

Concurrent Session I

# **Utilizing Geospatial Science and Technology to Advance Colorectal Cancer Prevention and Early Detection: Example Uses and Potential Future Applications**

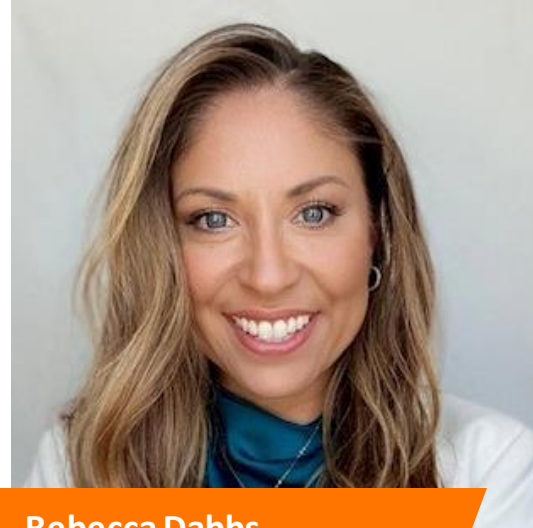


**9:55 AM to 11:10 AM**

# Utilizing Geospatial Science and Technology to Advance Colorectal Cancer Prevention and Early Detection: Example Uses and Potential Future Applications



**Moderator**  
**Robert Smith**  
PhD



**Rebecca Dabbs**  
MPH



**Matthew Boudreau**



**Liora Sahar**  
PhD, GISP



# Using Geospatial Data to Support San Diego's Colorectal Cancer Screening Project

**Rebecca Dabbs, MPH**

Associate Director, Community Partnerships

American Cancer Society

# Using Geospatial Data to Support San Diego's Colorectal Cancer Screening Project



**November 2023**

# Rebecca Dabbs, MPH

## Associate Director, Community Partnerships

My role engages with and supports primary care clinics, federally qualified health centers, community clinics, coalitions and collaboratives to increase cancer screening rates and cancer prevention through:

- Evidence-based interventions
- Quality improvement efforts
- Public awareness campaigns
- Patient and provider education

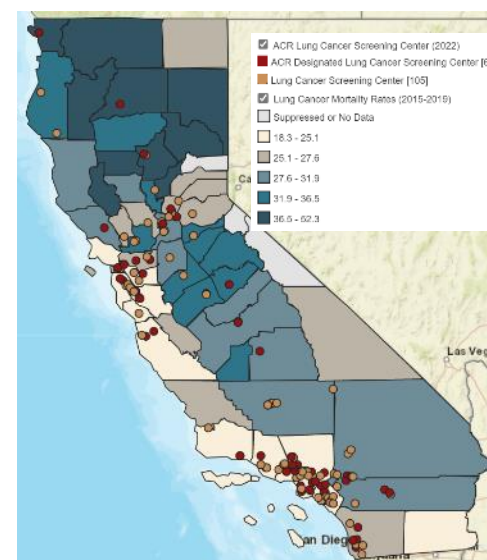
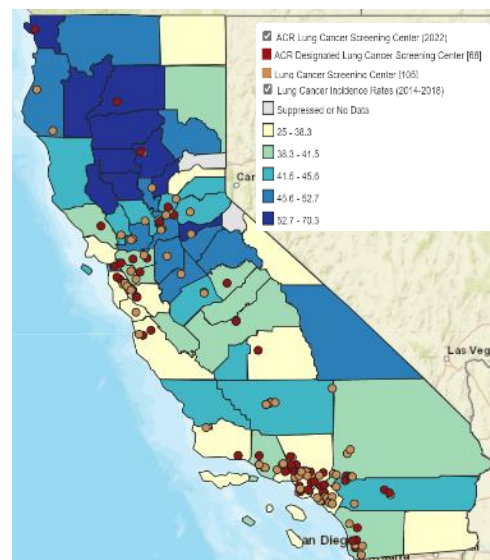
*Data is really the foundation for most of the work we do, as it should be.*

# Previous Efforts Using Geospatial Data & GIS

## 2022 California Lung Cancer Screening Environmental Report

### California County Level Lung Cancer Related Data

### ACR Lung Cancer Screening Centers with California Lung Cancer Incidence Rates (2014-2018) & Mortality Rates (2015-2019)

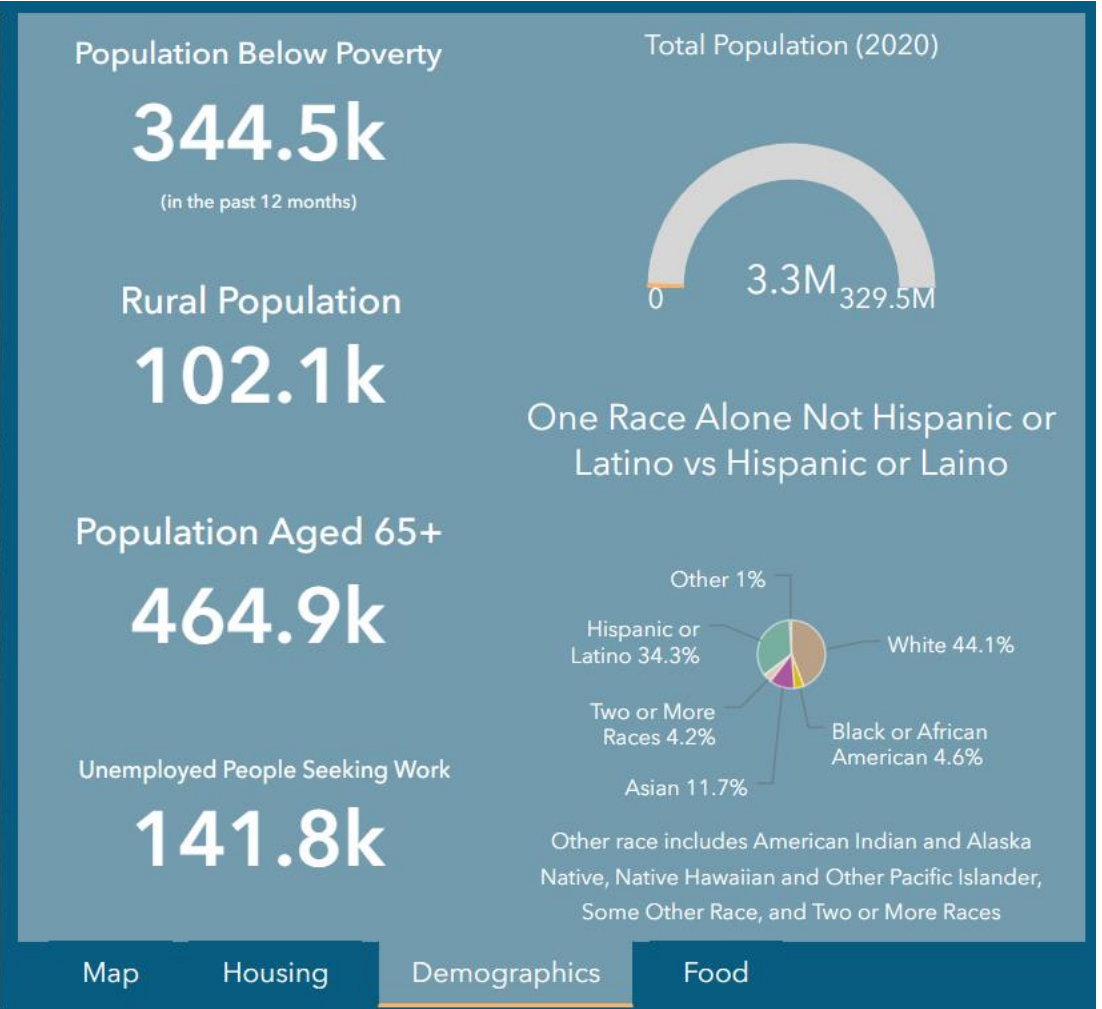
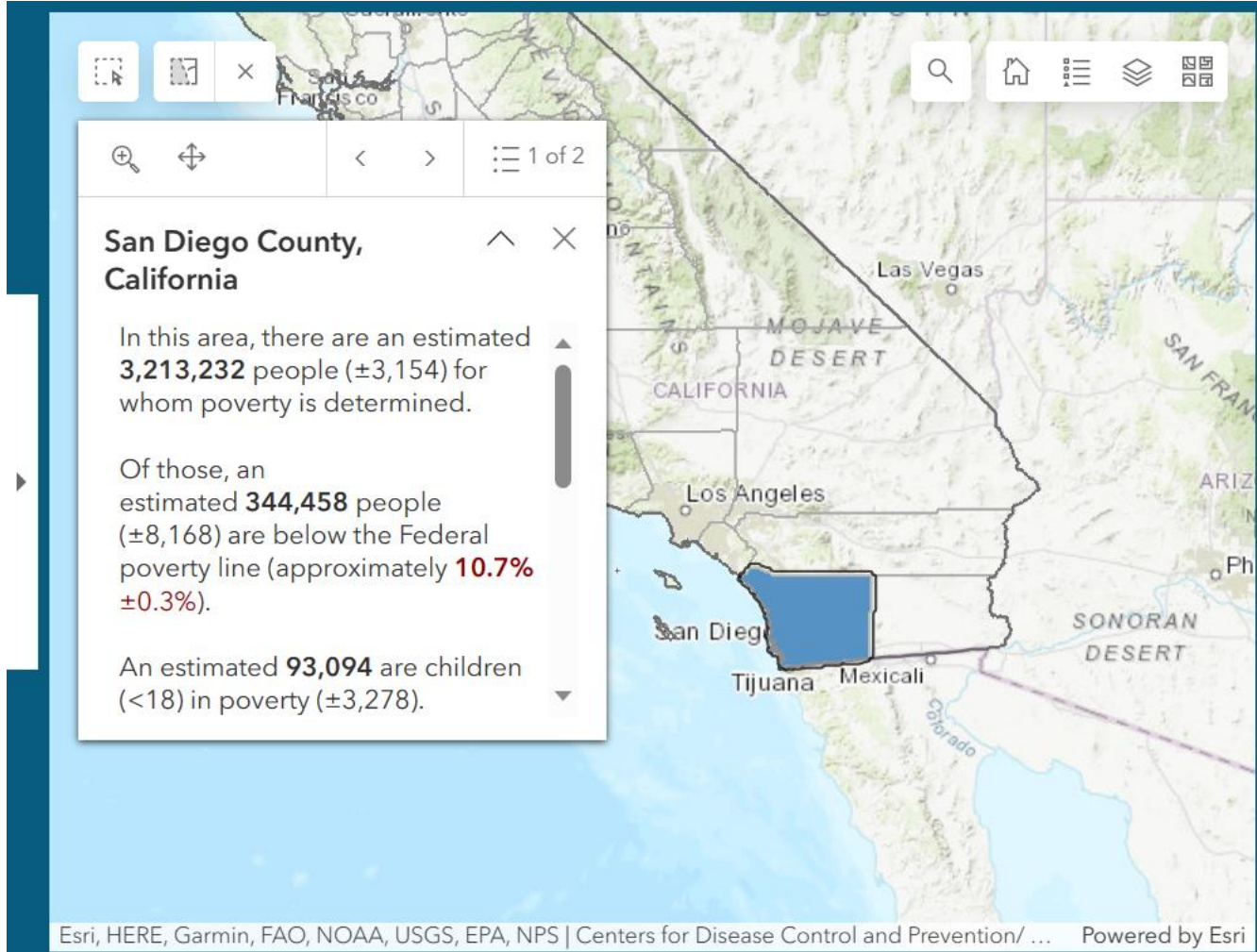


