6 Previous Pause Next Data and Programs 3 + - Q 2 + 0 M Resources Filter Lave

Home Page | Vermont Center for Geographic Information

### Vermont GIS parcel data



2022

WATERBURY

Residential-1

0.38

SMITH LACEY-ANN E

KISTNER BRITTANY 17 WINOOSKI ST

WATERBURY, VT, 056 0.38 AC & DWL/AP

Grand List Year Town

Ownership

Description Category (Real

Total Acres

#### Datasets

These datasets are downloadable and contain the best available GIS parcel data we have received from each municipality to date.

Choose which dataset you wish to use below: Parcel Polygons

Inactive Parcel Polygons



44º20'22"N 72º45'21"W

VERMONT

Parcel Viewer

waterbur X

		K KTH
SPAN: 696-221-11	000	
Parcel ID	988-0314.	
GIS Year	2022	
Grand List Year	2022	
Town	WATERBURY	
Ownership	KELLY LIVING T BURTA KELLY T 115 LAKEVIEW WILLISTON, VT	DRIVE
Property Description	108.28 AC & D	WL
Category (Real Estate only)	Residential-2	
Resident Ownership Code	S	
Total Acres	108.28	
Zoom to		

Parcels | Vermont Open Geodata Portal Your source for geospatial data

### **GIS Resources**

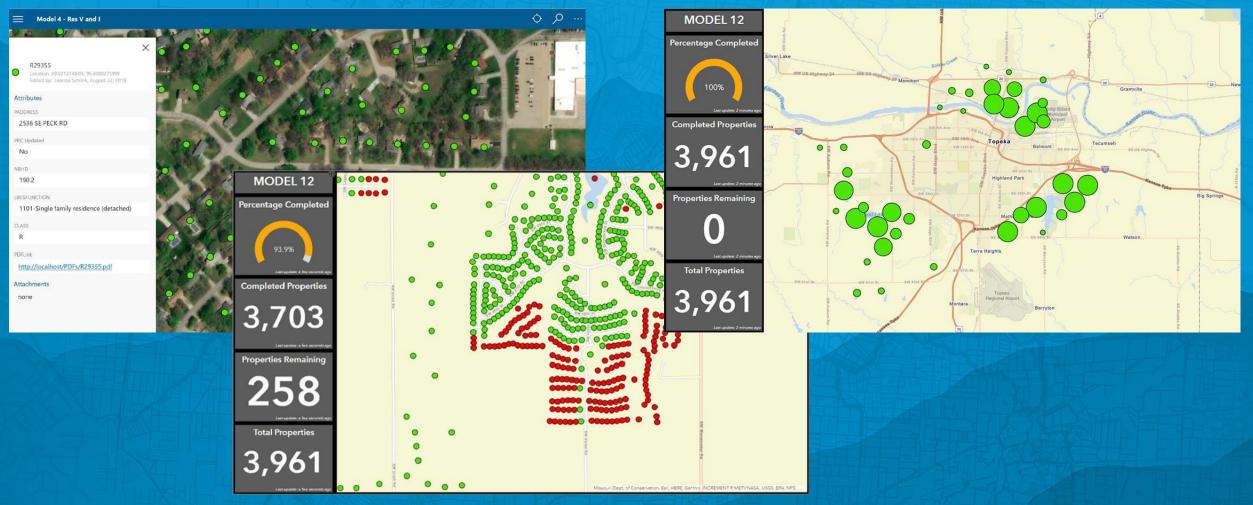
VERMONT State Representative: John Adams VT Center for Geographic Information 2021 Geospatial Maturity Assessment 2021 GMA Report Card Geospatial Office Clearinghouse

Esri

State Account Manager : Scot DeCristofaro Esri Boston Regional Office 35 Village Rd Middleton, MA 909 369-7096 sdecristofaro@esri.com

