



Improving Equity through Smart Community Planning



Dr. Arthi Rao

Center for Quality Growth and Regional
Development (CQGRD)

Georgia Smart Community Webinar Series

April 14th, 2020

ELDERLY

CITIES

MOBILITY
TRANSPORT

ENERGY

HOUSING
GRIDS
ENVIRONMENT

LOGISTICS

ARCHITECTURE

AIR

SMART

NRW

MEGACITIES

PRESERVATION
EMISSIONS

HEALTH

WATER

SYSTEM

PPP

URBAN

INVENTIONS

PRESERVATION

POWER

MODERN

FIREFIGHTERS

LED

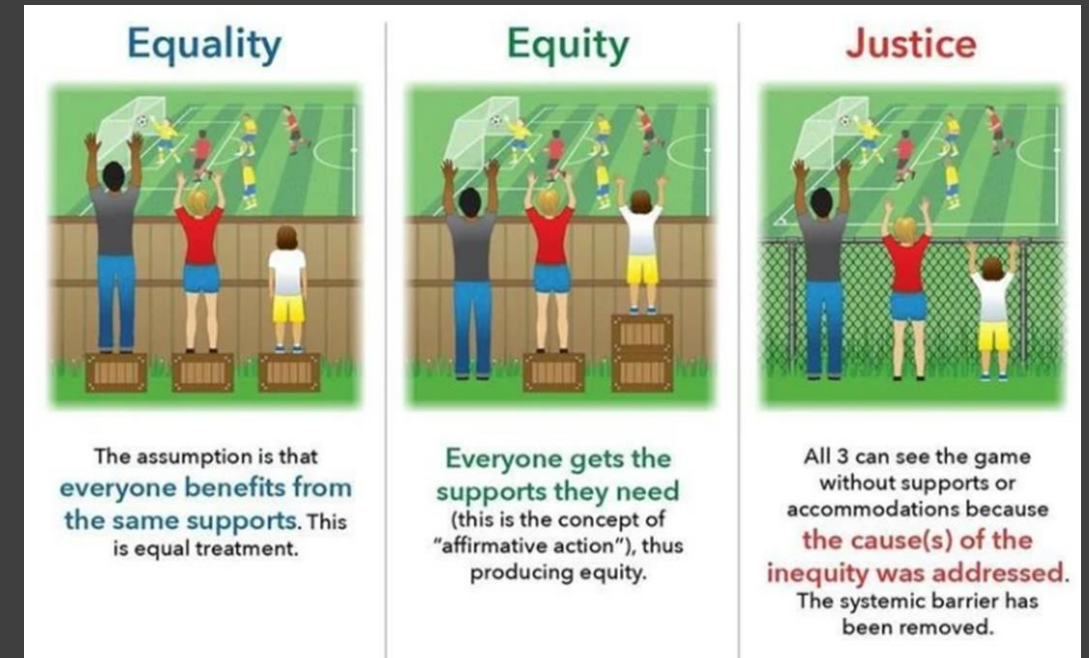


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Planning Ethics

“We shall seek social justice by working to expand choice and opportunity for all persons, recognizing a special responsibility to plan for the needs of the disadvantaged and to promote racial and economic integration. We shall urge the alteration of policies, institutions, and decisions that oppose such needs.”

~American Institute of Certified Planners (AICP) Code of Ethics and Professional Conduct



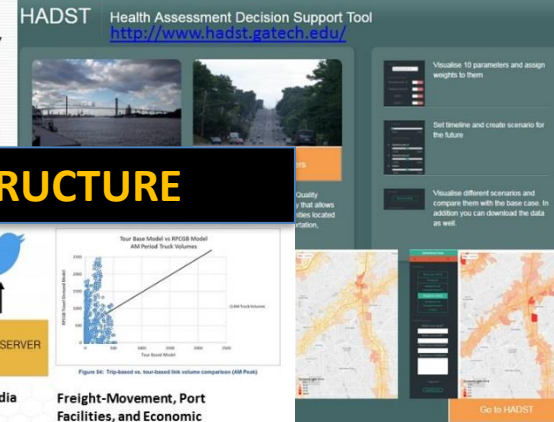
<http://agentsofgood.org/wp-content/uploads/2017/04/Equality-vs-Equity-Illustration3.jpg>

..... Enabling resilient, equitable, and technology-based outcomes to solve complex problems for people, cities and places.

HEALTHY PLACES

Healthy Places—"Healthy Places" refers to buildings, neighborhoods, and metropolitan areas that support the health, well-being, and quality of life of its inhabitants.

Our research combines planning, design, and policy to



TRANSPORTATION & INFRASTRUCTURE

Transportation & Infrastructure

- Investment and design for quality growth that addresses the need for greater equity and choice, mobility,

ation are
vement needs



REGIONS/MEGAREGIONS

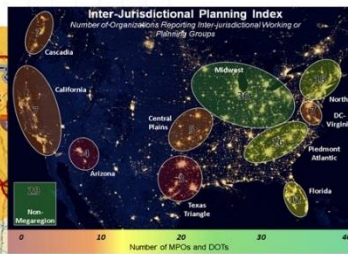
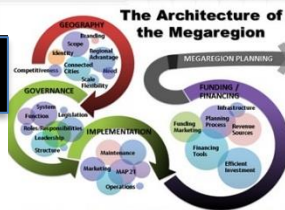
SMART COMMUNITIES

Smart Neighborhoods MBC was one of four projects awarded the 2019 Georgia Tech Georgia Smart Challenge that helps local governments implement Smart City ideas by providing grant funding, research expertise, interns and professional collaboration.

Smart Neighborhoods MBC seeks to foster greater citizen engagement by:

- Bringing a digital interface and broadband access to our most vulnerable neighborhoods
- Providing a platform to share information between residents and government
- Empowering residents to be more engaged in public policy through data driven decisions

MACONBIBB



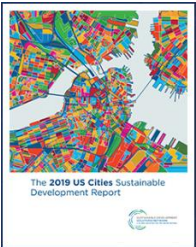
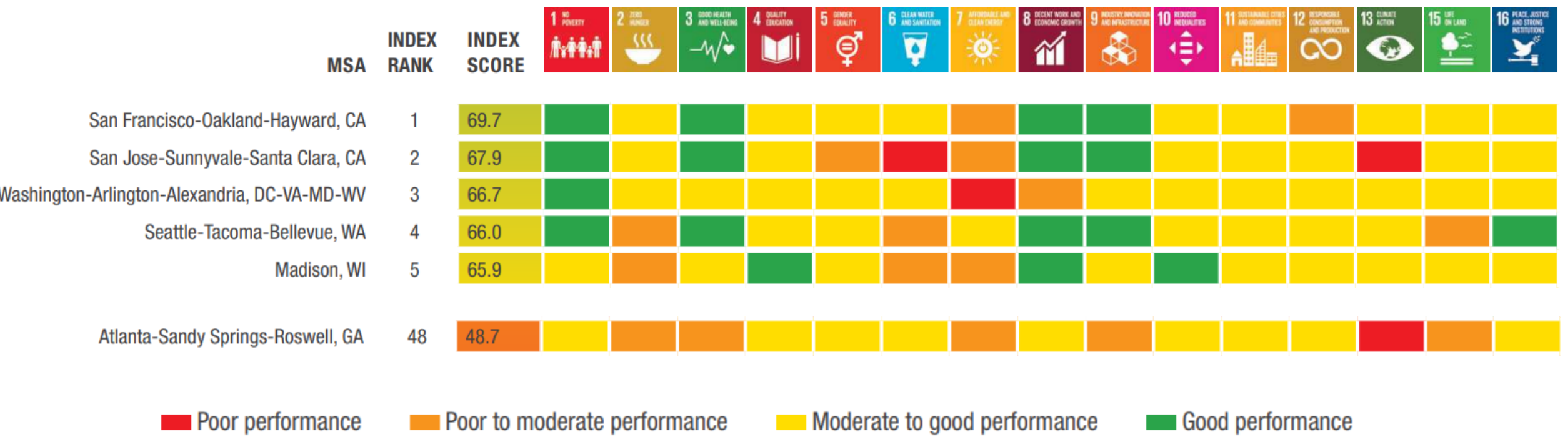
CREATING THE NEXT* 5

CREATING THE NEXT* 5

<https://cqgrd.gatech.edu/>



“Sustainable development is not a choice or ideology. It is not on the left-right political spectrum. It is the very essence of our wellbeing and the kind of cities and nation that we will leave to future generations.” ~ Jeffrey D. Sachs, Director, Sustainable Development Solutions Network



Lynch, A., LoPresti, A., Fox, C.
(2019): The 2019 US Cities
Sustainable Development
Report. New York: Sustainable
Development Solutions
Network (SDSN).





Equity Planning

**Community
development**

Smart Growth

**Environmental
Justice**

**Equitable
Development**

**Big Data & Analytics
Sensors, Sensor
networks and IoT**

Smart Cities

EQUITY?



Equitable development

“an approach to meet the needs of underserved communities and individuals through projects, programs, and/or policies that reduce disparities while fostering places that are healthy, vibrant, and diverse.”

A working definition for equitable development includes the following guiding principles:

- Promote both people and place-based policies and programs in communities
- Adopt strategies to reduce local and regional disparities in income, wealth, and access to opportunity
- Channel investments to generate economic returns and community benefits
- Enable effective civic engagement

Adapted from:

https://www.jchs.harvard.edu/sites/default/files/Harvard_JCHS_Ingredients_Equitable_Development_Planning.pdf

Identifying Potential Vulnerable Populations

“Vulnerable populations are those made vulnerable by financial circumstances, place of residence, health, age, or functional/developmental status; ability to communicate effectively; presence of chronic or terminal illness or disability.”

