

Welcome to Indiana GIS Day 2021!





Indiana
Department
of
Health

Reaching Every Hoosier: How IDOH Uses GIS During the COVID-19 Pandemic

Dr. Lindsay Weaver

Indiana GIS Day

November 16, 2021

OUR MISSION:

**To promote, protect, and improve
the health and safety of all Hoosiers.**

OUR VISION:

**Every Hoosier reaches optimal health
regardless of where they live, learn,
work, or play.**



COVID-19 Response Summary

- Since March 2020 in Indiana, there have been:
 - Over 1 million cases
 - Nearly 15 million tests
 - Nearly 17,000 deaths
 - Peak hospital census of 3,460 (Nov. 30, 2020)
 - Over 7 million vaccine doses administered

GIS Team

- GIS staff are in Office of Data Analytics – created in Fall 2020
- Most staff in ODA were previously in Epidemiology Resource Center
- ODA staff work across the agency and beyond to support IDOH data needs

ArcGIS Online

- Most applications you will see use AGOL
- Can create applications for public or internal use
- We put aggregated stats on AGOL, not patient info
- We have many AGOL users who are not full-time GIS staff
- Also make use of other visualization tools – e.g. Tableau, open source tools

Automation

- Many of these GIS projects use scripting and automation
- Main scripting languages used at IDOH are SAS, Python, and R
- Most processes run daily or weekly
- Especially useful for data processing, geocoding, and generating statistics



Indiana
Department
of
Health

February 25, 2020

"Ultimately we expect we will see community spread in this country," said Messonier. "It's not so much a question of if this will happen anymore, but rather more a question of exactly when this will happen and how many people in this country will have severe illness."

Testing Site App

 Free Community Test Site

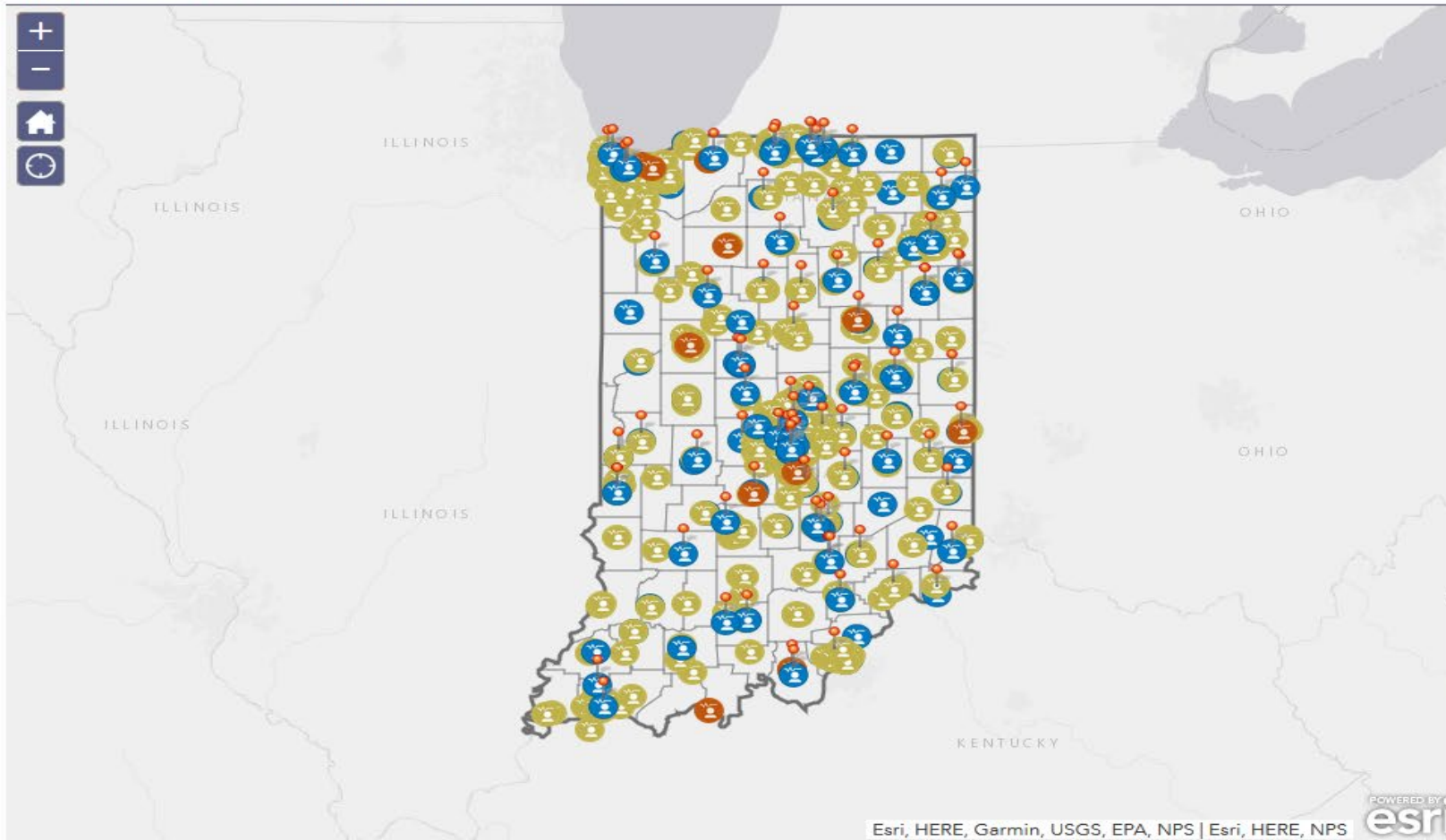
 Healthcare Provider or Retail Site



 Rapid Antigen Tests Available

 IDOH/Gravity Test Site

Indiana COVID-19 Testing Sites

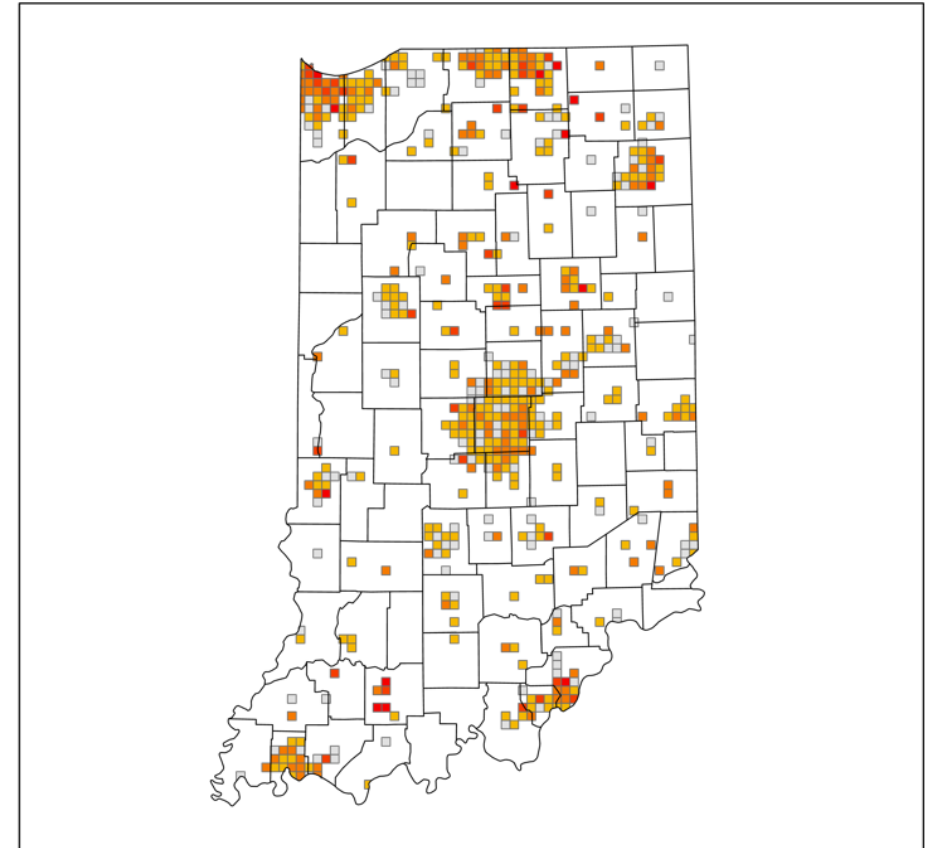
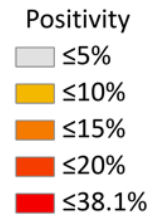
Indiana Department of Health



Testing Sites by County			
	Mobile Sites	31	
	Test Sites	657	
Adams		3	
Allen		28	
Bartholomew		10	
Benton		1	
Blackford		1	
Boone		6	
Brown		2	
Carroll		5	
Cass		4	
Clark		11	
Clay		1	
Clinton		3	
Crawford		1	
Daviess		2	
De Kalb		4	

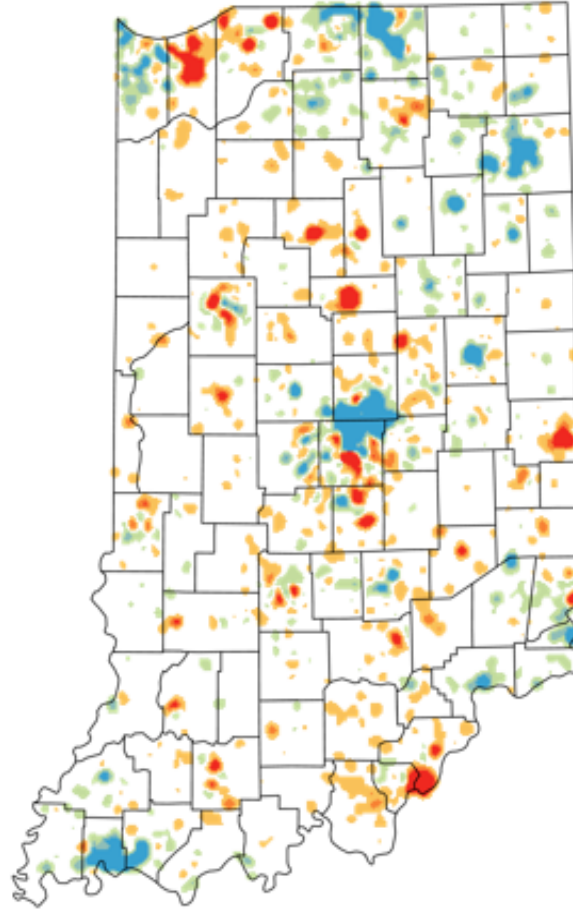
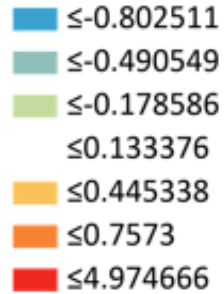
Geocoding Cases, Tests, and Vaccinations