## Project Goals:

Engage primary care and community clinics in year-long colorectal cancer screening improvement cohort to increase screening among underserved adults age 45-75 in the San Diego area, by:

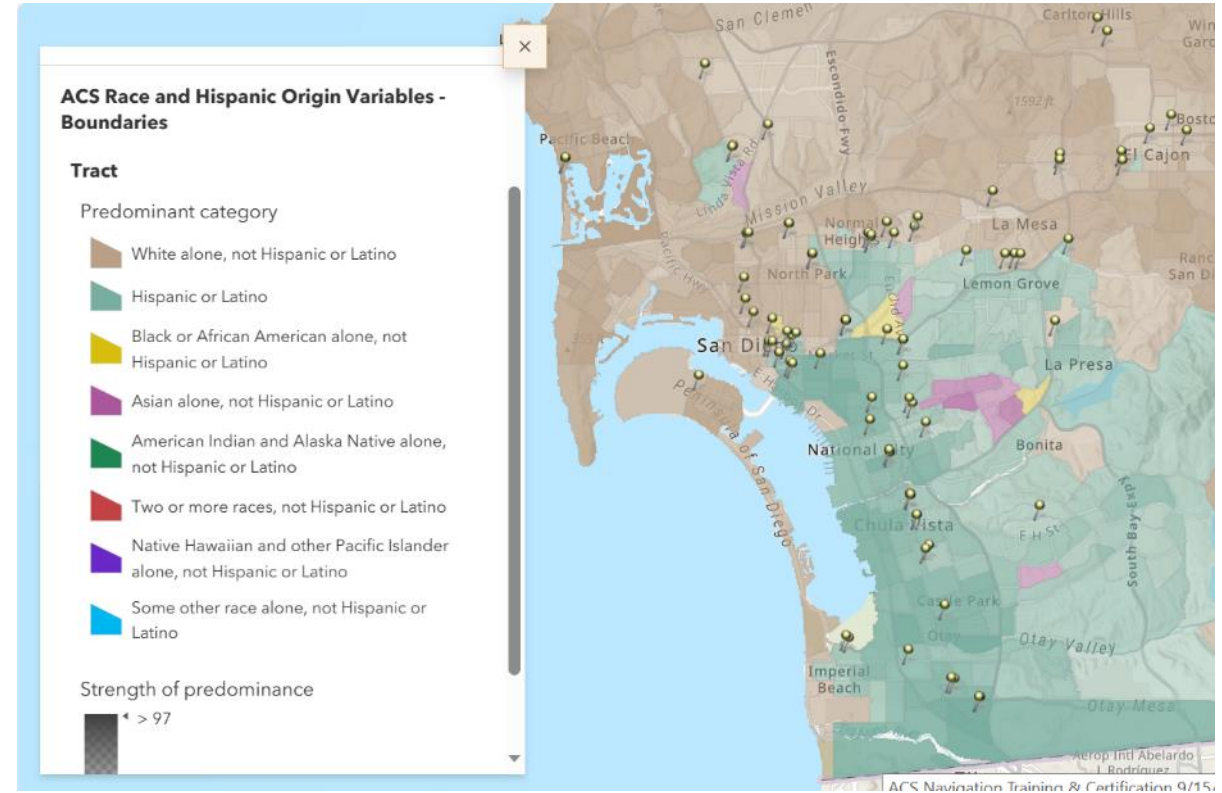
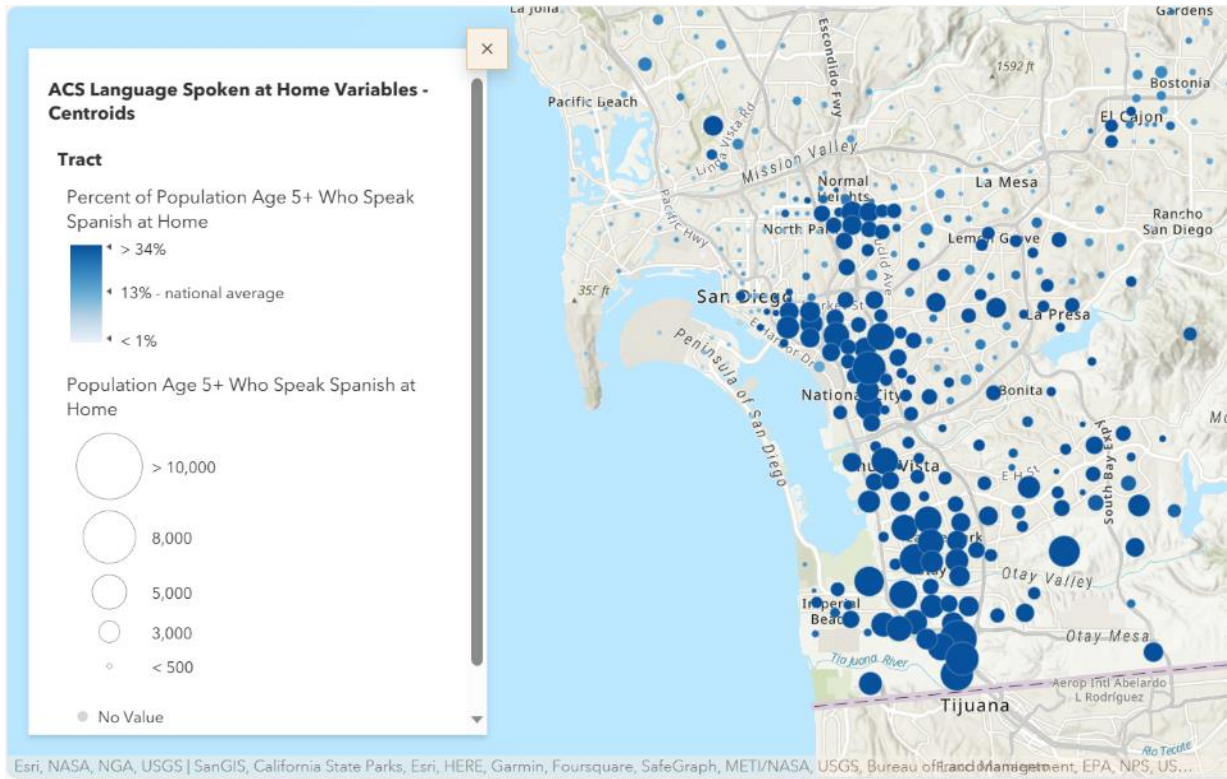
1. Identifying primary care and community clinic (FQHCs) in San Diego and partner with for CRC screening project;
2. Launching colorectal cancer screening initiative at selected primary care and community clinic site;
3. Assisting health system in identifying and addressing system and patient level barriers to colorectal cancer screening and implement evidence-based interventions to increase screening rates; and
4. Increasing public awareness of the value of CRC screening among eligible population.