# Appraising Property Using a GIS-Centric Workflow

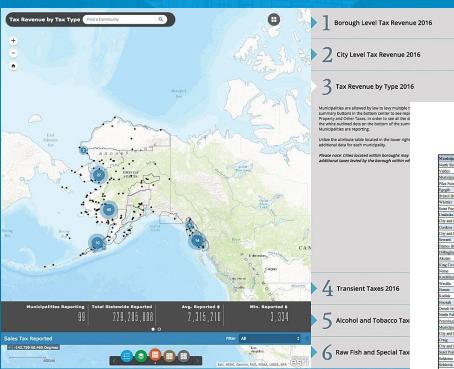
Annual Visual Inspections by the Shawnee County Appraiser's Office



Shawnee County Appraiser's Office Uses a GIS-Centric Workflow (esri.com)

### Telling the Story of Taxes in Alaska

164 independent municipalities levy their own sales and property taxes



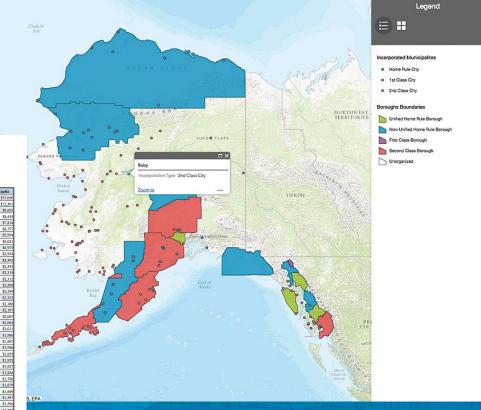
East Siberian Sea

Table 1Per-Capita Tax Revenues

Municipality	Property Tax	Sales Tax	Other Tax (1)	Total Tax	Population	Tax Per Capita
North Slope Borough	\$386,127,153	\$0	\$0	\$386,127,153	10,420	\$37,05
Valdez	\$48,928,301	\$0	\$409,848	\$49,338,149	4,011	\$12,30
Municipality of Skagway	\$1,821,411	\$7,068,042	\$120,267	\$9,009,720	1,040	\$8,66
Pilot Point	\$0	\$642,583	\$0	\$642,583	76	\$8,45
Egegik	\$0	\$0	\$812,706	\$812,706	104	\$7,81
Bristol Bay Borough	\$4,196,650	\$0	\$1,797,161	\$5,993,811	887	\$6,75
Whittier	\$626,526	\$557,265	\$322,638	\$1,506,429	253	\$5,954
Saint Paul	SO	\$376,326	\$1,771,910	\$2,148,236	427	\$5,03
Unalaska	\$5,929,241	\$7,766,849	\$9,212,254	\$22,908,344	4,605	\$4,97:
City and Borough of Juneau	\$47,205,860	\$46,187,130	\$4,890,873	\$98,283,863	33,277	\$2,95
Cordova	\$2,305,133	\$3,347,140	\$130,813	\$5,783,086	2,321	\$2,493
City and Borough of Yakutat	\$364,617	\$924,232	\$148,430	\$1,437,279	613	\$2,34
Seward	\$1,007,672	\$4,883,996	\$458,605	\$6,350,273	2,740	\$2,311
Haines Borough	\$2,825,480	\$2,828,963	\$109,808	\$5,764,251	2,493	\$2,313
Dillingham	\$2,383,255	\$2,620,237	\$478,994	\$5,482,486	2,386	\$2,29
Akutan	SO	\$0	\$2,098,763	\$2,098,763	933	\$2,24
King Cove	50	\$854,750	\$1,145,831	\$2,000,581	900	\$2,22
Nome	\$3,051,603	\$5,121,497	\$151,997	\$8,325,097	3,819	\$2,18
Ketchikan	\$5,488,642	\$11,461,271	\$486,838	\$17,436,751	8,277	\$2,10
Wasilla	SO	\$17,504,642	\$0	\$17,504,642	8,468	\$2.06
Homer	\$3,101,669	\$7,533,680	\$0	\$10,635,349	5,153	\$2,06
Kodiak	\$921,916	\$11,512,936	\$210,098	\$12,644,950	6,288	\$2,01
Hoonah	\$0	\$1,550,134	\$0	\$1,550,134	783	\$1,98
Denali Borough	50	\$0	\$3,503,040	\$3,503,040	1,781	\$1,96
North Pole	\$819,274	\$2,845,466	\$516.272	\$4,181,012	2,138	\$1,95
Petersburg Borough	\$3,167,360	\$3,030,191	\$55,461	\$6,253,012	3,199	\$1,95
Municipality of Anchorage	\$515,260,957	\$0	\$68,130,079	\$583,391,036	298,908	\$1,95
City and Borough of Sitka	\$6,194,986	\$10,014,174	\$1,000,917	\$17,210,077	8,929	\$1,92
Craig	\$602,456	\$1,552,438	\$0	\$2,154,894	1,180	\$1,820
City and Borough of Wrangell	\$1,703,619	\$2,642,785	\$39,114	\$4,385,518	2,442	\$1,79
Sand Point	\$0	\$908,182	\$688,517	\$1,596,699	951	\$1,67
Soldotna	\$287,379	\$6,920,246	\$0	\$7,207,625	4,319	\$1,665
Seldovia	\$181,892	\$179,068	\$0	\$360,960	226	\$1,59
Kenai Peninsula Borough	\$62,078,842	\$30,103,266	\$0	\$92,182,108	57,763	\$1,59
Adak	50	\$331,940	\$89,537	\$421,477	275	\$1,53
False Pass	SO	\$28,735	\$80,210	\$108,945	73	\$1,493
Kenai	\$3,771,925	\$6,781,037	\$0	\$10,552,962	7,229	\$1,46
Alcutians East Borough	SO	\$0	\$4,268,884	\$4,268,884	2,969	\$1,431
Matanuska Susitna Borough	\$119,269,340	\$0	\$9,474,899	\$128,744,239	100,178	\$1,28:
Palmer	\$1,316,111	\$6,503,870	\$0	\$7,819,981	6,135	\$1,27
Ketchikan Gateway Borough	\$8,427,766	\$8,452,793	\$50,666	\$16,931,225	13,778	\$1,22
Kotzebue	SO	\$3,711,382	\$295,408	\$4,006,790	3,267	\$1,220
Kodiak Island Borough	\$14,397,697	\$0	\$1,839,867	\$16,237,564	13,819	\$1,17
Bethel	SO	\$5,720,309	\$1,376,723	\$7,097,032	6,205	\$1,14
Fairbanks North Star Borough	\$107,140,828	\$0	\$4,392,485	\$111,533,313	98,645	\$1,13
Chignik	50	50	\$105,464	\$105,464	95	\$1,11
Nenana	\$197,740	\$181,723	\$7,527	\$386,990	380	\$1,011