- Case, test, and vaccination data are geocoded by patient address
- Allows us to examine spatial patterns in more detail



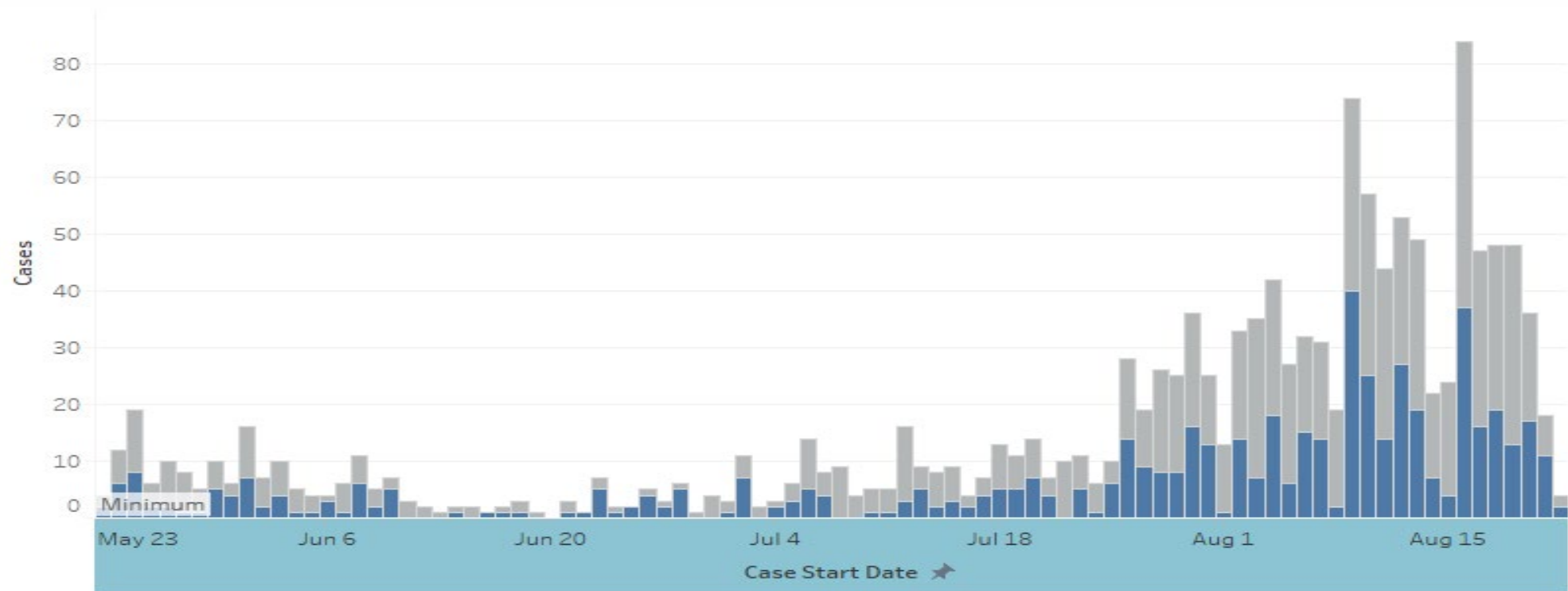
Test Density Change Example

Change in Tests/sq km





Congregate Settings

Geocoding includes identifying cases at long term care facilities and correctional facilities in order to supplement their reporting

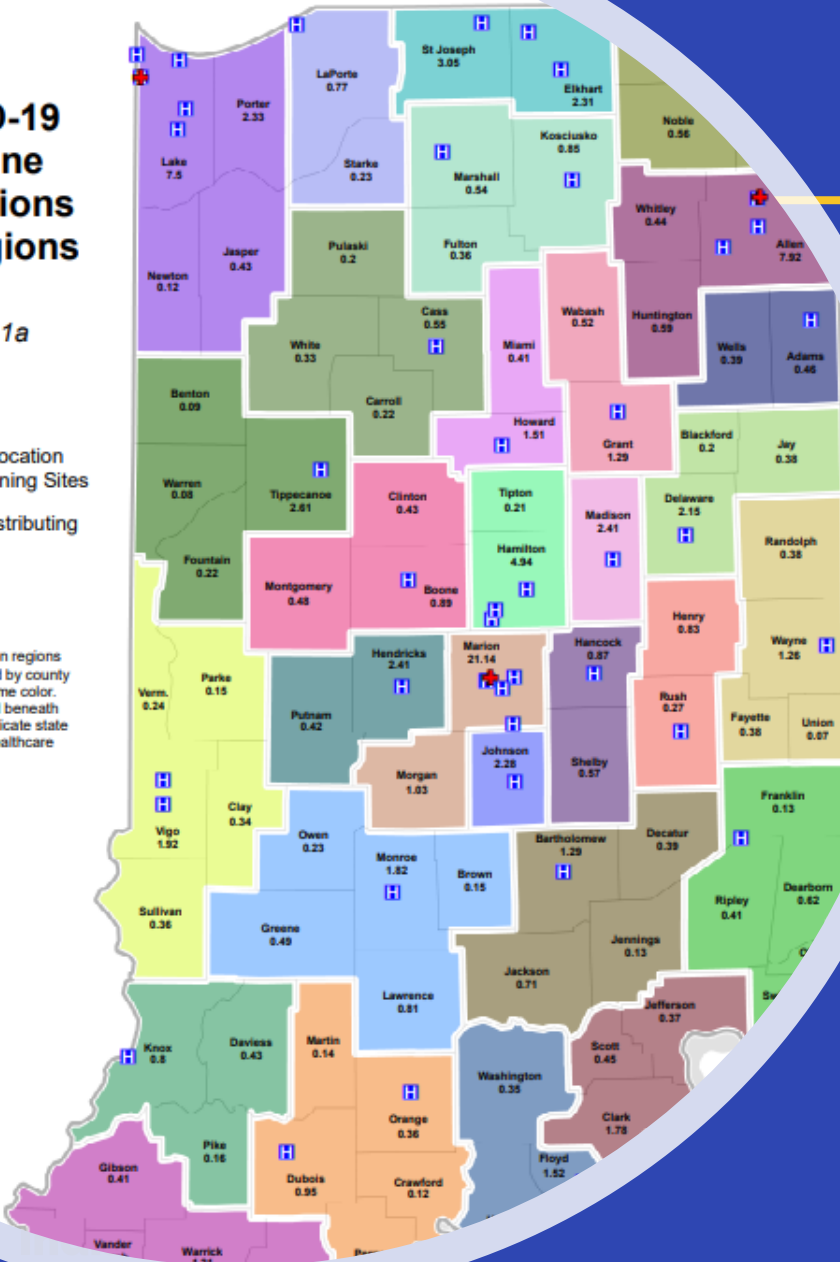


COVID-19 Vaccine Allocations by Regions

Phase 1a

-  Vaccine Allocation
Pre-Positioning Sites
-  Vaccine Distributing
Hospital

Vaccine allocation regions are distinguished by county groups of the same color. Values displayed beneath county labels indicate state percentage of healthcare personnel.



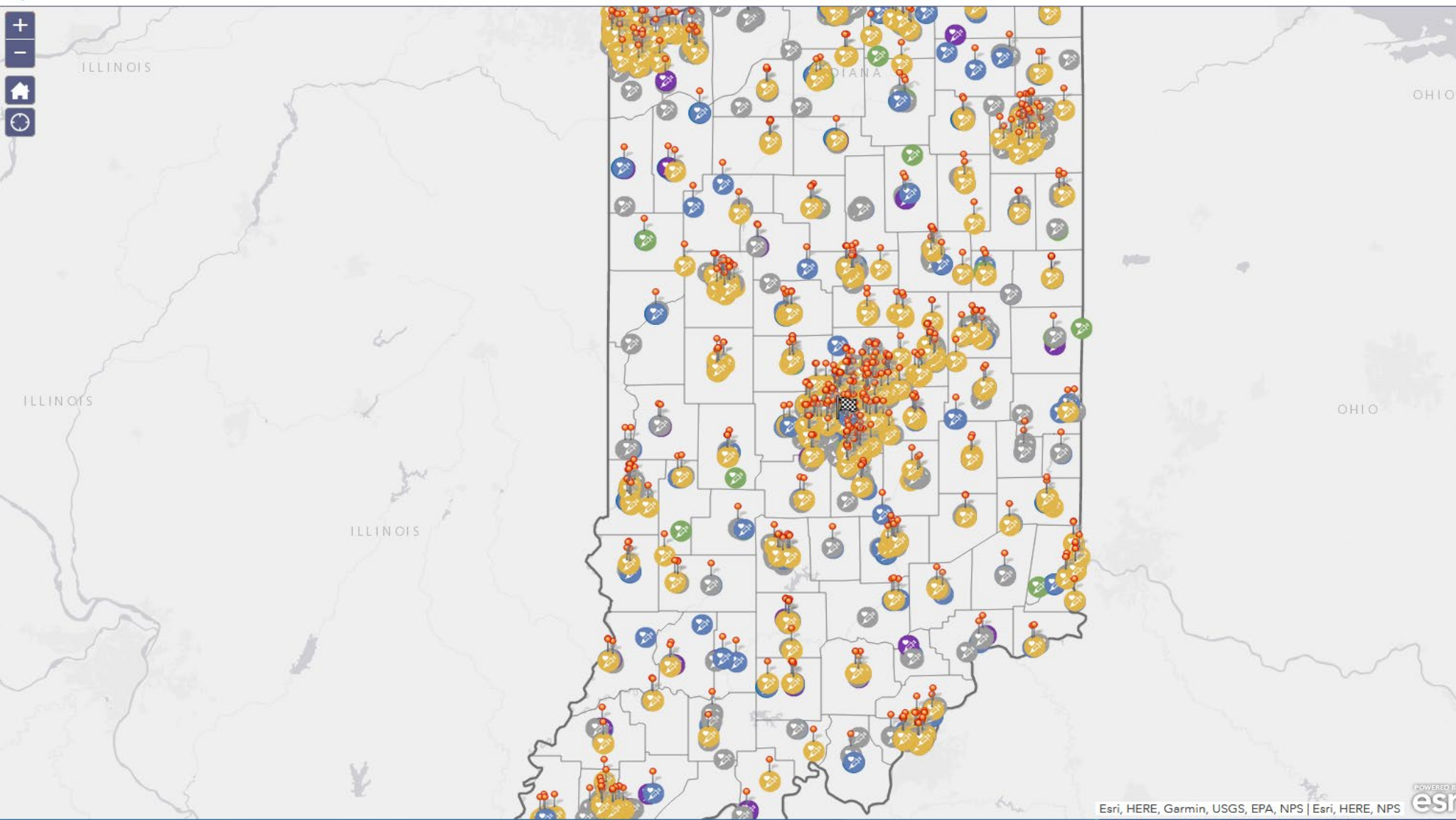
December 2020

Vaccination Site App



Si tiene dificultad en registrarse en línea, por favor de marcar al 211 de cualquier teléfono para asistencia.