# San Diego County Demographics

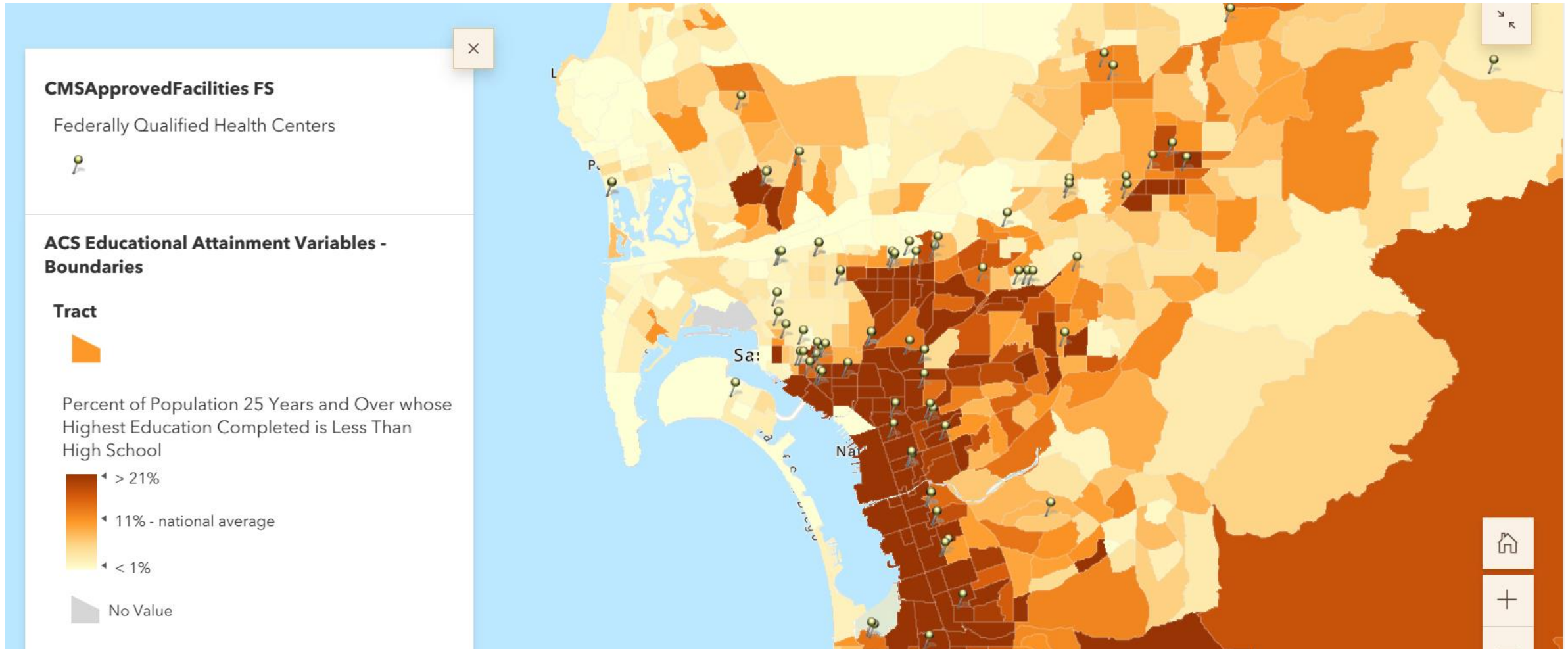




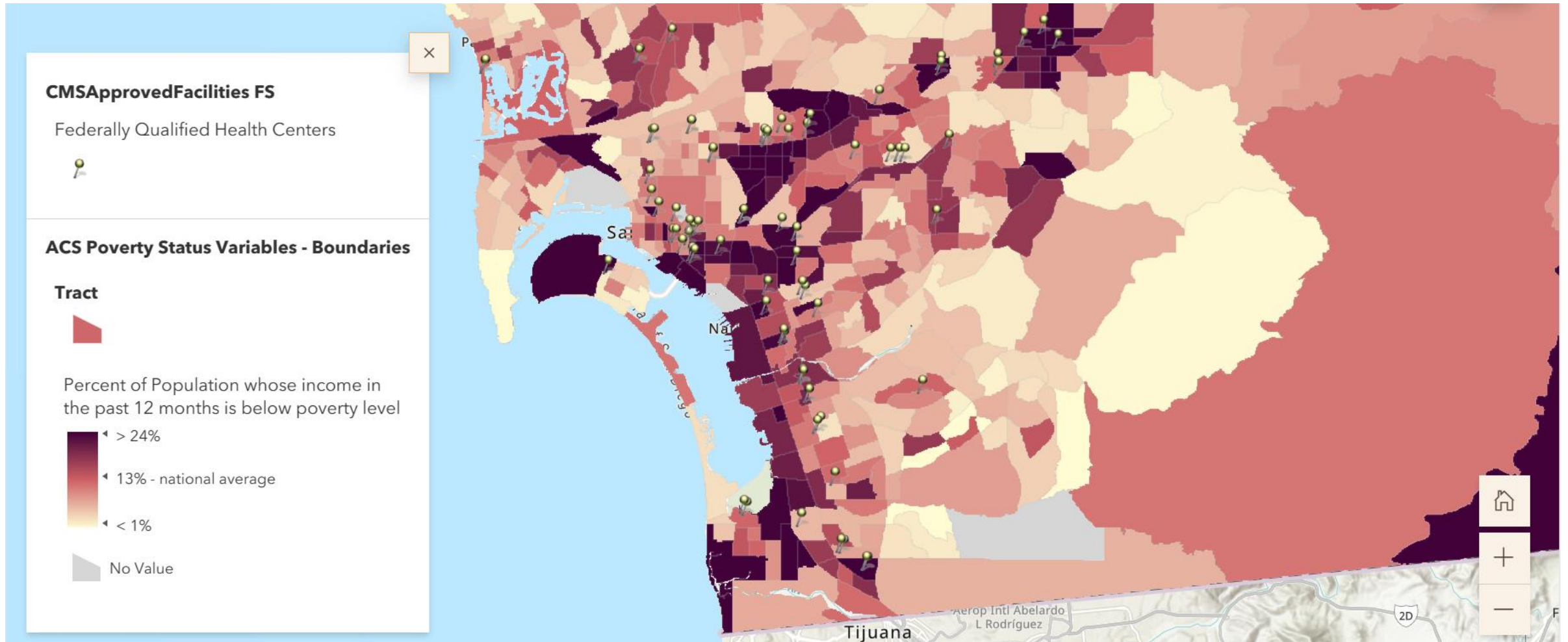
# Race and Language Variables



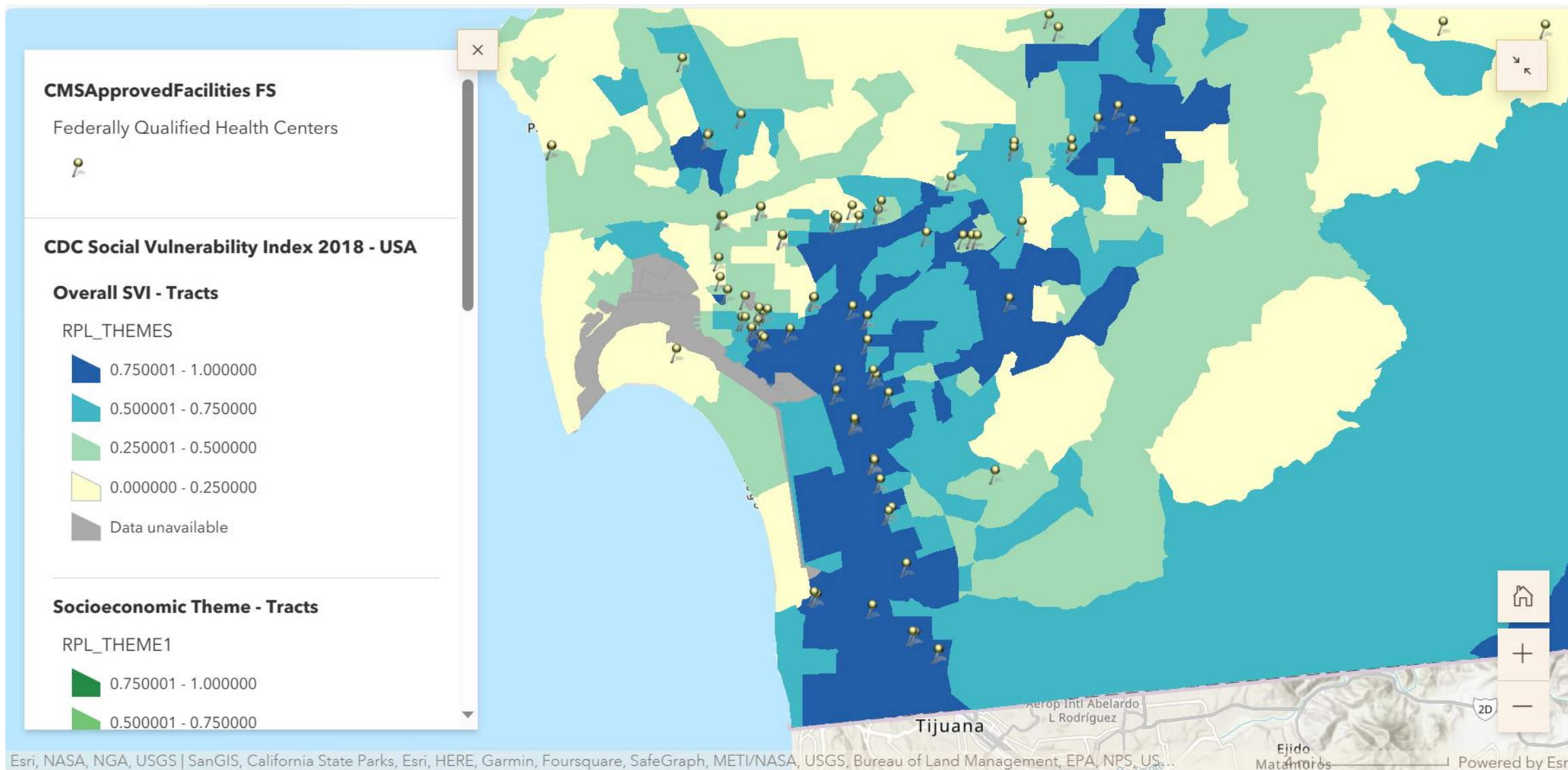
# Education Attainment Variables



# Poverty Status Variables



# Social Vulnerability



# Application of Data

Our efforts are more likely to succeed when we recognize and consider the diversity of the community we are trying to reach. The geospatial data will help to:

- Identify patient population & primary care clinic in areas with highest need.
- Use language that is accessible and meaningful to the target population.
- Tailor our intervention and communications efforts.
- Identify structural barriers that can be addressed to best serve different populations.
- Support storytelling to increase fundraising efforts.

*“The data maps that have been provided by the GIS Data Science team have been crucial to our project because they clearly and effectively highlight the need for our work. The CEO’s that we work with are extremely data driven and having these maps as a resource to share as we are having conversations has strengthened our pitch because it allows people to get a very clear visual of the story we are telling.”*

Chelsy Clark, ACS Corporate Relations Director

# Thank You



# Thank You

[nccrt.org](http://nccrt.org) @NCCRTnews #80inEveryCommunity

# Employing Data Mapping to Inform Targeting of Colorectal Cancer Prevention Efforts in Rhode Island

**Matthew Boudreau**

Program Manager, Colorectal Cancer Prevention Program  
Rhode Island Department of Health



# Employing Data Mapping to Inform Targeting of Colorectal Cancer Prevention Efforts in Rhode Island

Matthew Boudreau

Rhode Island Department of Health (RIDOH)

Colorectal Cancer Control Program





# Rhode Island

State in: [United States](#)

**1,095,610**

Population

1,033.9 square miles

1,059.7 people per square mile

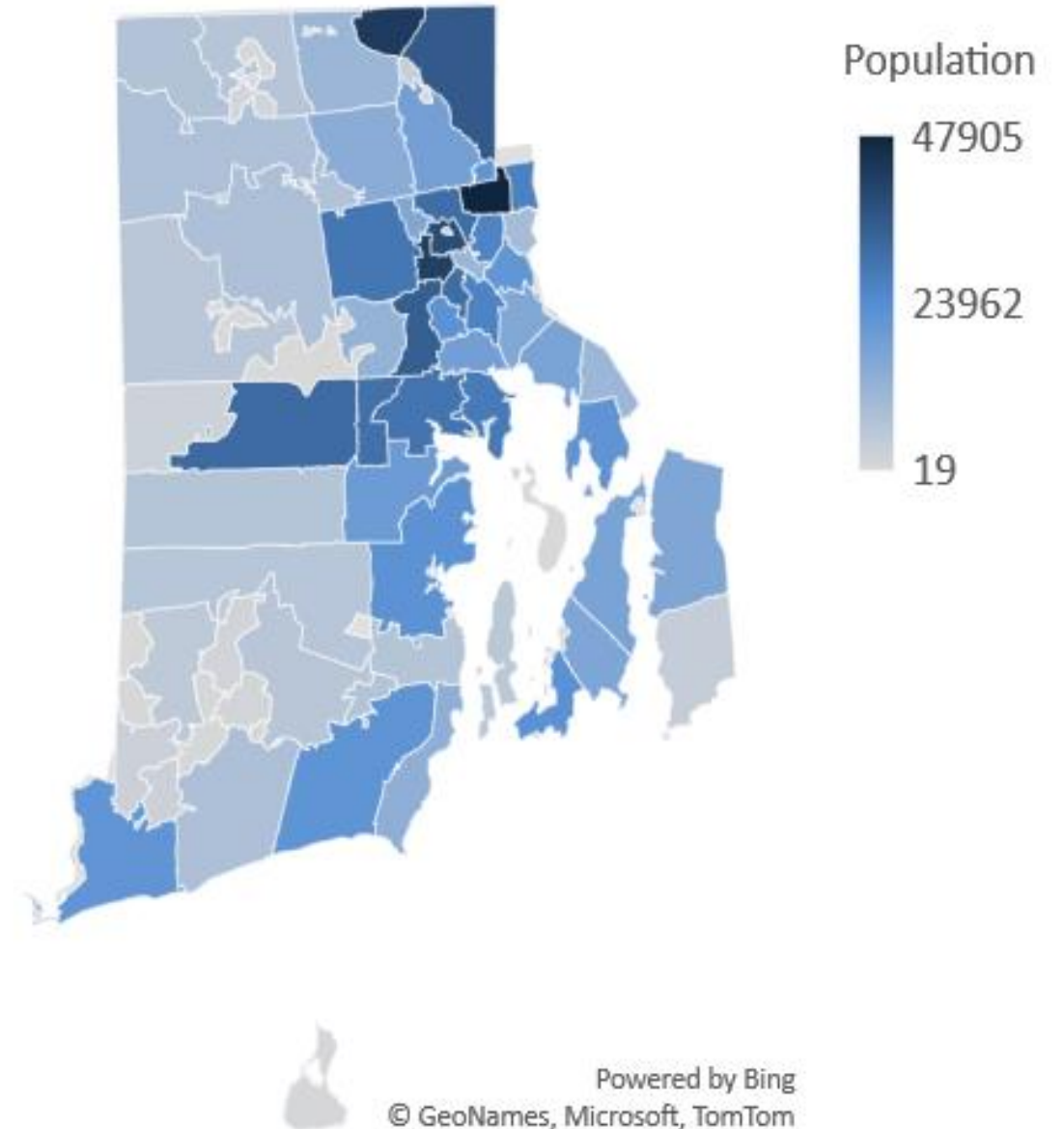
Census data: ACS 2021 1-year unless noted

**NOT ACTUAL SIZE!**

# Rhode Island Census Data, 2021

Race and Hispanic Origin	Distribution
White alone	82.8%
Black or African American alone	9.1%
Asian alone	3.7%
Two or More Races	3.1%
American Indian and Alaska Native alone	1.2%
Native Hawaiian and Pacific Islander alone	0.2%
Hispanic or Latino	17.6%
White alone, not Hispanic or Latino	69.9%

Population by ZIP Code Tabulation Area (ZCTA)



## 7 of 8 Federally Qualified Health Centers (FQHCs)\*

FQHC	# Clinics
Comprehensive Community Action Program (CCAP)	4
East Bay Community Action Program (EBCAP)	3
Providence Community Health Centers (PCHC)	8
Thundermist Health Centers (Thundermist)	3
Tri-County Health Center (Tri-County)	1
WellOne Primary Medical and Dental Care (WellOne)	4
Wood River Health Services (Wood River)	2
<b>TOTAL</b>	<b>25</b>

