

Location- Based Analytics: Using GIS to Improve Programs and Delivery of Services

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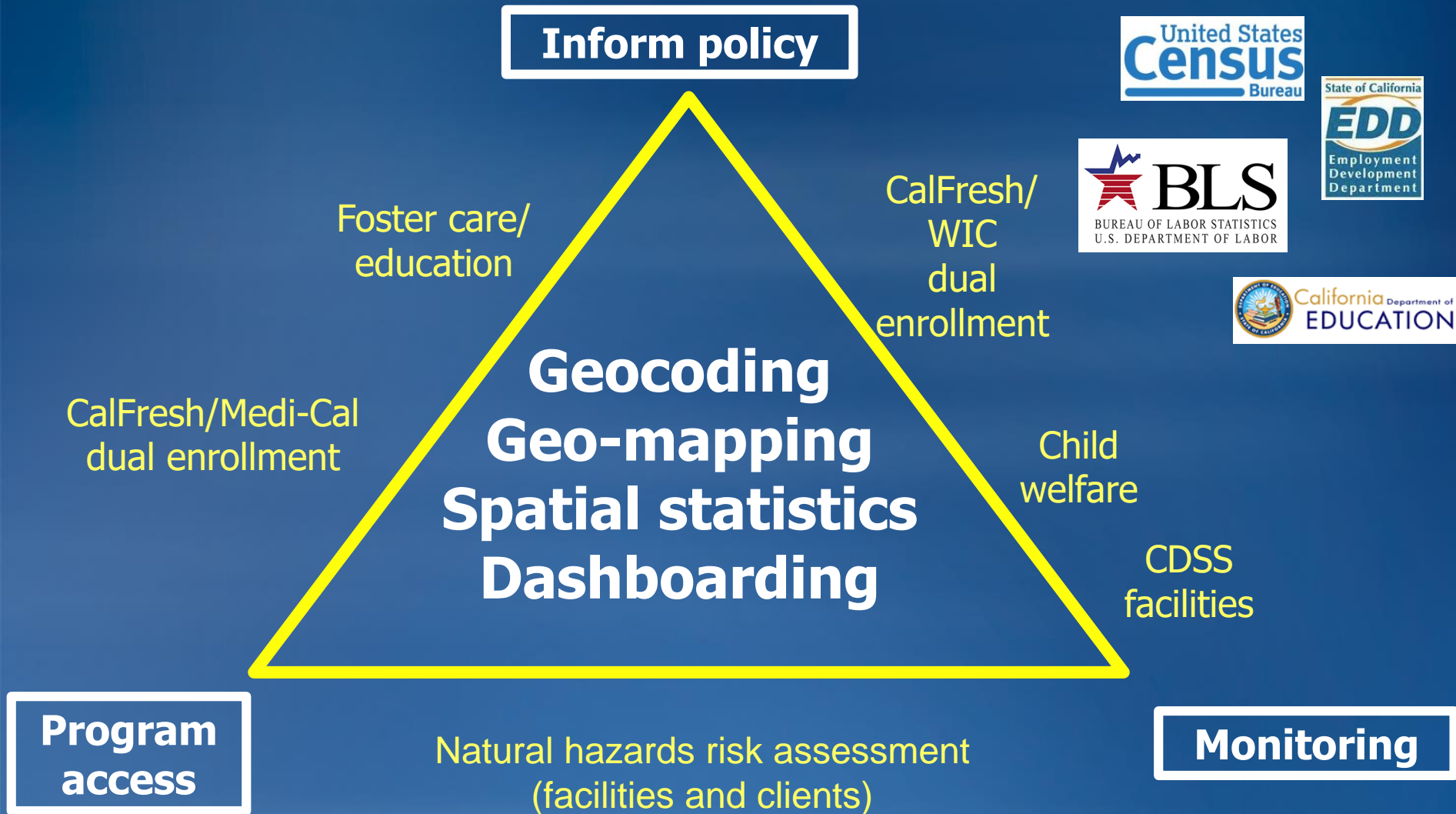
California Department of Social Services
Research Services Branch



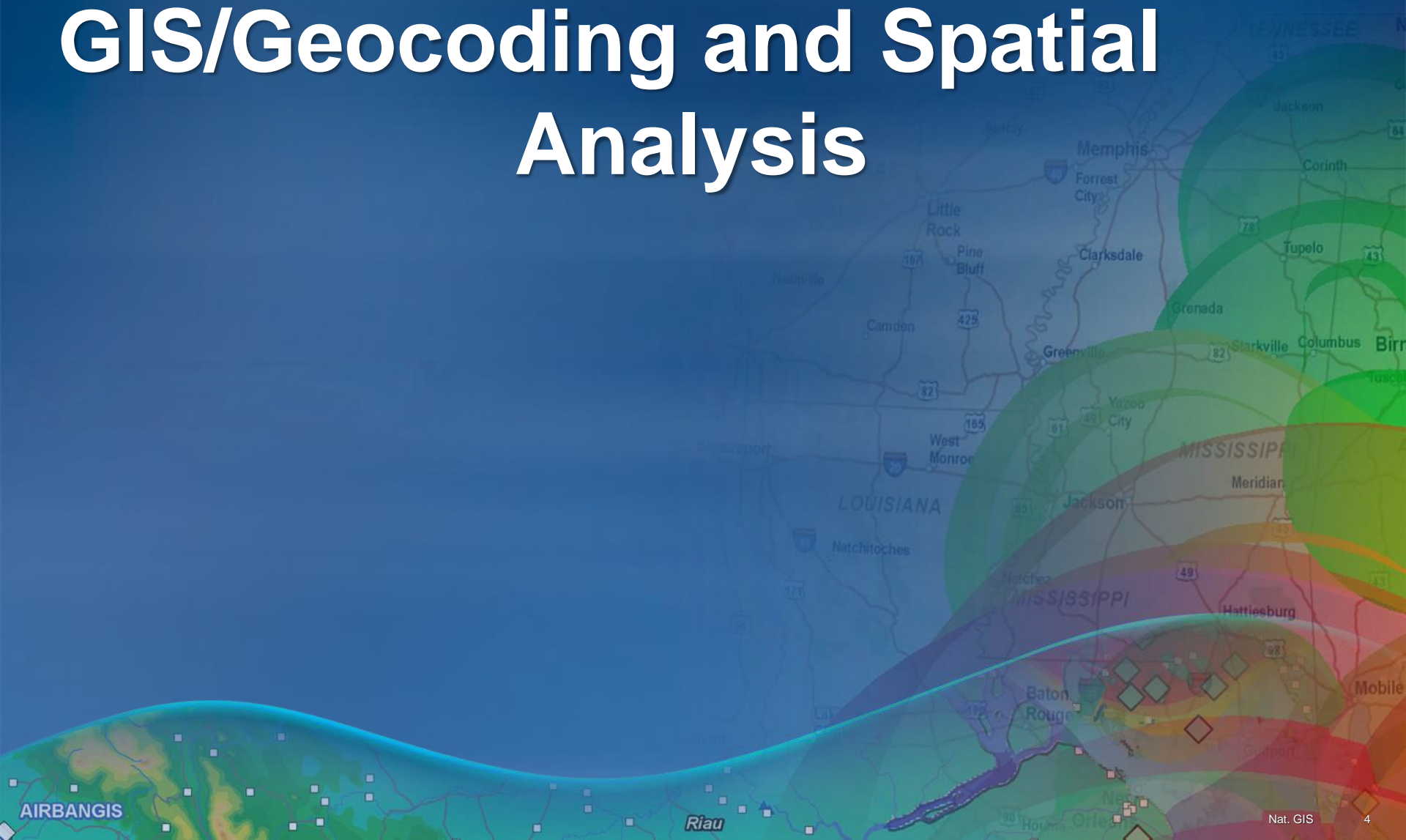
Location- Based Analytics: Using GIS to Improve Programs and Delivery of Services