Indiana COVID-19 Vaccine Sites Indiana Department of Health



Vaccine Sites

List of Vaccine Sites by County



Mobile Sites

61



All Vaccine Sites

1,454

Legend

Vaccine Types Available



Moderna



Pfizer



Johnson & Johnson



Multiple Vaccine Types



Chain Pharmacies & Providers



Vaccinating Ages 5-11

Tipos de vacunas disponibles



Moderna



Get Site Information and Register

Si tiene dificultad en registrarse en línea, por favor de marcar al 211 de cualquier teléfono para asistencia.

Indiana COVID-19 Vaccine Sites Indiana Department of Health






Vaccine Sites

List of Vaccine Sites by County


	Mobile Sites	63
	All Vaccine Sites	1,079

Legend

Vaccine Types Available

-  Moderna
-  Pfizer
-  Johnson & Johnson
-  Multiple Vaccine Types
-  Chain Pharmacies & Providers

Tipos de vacunas disponibles

-  Moderna

MVU Arsenal Tech High School VAX

Location Address
1500 E Michigan St,
Indianapolis, IN 46202

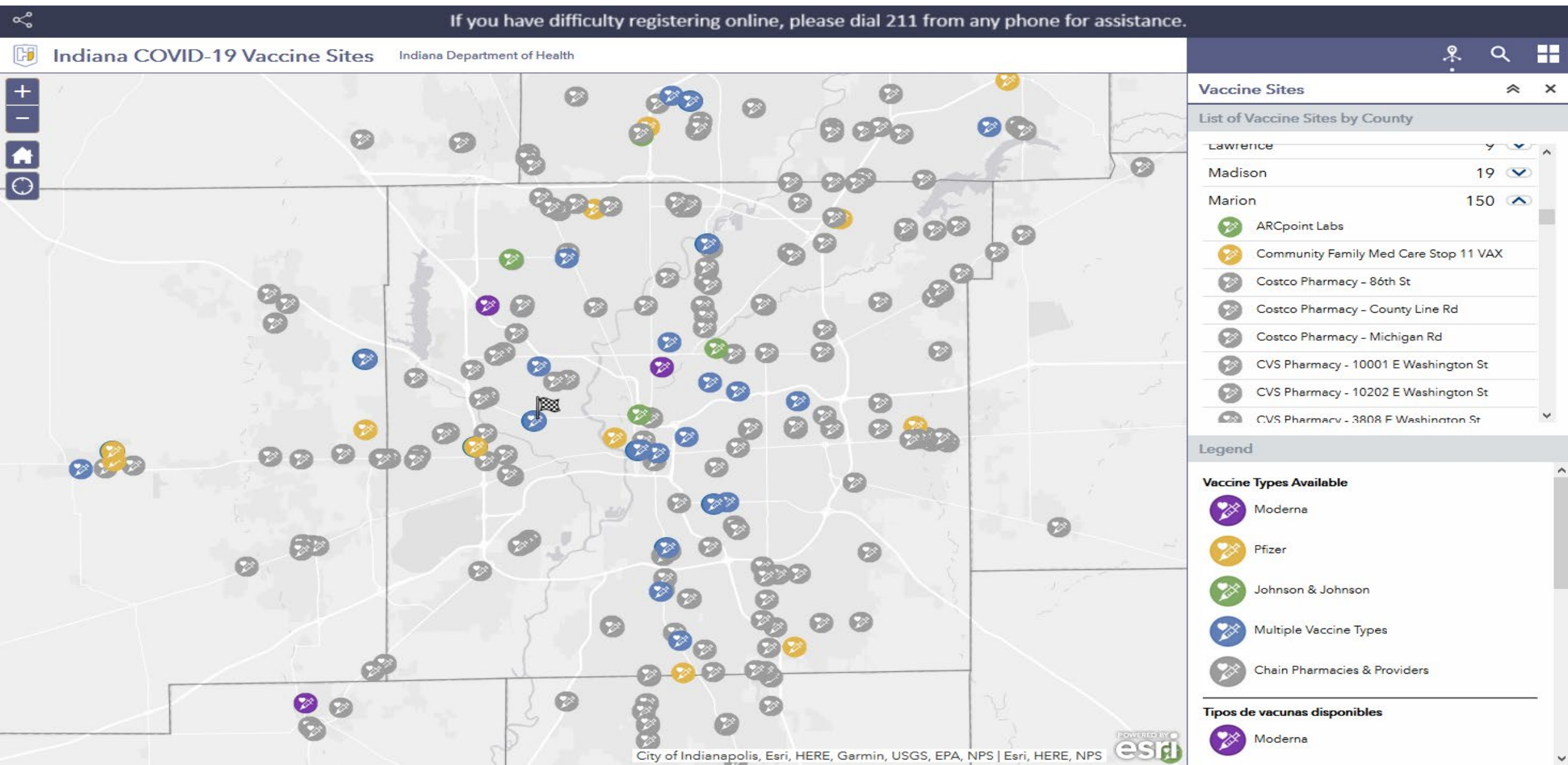
Mobile clinic Oct. 30, 10am - 2pm. This clinic has Johnson & Johnson and Pfizer. Walk-ins welcome.

Scheduling
[Click here to register](#)

Walk-in appointments are now [Zoom to](#)

City of Indianapolis, Esri, HERE, Garmin, USGS, EPA, NPS | Esri, HERE, NPS

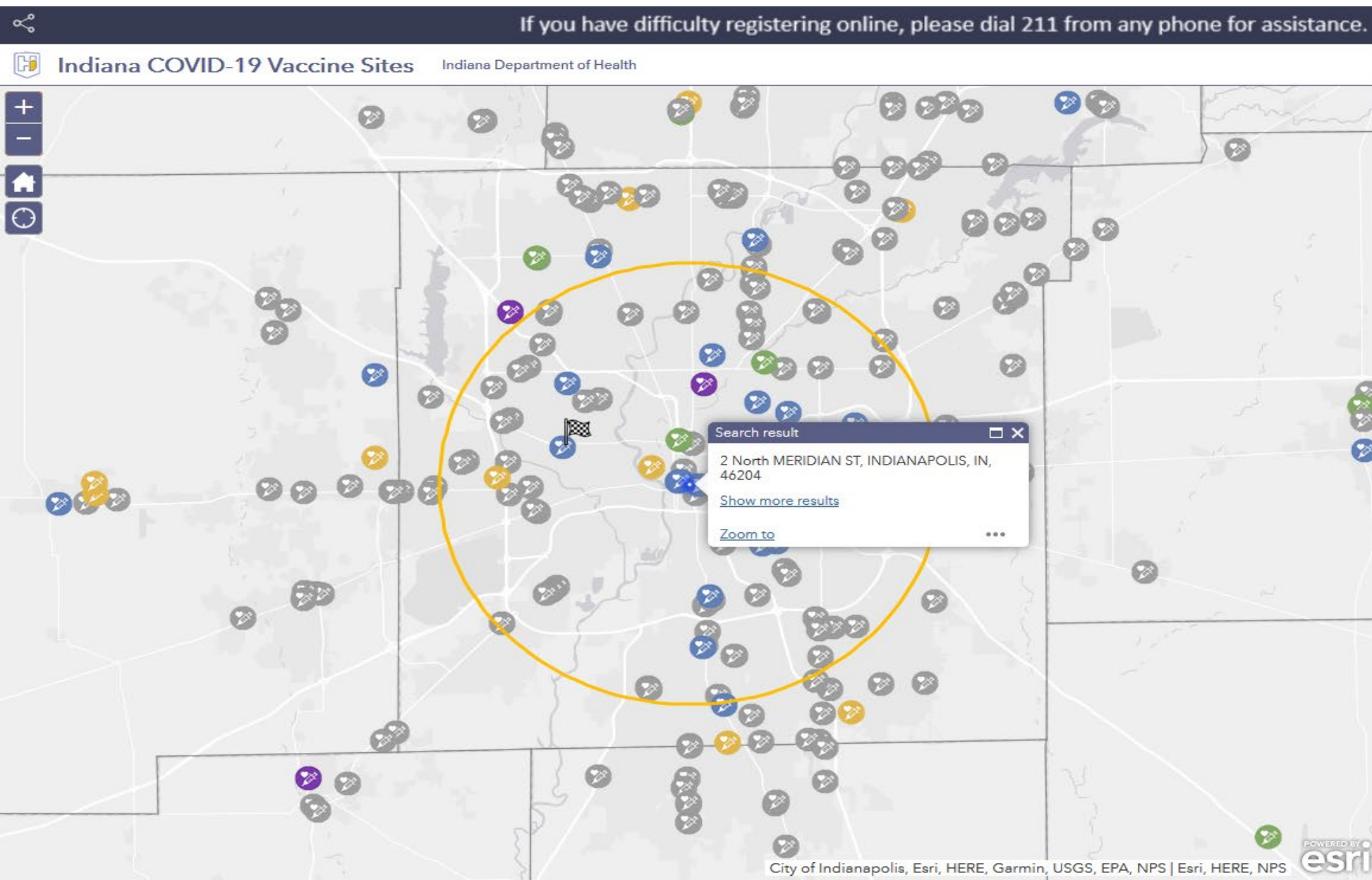
Site List By County



See All Sites Near An Address

If you have difficulty registering online, please dial 211 from any phone for assistance.