Could include: bed, alcohol, car rental, raw fish, tobacco and other miscellaneous taxes

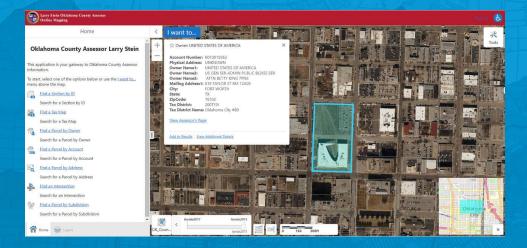
Average statewide per-capita revenue (Excludes North Slope) \$1,855 Average statewide per-capita revenue (Including North Slope) \$2,353



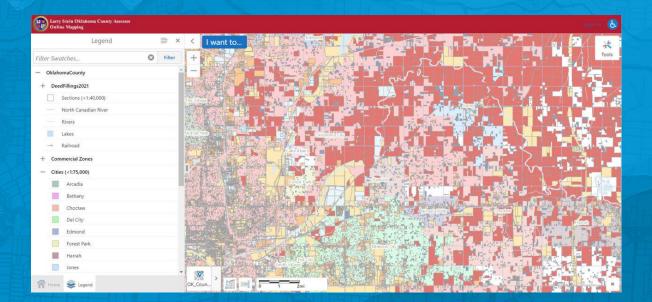
Telling the Story of Taxes in Alaska (esri.com)

# Oklahoma County's Assessor's Office Modernizes Workflows

A Comprehensive System of Records







Oklahoma County's Assessor's Office Modernizes Workflows with GIS (esri.com)