- **Overview of what is GIS and how CDSS uses GIS analytics**
- **Applications of GIS in California Health and Human Services programs:**
 - **CalFresh dashboard**
 - **CHHS Program dashboard**
- **Additional GIS tools available to:**
 - **Conduct Micro-level spatial analysis**
 - **Tell data stories**

CDSS' Use of GIS to Improve Program Access



GIS/Geocoding and Spatial Analysis



GIS and its Components

Software

A technology for storing and analyzing location and attribute data

Hardware

Systems to support rapid graphic analysis and processing



People

Project coordinators
Data analysts
Programmers
Managers

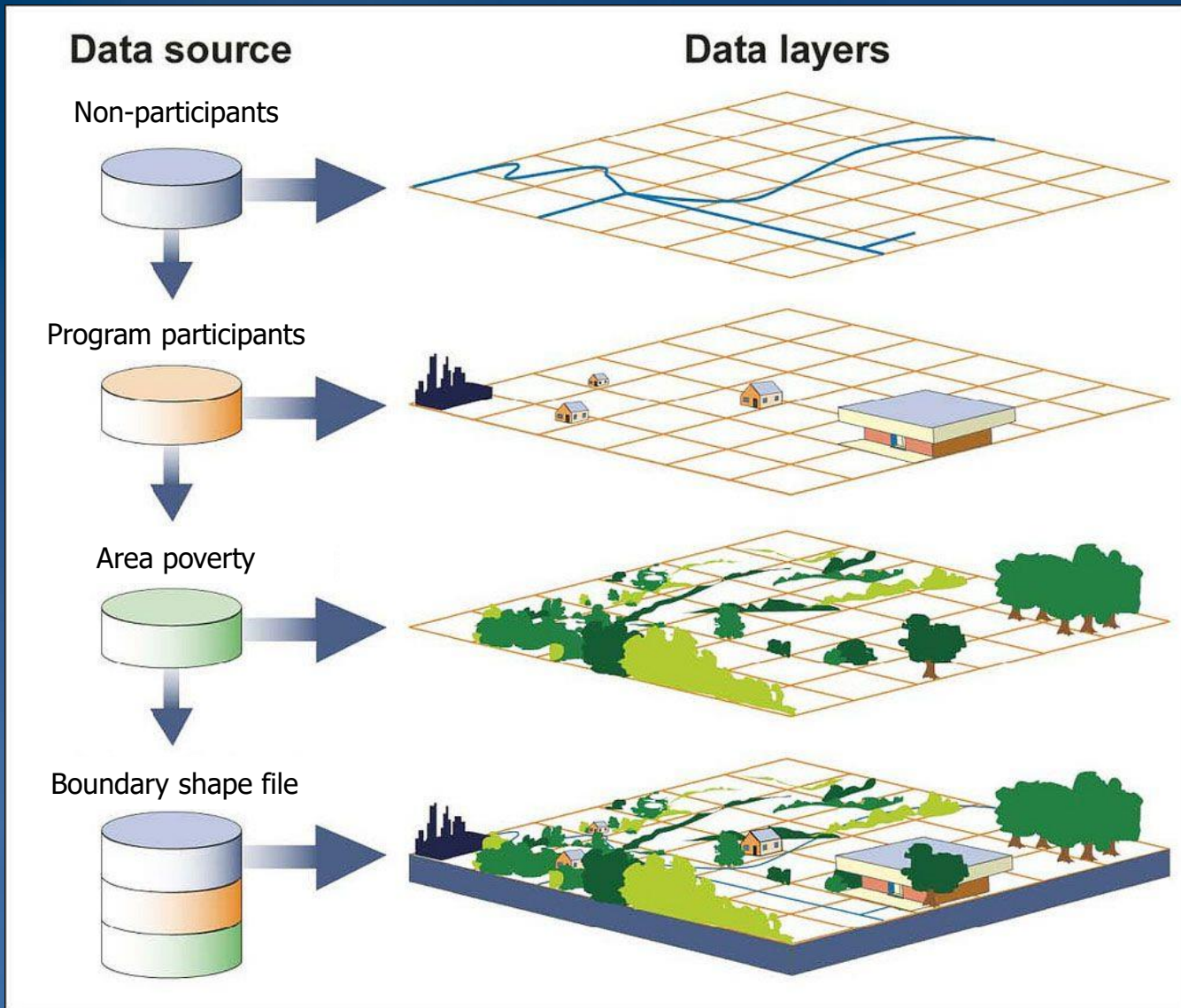
Data

Attributes about
people or cases

Methods

Guidelines
Procedures
Standards

GIS Data Layers



Source: GAO.