Agency for Health Care Policy and Research (1998)

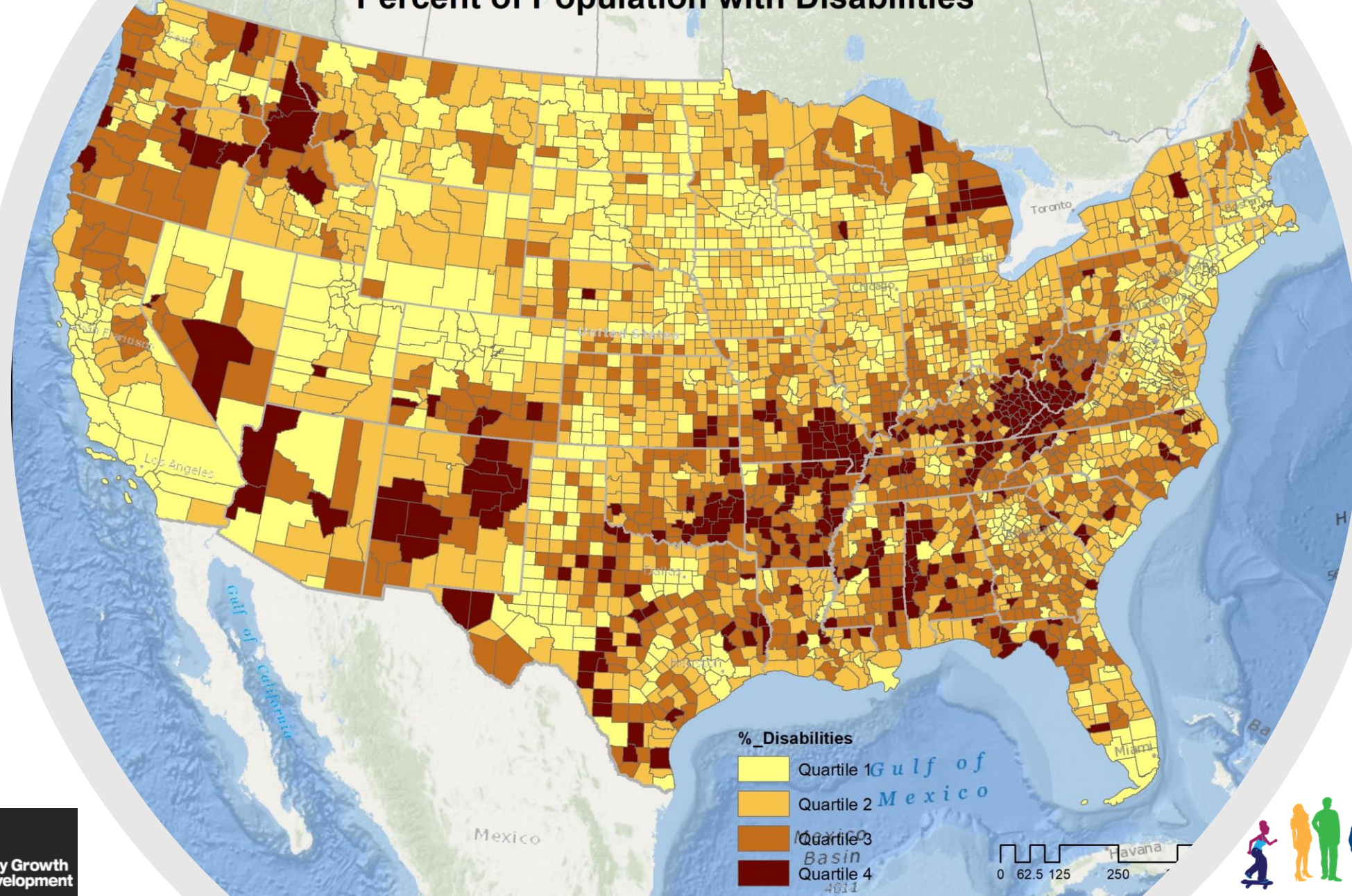
Vulnerability can be created by both:

- **the presence of a risk factor or**
- **the absence of a needed resource**



Vulnerability created by the presence of a risk factor

Percent of Population with Disabilities

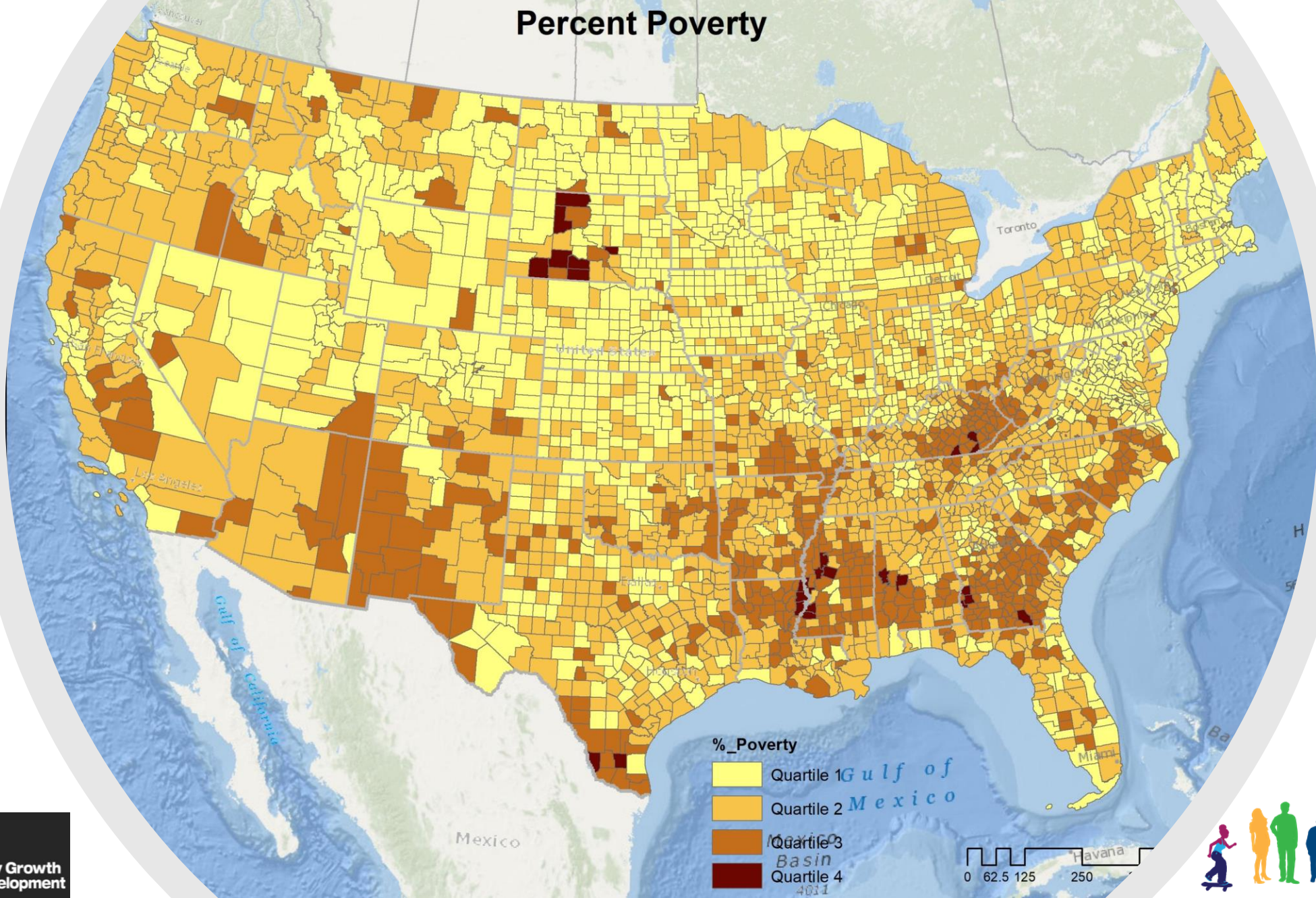


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Vulnerability created by the absence of resources

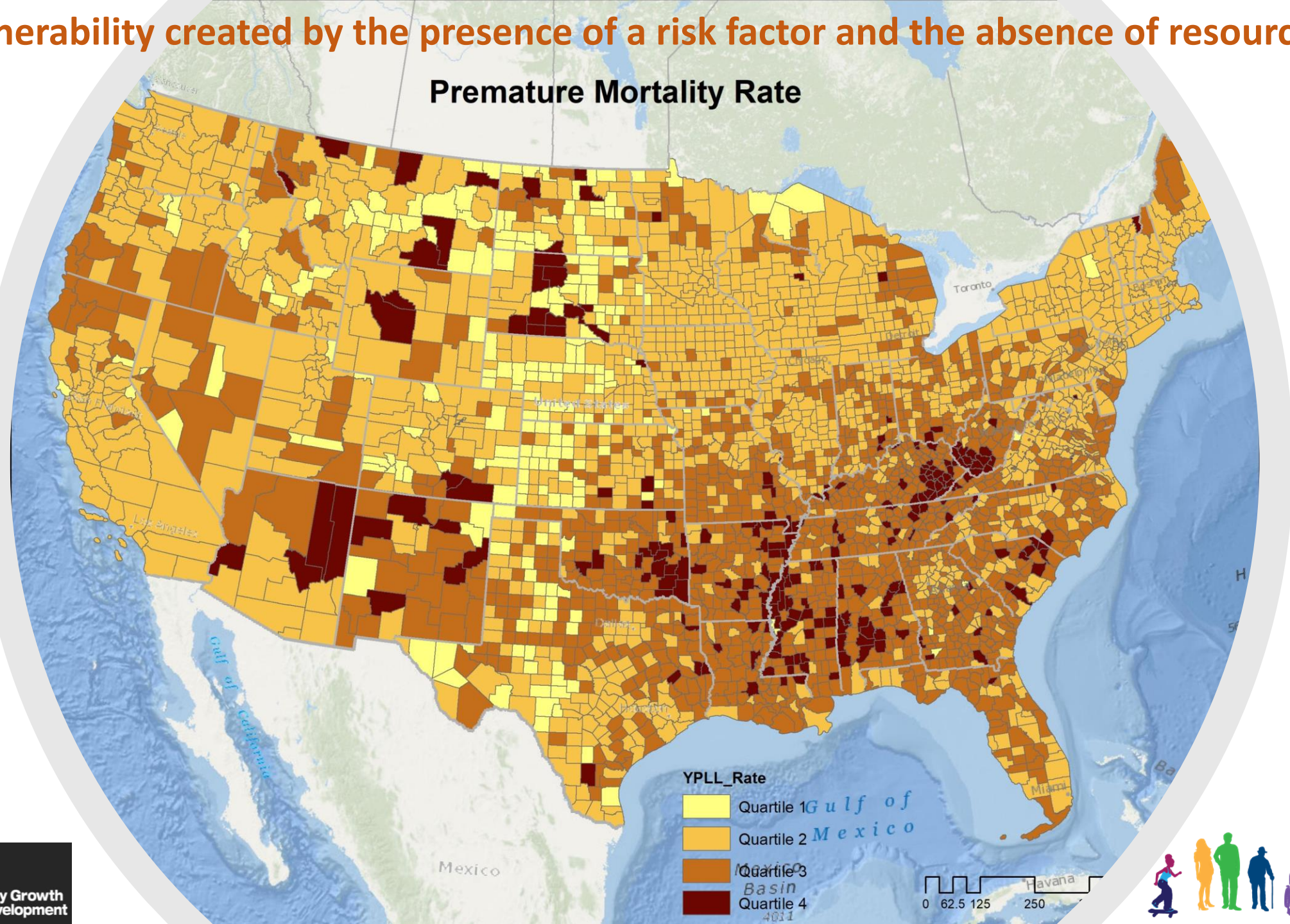
Percent Poverty



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Vulnerability created by the presence of a risk factor and the absence of resources