# **Drone Imagery Speeds Flood Response**

New Technology, Public Safety, and Economic Recovery



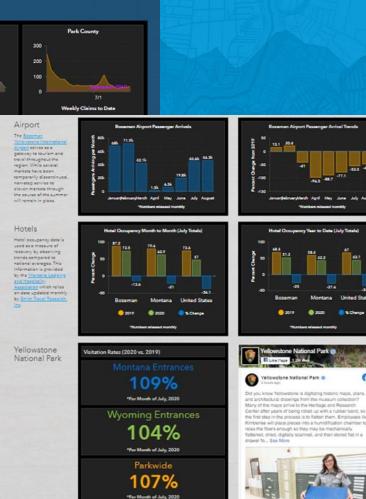
Drone Imagery Speeds Flood Response (esri.com)

# Bozeman, Montana, Builds a Path to Economic Recovery

**Business, Tourism, and Development** 

### **Business**







Sichan

lowstone National Park

stone is digitizing historic maps, plan

tural detailors from the museum collection?

Business

Licenses

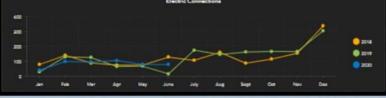
New applications and renewals for business licenses within the City of

Engemen are undeted manshiy by she

### Development









Economic recovery (esri.com)

### Resilient by Design

#### To be resilient, communities must use GIS to:



#### Serve as a System of Record for Analyzing Historic Patterns

The locations of some shocks aren't always as finitely predictable, such as earthquakes, wildfires or tornados. However there are ways that GIS can still be used to plan for these events, such as plan fire lines or controlled burns. Using historic storm tracks and demographic information, GIS can also be used to identify where community storm shelters would be most useful.

#### Establish Broad Availability of GIS

When it comes to response and recovery, accessibility of GIS is critical to the planning process. Simple web apps that display damage assessment, search and rescue, and emergency facility monitoring, can be put right in the hands of experts in the field. That way, information can be immediately transmitted back to an emergency operations center, where incident command can stay informed and make quick, data-driven decisions.

# ↑ Empower Community ← ○ → Leaders to Make More ○ Data-Driven Decisions

Using GIS to inform and empower community leaders across fields is a critical aspect of resiliency planning. These leaders decide where and how to prioritize resilience efforts. So providing them with the web maps and apps that outline vulnerable areas, provide analysis or visualize design alternatives is critical to these conversations - and that's what GIS delivers every day.

#### Create Genuine Citizen Engagement

Government leaders don't work in a vacuum. GIS can help create genuine citizen engagement. As technology has changed, so have the expectations of the public. They expect to be able to communicate with others, including their government, on their own terms and timeline. Simply relying on traditional public notification is insufficient in today's modern world. GIS can provide apps that allow the public to be informed about resiliency efforts, provide feedback through comments and even maps that go back to leadership to help the latter understand their concerns and priorities.

#### Carry Out Scenario Planning and Analysis

Finally, GIS can help us locate challenges and problems such as traffic congestion or blighted neighborhoods, as well as aid a community to play out different development and design scenarios to correct these issues. The fact is that stressors on a community are often tied together - few are independent of other forces. Fortunately, GIS can help understand how rectifying one stress can also alleviate other stresses. For example, many communities are seeing rapid growth in their downtown areas as younger citizens move in. A community could use GIS to visualize new affordable housing downtown, measure the number of new residences and employees for area businesses, predict the revenue impact for the neighborhood and analyze the impact this has in reducing traffic congestion.

# **Resilient by Design**

Solving What Keeps Community Leaders Up at Night

INDUSTRY PERSPECTIVE



Building a Mobile Government Strategy With GIS (govloop.com)



# **Urban and Regional Planning**

#### **Zoning Management**



City of Seguin Texas



Development Suitability

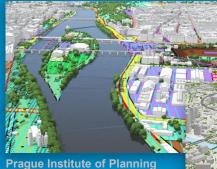
Comprehensive Land-Use Plan



**Cobb County** Government Cobb County, Georgia

Houseal Lavigne Associates Fayette County, West Virginia

Urban Plan Visualization



**Basemaps** 

3D

and Development



**Hillsborough County** 

### **Rezoning Evaluation** Proposed Building



**Borough of** State College State College, Pennsylvania

3D GIS-Living Digital Twin

Lands Department

Hong Kong Special Administrative Region

of Hong Kong





Visualizing Urban Sprawl

**Paris-Saclay Development Authority** France

#### World Cup (FIFA) Planning



The Center for GIS Doha, Qatar

Urban Design & Carbon Assessment





Vienna, Austria



Maryam Khan Karachi, Pakistan

# Public Engagement and Collaboration Portals

Adopt-a-Road

**Douglas County** 

Government Colorado

Peterson Rd: AVAILABLE - 3.2 mile:

From: Airport Rd To: Platte Ave

Adopt-a-Storm Drain

Salt Lake City Department of Public Utilities Utah

Crowdsourcing Flood Damage





Real-Time Snowplow Reporting





3D Virtual City Explorer



Serviço Geológico do Brasil Rio de Janeiro, Brazil



Mapping Accessible Routes for People with Disabilities



Município de Itajaí Brazil

# esri

World Leader in Geographic Information Systems (GIS) Over 10 Million Users

33,000 Businesses
12,000 Colleges & Universities
8,600 Utilities
12,600 NGOs
1,200 National Government Agencies
12,000 States & Regional Agencies
30,800 Cities & Local Governments

Growing, Strong and Impactful

Multifactor Risk Zones

### Planning for and Responding to Disasters

International Search & **Rescue Coordination** 





ΝΑΤΟ Türkiye





INSARAG Türkiye

Impact & Situational Awareness

UNOSAT Türkiye



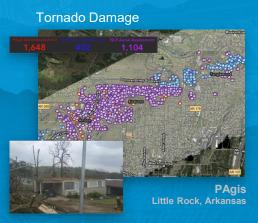


Flooding from Dam Sabotage

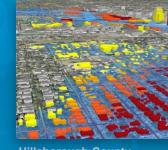
Esri BeLux



ICEYE



#### Storm Surge



Hillsborough County Florida



Monitoring

**Highlands County Board of County Commissioners** Florida

MANAGEMEN

Volcanic Eruption -Mauna Loa



Winrock International Burkina Faso, West Africa

US DHS

Analyzing Wildfire History

#### Wildfire Modeling



Technosylva California



University of Haifa Haifa, Israel

Fire Damage Inspection



**CAL FIRE Tulare County, California** 





### Census, Population and Demographics

#### **Retirement Affordability**



RPM Consulting New York City, New York

Boundary Management

**Extreme Poverty** 

Map Ideation . Mississippi

Administrative Boundary Management



Redistricting (Using 2020 Census)



**City of Wheaton** 

**US Census** Bureau Mid-Atlantic Region, US

nal Districts of the 118<sup>th</sup> of the United States

**Congressional Districts** 

of the 118th Congress

**US Census Bureau US | Puerto Rico** 

Estimated

Household Density

#### (Dot Density) Mapping **Population Growth** 2010-2020 Population Density (Hex Bins) (Using Imagery & Deep Learning) Te Pūkenga Open Polytechnic New Zealand OCPC St. Johns County **UC Irvine Portals UN Population Data** Kenya, East Africa **Geostatistical Portal** National Census Infographics 2.06 % 90.8 US\$/BBL 4,932,776 00000 UNFPA Statistics Lithuania