\*NOT Partnered with *Blackstone Valley Community Health Care*

Health  
System and  
Clinic  
Partners –  
FQHCs

Health  
System and  
Clinic  
Partners –  
CSNCs & IHS

## 2 Community Safety Net Clinics (CSNCs)

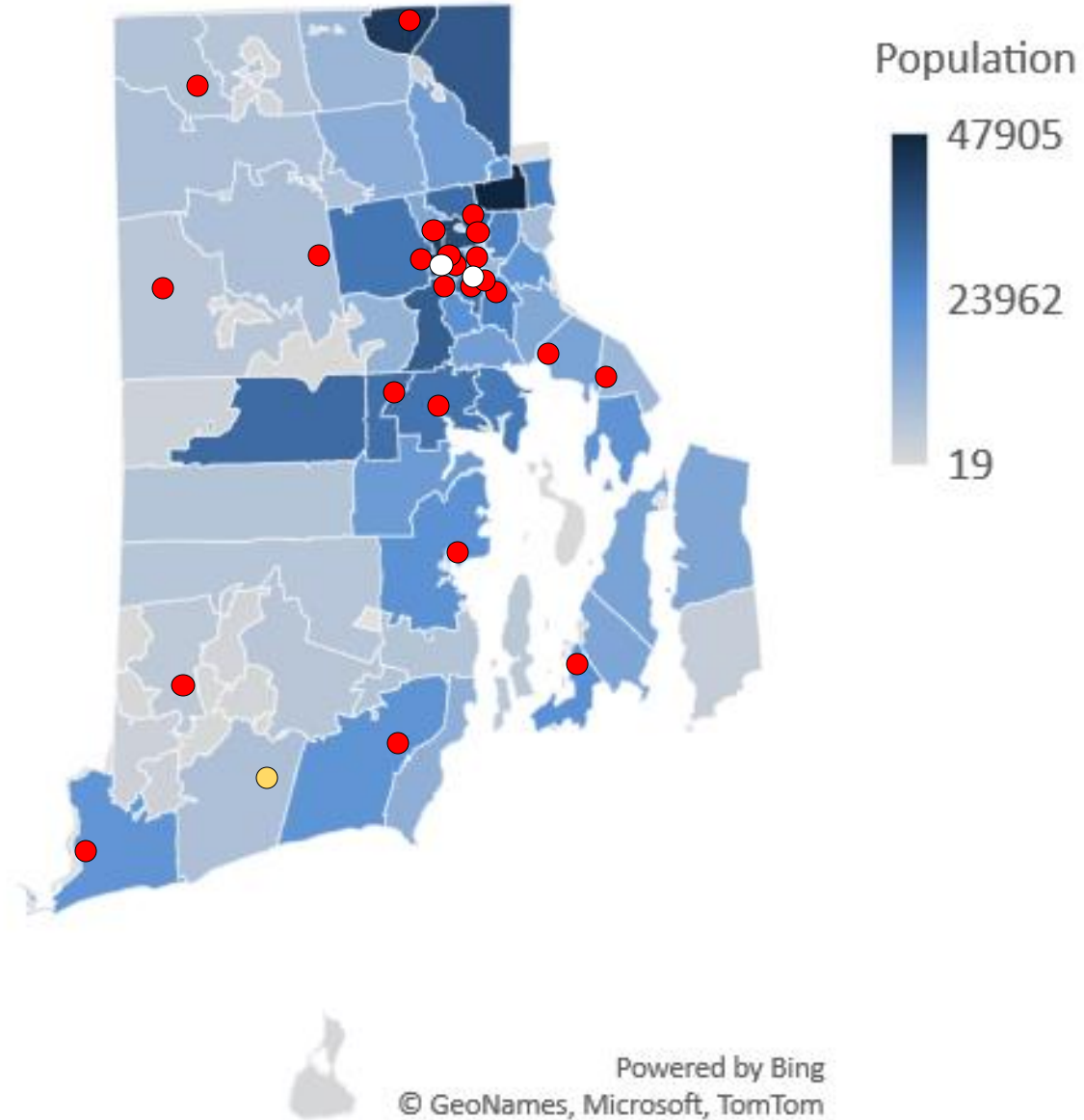
- Clinica Esperanza / Hope Clinic (CEHC)
- Rhode Island Free Clinic (RIFC)

## 1 Indian Health Service (IHC)

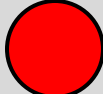
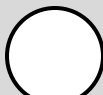

- Narragansett Indian Health Center (NIHC)

# Health System and Clinic Partners

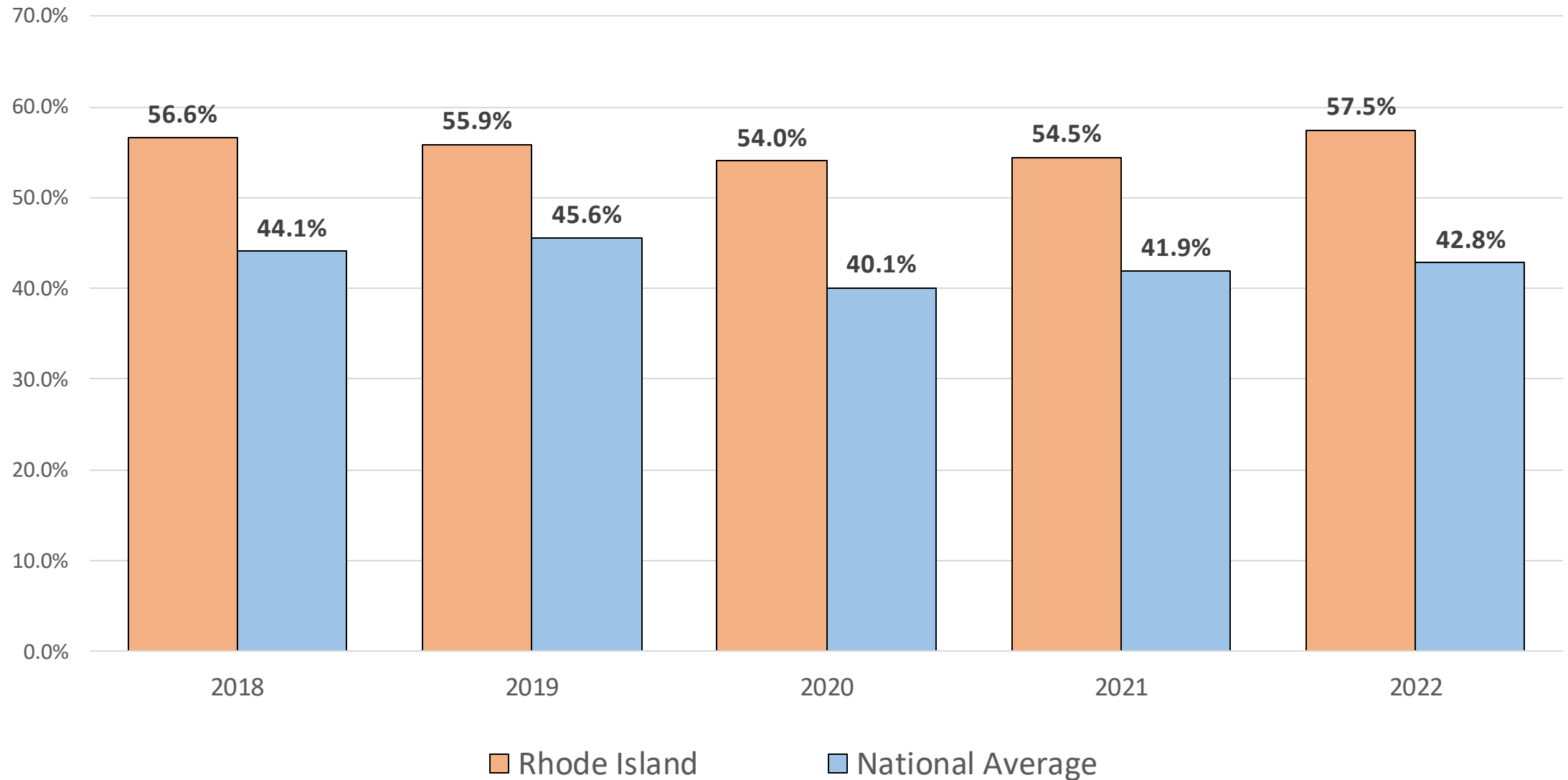
Population by ZIP Code Tabulation Area (ZCTA)



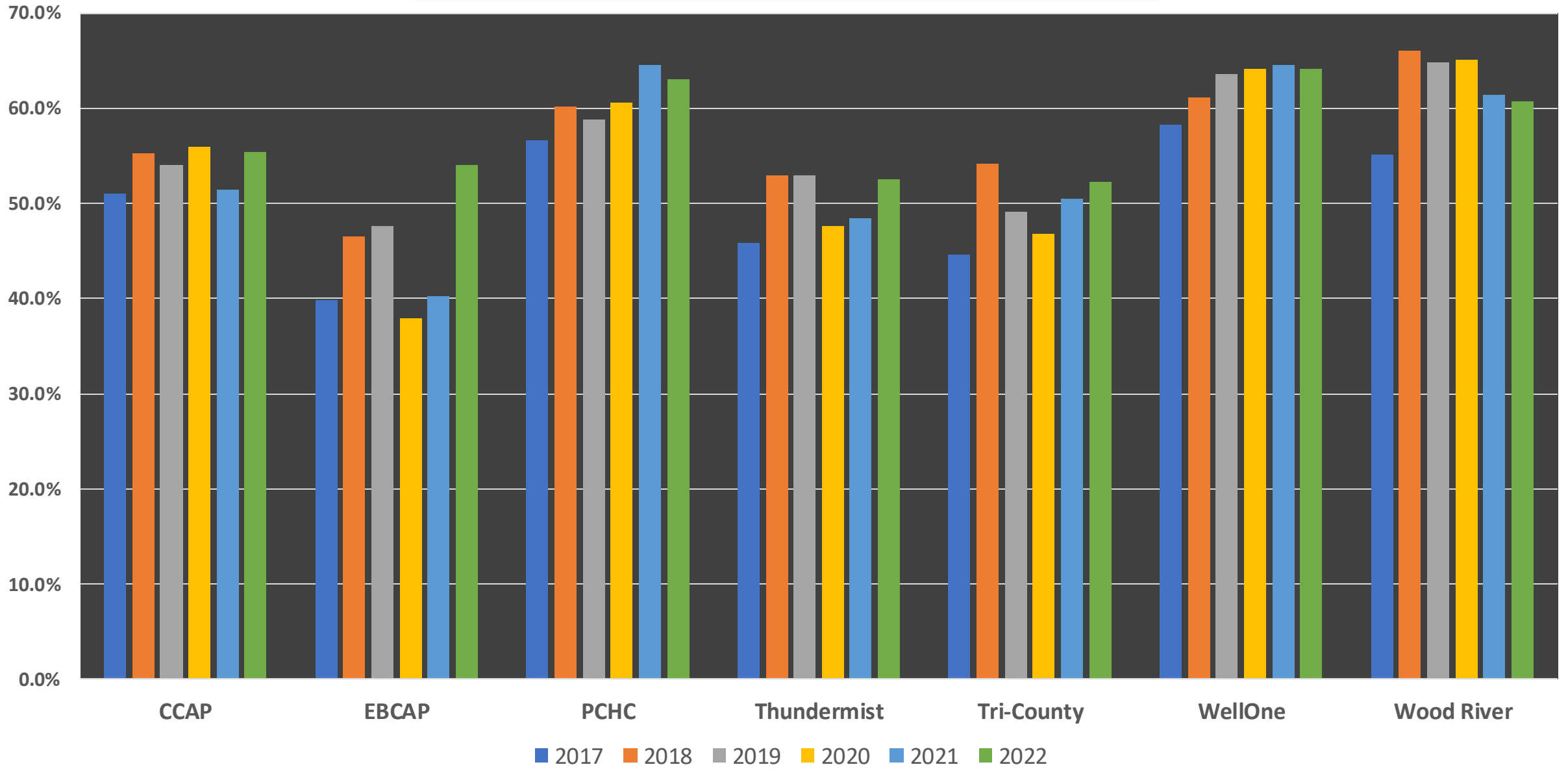
Our partners  
comprise a  
**total of 28**  
clinic locations  
throughout  
Rhode Island

-  FQHC
-  CSNC
-  IHC

## Uniform Data System (UDS) Colorectal Cancer Screening Rates, 2018-2022



FQHC Colorectal Cancer Screening Rates, 2017-2022





## *What we know*

- FQHCs serve populations at high risk for being unscreened
- The Rhode Island Colorectal Cancer Control Program (RI CRCCP) has partnered with 7 of the state's FQHCs
- RI FQHC screening rates have increased since 2017, yet there's still more work to be done

## **BUT...**

- What about individuals who are not established FQHC patients? Who are they?
- Where do they live?
- How can we reach them?