Indiana COVID-19 Vaccine Sites | Indiana Department of Health



Find Sites By Address or Zipcode

Enter text into search box below

2 north meridian, inc X

Show results within 10 Miles

0 60

Vaccine Sites (84)

LHD Marion Co IndyGo Mas...	0.36 mi
MVU Black Males Conferenc...	0.44 mi
MVU State House Market VAX	0.48 mi
CVS Pharmacy - S Delaware St	0.55 mi
Kroger Pharmacy - W Michig...	0.64 mi
HSP IU Health Riley Hospital ...	1.73 mi
MVU Arsenal Tech High Sch...	1.81 mi
CVS Pharmacy - N Meridian St	1.82 mi
Walgreens Pharmacy - N Me...	1.83 mi
IUH Methodist Retail Pharm ...	2.03 mi
CVS Pharmacy - Shelby St	3.04 mi
Kroger Pharmacy - Twin Aire...	3.09 mi
CVS Pharmacy - 3808 E Was...	3.93 mi
MVU Shenandoah Growers ...	4.02 mi

City of Indianapolis, Esri, HERE, Garmin, USGS, EPA, NPS | Esri, HERE, NPS

POWERED BY esri

Editing With ArcGIS Experience Builder

- Sites are being added, removed, and edited every day
- GIS team receives edits from IDOH Office of Public Affairs
- Edits were taking a lot time and messages
- Created Experience to allow OPA to make many edits themselves
- OPA edits text info and hides sites that close, GIS team adds and moves points
- Saves time for both groups

Vaccine and Testing Site App Summary

Vaccine Site App - <https://ourshot.in.gov>

Testing Site App - <https://www.coronavirus.in.gov/2524.htm>

Both apps have about 8 million views

Original Case Dashboard

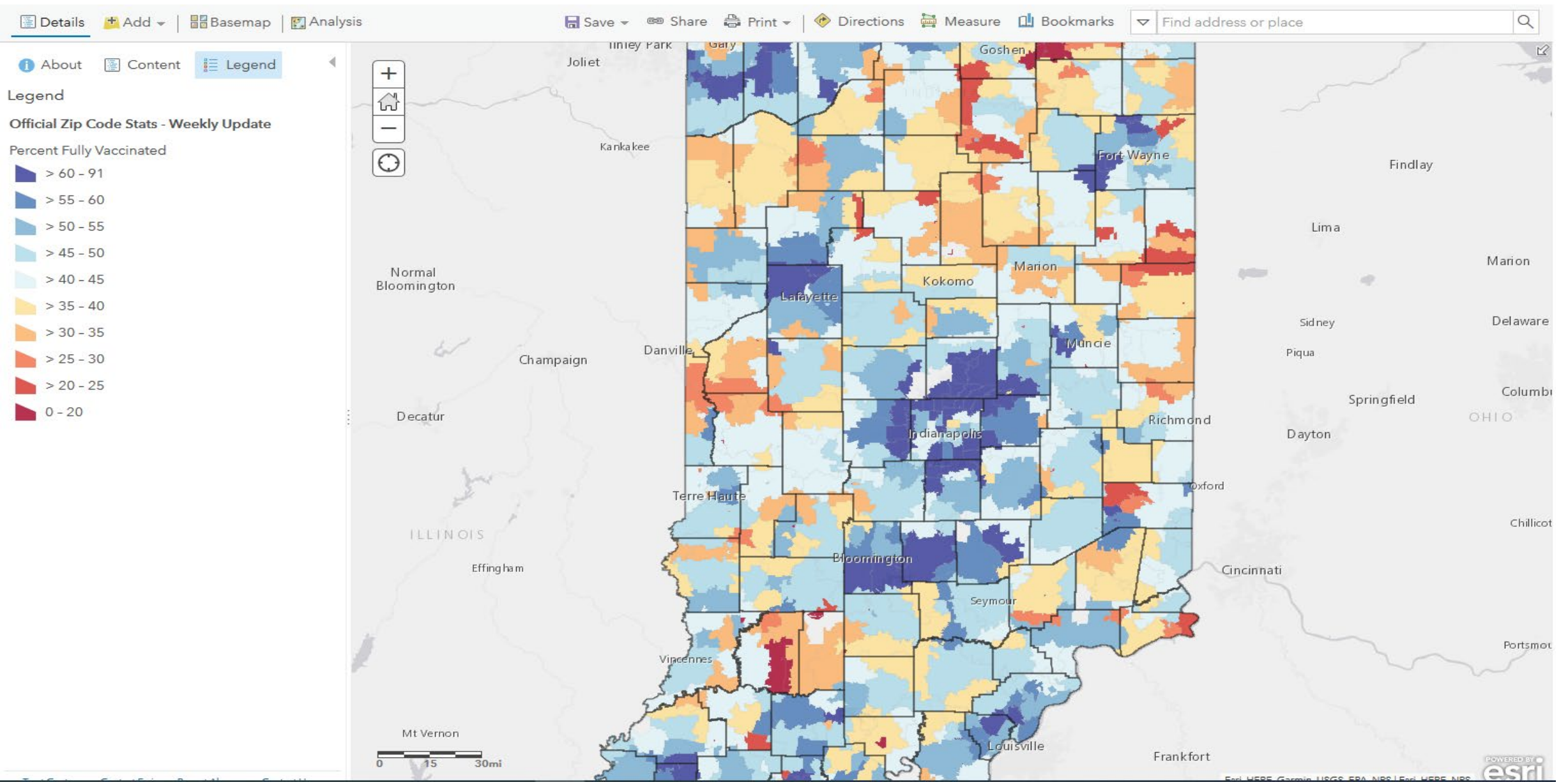
- When COVID cases first appeared in Indiana in March 2020, we quickly created a public AGOL dashboard
- This version was replaced by the current version a few weeks later but had 27 million views in that short amount of time
- Data was openly available for use by other applications