The ability to 'stack' layers in GIS allows us to ask questions about the relationship between different aspects of an issue.

Place Matters in Human Services

CalFresh

CalWORKs

WIC

Medi-Cal

Homeless services

Developmental disabilities

Adoption services

Behavioral health

Child care licensing

Foster care

HIV/AIDS

Water

Immigrant services

Elderly services

Mental health services

Emergency Management

Energy

Wildfire

Substance abuse services

Global Warming

Land Use

Population growth

Hospice

Education

Public Safety

Development

Senior services

Youth services

Vocational services

Services for the blind

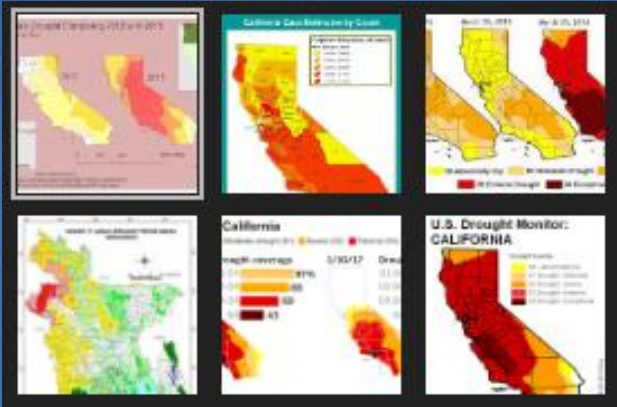
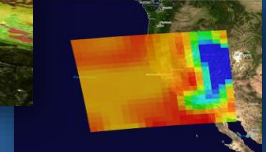
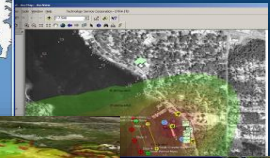
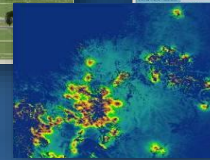
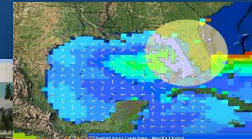
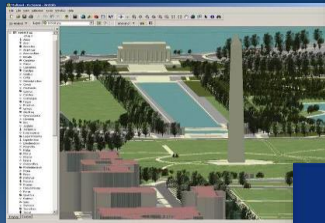
Economic Recovery

Environmental Protection

Law Enforcement

Employment services

Public housing



GIS can help by Improving Planning, Management and Decision Making . . . and Providing Critical Infrastructure

CHHS Program Dashboard

Improving Program Oversight by Informing Policymakers

- Example of these concepts from Health & Human Services Program Dashboard project:
- Internal & external data sources
- Geocoding & geomapping
- Enhanced dashboarding with geomaps



Scenario

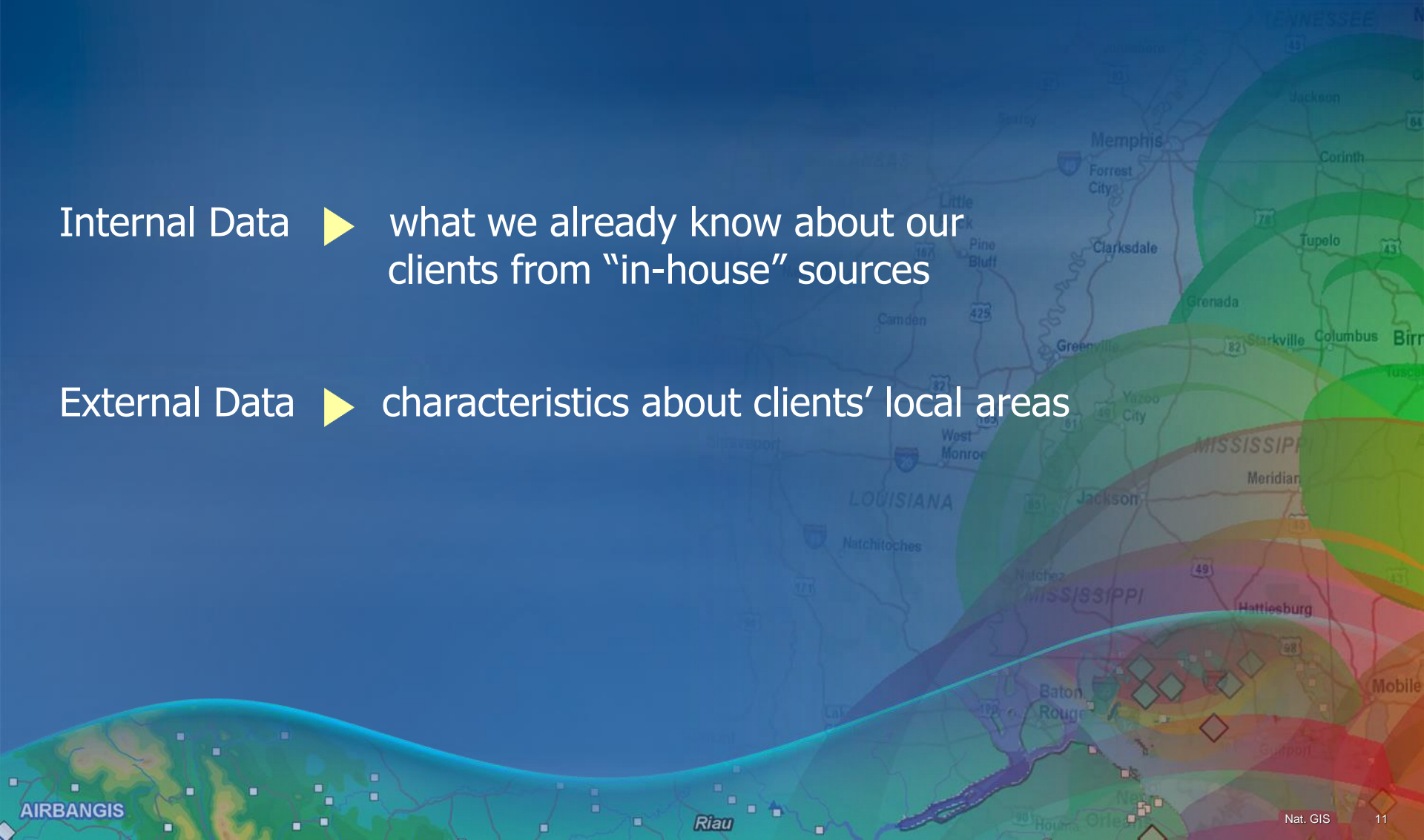
In light of pending federal legislation, CDSS wanted to know:

“How would budget cuts to more than one program affect families?”



Contextualize an Area by Combining Internal & External Data

- Internal Data ► what we already know about our clients from “in-house” sources
- External Data ► characteristics about clients’ local areas



Internal CHHS Data



External Data



- Unique Identifiers
- Location (i.e., street address)
- Program Usage
 - benefit amount
 - household composition
 - enrollment history

- Poverty / Unemployment
- Language
- Demographics
- Homeownership / Rental Stats
- What other outside factors impact your program?

Geocoding & Geomapping

- Getting a latitude/longitude from a street address
 - Challenges involved
- Development of summary statistics for geographical areas
 - In this case, legislative districts

Level	Number	Program	Person	Cases	Grant	White	Hispani	Bl
U.S. Congress	00 - Cong. Average	CalWORKs	18,550	7,566	\$4,221,782	2,983	10,344	3,1
U.S. Congress	00 - Cong. Median	CalWORKs	14,608	6,894	\$3,660,110	1,782	6,751	1,7
U.S. Congress	00 - State Total	CalWORKs	983,131	400,996	\$223,754,420	158,089	548,240	165
U.S. Congress	01	CalWORKs	17,667	7,586	\$4,060,365	11,433	2,815	5,8
U.S. Congress	02	CalWORKs	9,546	4,104	\$2,206,348	4,511	2,671	4,3
U.S. Congress	03	CalWORKs	17,589	7,404	\$4,082,263	6,836	6,116	2,3
U.S. Congress	04	CalWORKs	7,316	3,230	\$1,682,192	4,862	1,326	2,1
U.S. Congress	05	CalWORKs	9,214	4,134	\$2,251,120	2,343	2,939	2,7
U.S. Congress	06	CalWORKs	42,154	17,288	\$9,277,237	6,725	10,404	14,7
U.S. Congress	07	CalWORKs	18,810	7,596	\$4,056,227	4,681	3,612	4,5
U.S. Congress	08	CalWORKs	44,309	17,268	\$9,665,606	10,422	20,029	10,7
U.S. Congress	09	CalWORKs	29,597	12,562	\$6,824,989	4,500	12,551	6,8
U.S. Congress	10	CalWORKs	25,282	10,462	\$5,662,713	6,945	13,016	1,5
U.S. Congress	11	CalWORKs	10,685	4,964	\$2,643,615	1,207	3,917	3,6
U.S. Congress	12	CalWORKs	5,649	2,691	\$1,425,623	371	1,570	2,0
U.S. Congress	13	CalWORKs	14,608	7,093	\$3,660,110	571	3,953	7,6
U.S. Congress	14	CalWORKs	2,774	1,260	\$667,331	312	1,442	3,8
U.S. Congress	15	CalWORKs	6,662	3,119	\$1,644,977	785	2,533	1,7
U.S. Congress	16	CalWORKs	56,622	21,868	\$12,373,642	6,452	37,718	6,8
U.S. Congress	17	CalWORKs	3,613	1,607	\$841,087	511	1,742	4,1
U.S. Congress	18	CalWORKs	2,476	1,122	\$583,016	516	1,370	1,9
U.S. Congress	19	CalWORKs	9,378	4,173	\$2,186,243	742	6,775	6,3
U.S. Congress	20	CalWORKs	12,763	5,308	\$3,039,414	1,585	9,786	3,1
U.S. Congress	21	CalWORKs	41,170	15,811	\$8,946,145	3,606	31,966	3,2
U.S. Congress	22	CalWORKs	33,609	13,402	\$7,432,583	5,809	22,362	2,5
U.S. Congress	23	CalWORKs	34,022	13,525	\$7,638,919	9,992	16,007	5,5

CALIFORNIA HEALTH AND HUMAN SERVICES AGENCY
DEPARTMENT OF SOCIAL SERVICES

7th Congressional District Congressman Ami Bera CalFresh Program Profile¹

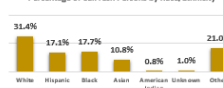
Located entirely within Sacramento County and representing many of the capital city's suburban areas, California's 7th Congressional District is home to 735,468 residents with a median household income of \$68,735. The Census Bureau estimates that 11.6 percent of its residents live below the Federal Poverty Level (FPL), lower than the median Congressional District rate of 13.9 percent. The most recent data (2016) indicate an unemployment rate of 5.7 percent among the District's labor force. Eligibility for receipt of CalFresh benefits is determined based on applicants' earned income, first using a gross income threshold of 200 percent FPL (note this level is higher than the SNAP gross threshold of 150 percent FPL) and then a net income threshold of 100 percent FPL. Benefit amounts are dependent on household size, countable income, and monthly expenses such as housing, utilities, and so forth. All U.S. citizens or Legal Permanent Resident children may qualify to receive CalFresh benefits, regardless of where the parents were born.