# Mapping is for everyone!

- Sophisticated Geographic Information System (GIS) options include ArcGIS and QGIS, but these require specialized training and software.
- Often, in-house GIS teams are overloaded with requests and projects.
- Another viable option is to create maps by employing readily available programs, such as Microsoft Excel, with only minimal mapping experience.

# Accessible Mapping Tools

## 1. Identifying Underserved Communities

- CDC PLACES
- CDC/ATSDR Social Vulnerability Index (SVI)

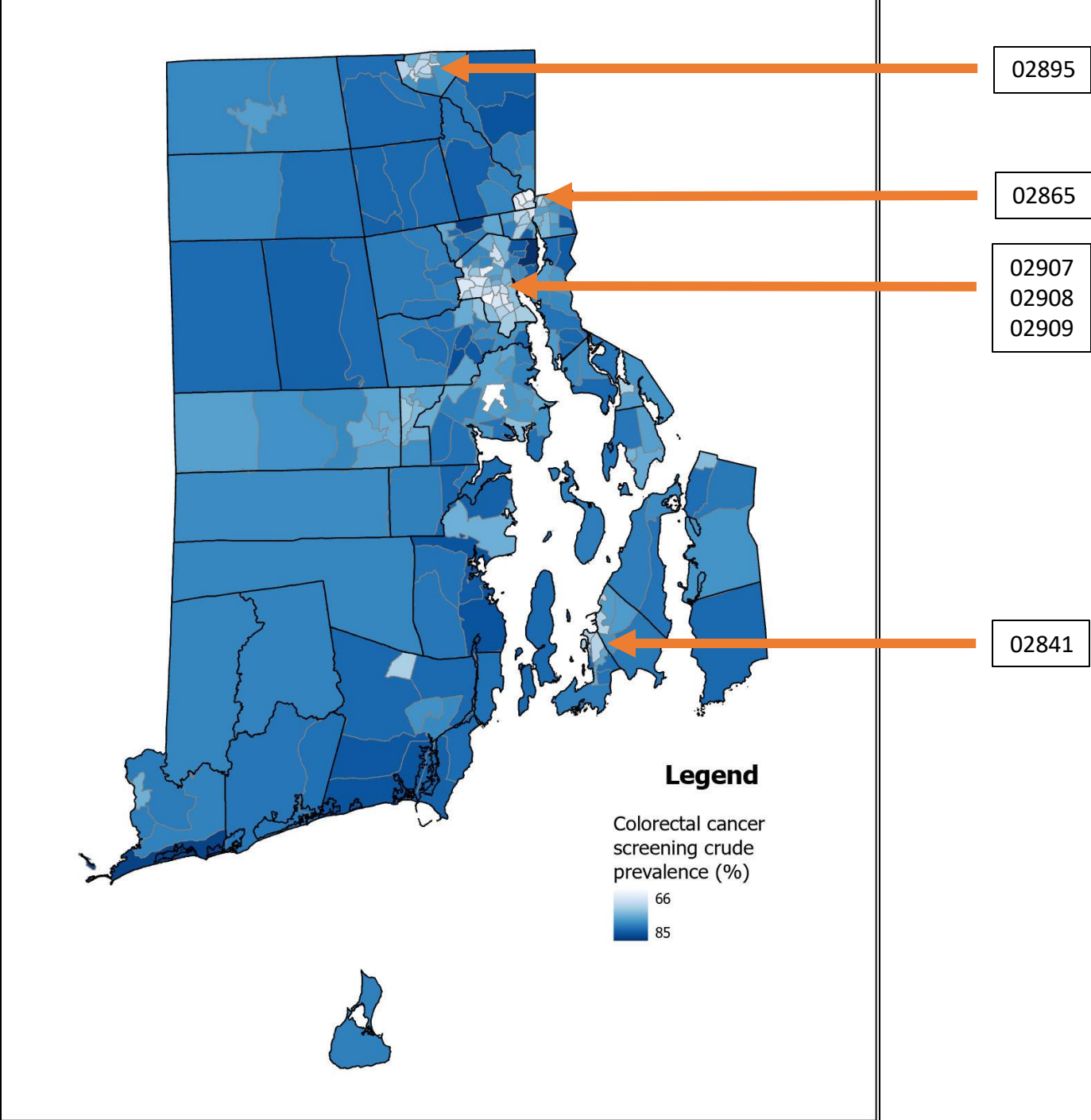
## 2. Identifying Community Characteristics

- Census Bureau QuickFacts
- American Community Survey (ACS)