Indiana
Department
of
Health

Vaccine Equity

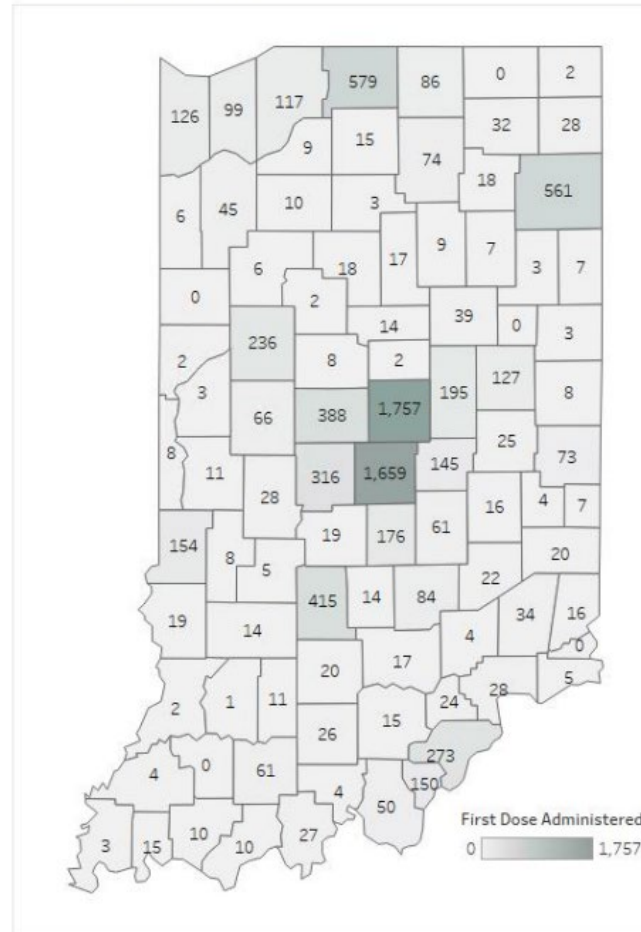
Vaccination Rate Example



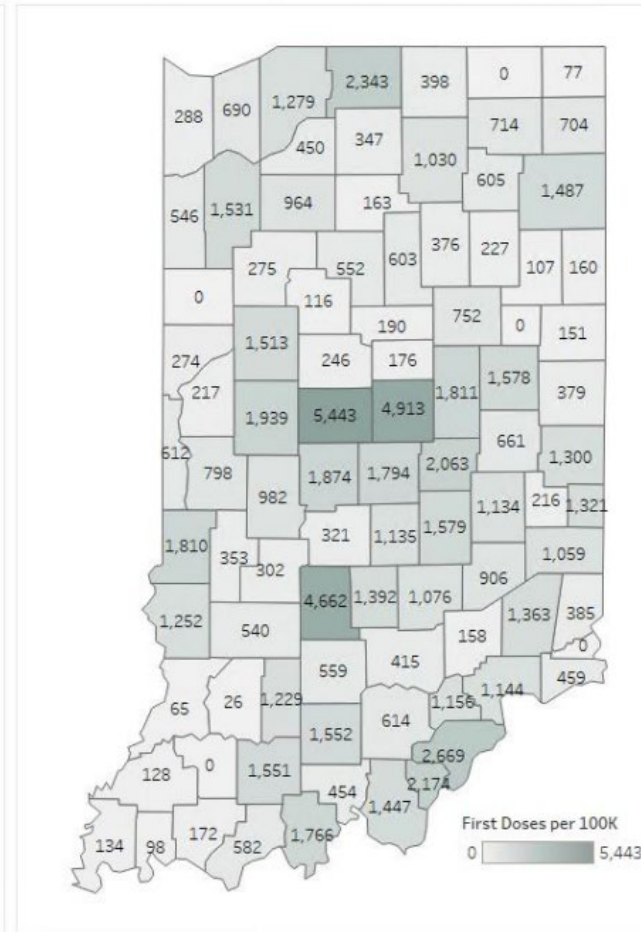
5-11 Vaccine Uptake

First Doses Administered to the 5-11 Year Age Group

First Doses Administered



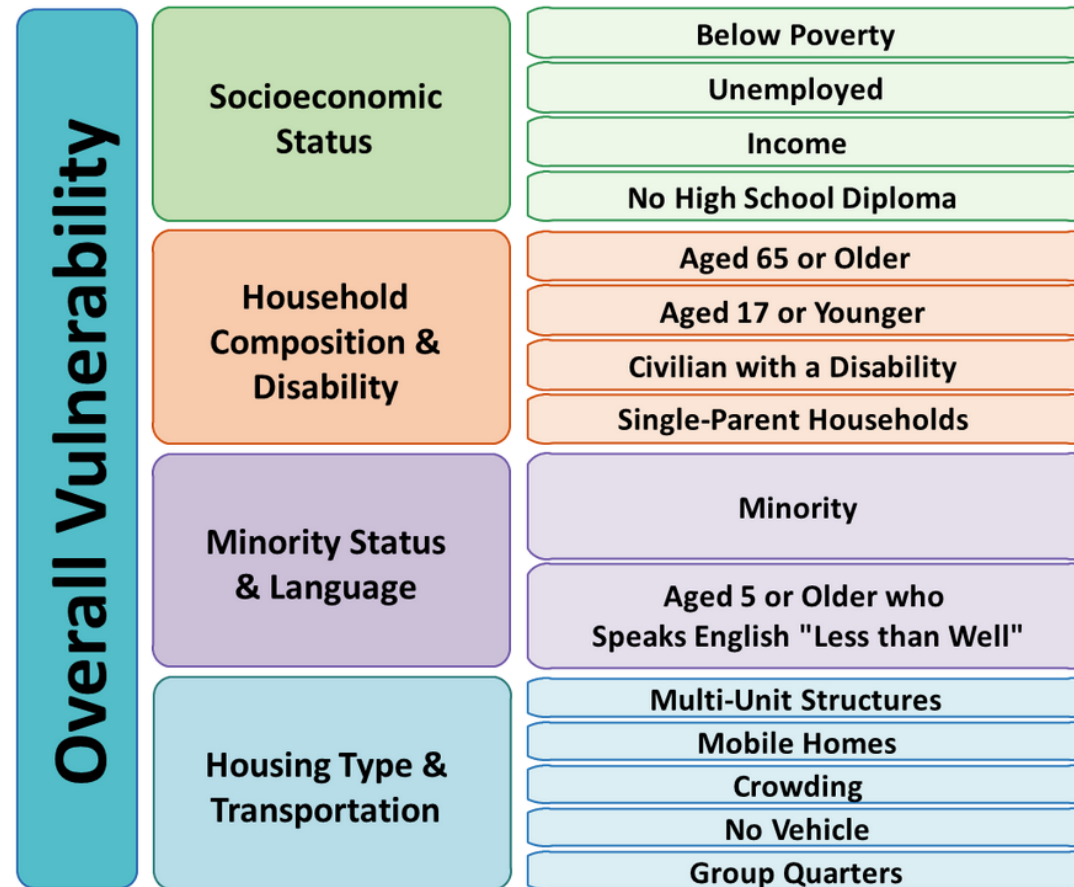
First Doses Administered per 100K Residents Aged 5-11



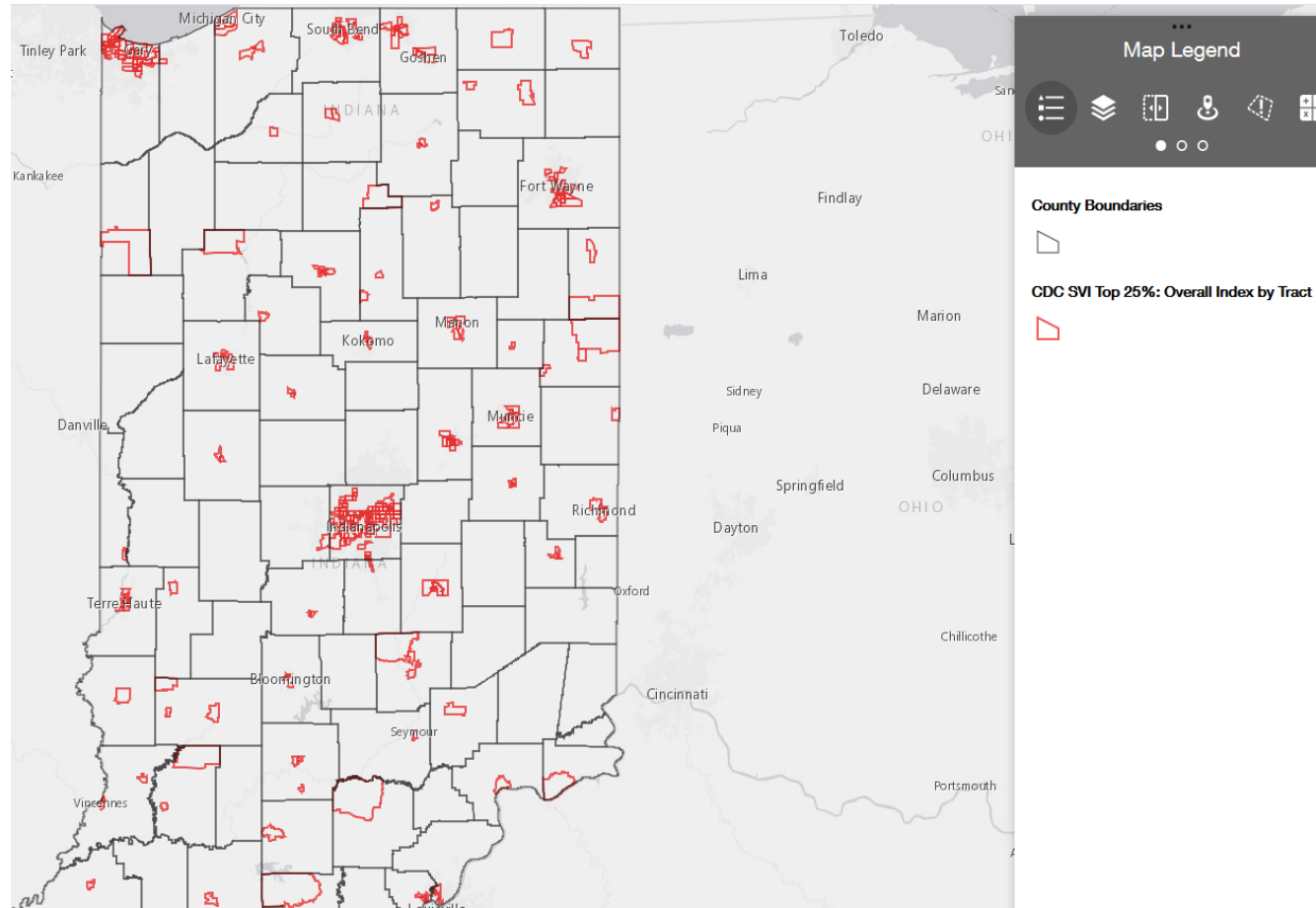
Social Determinants of Health (SDOH)

- Where you live influences health outcomes
- Look at community level data (e.g. Census)
- Can combine SDOH with case data to improve health equity and decision-making in response
- CDC made Social Vulnerability Index (SVI) to assess vulnerability to natural hazards
- We have also worked with local partners to make custom indices

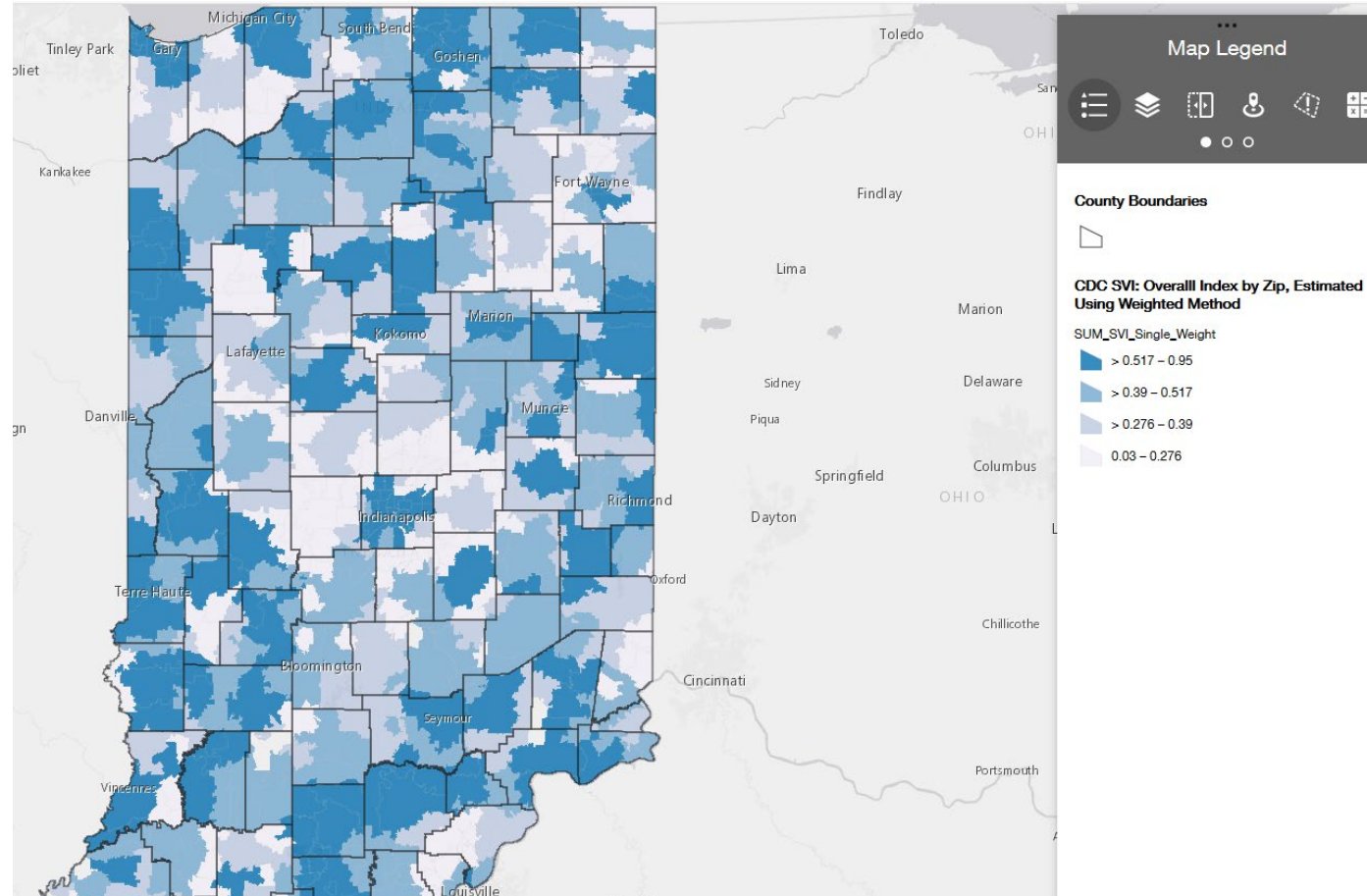
Social Vulnerability Index (SVI)