The 7th District has 68,225 individuals in 31,837 households currently receiving CalFresh benefits, collectively receiving \$9,396,262 in program benefits. Person and household figures are roughly equivalent to the state's Congressional district median values (68,095 and 32,465, respectively) while District 7's total grant amount is the median value of all districts. Of these recipients, 45.0 percent are under the age of 18, 48.5 are ages 18-59, and 6.5 percent are age 60 or older. The gender composition of all CalFresh individuals is roughly even (54.8 percent female and 45.2 percent male). The District has more white individuals receiving CalFresh than any other racial/ethnic group (31.4 percent), followed by black (17.7 percent), Hispanic (17.1 percent), Asian (10.8 percent), "unknown" (1.0 percent), and American Indian recipients (0.8 percent).

¹ Sources: Medi-Cal Eligibility Data System; U.S. Census Bureau 2016 American Community Survey; CalFresh caseload and grant amount figures reflect the month of July 2017.

	7th Congressional District	California Congressional District Median
CalFresh persons	68,225	68,095
CalFresh persons as percentage of overall district population	9.2%	9.5%
CalFresh households	31,837	32,465
CalFresh households as percentage of total state caseload	2.1	2.1
CalFresh households as percentage of total state caseload	1.7%	1.7%
Total CalFresh grant	\$9,396,262	\$9,396,262
Grant per person	\$138	\$138
Grant per household	\$295	\$289
Race & Ethnicity		
White	31.4%	31.35%
Hispanic (any race)	17.1%	17.1%
Black	17.7%	17.7%
Asian	10.8%	10.8%
American Indian	0.8%	0.8%
Unknown	1.0%	1.0%
Age		
17 and Under	45.0%	45.0%
18 - 59	48.5%	48.5%
60 and Over	6.5%	6.5%
Gender		
Female	54.8%	54.8%
Male	45.2%	45.2%

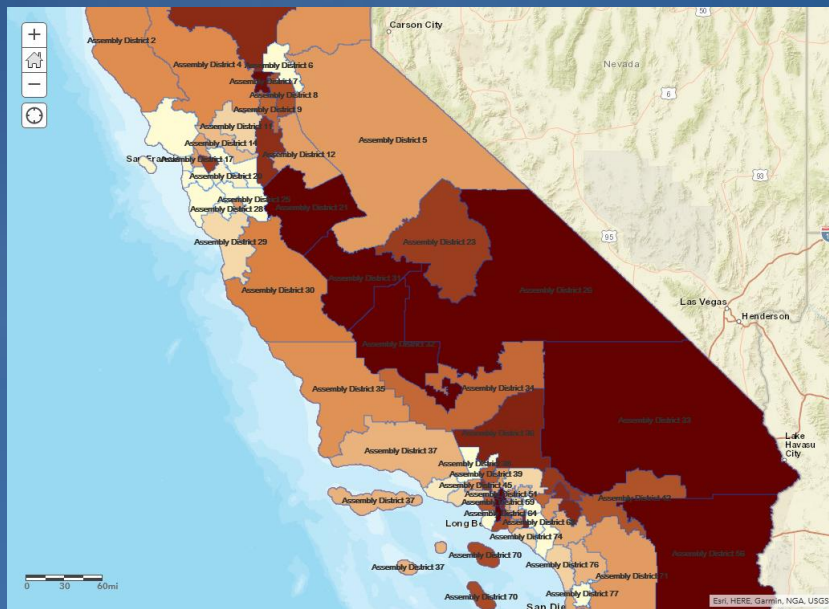
Percentage of CalFresh Persons by Race/Ethnicity



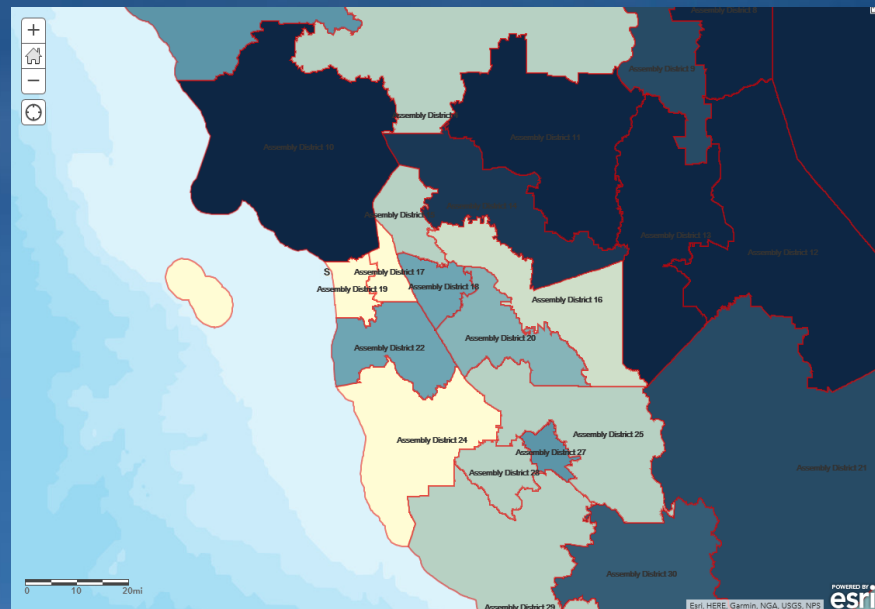
Click [here](#) to access detailed map of CalFresh and poverty statistics for District 7

Geocoding & Geomapping

- Using boundary shapefiles in combination with geocoded data, visualize the data by geomapping
- Layers of data on top of each other
 - Geographic boundaries (legislative districts)
 - Client locations and demographics
 - Census poverty / income profiles