Population & Ethnicity

**GIS** Division

283

18,9 %

Lithuania

Khatib & Alami Oman

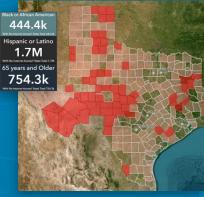
### Social Equity

Park Planning & Social Equity



**Trust for Public** Land | Innovate

### Access to Legal Services & the Digital Divide



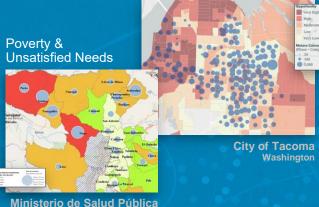
Self-Represented Litigation Network

Tree Cover & Summer Temperatures in Redlined Areas



University Pittsburgh, Pennsylvania

Infrastructure Investments & Equity Index



Quito, Ecuador

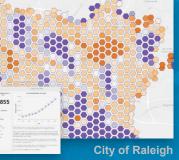


San Antonio, Texas

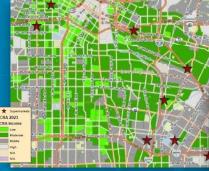
CAMP BULLIS

CalEnviroScreen





#### Low Income & Food Deserts



Retail Profit Management

#### Food Bank Operations



Food Bank of Central & **Eastern North Carolina** 

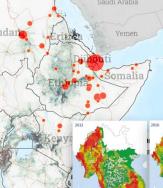
### Health and Human Services

#### **Stroke Patients**

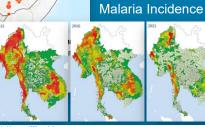


San Bernardino County California

#### Malaria and Population



**UC Irvine** East Africa



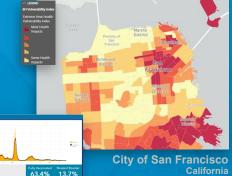
WHO Southeast Asia

COVID-19

Monitoring

7 Day Moving Ave 6.00 New Cases Per D Updated Weekly Wednesday Wednesday

#### Heat and **Vulnerable Population**



Homeless Point-In-Time Survey



BAKERSFIELD City of Bakersfield Homeless Hub 902

Fully Vaccinated 63.4% Source: Web12 Boosted 32.6% Forum Web12 Tatton Poster

Nevada

Washoe County

Homeless Dashboard

6

855 500 260 158 121 90

City of Bakersfield California





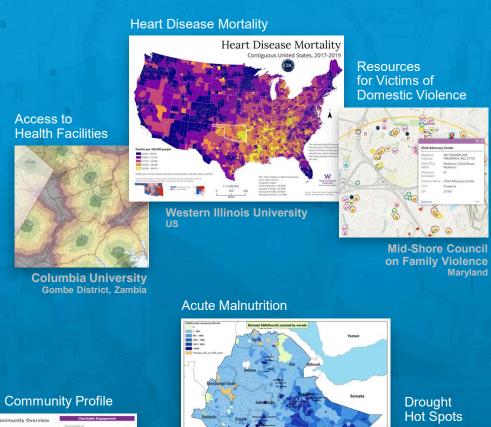
Authority California



Access to

57,573 78,50 2.94 Aurerappe annity filter

> YMCA of the USA Dallas, Texas



WHO

Ethiopia



### **Business and Economic Development**

In-Person Banking Preference



Economic Development Dashboard

Palm Springs, California

Monitoring Customer Inquiries

Tax Exempt Total Value \$573,018,853 248 **逾**76 **Pro-West & Associates** St. Cloud, Minnesota

**Consumer Behavior** 

#### Real Estate Prospecting

Ministry of

Agriculture and Food British Columbia, Canada

Mapping Food & Beverage Processing Facilities



Datastory Charlotte, North Carolina

Forecasting Real Estate Development

CoreLogic US



Support Centers &

Service Area Coverage

**Cisco Systems** Visualizing

Port Disruptions



**International Monetary Fund** 

Shipping Delays

Monitoring



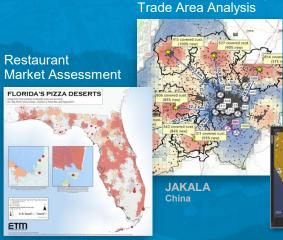
**ESP Logistics** Mediterranean Sea

Market Research

#### Earthquake Damage & Insurance Coverage



California Earthquake Authority Automobile Dealership



ETM Miami, Florida

i un ETM

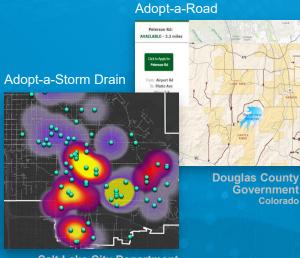


Penske US

Wyndham City Council Melbourne, Australia

### **Public Engagement and Collaboration Portals**

Government Colorado



Salt Lake City Department of Public Utilities Utah

#### Crowdsourcing Flood Damage









New York City, New York



Serviço Geológico do Brasil Rio de Janeiro, Brazil



Mapping Accessible Routes

for People with Disabilities



Município de Itajaí Brazil