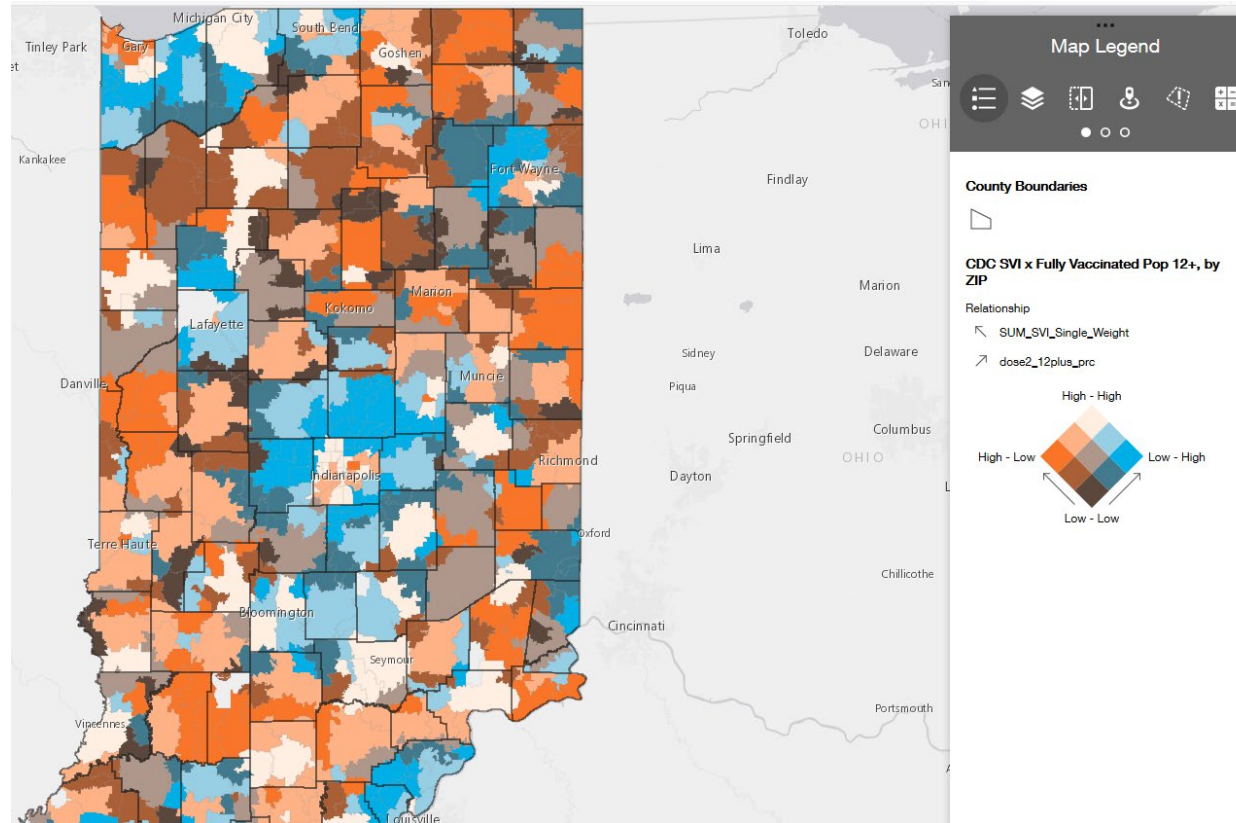
Most Vulnerable Tracts in State



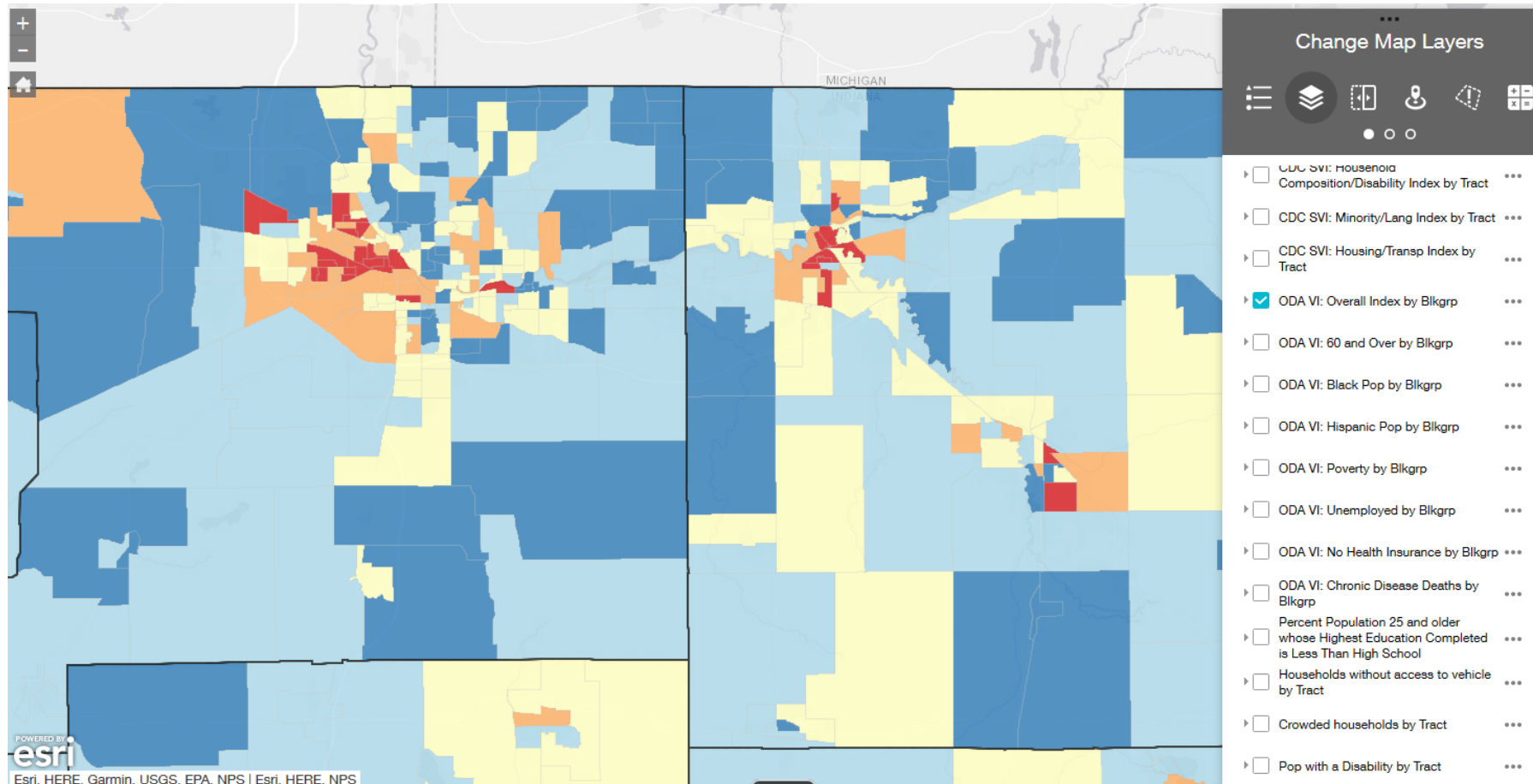
SVI by Zip Code (Custom Calculation)