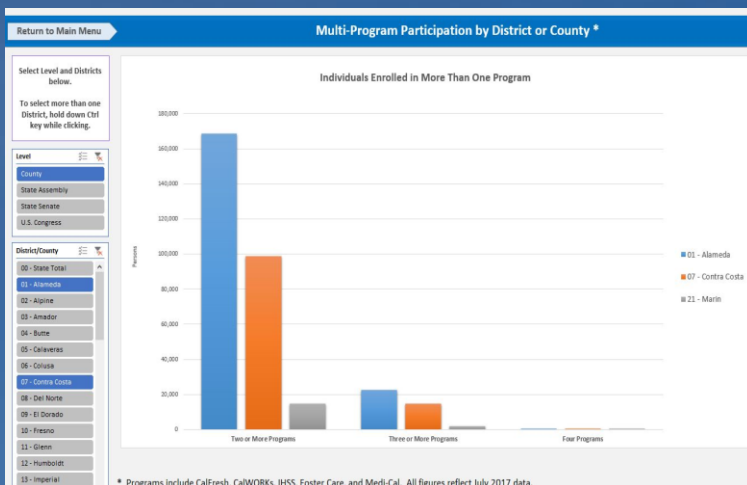
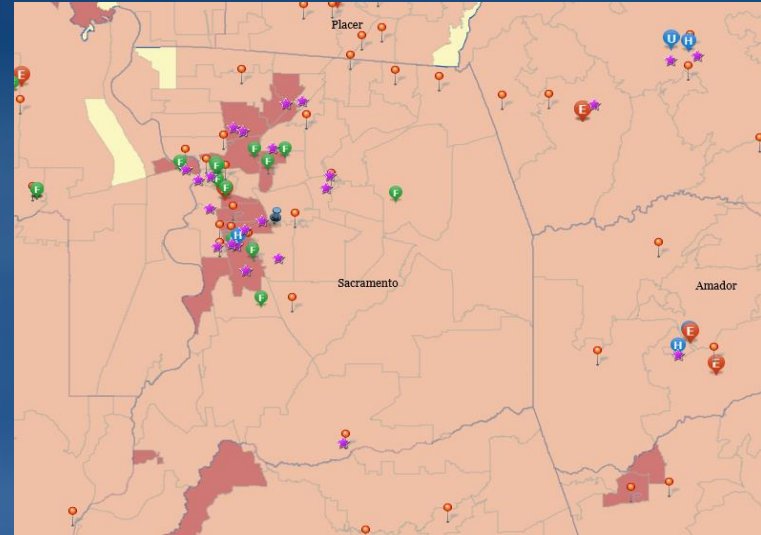
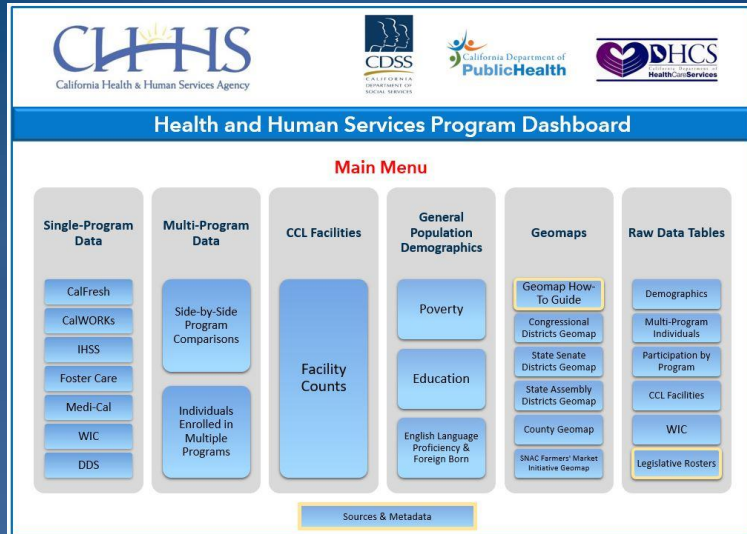
Medi-Cal & CalFresh Dual Enrollment, July 2017



Prevalence of Group Home Facilities in the Bay Area, July 2017

Enhanced Dashboarding

- In addition to traditional charts, graphs, and tables, incorporate geomaps to give users spatial visualization of your data



Results

- Now we know how many of our clients are enrolled in various programs simultaneously by district
 - Moving away from siloed view of client-program participation toward holistic perspective
- Informing federal and state legislators, as well as county stakeholders and public
 - [CHHS Open Data Portal](#)
- Incorporation into future dashboard projects

GIS Applications, cont.

CalFresh County-Level Analysis

- ❖ CalFresh dashboard (PRI)
- ❖ CalFresh dashboard / Race-ethnicity
- ❖ CalFresh access / In-depth