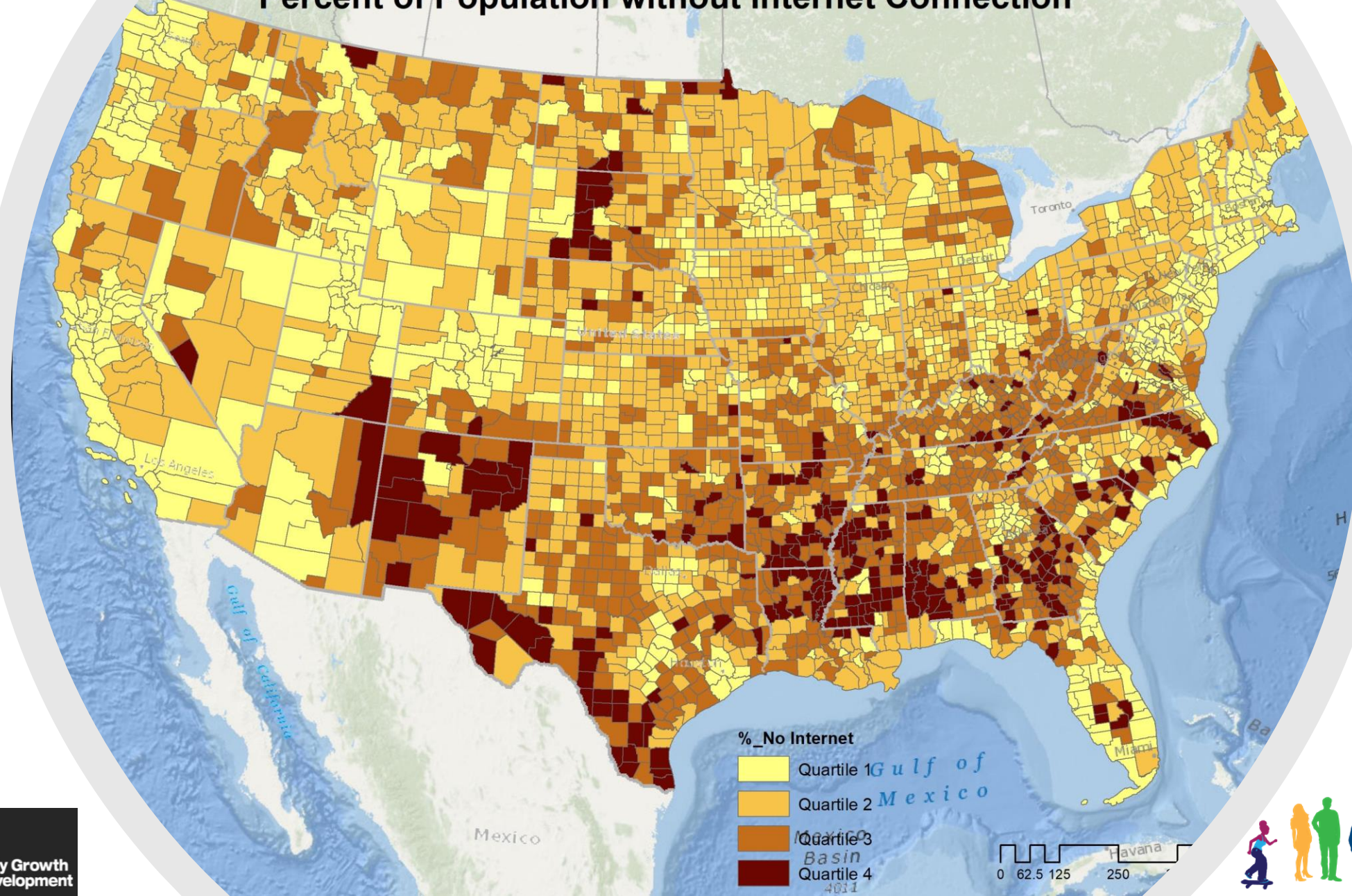


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Vulnerability created by the absence of resources

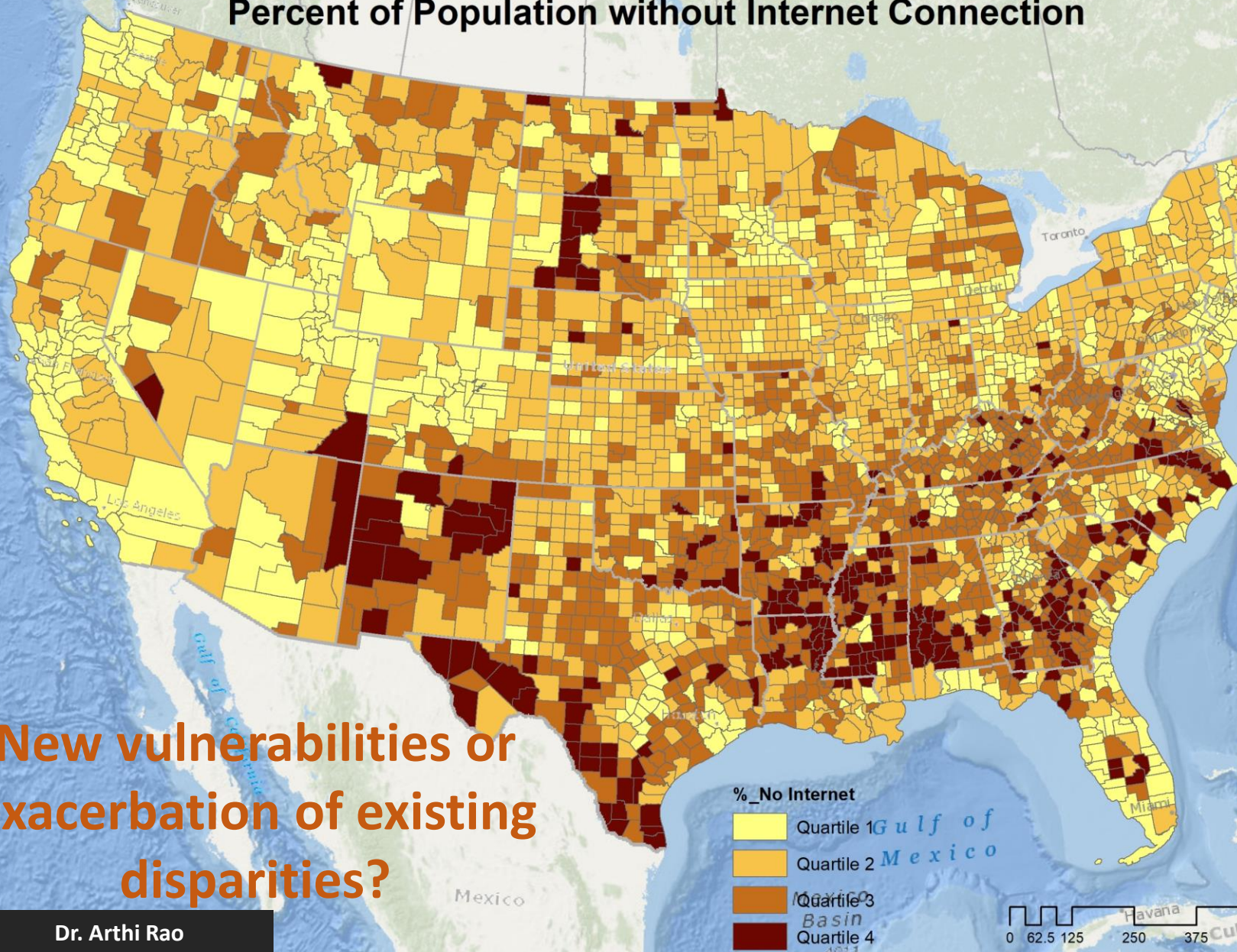
Percent of Population without Internet Connection



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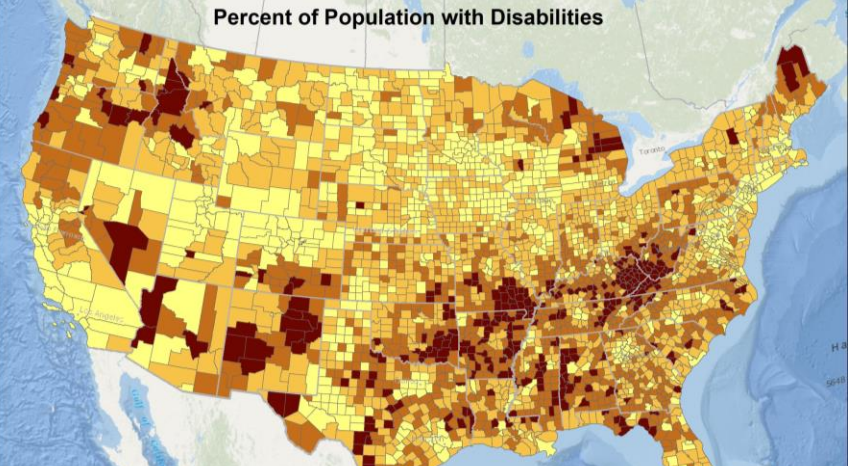
Percent of Population without Internet Connection



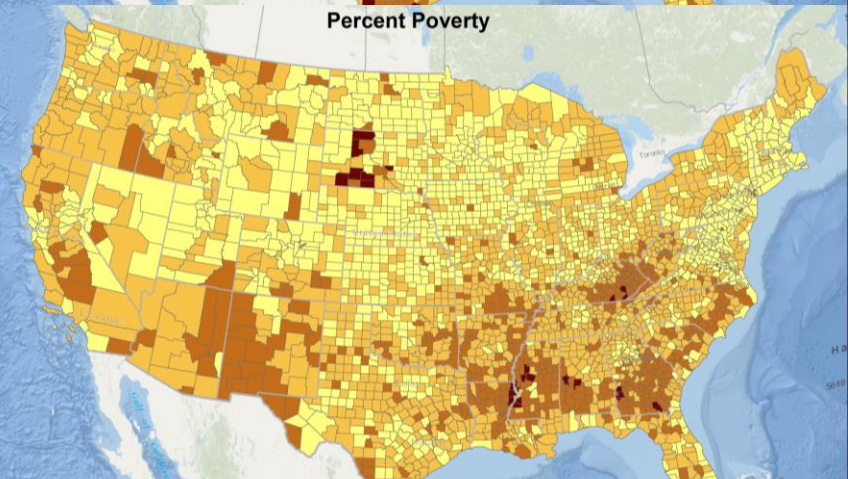
New vulnerabilities or
exacerbation of existing
disparities?