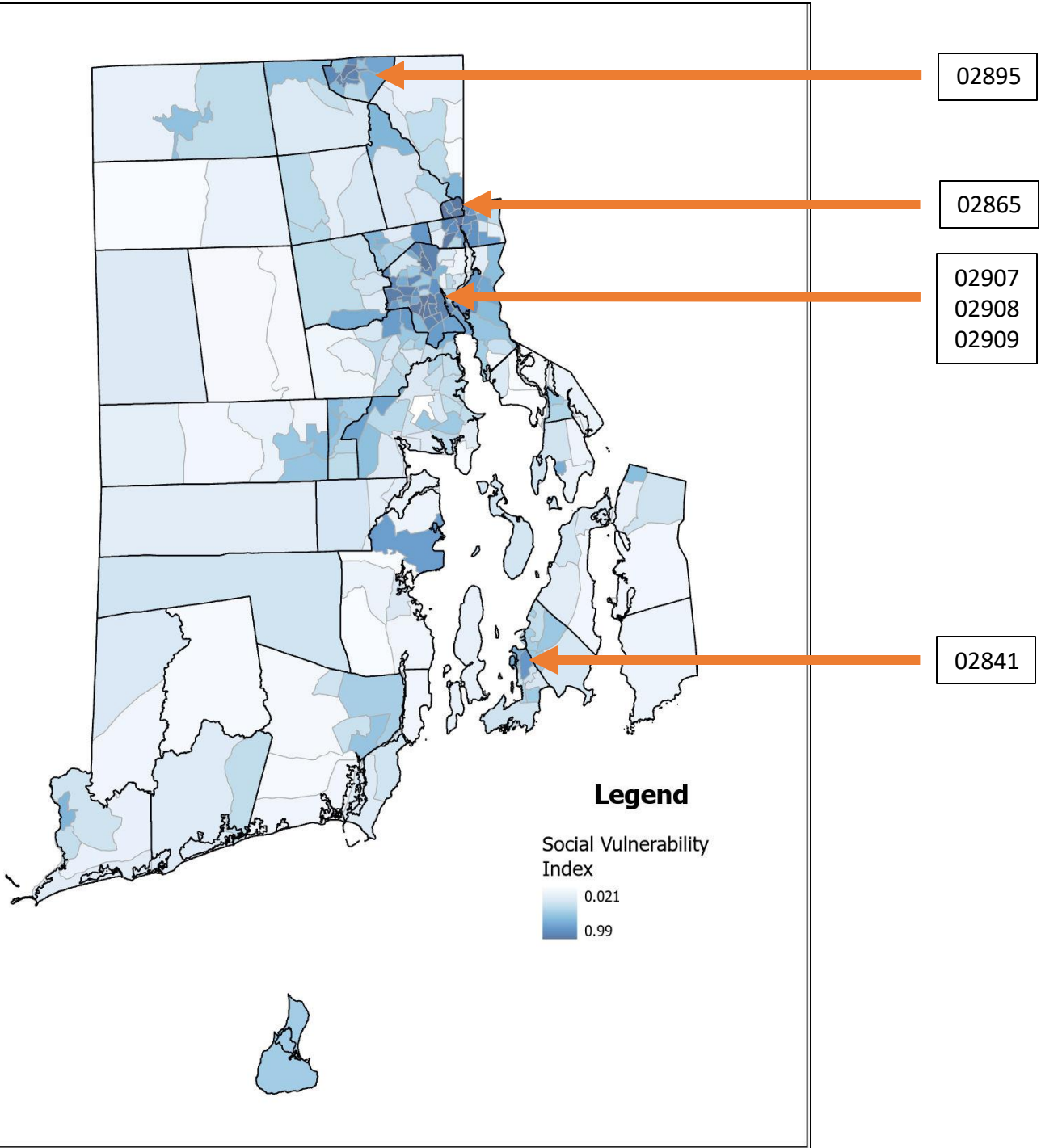
## 3. Identifying Appropriate Partners

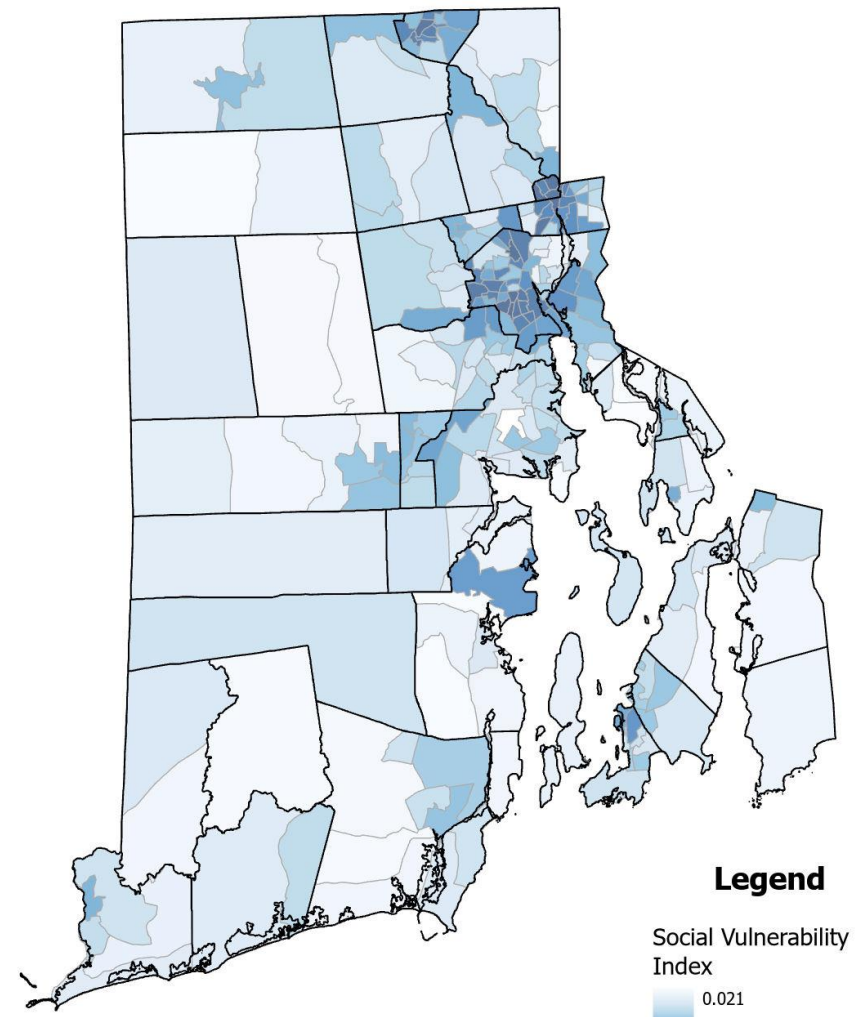
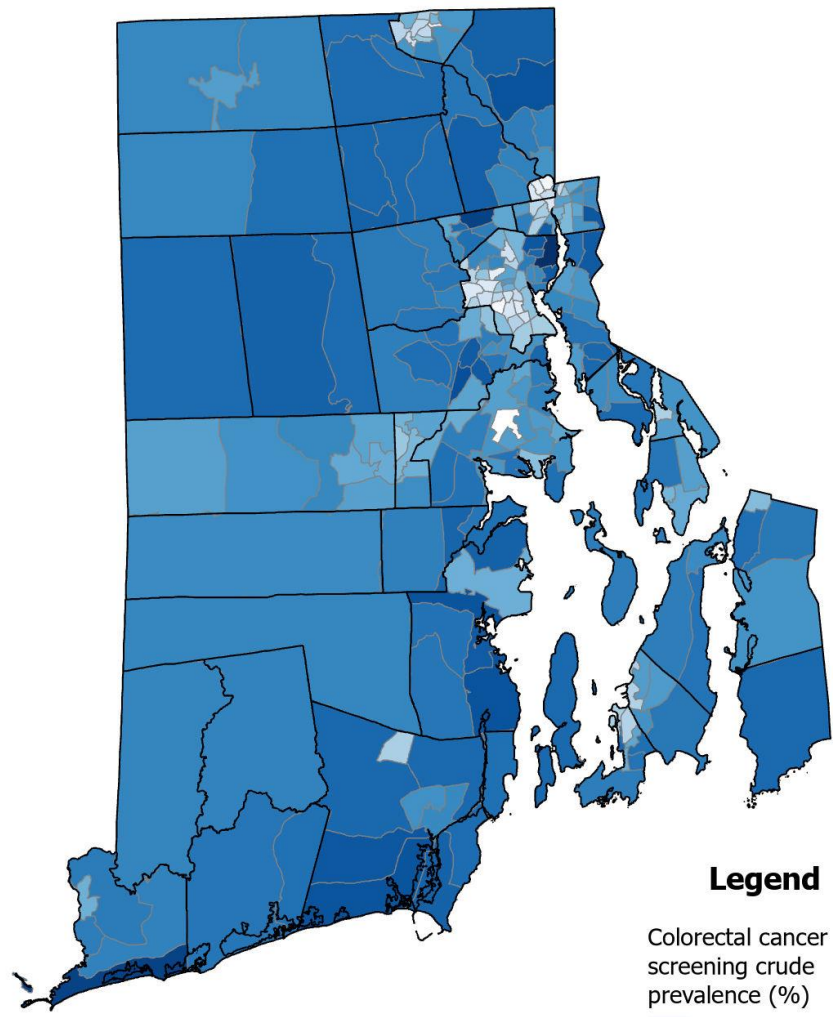
- UDS Mapper
- Google Maps