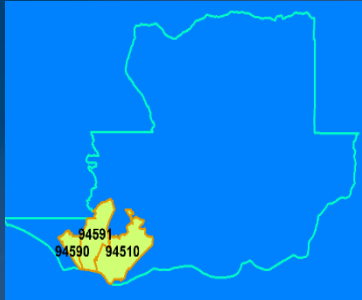
ADDITIONAL GIS TOOLS

MICRO-LEVEL

Neighborhood CalFresh in Three
Solano County ZIP Codes



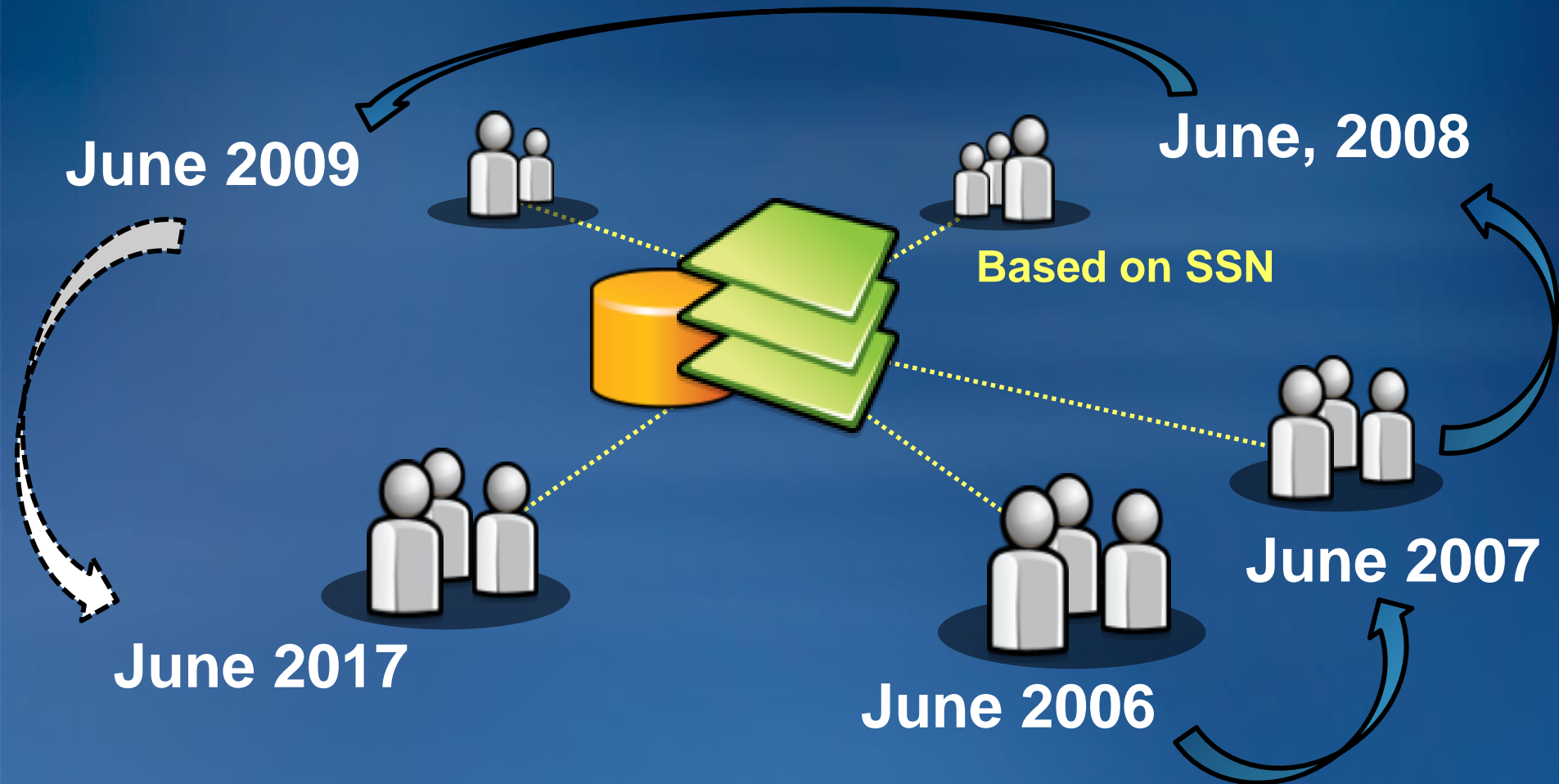
Case Study: Neighborhood CalFresh In Three Solano County ZIP Codes



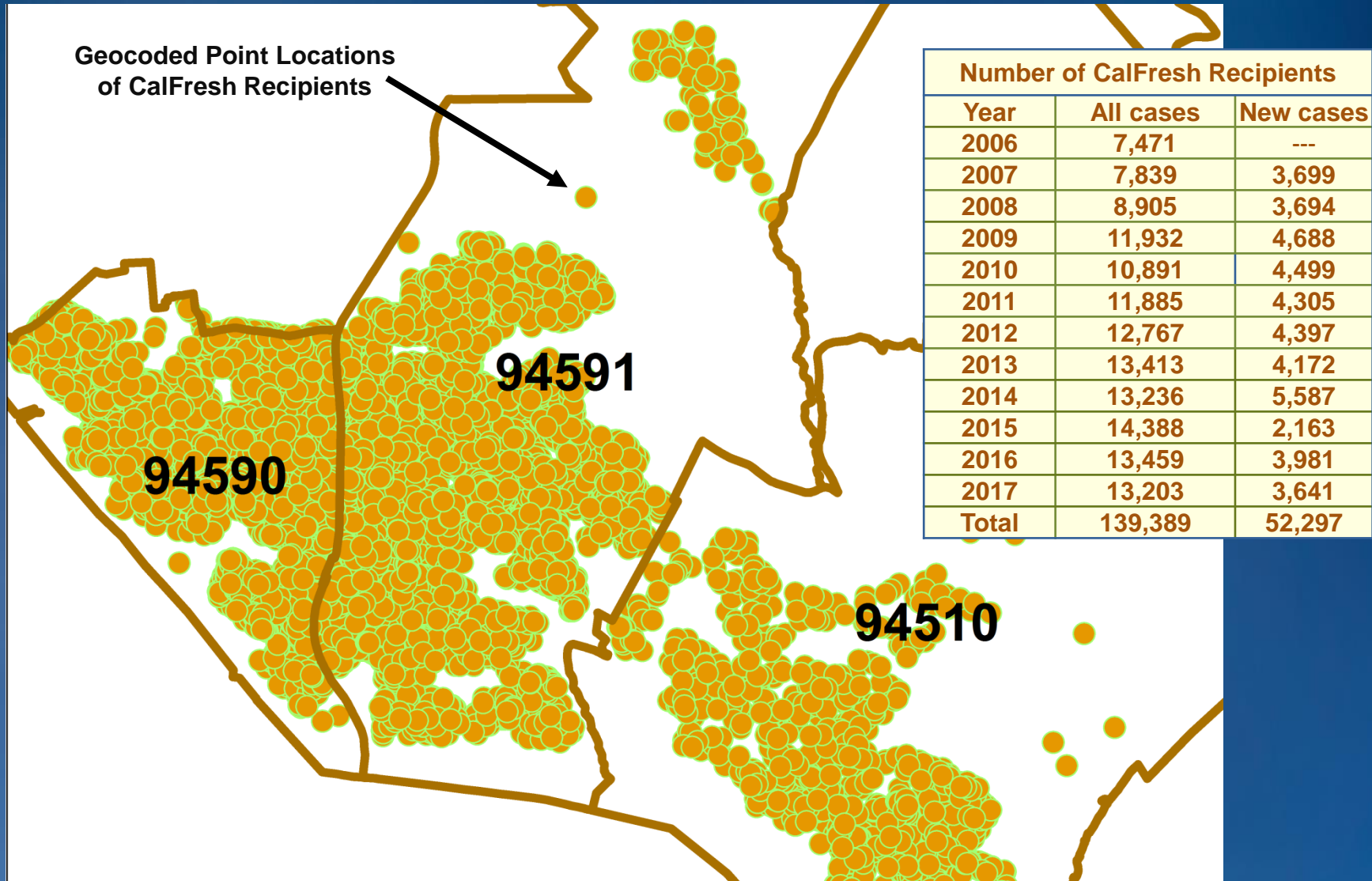
	Population (2016)	% in poverty (2016)	Median Income (2016)	% home owners (2016)	Receiving CalFresh (June 2017)
94590	36,807	26.2	\$41,530	38.9	7,653
94591	54,491	10.6	\$73,897	64.7	4,518
94510	27,786	7.1	\$87,569	67.9	1,032
Solano County	440,207	12.7	\$69,227	59.2	40,768