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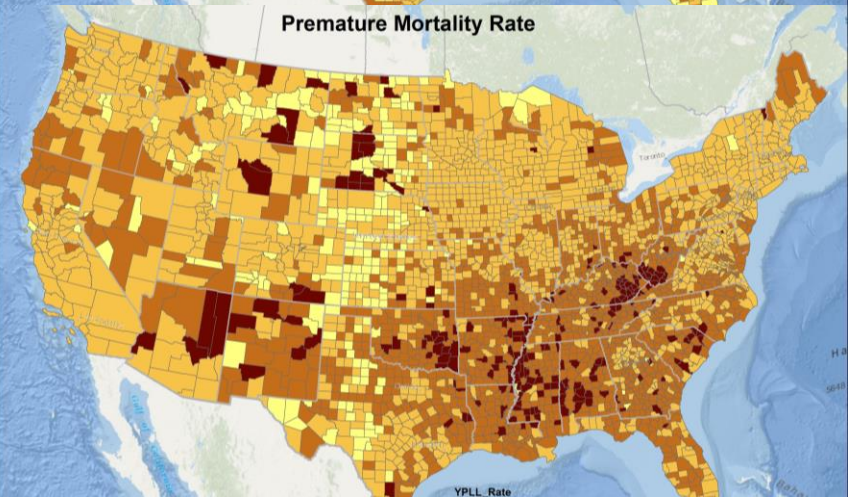
Percent of Population with Disabilities



Percent Poverty



Premature Mortality Rate



Shared Values in Supporting Vulnerable Populations

The ethics code endorsed by the American Public Health Association states:

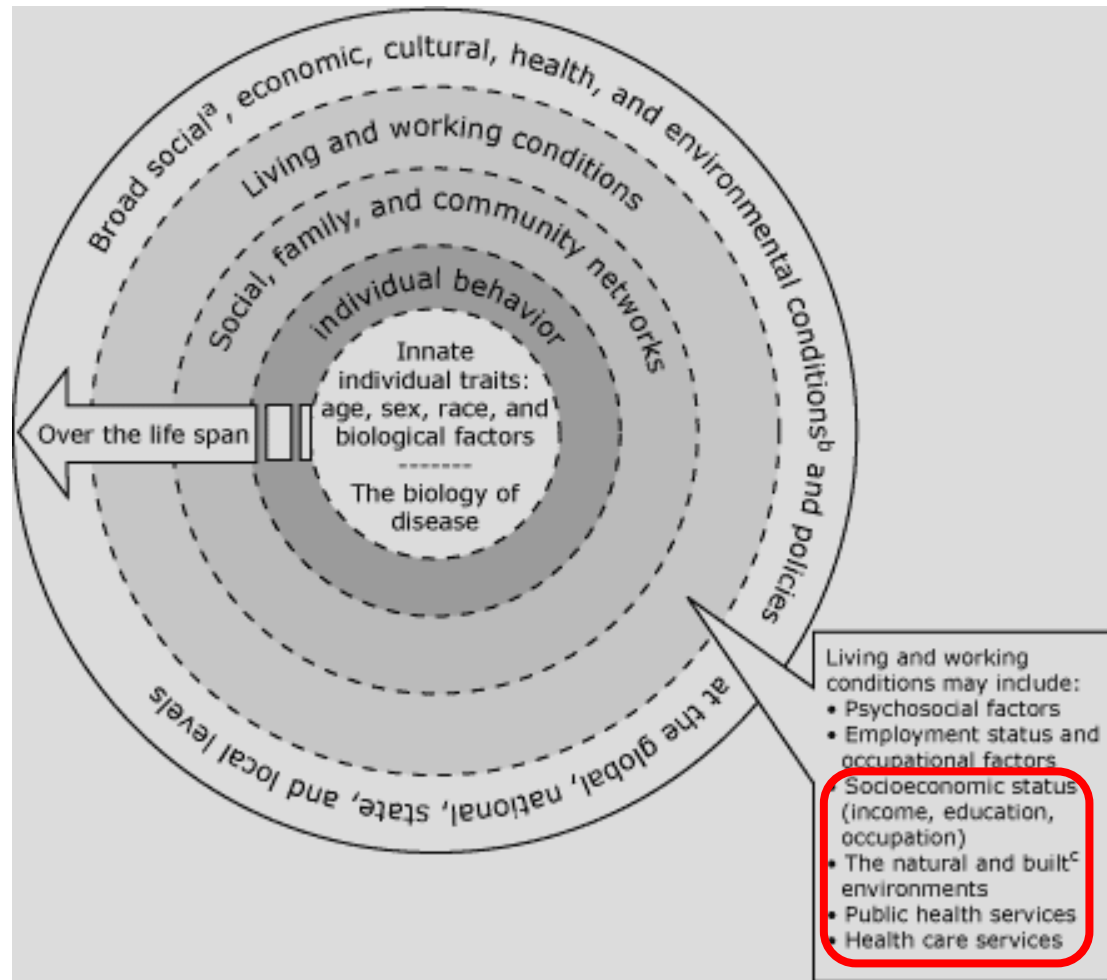
- “Public health should advocate and work for the **empowerment of disenfranchised community members**, to ensure that the basic resources and conditions necessary for health are **accessible to all**.”

The American Institute of Certified Planners code states:

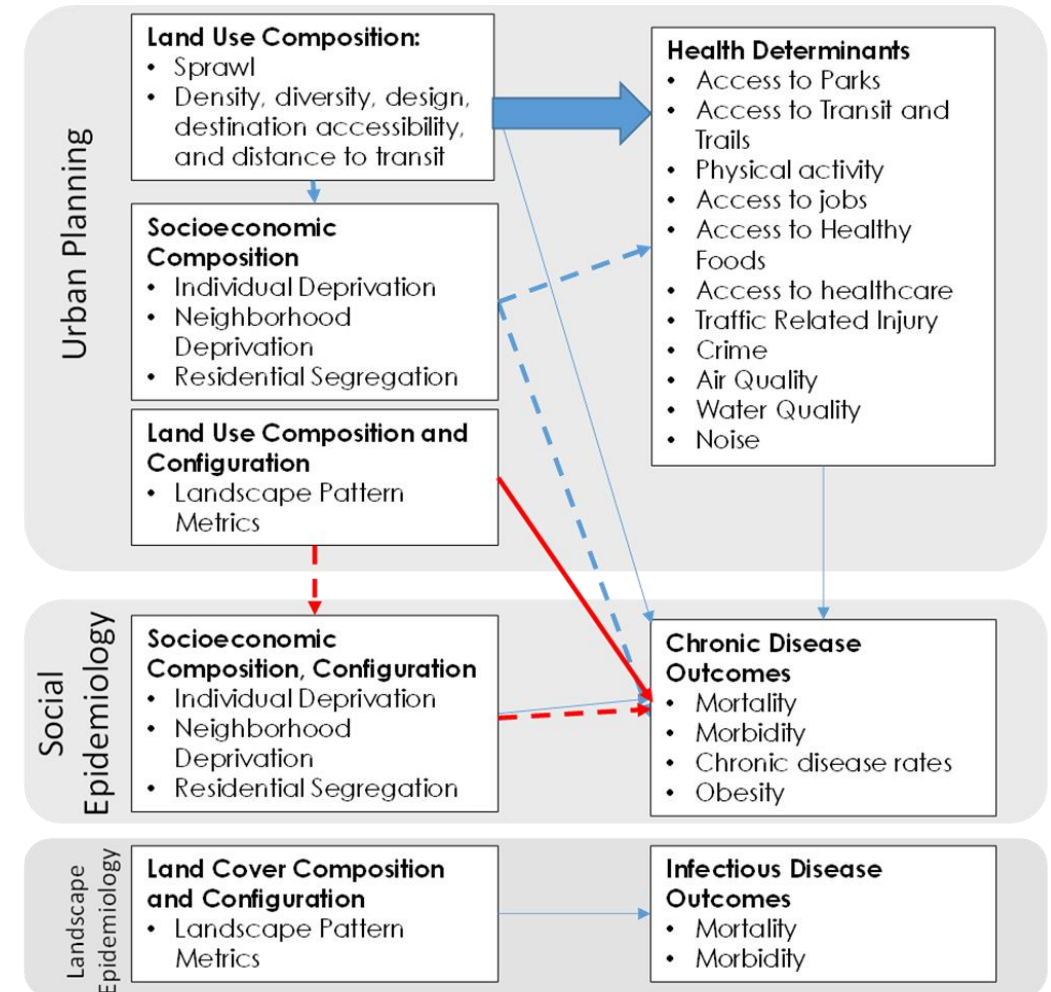
- “We shall seek **social justice** by working to expand choice and opportunity for all persons, recognizing a special responsibility to plan for the **needs of the disadvantaged** and to promote **racial and economic integration**.”