# Colorectal Cancer Screening by Census Tract, 2021

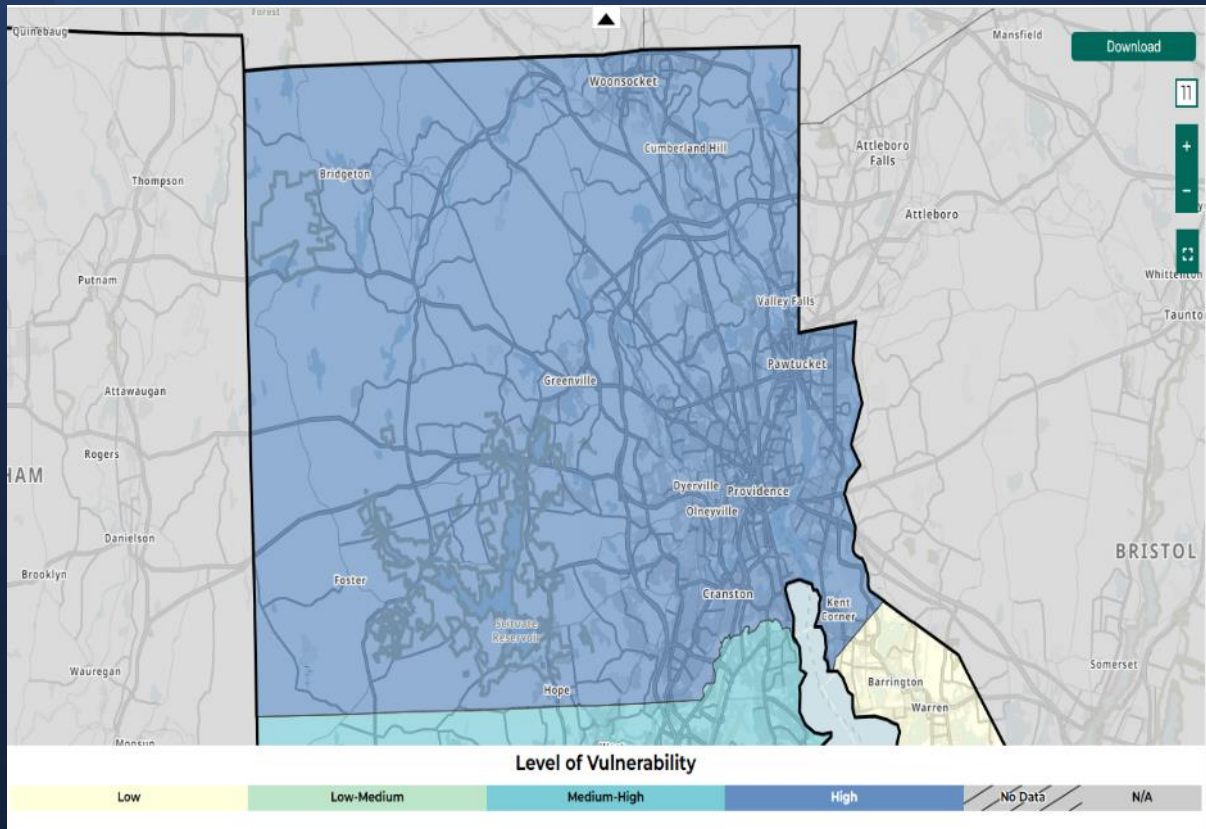


# Social Vulnerability Index, 2021

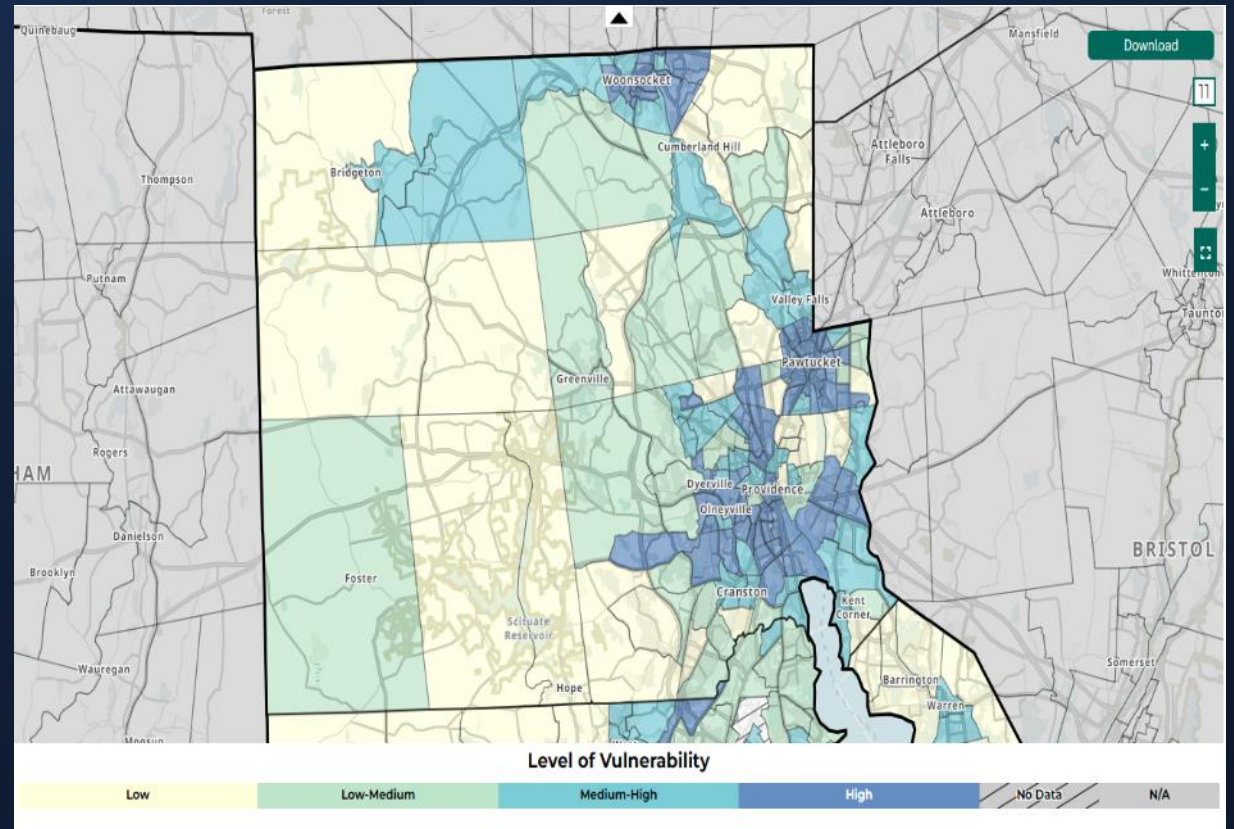




# Social Vulnerability Index, 2021 Providence County

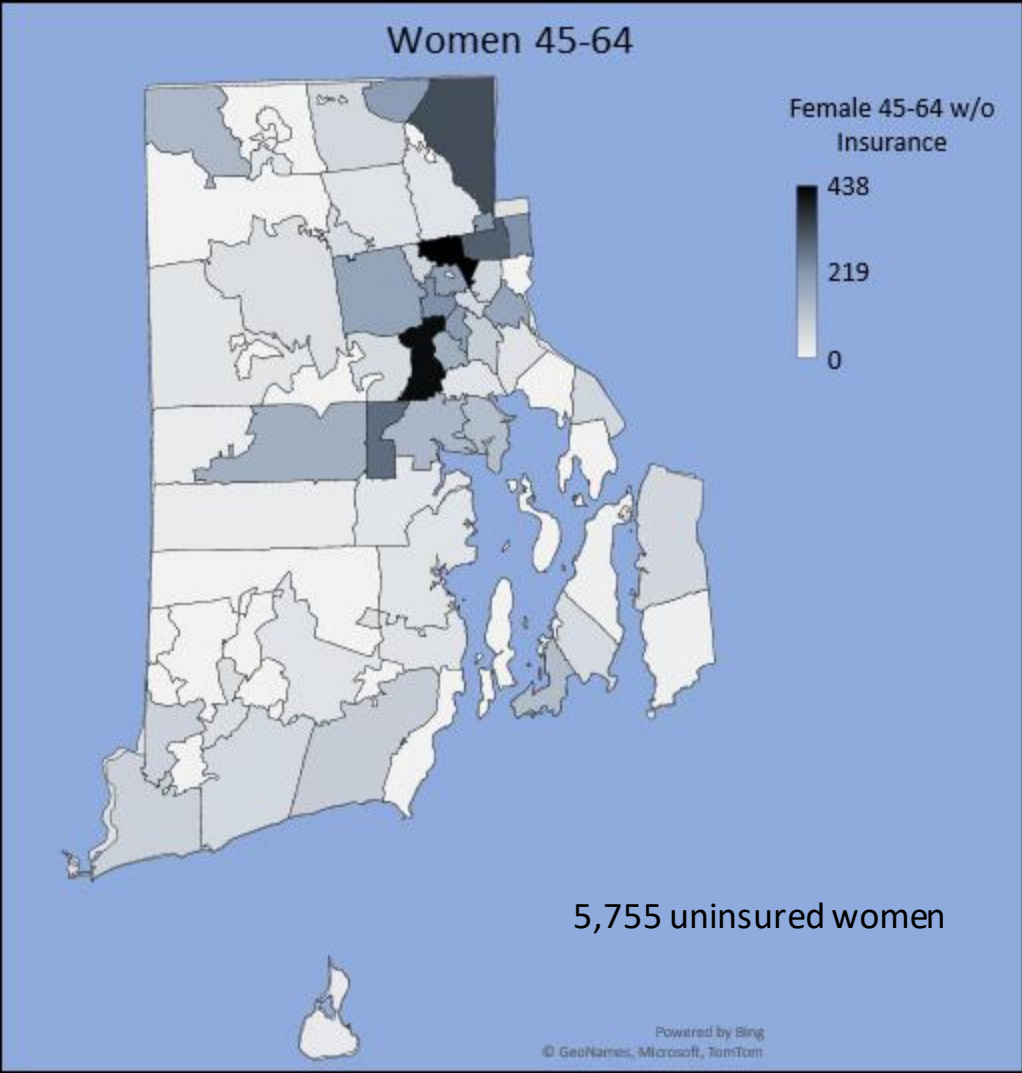
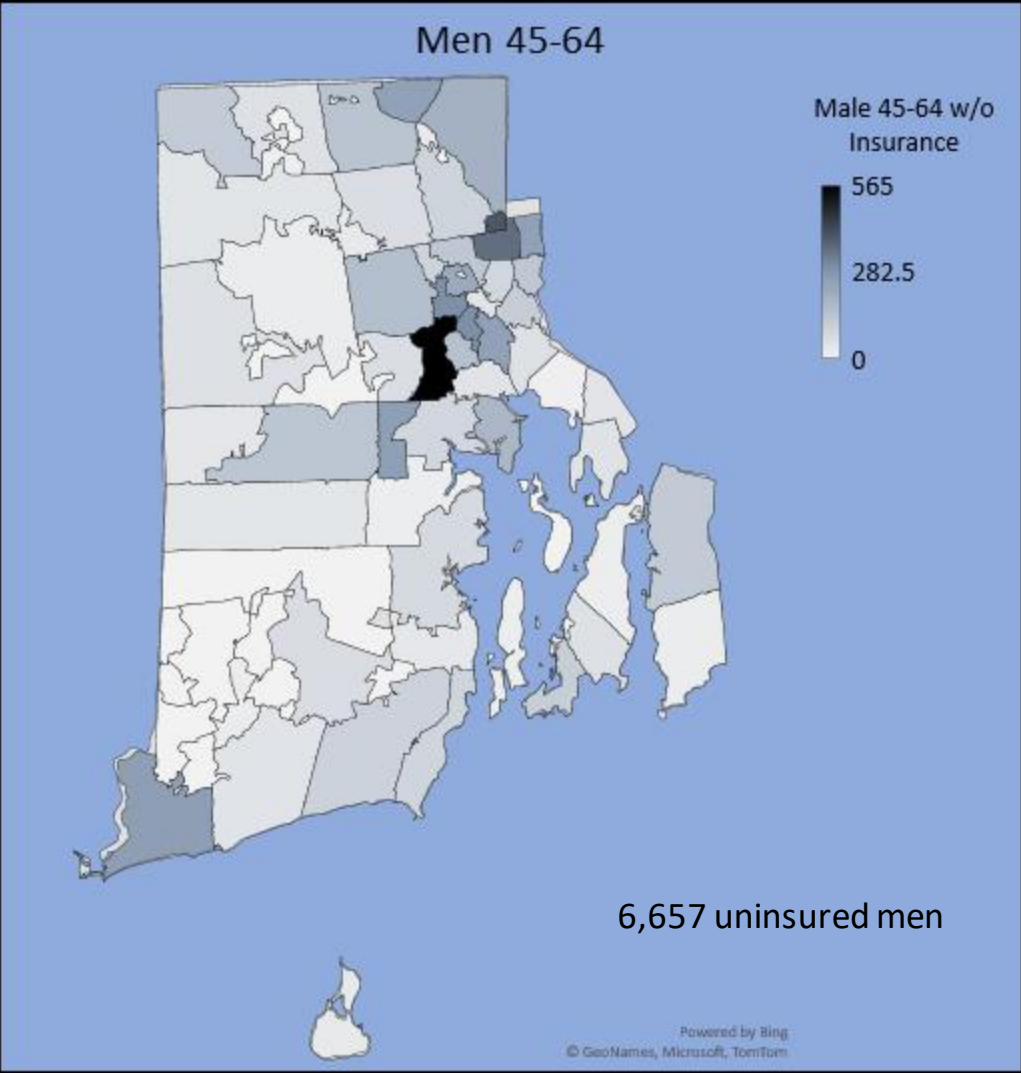


Geographic Unit: Counties



Geographic Unit: Census Tract

# Uninsured Men and Women, ACS 2021





# Census Bureau QuickFacts

(2017-2021 ACS 5-year estimates)

Population	Pawtucket city, Rhode Island	Central Falls city, Rhode Island
<b>Population Estimates, July 1, 2022, (V2022)</b>	<b>75,066</b>	<b>22,490</b>
<b>PEOPLE</b>		
<b>Population</b>		
<b>Population Estimates, July 1, 2022, (V2022)</b>	<b>75,066</b>	<b>22,490</b>
Population estimates base, April 1, 2020, (V2022)	75,612	22,583
Population, percent change - April 1, 2020 (estimates base) to July 1, 2022, (V2022)	-0.7%	-0.4%
Population, Census, April 1, 2020	75,604	22,583
Population, Census, April 1, 2010	71,148	19,376
<b>Race and Hispanic Origin</b>		
White alone, percent	55.8%	42.4%
Black or African American alone, percent (a)	17.6%	6.9%
American Indian and Alaska Native alone, percent (a)	0.5%	0.2%
Asian alone, percent (a)	2.0%	0.3%
Native Hawaiian and Other Pacific Islander alone, percent (a)	0.1%	0.1%
Two or More Races, percent	12.5%	13.5%
Hispanic or Latino, percent (b)	25.2%	<b>71.5%</b>
White alone, not Hispanic or Latino, percent	46.7%	19.6%
<b>Families &amp; Living Arrangements</b>		
Households, 2017-2021	29,666	7,074
Persons per household, 2017-2021	2.52	3.04
Living in same house 1 year ago, percent of persons age 1 year+, 2017-2021	89.7%	81.1%
Language other than English spoken at home, percent of persons age 5 years+, 2017-2021	39.9%	<b>66.6%</b>
<b>Income &amp; Poverty</b>		
Median household income (in 2021 dollars), 2017-2021	\$56,427	<b>\$40,235</b>
Per capita income in past 12 months (in 2021 dollars), 2017-2021	\$30,246	\$17,962
Persons in poverty, percent	14.9%	24.9%

# UDS Mapper

UDS Mapper

HOME ABOUT UDS MAPPER UPCOMING EVENTS TUTORIALS & RESOURCES HEALTH CENTER RESEARCH

Help

UDS Mapper Data Table

Table Advanced Analysis

ZCTA	Post Office Name	State	HCP: Health Center Count (Combined) 2022	HCP: Dominant Health Center 2022	Pop: Total (#) 2017-2021	Pop: Low-Income (#) 2017-2021	HCP: Total Patients (#) 2022	HCP: Penetration of Low-Income (%)	HCP: Penetration of Total Population (%)
Summary:			19		70,284	31,838	20,634	64.81 %	29.36 %
02860	Pawtucket	RI	11	BLACKSTONE VALLEY COMMUNITY HEALTH CARE INC.	48,092	19,120	12,358	64.63 %	25.70 %
02863	Central Falls	RI	8	BLACKSTONE VALLEY COMMUNITY HEALTH CARE INC.	22,192	12,718	8,276	65.07 %	37.29 %

Standard UDS Mapper Report Additional Health Center Related Data Additional Population Data and Indicators Uninsurance by Income Level Top 5 Health Centers Serving ZCTA MAP for MAT

Select All Select None

- ✓ HCP: Health Center Count (Combined) 2022
- ✓ HCP: Dominant Health Center 2022
- ✓ Pop: Total (#) 2017-2021
- ✓ Pop: Low-Income (#) 2017-2021
- ✓ HCP: Total Patients (#) 2022
- ✓ HCP: Penetration of Low-Income (%)
- ✓ HCP: Penetration of Total Population (%)

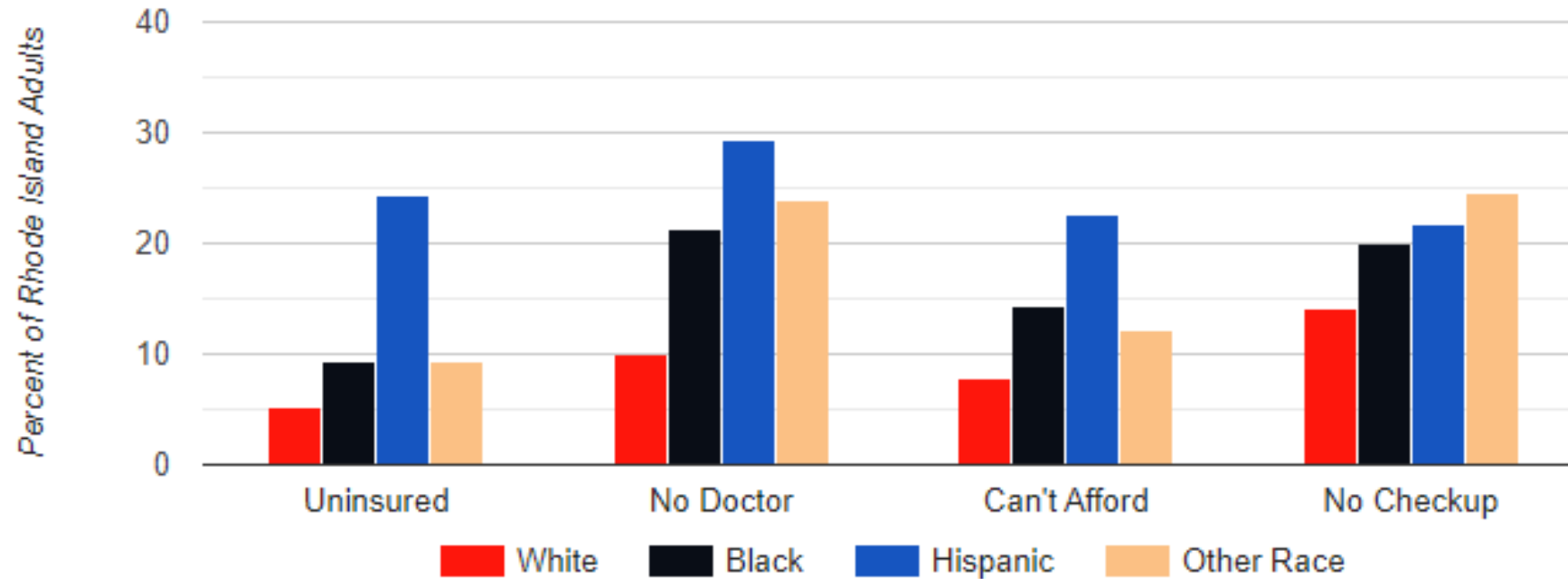
02863, Central Falls

Health Centers with Largest Market Share 2022	Share of Patients
BLACKSTONE VALLEY COMMUNITY HEALTH CARE INC.	81.37 %
THE PROVIDENCE COMMUNITY HLTH CENTERS, INC.	10.51 %
THUNDERMIST HEALTH CENTER	5.05 %