Case Study: Neighborhood CalFresh in Three Solano County ZIP Codes

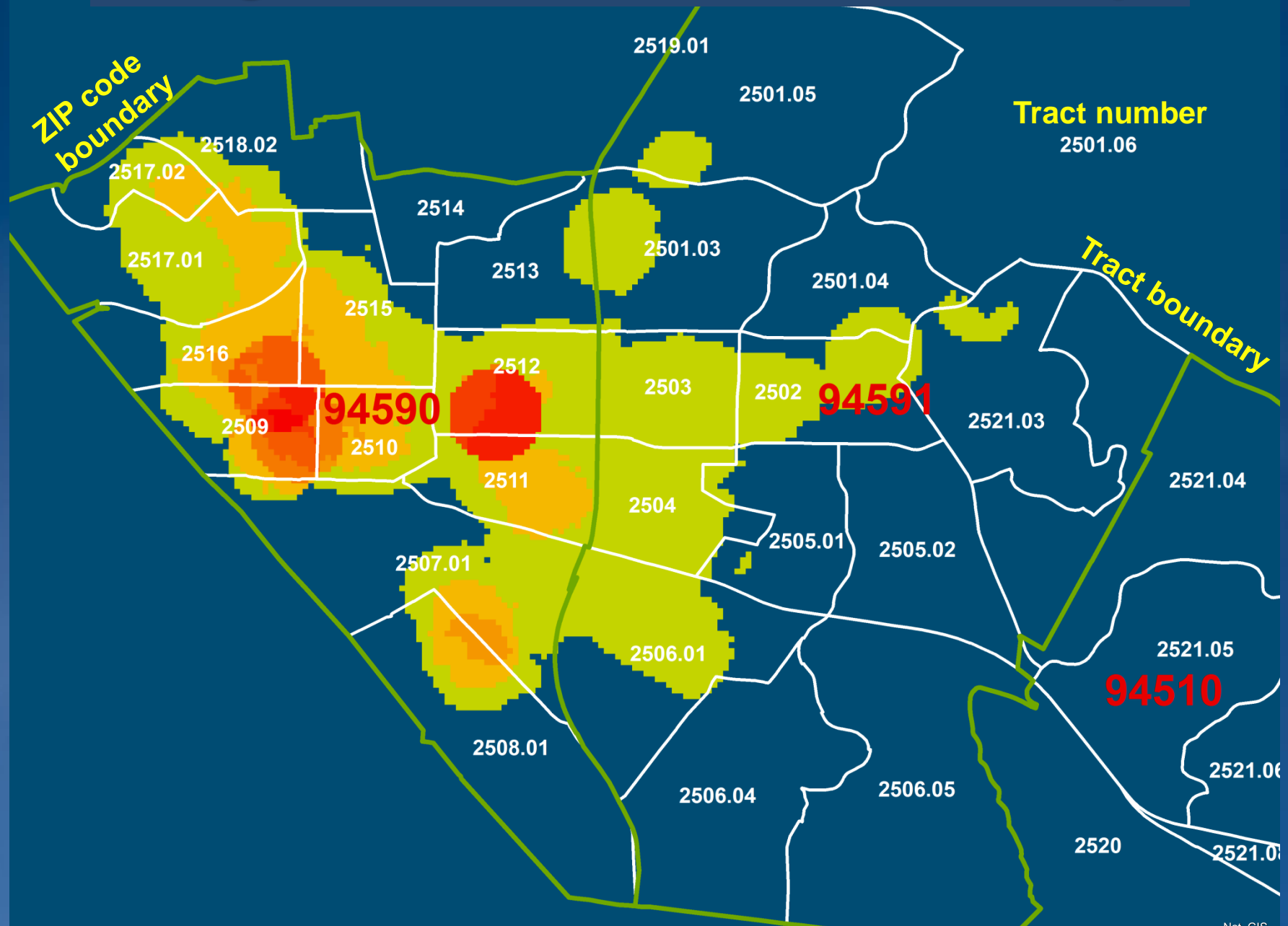
Merged Data Provides a Powerful Insight Into Welfare Dynamics



Case Study: Neighborhood CalFresh in Three Solano County ZIP Codes



Neighborhood CalFresh: Heat Map



GIS Data Analysis Results

Neighborhood CalFresh

[ArcGIG Online](#)

[Storytelling with Data](#)

[Dashboard](#)

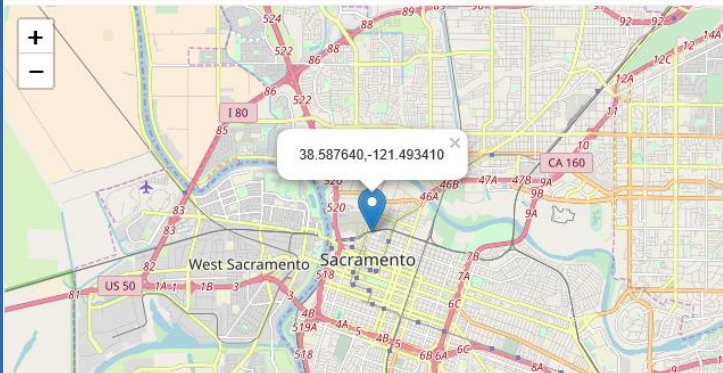
[CalFresh In-depth](#)

[Tract-Level: CalFresh and language](#)

Thank You Questions?

For further questions write to....

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