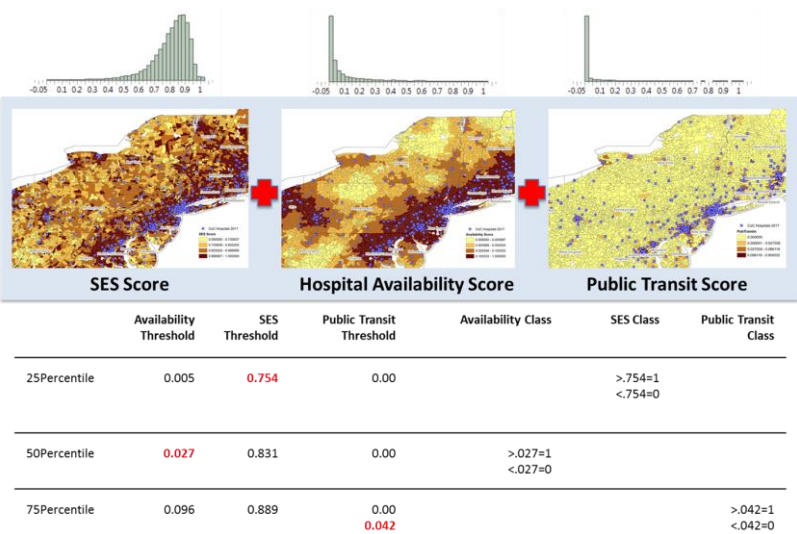
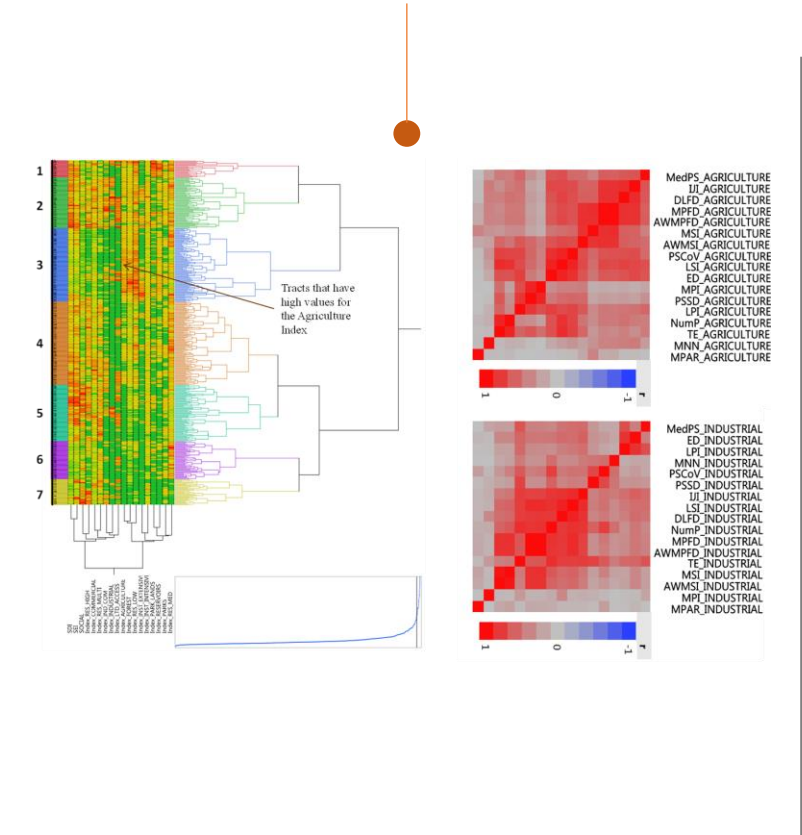
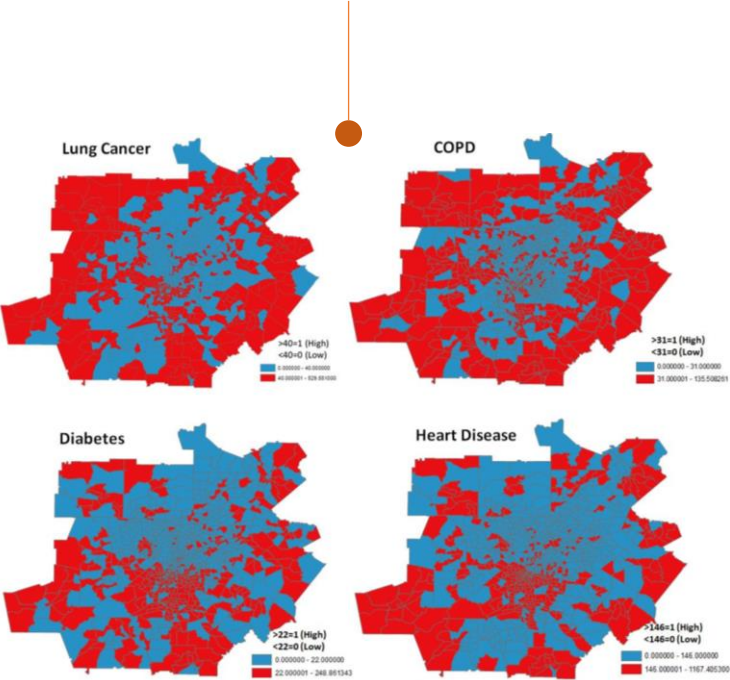
The Social Determinants of Health



Institute of Medicine's model of the multiple determinants of health



Using spatial analytics and machine learning algorithms to better understand the relationships between built environment and health disparities



Building decision-support tools to help reduce health disparities



The Health Assessment Decision Support Tool

INTRODUCTION

INDEXES

Composite Index Score

WEIGHTING SYSTEM

Population Under 15 ☐ Low

Population Above 65 ☐ Low

Asthma ☐ Low

Percent Low-Weight Birth ☐ Low

Percent Poverty ☐ Low

Carbon Monoxide (CO) ☐ Low

Nitrogen Dioxide (NO2) ☐ Low

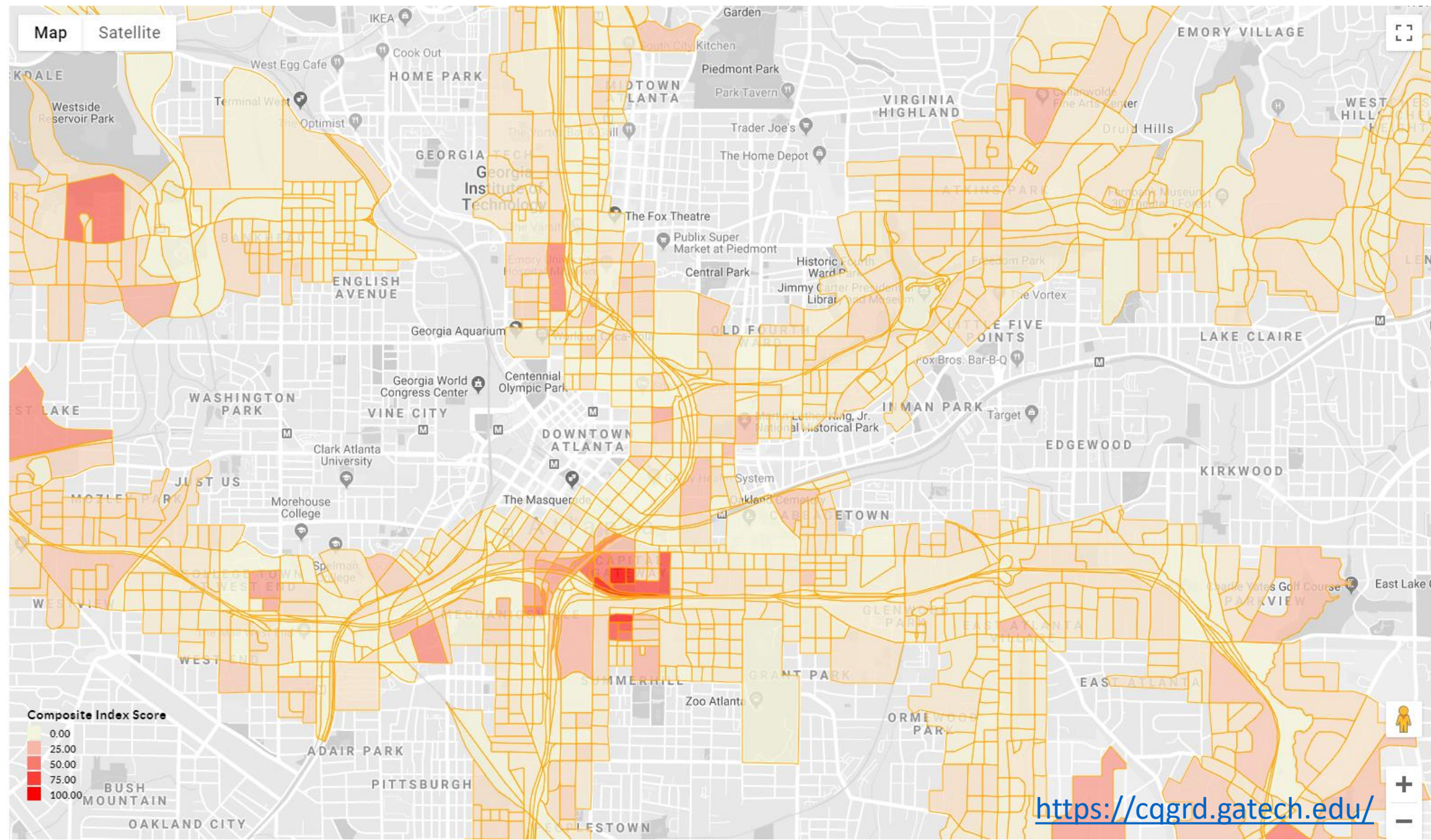
PM 2.5 ☐ Low

PM 10 ☐ Low

Sulfur Dioxide (SO2) ☐ Low

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COVID Community Vulnerability Map

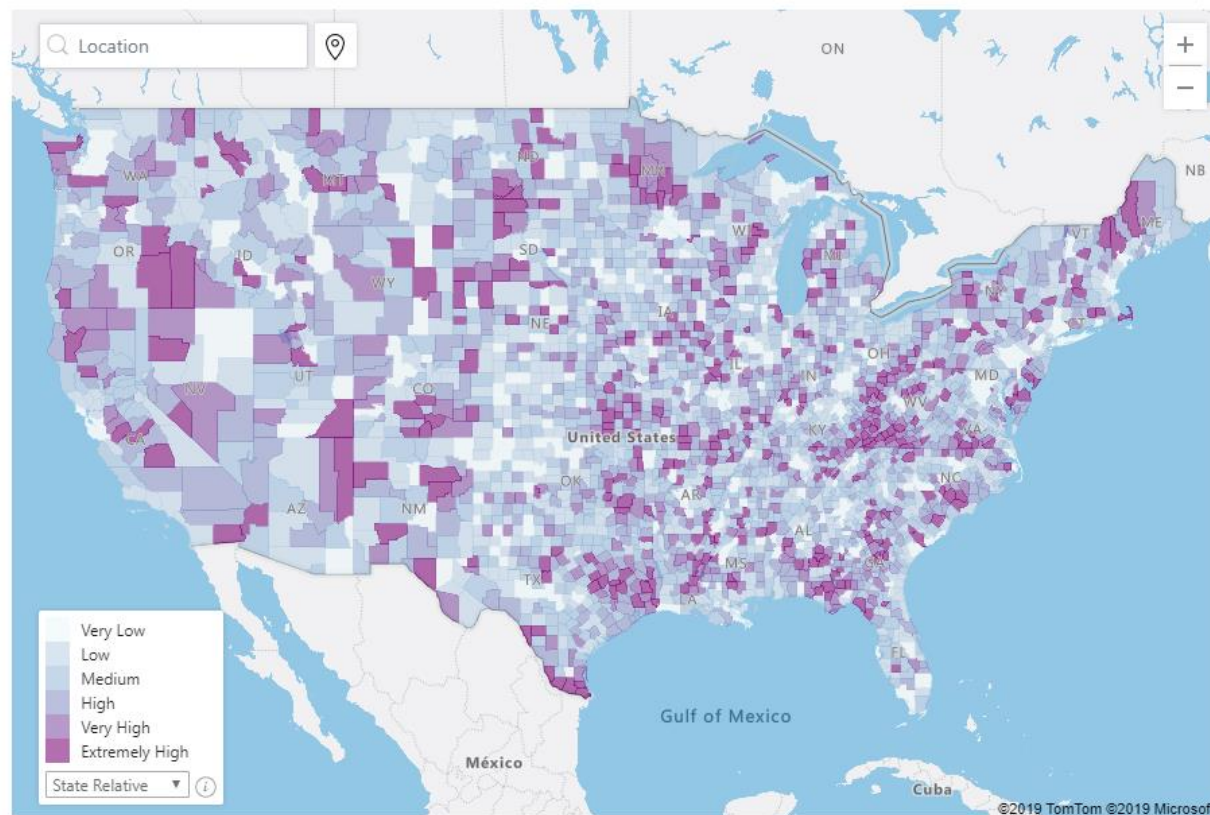
Identification of the populations at risk for severe outcomes once infected to inform resource planning, interventions, outreach and other community initiatives