02860, Pawtucket

Health Centers with Largest Market Share 2022	Share of Patients
BLACKSTONE VALLEY COMMUNITY HEALTH CARE INC.	63.66 %
THE PROVIDENCE COMMUNITY HLTH CENTERS, INC.	19.43 %
THUNDERMIST HEALTH CENTER	9.54 %

# RI Behavioral Risk Factor Surveillance System (BRFSS), 2018



- ⚓ White, non-Hispanic adults have fewer barriers to access healthcare than other racial/ethnic groups.
- ⚓ The prevalence of being uninsured, having no doctor, and experiencing cost barriers to seeing a doctor are highest among Hispanic adults compared with all other racial/ethnic groups.

Health  
System and  
Clinic  
Partners –  
CSNCs & IHS

### 3 Community Safety Net Clinics

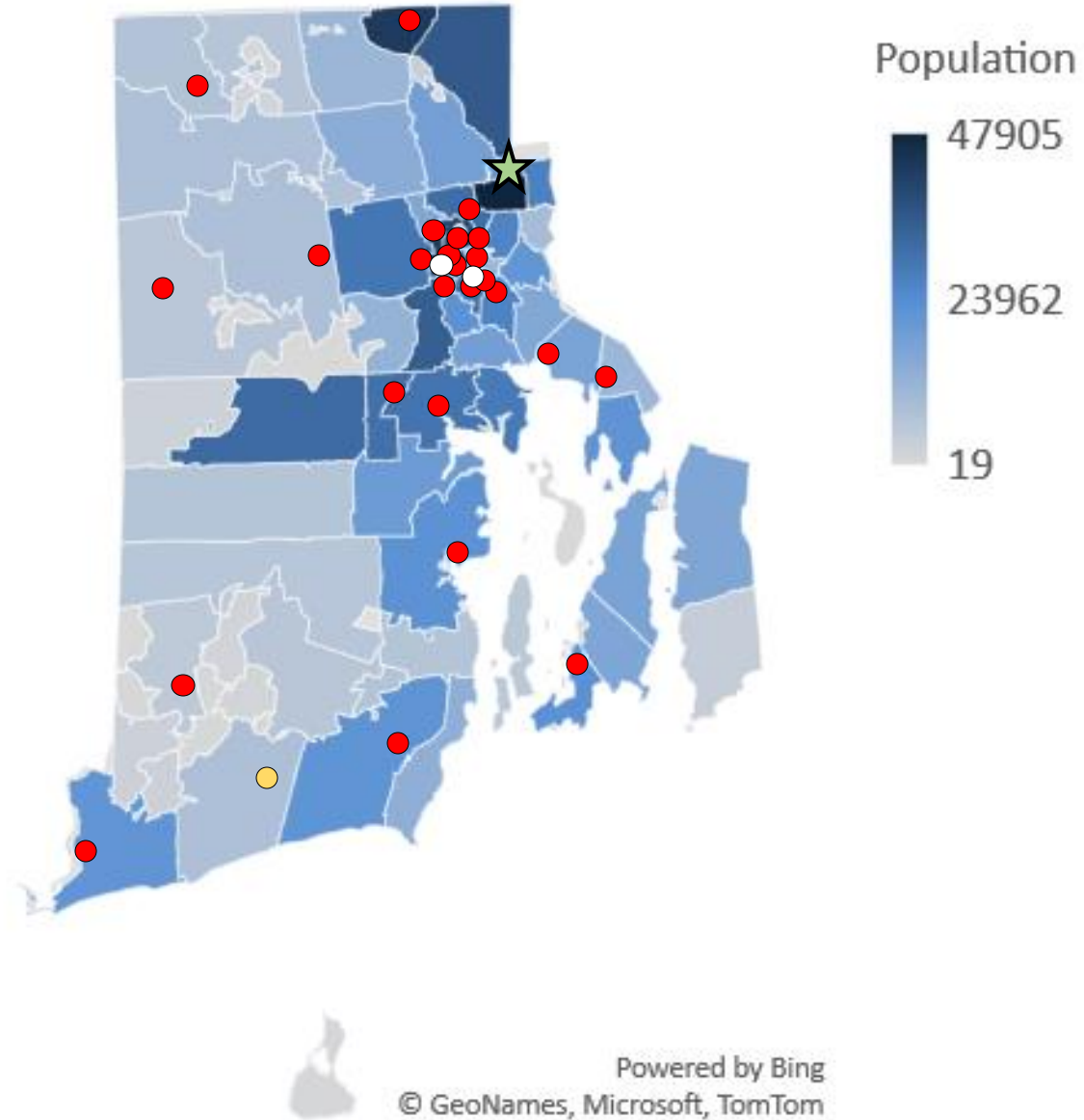
- Clinica Esperanza / Hope Clinic (CEHC)
- Rhode Island Free Clinic (RIFC)
- Jenks Park Health Clinic (JPHC)

### 1 Indian Health Service

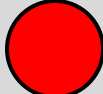
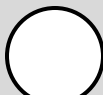

- Narragansett Indian Health Center (NIHC)

# Health System and Clinic Partners

Population by ZIP Code Tabulation Area (ZCTA)



Our partners  
comprise a  
**total of 29**  
clinic locations  
throughout  
Rhode Island

-  FQHC
-  CSNC
-  IHC

# Next Steps for Central Falls & Pawtucket

1

Decrease barriers to screening (and increase screening rates) for Jenks Park Health Clinic patients

2

Work with RI Public Health Association and other partners to create culturally and linguistically appropriate small media materials

3

Meet with identified non-profit community organizations, including Progreso Latino, Inc. and YWCA Central Falls

4

Work with The Ministers Alliance of RI on faith-based community outreach

5

Participate in Central Falls and Pawtucket community activities and events

# Targeted Outreach

## Future Goal:

To mirror the RI BCCEDP (Breast and Cervical Cancer Early Detection Program) initiative in adding QR Codes to small media materials, linking users to a program landing page and dashboard. Data on the number, duration, and location of views can be collected.



**El cáncer de seno es la clase de cáncer más comunmente diagnosticada en Rhode Island.**


*Aprenda acerca de opciones de pruebas hoy:*

Visite:  
[womenscancerscreening-rihealth.hub.arcgis.com](http://womenscancerscreening-rihealth.hub.arcgis.com)  
 Llame:  
 401-222-4324  
 O Escanee este código:



**Is there a cost to get tested?**

If you are uninsured or your insurance doesn't cover screenings, RI Department of Health has a program that may be able to help. Call 401-222-4324 or scan the QR code below!



Original Published July 30, 2020.  
 Rhode Island Department of Health  
 Breast and Cervical Cancer Early Detection Program



**The Importance of Colorectal Cancer Screening**

Colorectal cancer occurs when cell growth is out of control in the colon or rectum. In Rhode Island, colorectal cancer is the 4th leading cause of all cancer-related deaths. Routine screenings are exceedingly important for detecting signs of colorectal cancer.

**Who's at risk?**  
 Everyone in Rhode Island is at risk for colorectal cancer. Older age (>40), alcohol use, tobacco use, and obesity are risk factors for colorectal cancer.

**What are polyps?**  
 Polyps are abnormal growths in the colon or rectum. Polyps can become cancerous. Polyps can be seen during a colonoscopy or sigmoidoscopy.

**Who do I talk to?**  
 Talk to your primary care provider! They will be able to tell you about your risk factors and which screenings are right for you.

**What are the signs?**

- Changes in bowel habits
- Blood in or on your stool
- Diarrhea or constipation
- Unexplained weight loss
- Abdominal pain or cramps that won't go away

**Is it treatable?**  
 Yes! Colorectal cancer is treatable if detected in time. Routine screenings can help your provider track any existing polyps and when new ones form.

**Where can I get tested?**  
 Talk to your primary care provider about your options for colorectal cancer screenings.



**Importancia de las pruebas de detección del cáncer colorrectal.**

El cáncer colorrectal ocurre cuando el crecimiento celular está fuera de control en el colon o el recto. En Rhode Island, el cáncer colorrectal es la quinta causa principal de todas las muertes relacionadas con el cáncer. Los exámenes de rutina son sumamente importantes para detectar signos de cáncer colorrectal.

**¿Quién está en riesgo?**  
 Todos en Rhode Island corren el riesgo de padecer cáncer colorrectal. La edad avanzada (>40), el consumo de alcohol, el consumo de tabaco y la obesidad son factores de riesgo para el cáncer colorrectal.

**¿Qué son los pólipos?**  
 Los pólipos son crecimientos anormales en el colon o el recto. Los pólipos pueden volverse cancerosos. Los pólipos se pueden ver durante una colonoscopia o una sigmoidoscopia.

**¿Con quién hablo?**  
 Hable con su proveedor de atención primaria! Ellos podrán informarle sobre sus factores de riesgo y qué pruebas de detección son adecuadas para usted.

**¿Cuáles son los signos?**

- Cambios en los hábitos intestinales
- Sangre en o sobre sus heces
- Diarrea o estreñimiento
- Pérdida de peso inexplicable
- Dolor o calambres abdominales que no desaparecen

**¿Es tratable?**  
 ¡Sí! El cáncer colorrectal es tratable si se detecta a tiempo. Los exámenes de rutina pueden ayudar a su proveedor a rastrear cualquier pólipo existente y cuándo se forman nuevos.

**¿Dónde puedo hacerme la prueba?**  
 Hable con su proveedor de atención primaria sobre sus opciones para las pruebas de detección del cáncer colorrectal.

# Lessons Learned

1. Utilize multiple sources of data
2. Understand the accuracy and limitations of your data
3. Choose appropriate tools and techniques
4. Remember: A map won't speak for itself!



Thanks to  
Will and  
Steve for  
their help!



Steve Williamson, PhD  
*Planning and Programming Specialist  
Rhode Island Department of Health*

Will Goedel, PhD  
*Assistant Professor of Epidemiology  
Brown University School of Public Health*



# Thank you!



Matthew Boudreau

Rhode Island Department of Health (RIDOH)

Colorectal Cancer Control Program

[Matthew.Boudreau@health.ri.gov](mailto:Matthew.Boudreau@health.ri.gov)



# Thank You

[nccrt.org](http://nccrt.org) @NCCRTnews #80inEveryCommunity

# Utilizing Geospatial Science and Technology to Advance CRC Cancer Prevention and Early Detection

**Liora Sahar, PhD, GISP**  
Senior Director, GIS Data Science  
American Cancer Society (virtual)





# Thank You

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