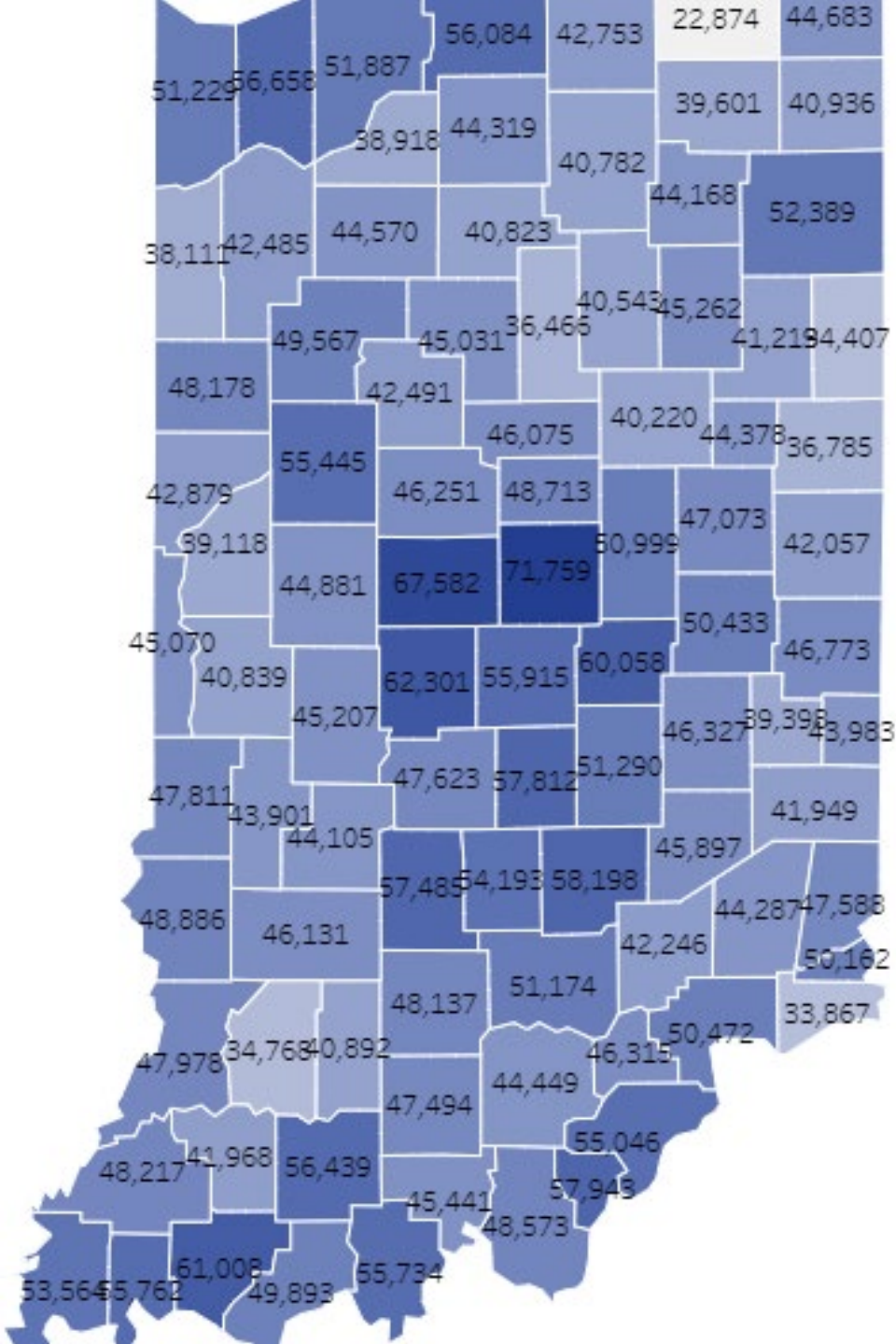


Bivariate Map – SVI and Vaccination Rate

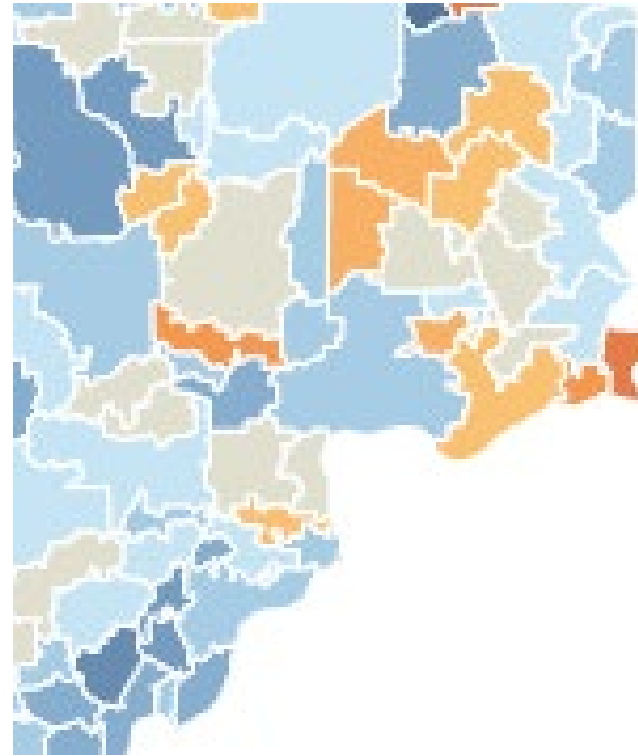


Block Group Level Vulnerability





A Tale of Two Counties

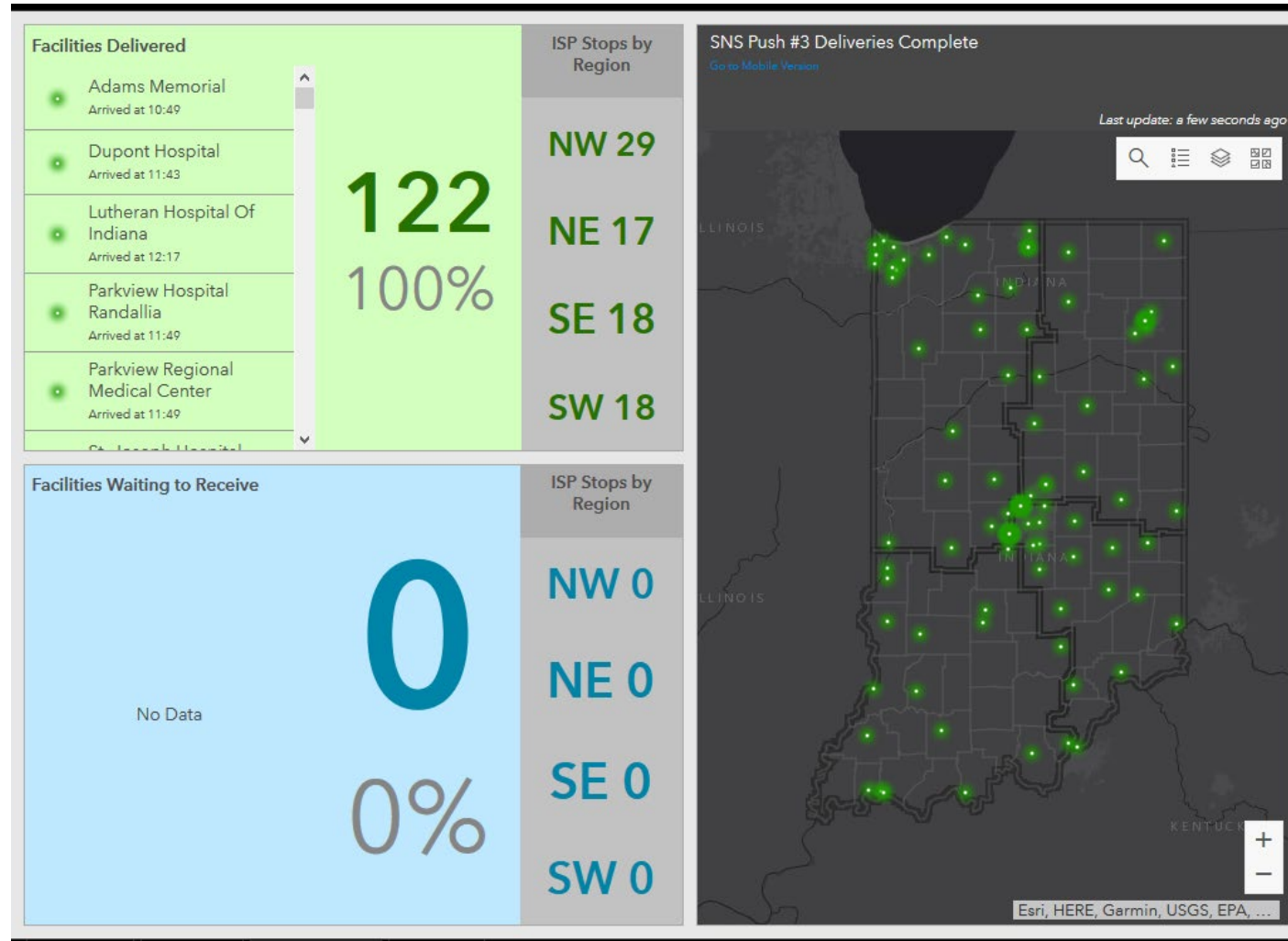




Indiana
Department
of
Health

PPE Logistics

PPE Delivery Logistics



HOSPITAL STATUS

Community Hospital Status

- Community Hospital Of Bremen
- Community Hospital South
- Community Howard Regional Health
- Daviess Community Hospital
- Deaconess Cross Pointe
- Deaconess Gateway Hospital
- Deaconess Hospital
- Decatur County Memorial
- Dekalb Memorial
- Dukes
- Dupont Hospital
- Elkhart General Hospital

Black-Red-Yellow

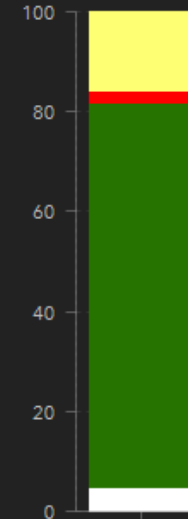
Select Status Color to Filter

23

Number of Hospitals

18%%

Percent of Hospitals



HEALTH DEPT STATUS

- Delaware County Health Dept.
- Dubois Co. Health Dept.
- East Chicago Health Dept.
- Elkhart Co. Health Dept.
- Fayette Co. Health Dept.
- Floyd Co. Health Dept.
- Fountain-Warren Co. Health Dept.
- Franklin County Health Department
- Fulton Co. Health Dept.
- Gary Health Department
- Gibson Co. Health Dept.