This map allows you to search and drill down into communities to view populations most vulnerable for severe outcomes if infected with a COVID-like virus and the socioeconomic factors driving that risk.

How to use this map:

Select a geographic location or enter a reference point in the search bar to drill down to census block group level information.

Brought to you in partnership with Azure Maps



Click on an area within the map or enter a reference point in the search bar to get started. Double-click to zoom in.

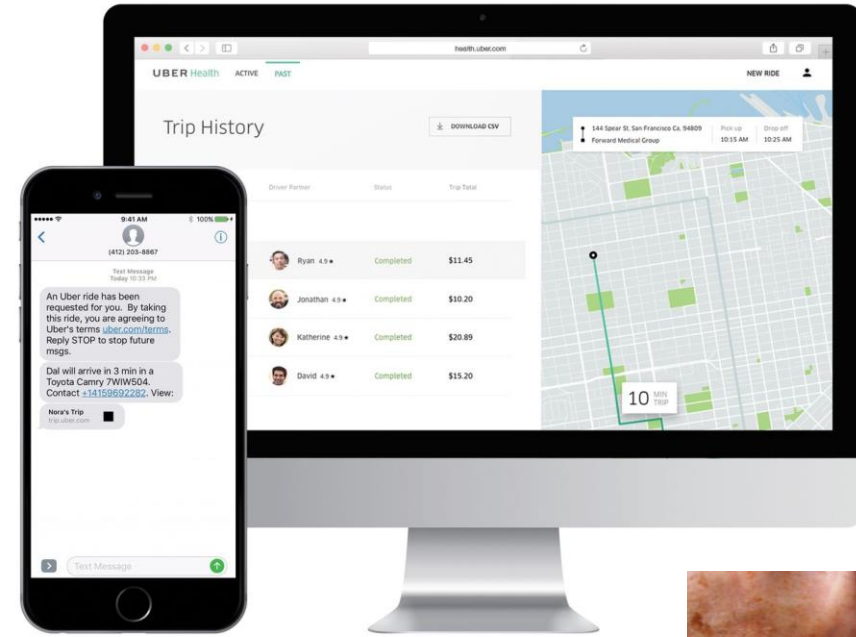
<https://covid19.jvion.com/>

The information provided is the result of the internal analysis of 30 million de-identified patient records from within the Jvion AI CORE. Results were modeled on respiratory viruses with features and symptoms similar to COVID.

Dr. Arthi Rao



UBER Health



<https://www.theverge.com/2018/3/1/17061862/uber-health-non-emergency-medical-transportation-hipaa>



<https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3DYJAJYUuytw8&psig=AOvVaw2T3dwA5onA1FI0IVEOhvWw&ust=1586984886290000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCPCdz8rp6OgCFQAAAAAdAAAAABAD>

Dr. Arthi Rao

<https://floridapolitics.com/archives/293380-bill-to-allow-uber-and-lyft-to-take-medicaid-patients-to-docs-passes-florida-house>



IMPROVE ASTHMA, TOGETHER

The city of Louisville has one of the highest asthma rates in the U.S. AIR Louisville was a community program that used smart connected inhalers to help improve the asthma problem in Louisville.

AIR Louisville enrolled 1,147 citizens of Louisville to improve asthma for everyone.

[See Final Results](#)

<https://www.airlouisville.com/>

Receive a sensor for your inhaler

We have a limited number of sensors available to the community at no cost, thanks to generous funding from the Robert Wood Johnson Foundation, the nation's largest philanthropic organization focused on public health.

Already in AIR Louisville and need a new sensor? Contact help@propellerhealth



Digital Inclusion

- Affordable and reliable access to broadband internet services
- Availability of internet-enabled devices that meet the needs of the user
- Access to resources that enable digital literacy, self-sufficiency, participation and collaboration
- Quality technical support
- Intentional strategies to reduce/eliminate historical, institutional and structural barriers to the access and use of technology

~ National Digital Inclusion Alliance

- **One in three Macon-Bibb County households have no access to broadband internet.**
- **One in five households have no access to a computer or smart device.**

-US Census Bureau analysis covering 2013-2017



How can areas that wish to participate in projects that seek to improve their communities do so without access to the information and services that support them?



Trending Applications



Election Polling Places

Where to Vote

Election Polling Places in Macon-Bibb County. Enter your address, click your location on the map or

[Find Insights!](#)



Find Your Macon-Bibb County Commissioner

Do you know who your Macon-Bibb County Government Commissioner is?

[Find Insights!](#)




My Elected Representative

Find Your Elected Representatives

Find your local, state and federal representatives serving Macon-Bibb County. Enter your address, click find

[Find Insights!](#)



Aerial, Contour, DEM & LiDAR Download Portal

A one stop portal for downloading elevation contour, aerial imagery, DEM and LiDAR information.

[Find Insights!](#)



My Trash Services

The Macon-Bibb County Government Solid Waste Collection Services application provides

[Find Insights!](#)



Proposed Roundabout For Seven Bridges Intersection

Proposed Roundabout For Seven Bridges Intersection

[Find Insights!](#)



PUBLIC WORKS

MAINTAINING & ENHANCING THE COMMUNITY

Mosquito Control Zones

Mosquito spraying zones in Macon-Bibb County.

[Find Insights!](#)



Property Tax Rates for Macon-Bibb and

Millage rates for Macon-Bibb (including proposed 2018 millage increase) and surrounding counties.

[Find Insights!](#)



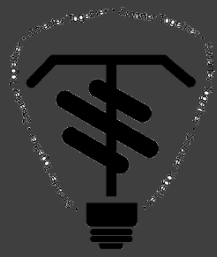
Smart Neighborhoods MBC brings City Hall to our Neighborhoods

Sponsored by **Mayor Robert Reichert** and **County Manager Keith Moffett**, **Smart Neighborhoods MBC** is a Macon-Bibb County (MBC) Government's **Georgia Smart Communities** project that aims to **inform and engage** our community through interactive technology, information solutions and community involvement in new and innovative ways.

This projects' objective is to promote **digital equity** by deploying a Smart Kiosk system in underserved and at-risk areas of Macon-Bibb County. Prospective locations include:

- Senior Citizen Centers
- Recreation Centers
- Libraries
- Public Buildings
- High Traffic Pedestrian Areas





Completed Tasks:

- Statistical analysis and surveys of our communities
- Research of technology options
- Stakeholder engagement

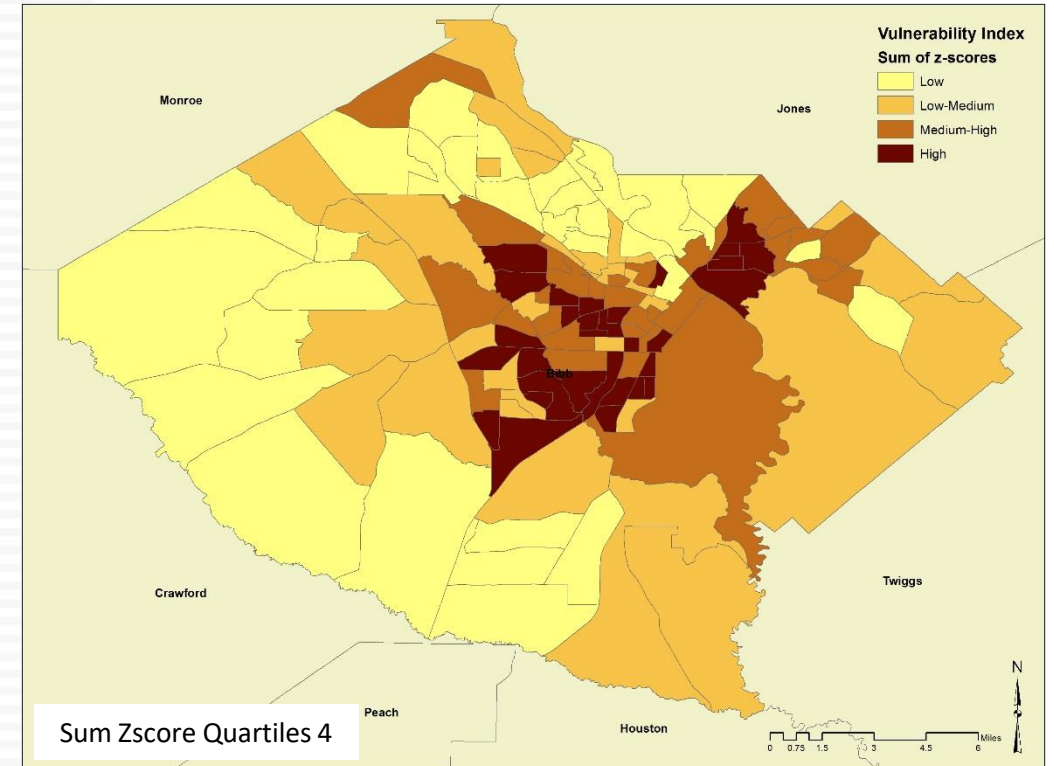
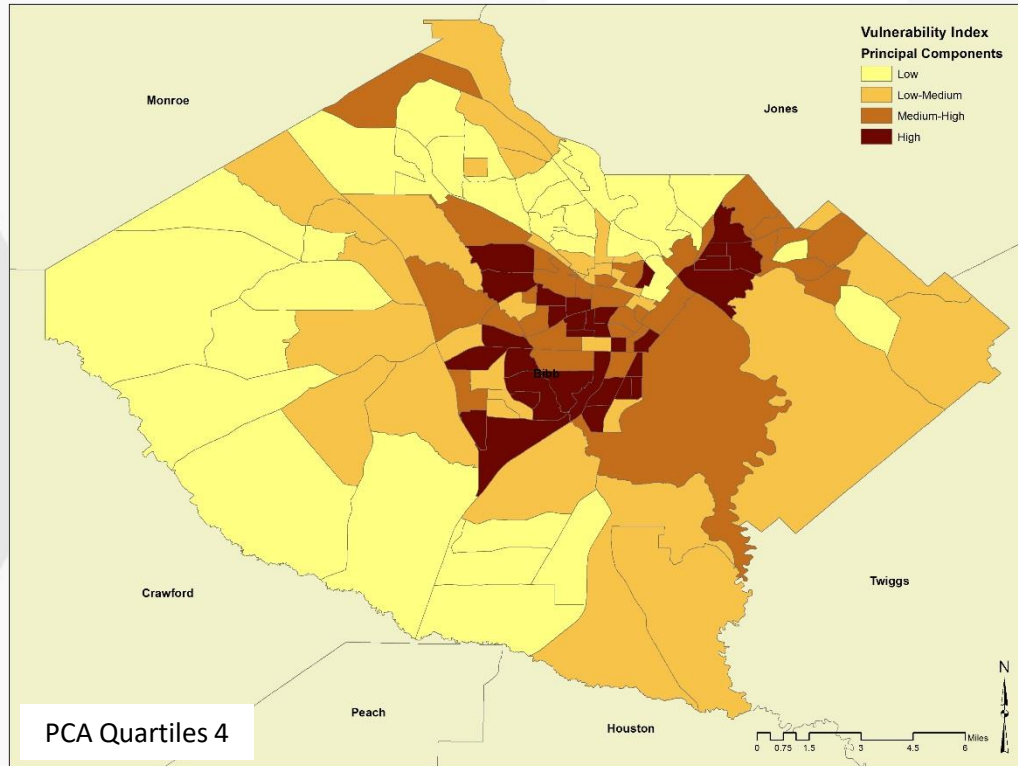
Next Steps:

- Deployment of demonstration kiosks
- Project documentation, research to track evaluation of outcomes and ROI



Statistical analysis and surveys of our communities

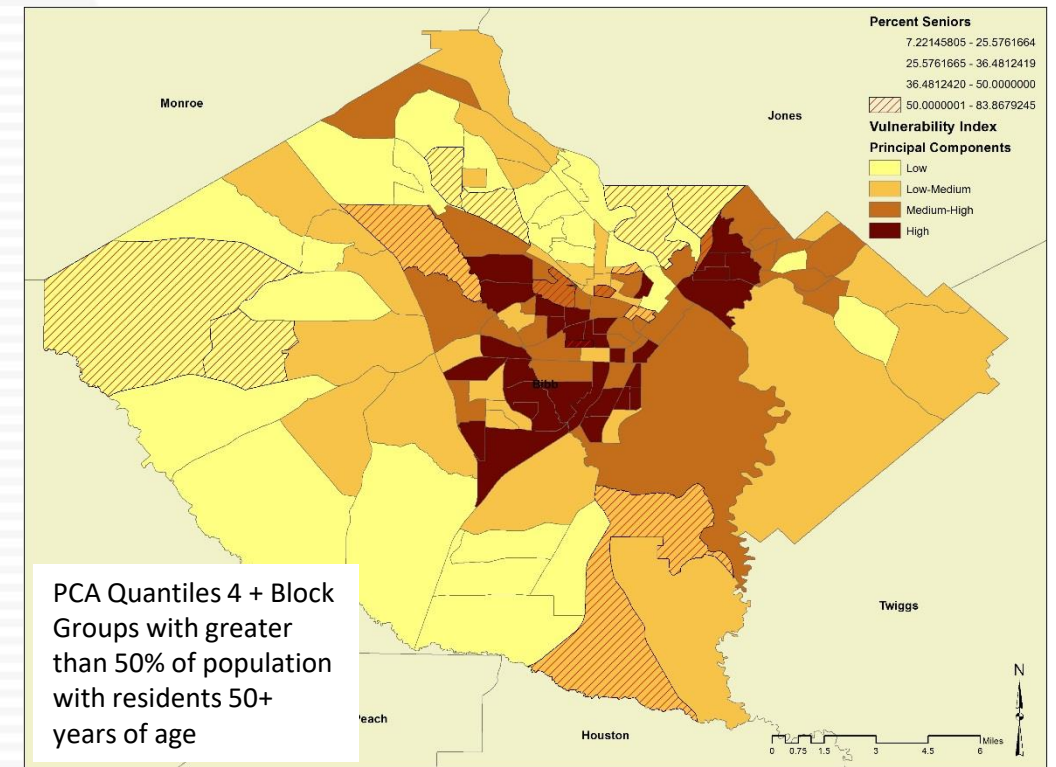
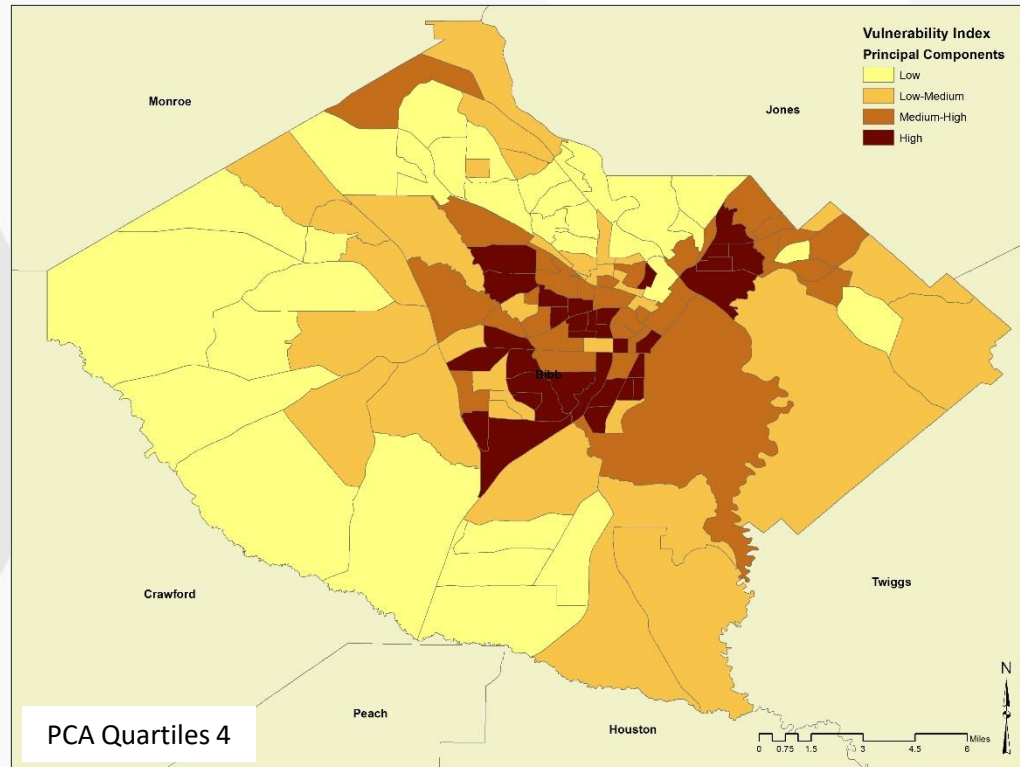
LOCATION INTELLIGENCE- DEVELOPING THE SMART LOCATION INDEX



The first step was to develop a data-driven index to quantitatively assess where our vulnerable communities are and visualize their geographic distribution. We based our index on well-known indicators of vulnerability such as income, education and poverty. We used two statistical methods routinely used in the research literature and compared results (fairly identical). We picked the index using Principal Components Analysis (PCA; based on consultation with MBC IT). The slides above show the index visualized as quartiles to make it comparable.

Statistical analysis and surveys of our communities

LOCATION INTELLIGENCE- DEVELOPING THE SMART LOCATION INDEX

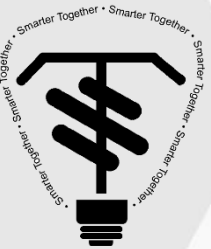


The next step was to take the general index and add layers that might point us to other types of demographic groups that are also vulnerable. Here we show socioeconomic vulnerability overlaid with communities that have a sizeable aging population who are also at risk for social isolation and reduced mobility. We defined these neighborhoods as block groups with 50% of the population with individuals over 50 years of age.

Statistical analysis and surveys of our communities

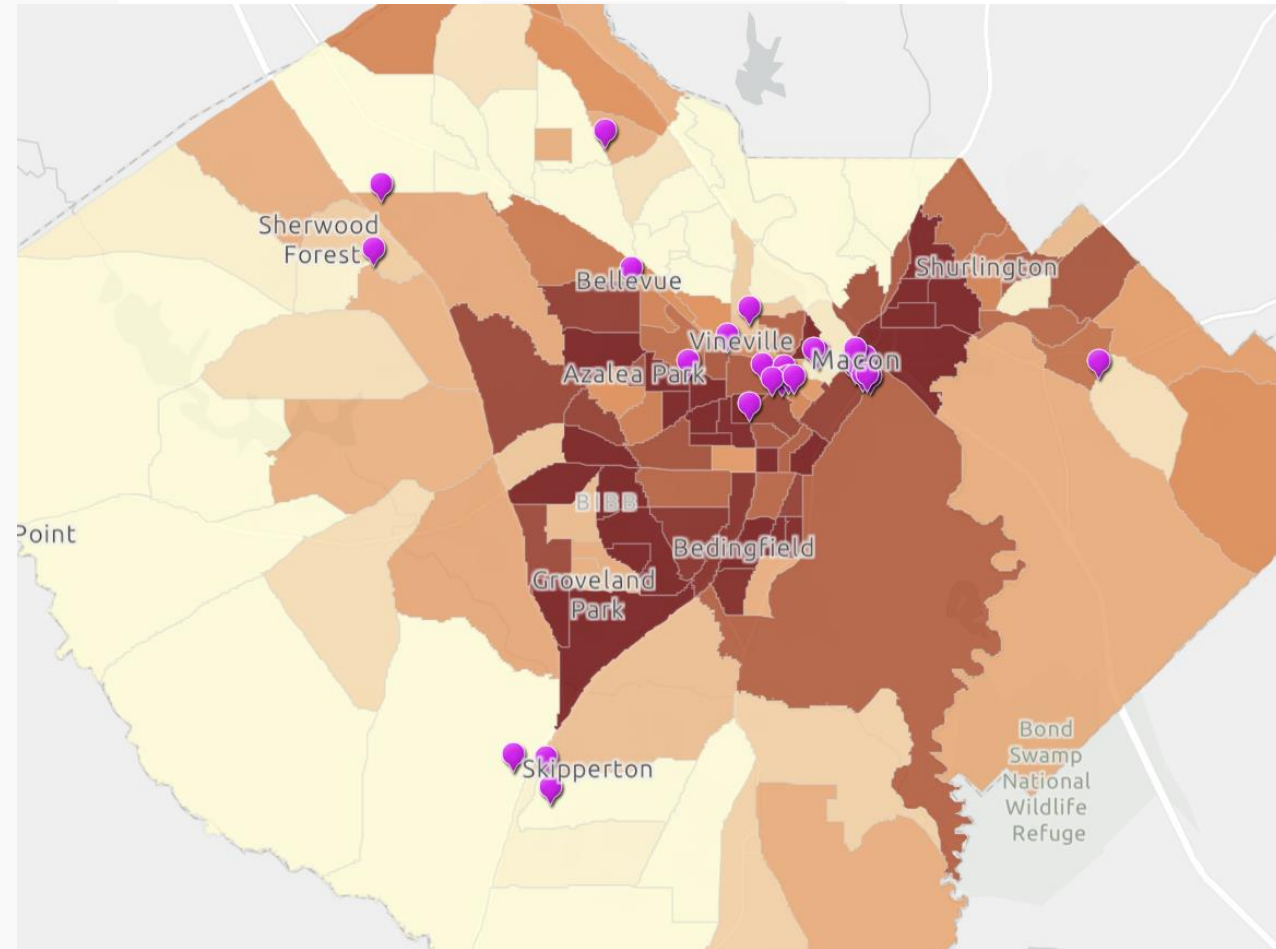
We used the ESRI Geo Form application to design a survey that asks the questions regarding:

- Demographic information
- Key features that would be desirable in a kiosk
- Key information services that would be desirable in a kiosk
- Where respondents would like to see a kiosk installed

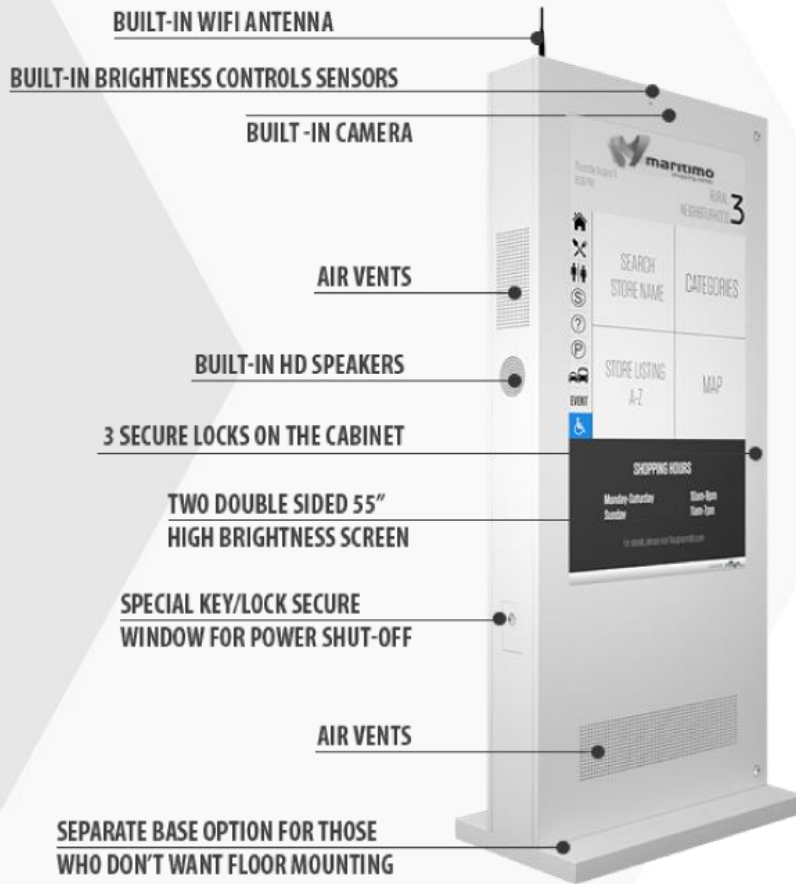


GEORGIA SMART COMMUNITIES CHALLENGE

Statistical analysis and surveys of our communities



Research of Technology Options



All-in-one Type Systems Advantages:

- Quicker ability to deploy systems
- Integrated, supported operating system and features with development teams
- Some companies offer kiosks at little to no cost (covered through advertising revenue), including installation and maintenance

All-in-one Type Systems Disadvantages:

- High cost
- Companies operating on an advertising model may not be interested in the Macon-Bibb market

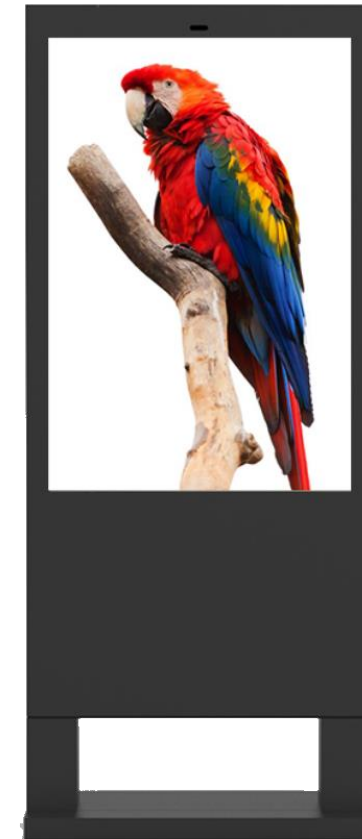
Research of Technology Options

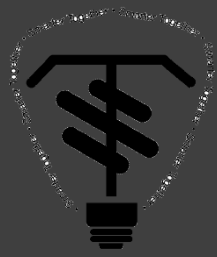
In House Build Systems Advantages:

- Lower cost
- More flexibility to choose operating system and features

In House Build Systems Disadvantages:

- Shifts burden of programming and software development to in house staff
- Limited support
- Longer lead time for deployment





Where to Next?

- Enhance our index using additional sources of data such as the FCC Form 477
- Conclusion of statistical analysis and surveys of our communities
- UI/UX Development
- Hardware Procurement
- Deployment of demonstration kiosks
- Project documentation, research to track evaluation of outcomes and ROI





The Digital Inclusion Strategic Plan was approved ' Council on November 20, 2014.

The City of Austin's 2014 Digital Inclusion Strategy is a dynamic plan that leverages community assets to overcome barriers, ensuring all residents have the skills and devices necessary to engage in our digital society. The strategy began on March 20, 2014 when the City Council (320-056) that calls for the development of a digital inclusion strategy that addresses access and adoption of digital technology. The City has already begun developing this strategic plan and the Department of Technology & Telecommunications (T&T) has established priorities for taking action.

The Digital Inclusion Strategic Plan is developed by the Department of Technology & Telecommunications.

The City of Seattle's Digital Inclusion Strategy is a dynamic plan that leverages community assets to overcome barriers, ensuring all residents have the skills and devices necessary to engage in our digital society. The strategy began on March 20, 2014 when the City Council (320-056) that calls for the development of a digital inclusion strategy that addresses access and adoption of digital technology. The City has already begun developing this strategic plan and the Department of Technology & Telecommunications (T&T) has established priorities for taking action.

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<http://austintexas.gov/page/digital-inclusion-strategic-plan>
<https://www.portlandoregon.gov/oct/article/647688>
https://www.seattle.gov/Documents/Departments/Tech/DigitalEquity_PhaseII.pdf

DIGITAL EQUITY ACTION PLAN April 2016

GOAL	GOAL	OBJECTIVE
GOAL 1 Access: Ensure access to affordable high-speed internet and devices for those in need.		WiFi universally available in public places throughout Multnomah County. Devices available to all in need. Affordable broadband internet access (25 Megabit symmetrical or greater) available at home to those in need. Public and private organizations repurpose devices for use by community.
GOAL 2 Support and training: Provide training and support to ensure that everyone has the skills to use digital technology to enhance their quality of life.		Coordinated plan to deliver basic digital literacy training countywide that builds on the strengths of the partners and serves their target audiences. Each partner has ongoing funding and support mechanisms to provide digital literacy training and support. Digital literacy trainings include information about online safety, privacy and how to understand broadband contract language and terms. Define/develop measures of improved access and inclusion for underserved populations.
GOAL 3 Leadership and capacity building: Empower community partners to bridge the digital divide through funding, coordination, training and staff resources.		Expand the Digital Inclusion Network, a coalition of community partners, to lead efforts of collective action on digital equity. Provide resources to sustain the community partners' network through convening regular meetings and summits for collaboration. Build capacity of organizations to implement community-driven solutions that address the digital equity gap.
GOAL 4 Connecting to the digital economy: Create opportunities for jobs in the digital economy for underserved populations.		Increase numbers of people from underrepresented populations in the technology economy. Underserved communities have a voice/influence in technology design/deployment. Elected officials advocate for digital equity and support community-centered and delivered solutions. Local governments' online engagement tools are accessible to people with disabilities and language barriers. Statewide legislation mandates transparency and clarity in broadband contract language.
GOAL 5 Policy: Build a policy framework that supports digital equity and meaningful internet adoption, leading to better community outcomes.		



Dr. Arthi Rao

Concluding Thoughts.....

- The Digital Divide is not purely a rural phenomenon
- Framing Smart Community Planning using an Equitable Development Lens can help...
 - Bridge the digital divide
 - Mitigate disparities in employment, education, health and other societal domains by enabling access to information
 - Improve civic participation and community empowerment

Thank you!

Dr. Arthi Rao

Center for Quality Growth and Regional Development

Georgia Institute of Technology

arthir@gatech.edu