Black-Red-Yellow

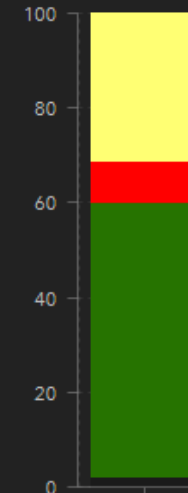
Select Status Color to Filter

39

Number of Health Dept

42%%

Percent of Health Dept





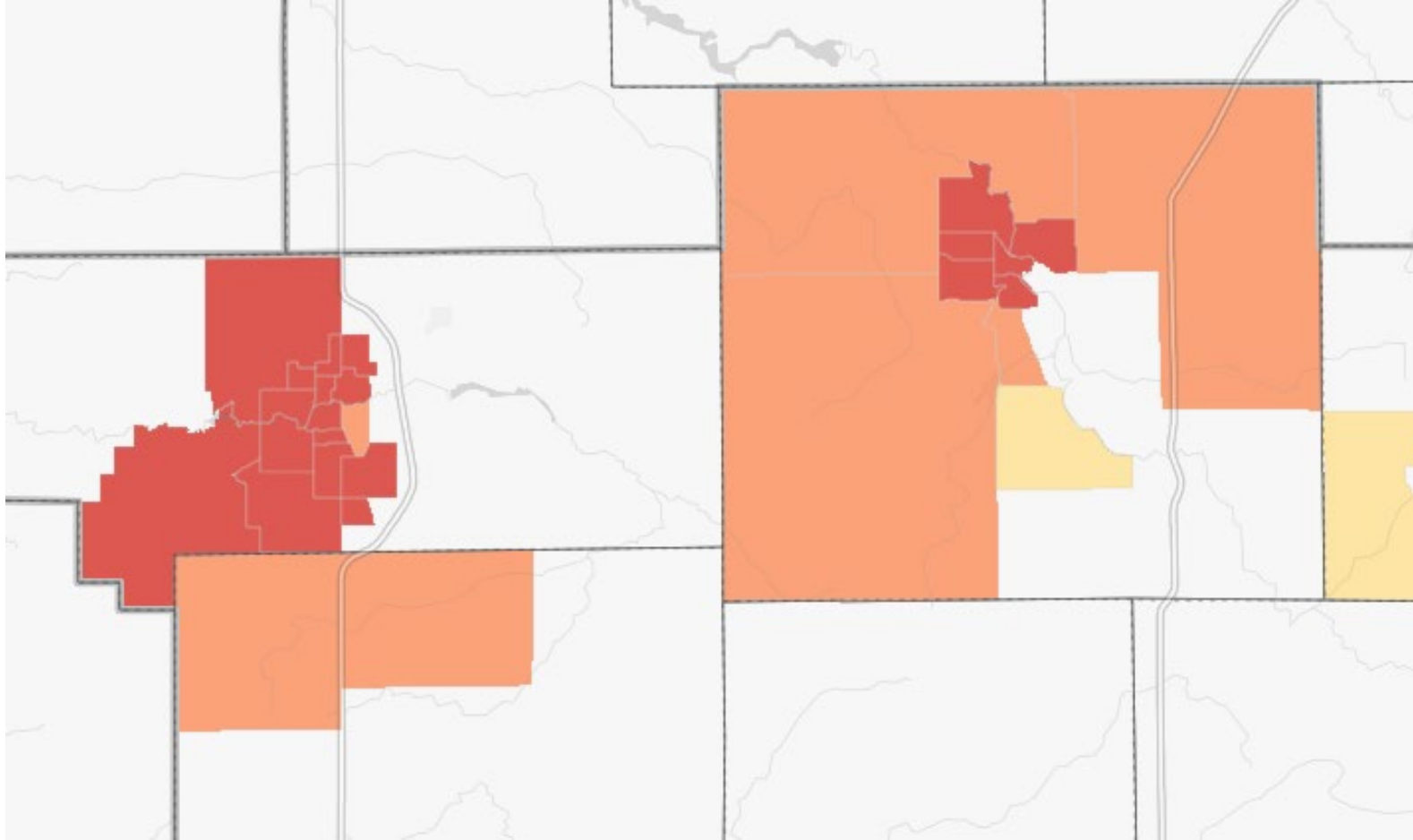
Indiana
Department
of
Health

School Outbreak Monitoring

School Outbreak Detector

- Geocoding cases among school-age children
- Use to identify schools and areas that may be having high case rates
- Needed because not all schools have been reporting cases
- Imperfect process because we don't know which school each student attends

School Outbreak Detector





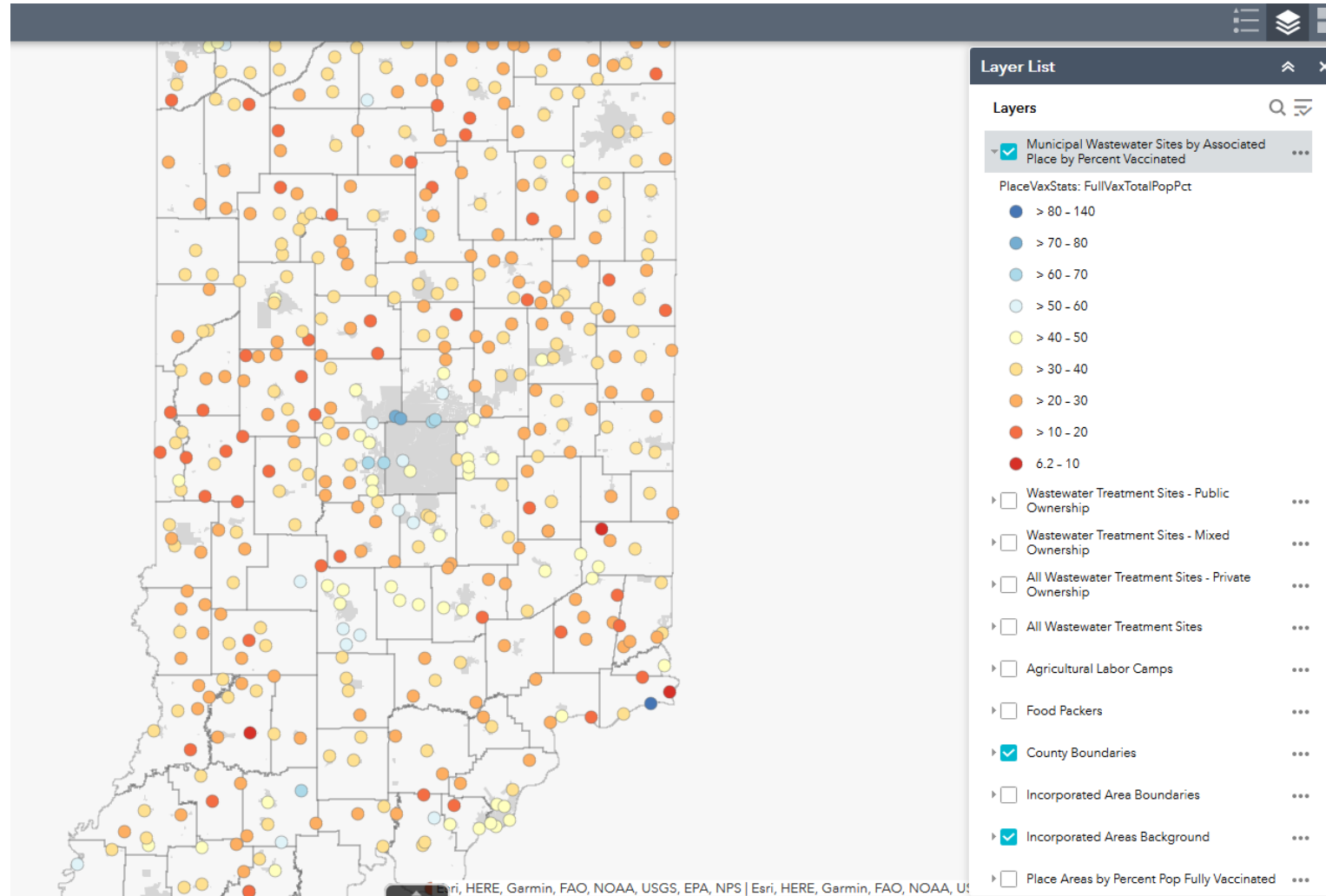
Indiana
Department
of
Health

Wastewater Testing

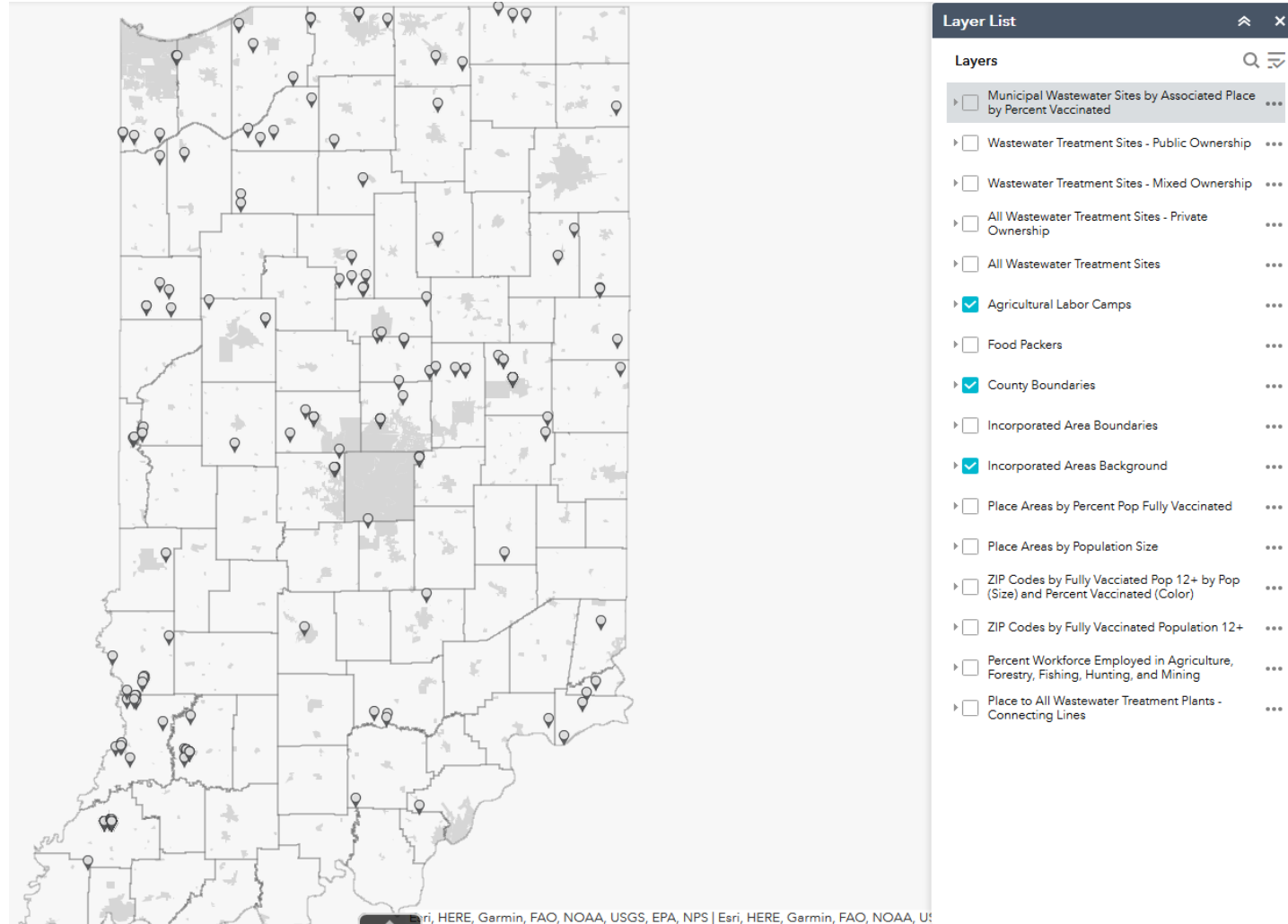
Wastewater Testing

- Received FDA grant to test wastewater at small number of sites
- Supplement PCR and rapid testing
- To decide where to test, looked at large enough public sewerage systems in agricultural areas with local vaccination rates
- Calculated vaccination rates by Census Designated Place
- Also looked at locations of agricultural labor camps

Wastewater Testing



Agricultural Labor Camps



Very Large Team Effort

GIS is just one small part of COVID response, which has involved thousands of people across the state. This work wouldn't be possible without the work of many other people.

Questions?

CONTACT:

