

# MENTAL HEALTH TRACKING IN CALIFORNIA

Este Geraghty

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For the Mental Health Services Oversight and Accountability Commission  
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# Our Charge



- Use the Medi-Cal billing database to analyze and map disparities in service **access** and **delivery** at the local level (census tracts within counties) across the state for various subgroups:
  - Age
  - Gender
  - Race
  - Ethnicity

# Focus on SMI and SED



- From the Federal Register:
- "..., adults with a **serious mental illness** are persons 18 years and older who, at any time during a given year, had a diagnosable mental, behavioral, or emotional disorder that met the criteria of DSM-III-R1 and ... that has resulted in functional impairment which substantially interferes with or limits one or more major life activities...."
- **Serious emotional disability (SED)** refers to children under the age of 18

# Access to Care



- *Penetration rate*: a common measure reflecting the proportion of individuals in a given population (like a health plan) that use specialty mental health services in a year

No. of Medi-Cal Mental Health Patients\*  
Total Medi-Cal Beneficiaries

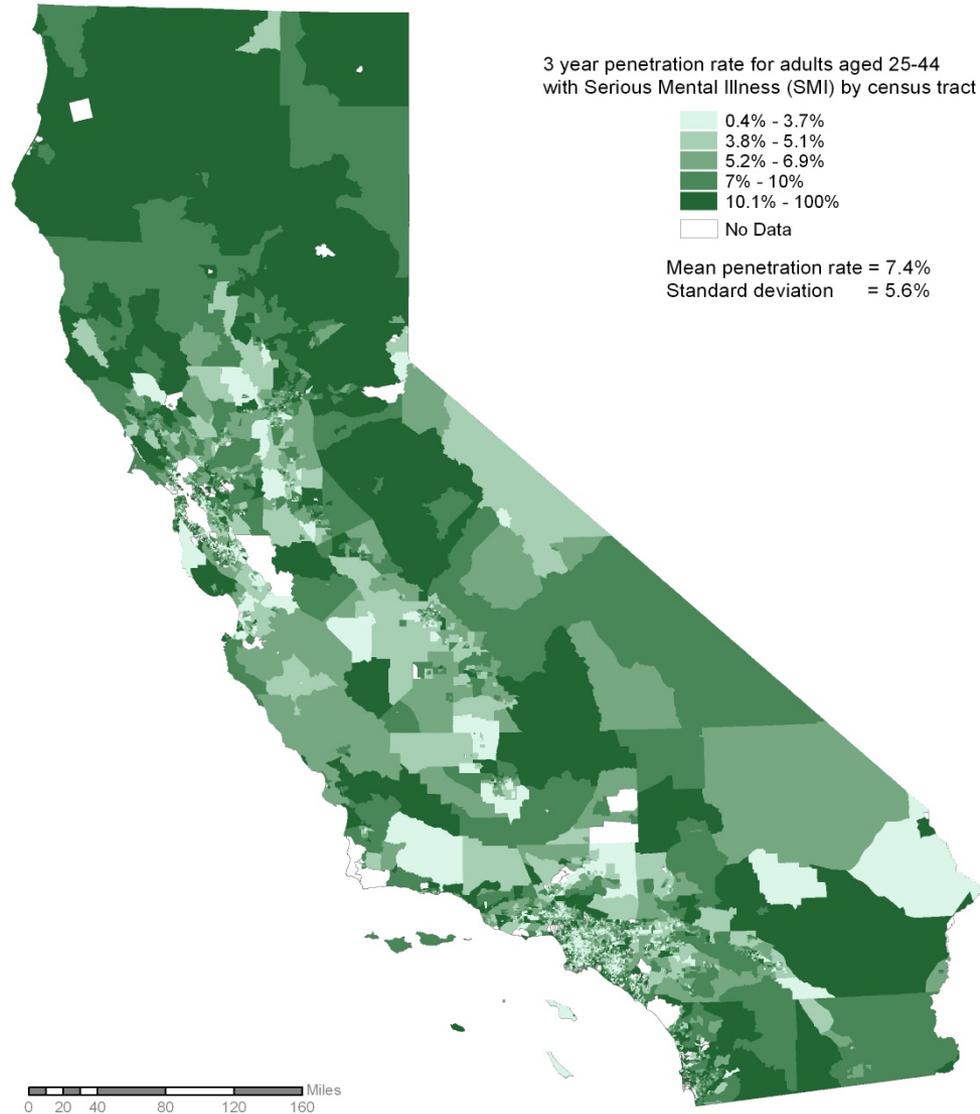
\* Includes managed care, fee for service and Short Doyle. Mental health patients have an ICD-9 code consistent with Serious Mental Illness or Serious Emotional Disability

# Delivery and Utilization

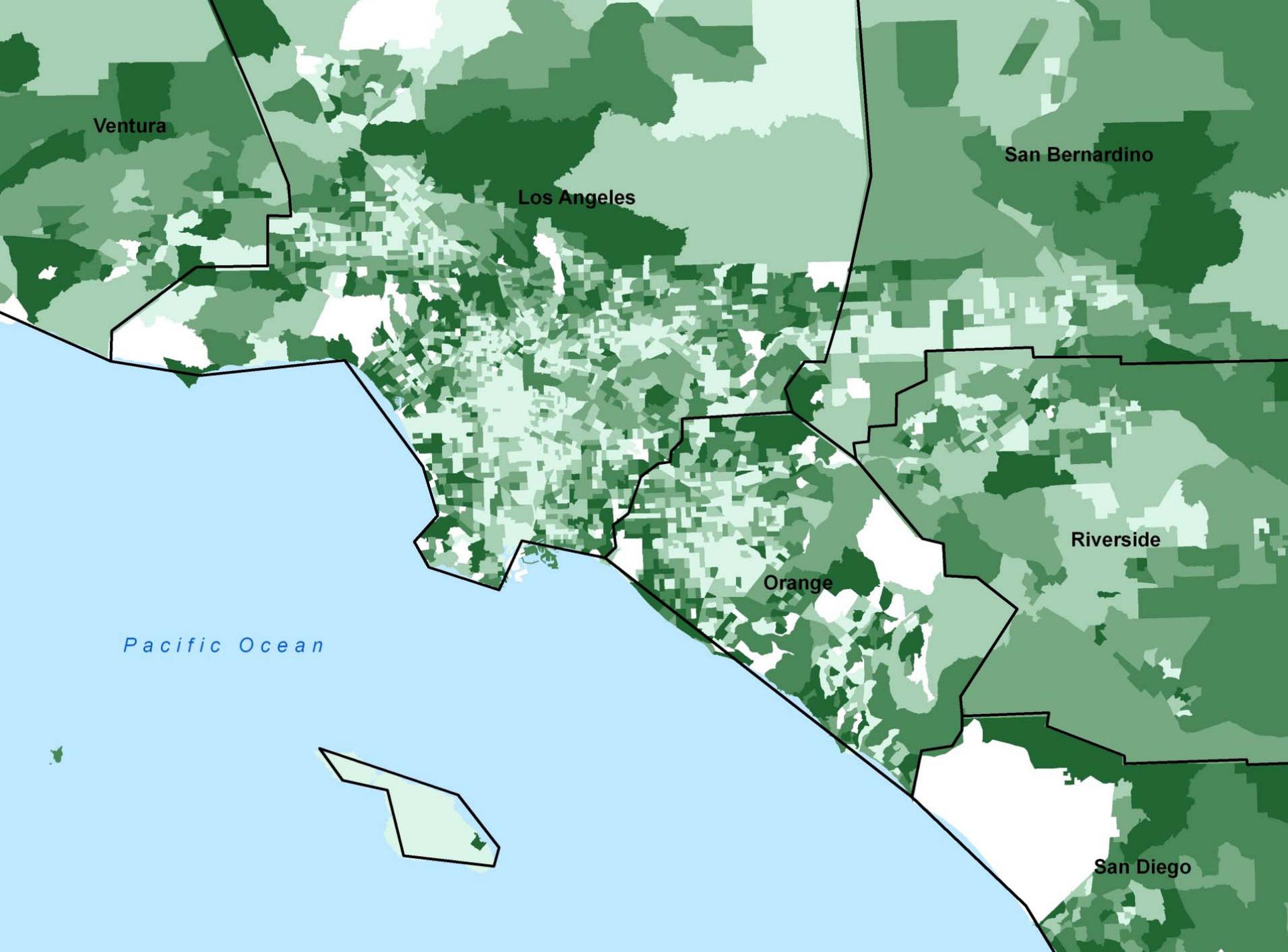


- We characterized service delivery via the utilization rate:
  - ▣ Total number of mental visits per mental health Medi-Cal beneficiary
  - ▣ Used outpatient visits only

# Access to Mental Health Services for ages 25-44 with SMI California, 2007-2009



Notes: Medi-Cal Data from the California Department of Health Care Services  
Projection is North American Datum 1983, California Teale Albers



Ventura

Los Angeles

San Bernardino

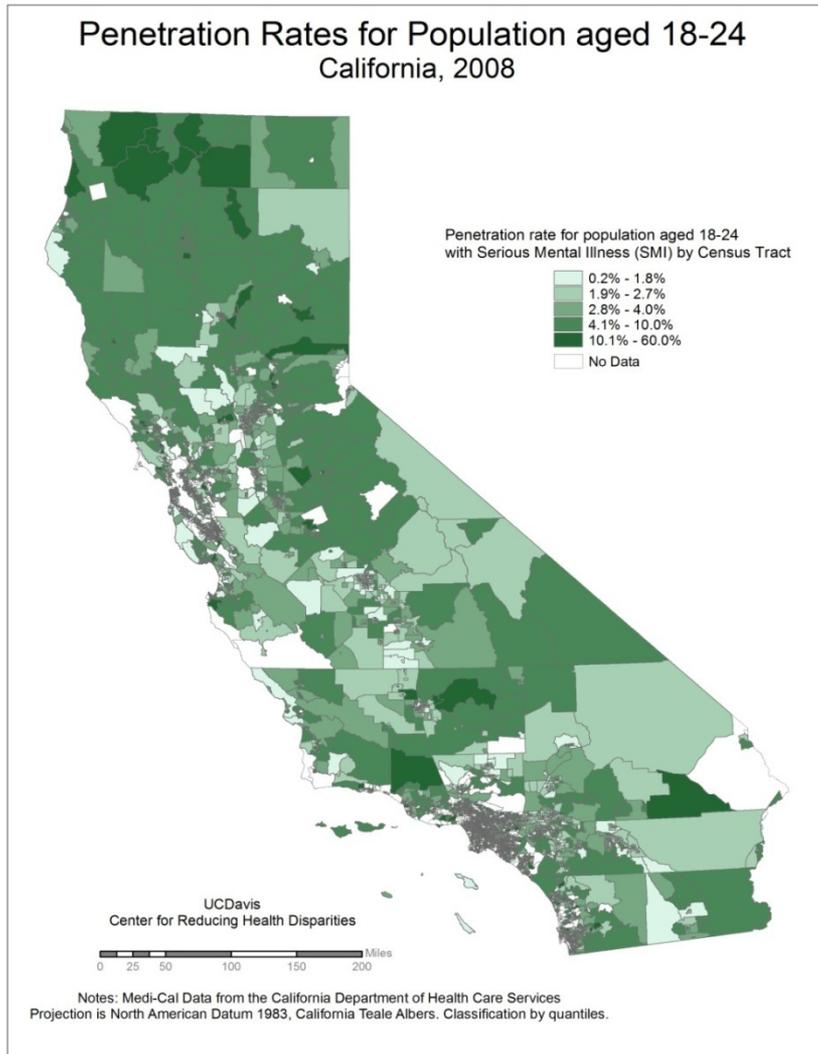
Riverside

Orange

San Diego

*Pacific Ocean*

# Distribution of Mental Health Services

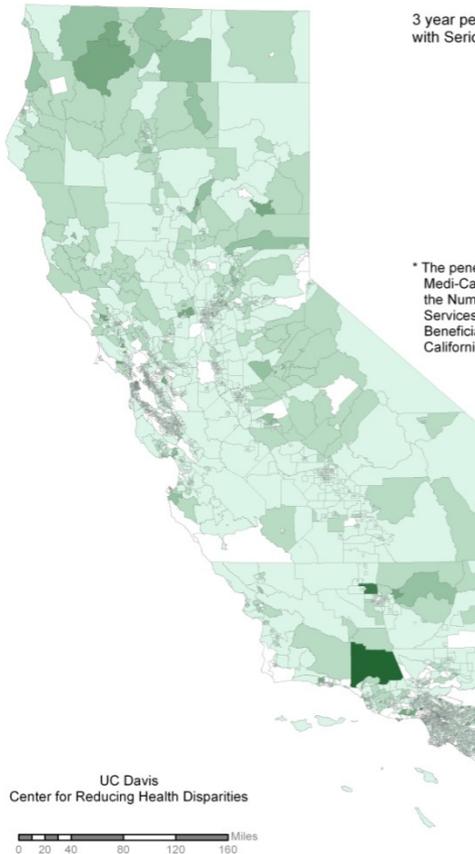


- Classification by Quantiles
  - 5 categories with 20% of the observations in each category
  - Nice, even color distribution in the map
  - But ranges vary widely in the map (especially the highest range).
    - Misleading (CT with 10% not equivalent to one with 60%)
    - Maps are not comparable
    - Cannot easily see patterns in the data

# Distribution of Mental Health Services



Access to Mental Health Services\* for Adults aged 55-64 with SMI  
California, 2007-2009



3 year penetration rate with Serious Mental Illness (SMI) by census tract

\* The penetration rate for treatment of SMI among Medi-Cal beneficiaries age 55-64 is calculated as the Number of these patients receiving mental health Services divided by the total number of Medi-Cal Beneficiaries in that age group, aggregated by California census tract in 2007 - 2009

UC Davis  
Center for Reducing Health Disparities

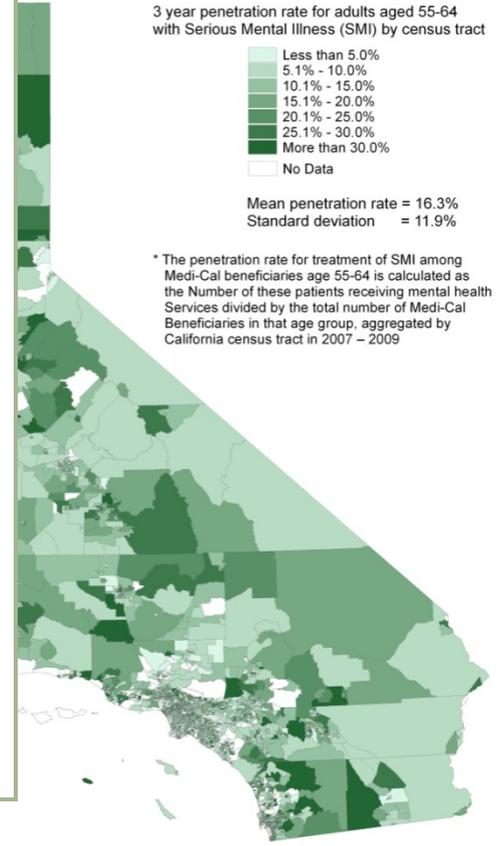
0 20 40 80 120 160 Miles

Notes: Medi-Cal Data from the California Department of Health Care Services  
Projection is North American Datum 1983, California Teale Albers

## Issues:

- The eye has difficulty discerning multiple colors
- Most census tracts are too small to see clearly
- Our eye is drawn to the bigger/darker census tracts – leads to bias

Services\* for Adults aged 55-64 with SMI  
California, 2007-2009



3 year penetration rate for adults aged 55-64 with Serious Mental Illness (SMI) by census tract

Less than 5.0%  
5.1% - 10.0%  
10.1% - 15.0%  
15.1% - 20.0%  
20.1% - 25.0%  
25.1% - 30.0%  
More than 30.0%  
No Data

Mean penetration rate = 16.3%  
Standard deviation = 11.9%

\* The penetration rate for treatment of SMI among Medi-Cal beneficiaries age 55-64 is calculated as the Number of these patients receiving mental health Services divided by the total number of Medi-Cal Beneficiaries in that age group, aggregated by California census tract in 2007 - 2009

0 20 40 80 120 160 Miles

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# Hot Spot Analysis

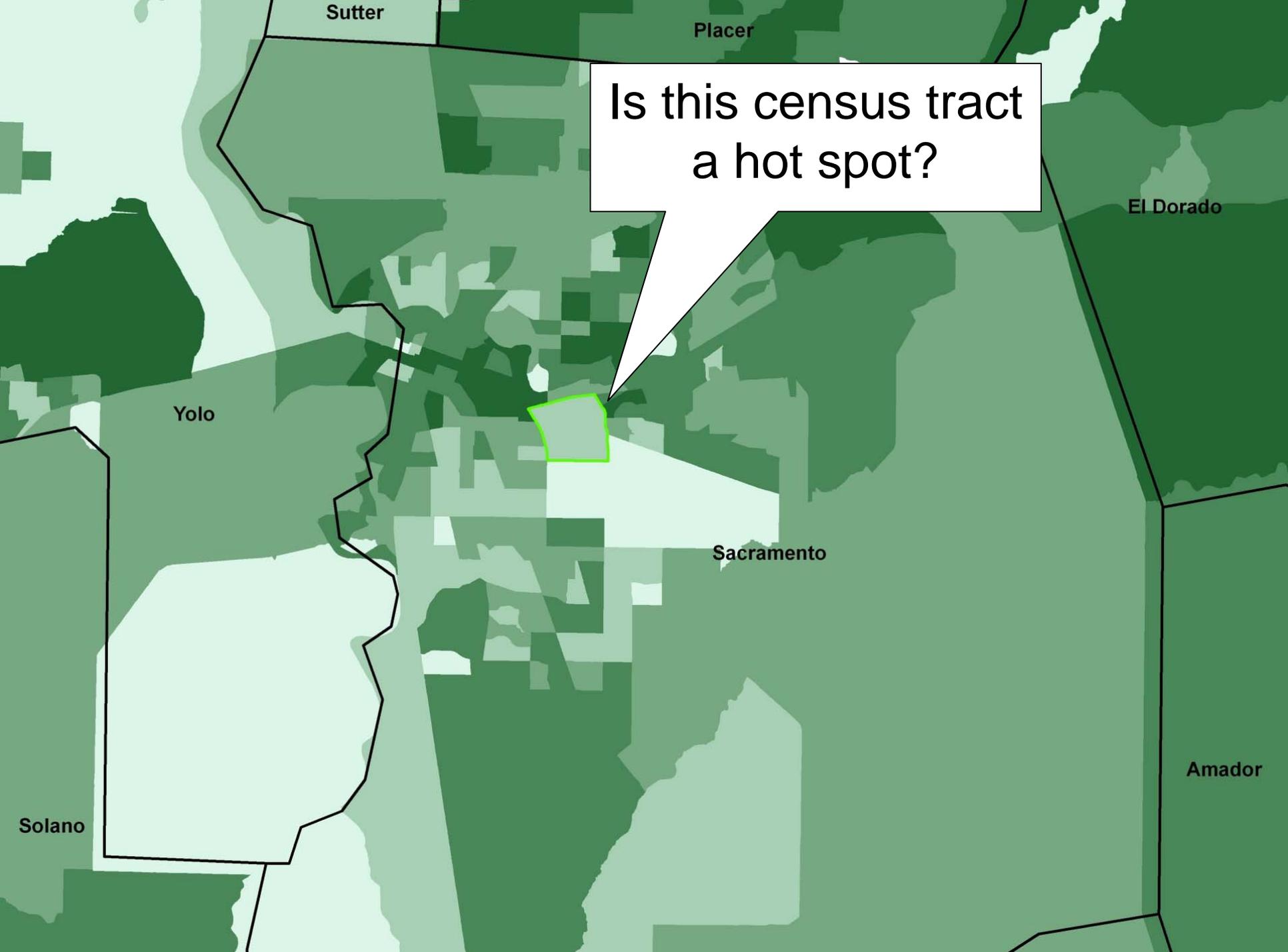


- It's a method for testing the statistically significant clusters of a variable (such as the penetration rate)
  - There is a difference between an **outlier** and a **hot/cold spot**
  - The analysis value (penetration rate) in a census tract is compared to a designated set of neighboring census tracts defined by distance and/or the number of neighbors (creating a local mean)
  - The local mean is compared to the overall mean for the dataset (in this case, California)
  - Areas of intense clustering of high values are **hot spots** and areas of intense clustering of low values are **cold spots**

# Why are we using Hot Spot Analysis?



- It answers the right question...
  - Where is the access to mental health care in California greater or lesser than expected, given the overall Medi-Cal beneficiary population?
- Maps are more comparable
- There is less concern about missing important information in small census tracts
  - We can now see important patterns in the data
- Statistical significance provides meaningful information



Is this census tract  
a hot spot?

Sutter

Placer

El Dorado

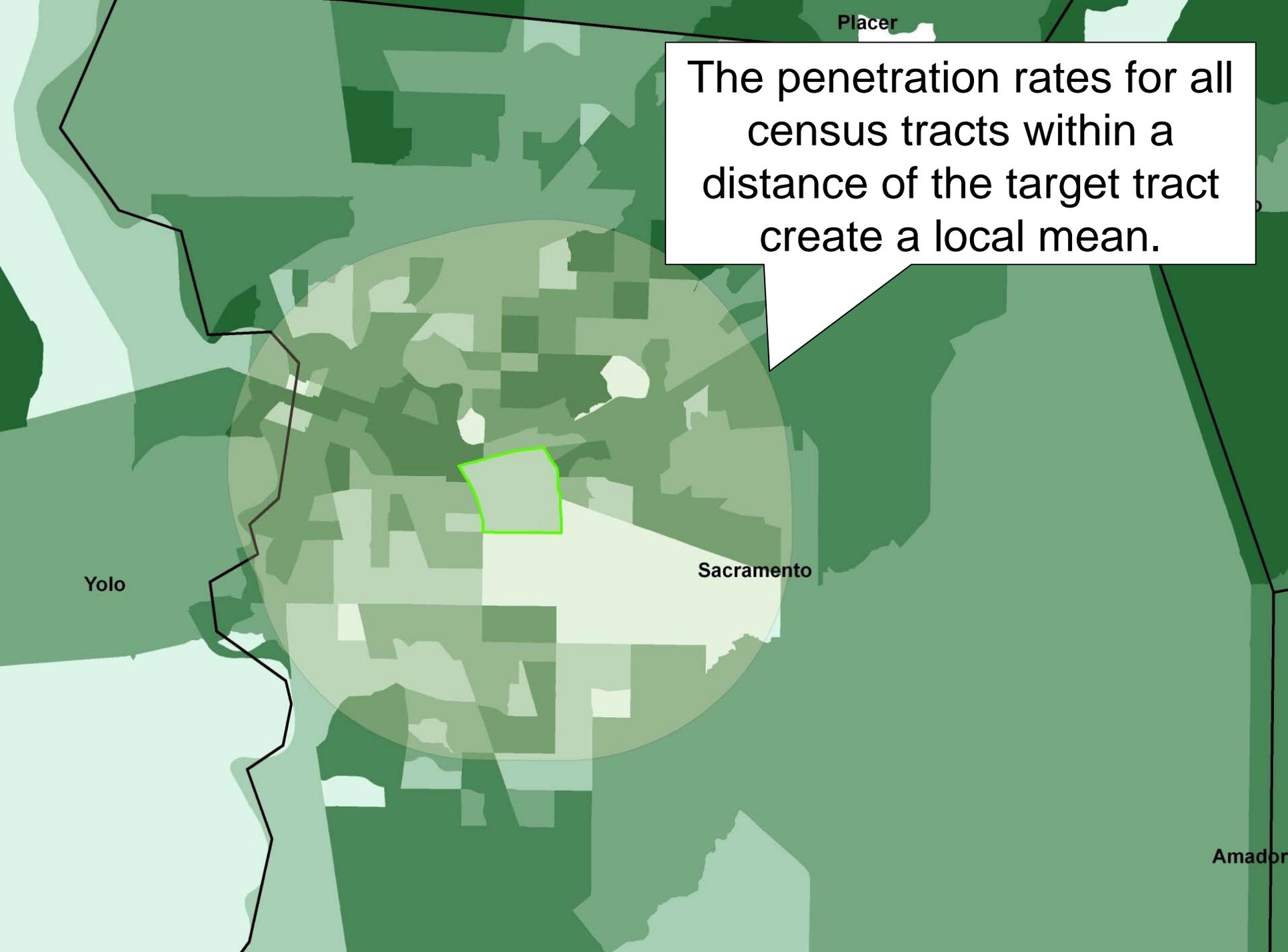
Yolo

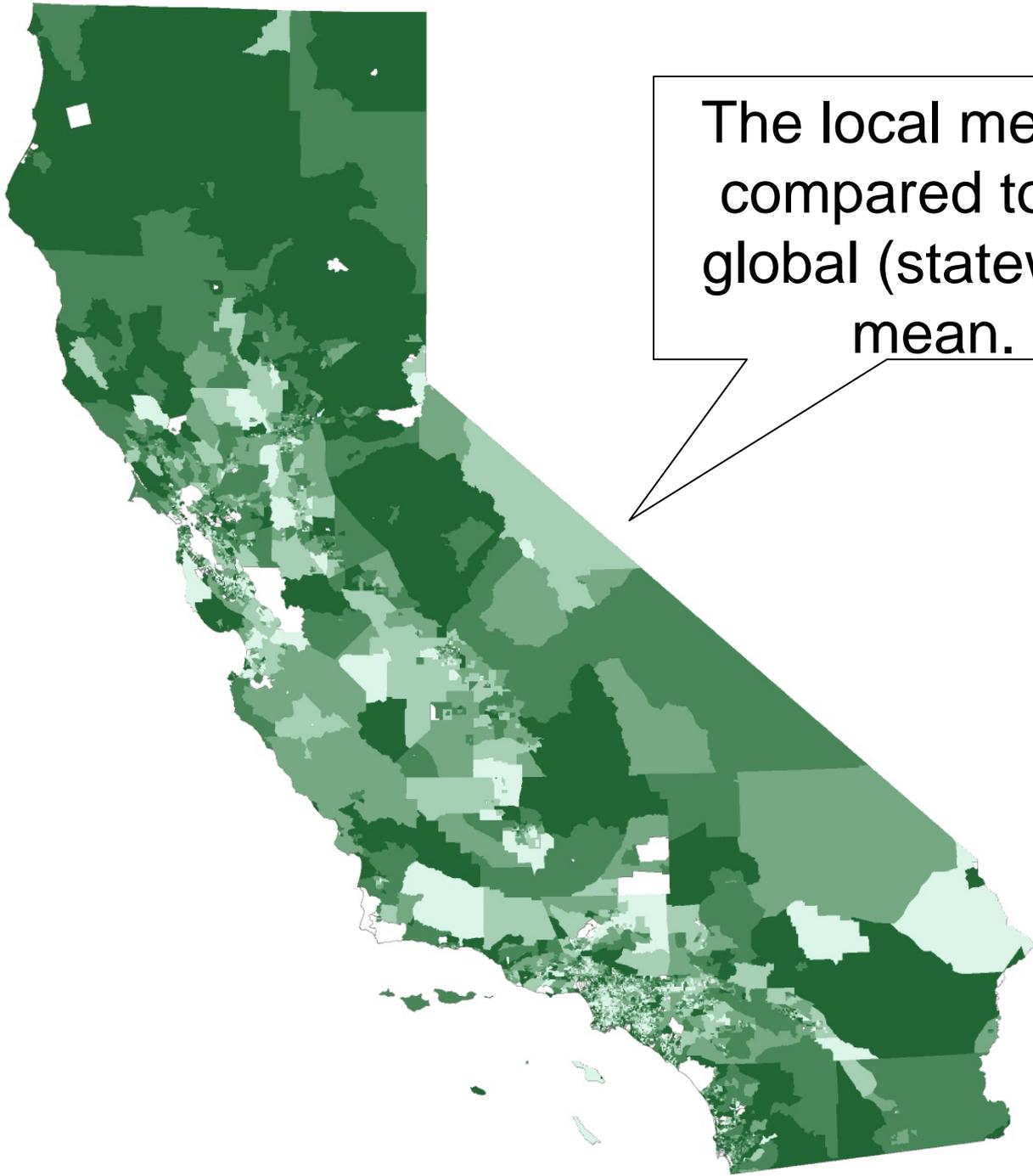
Sacramento

Solano

Amador

The penetration rates for all census tracts within a distance of the target tract create a local mean.





The local mean is compared to the global (statewide) mean.

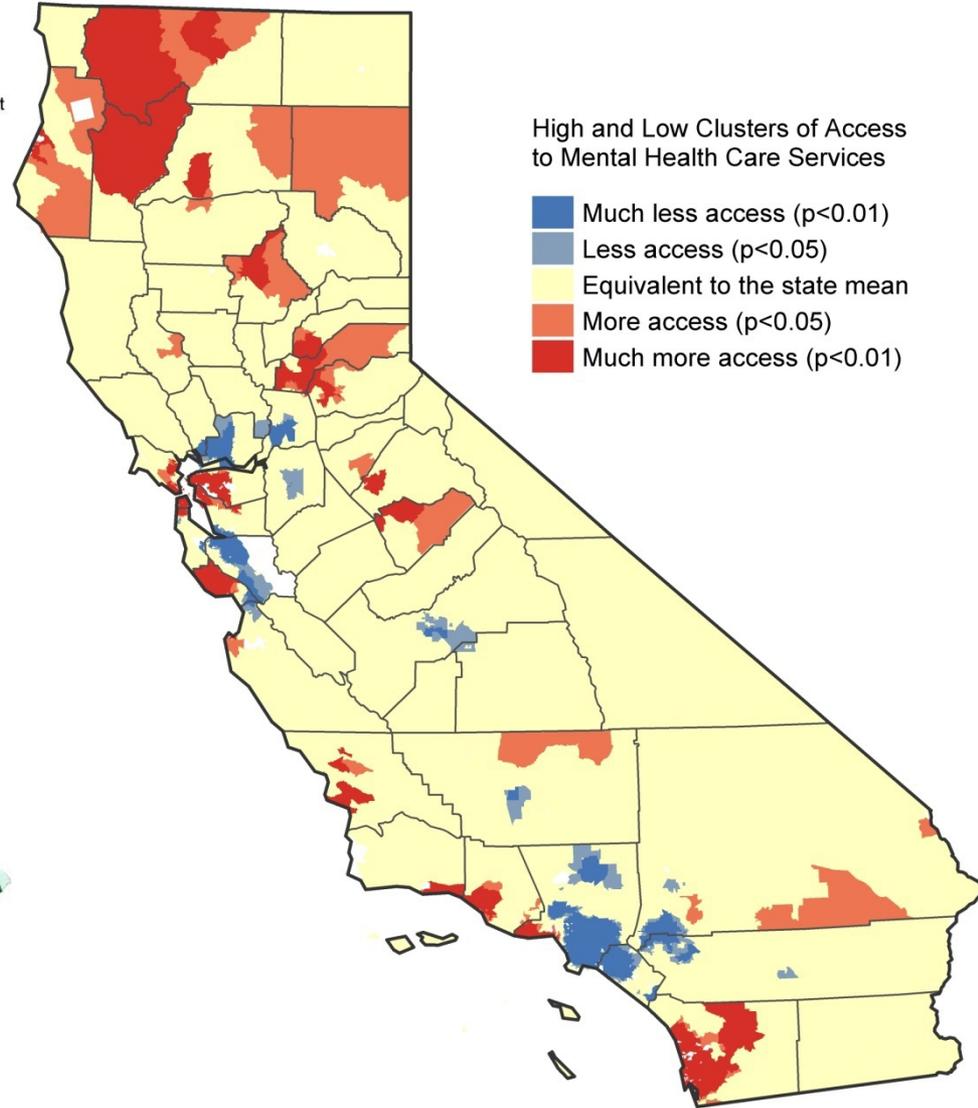
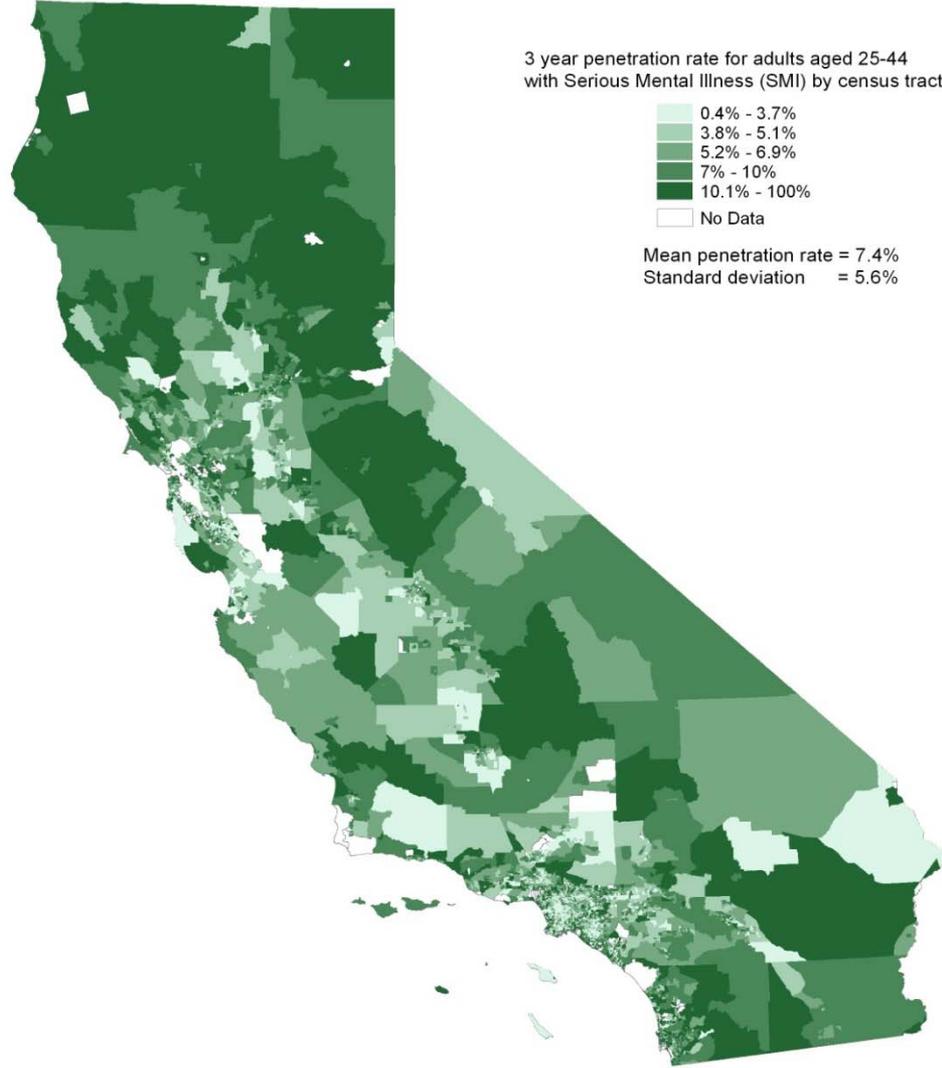
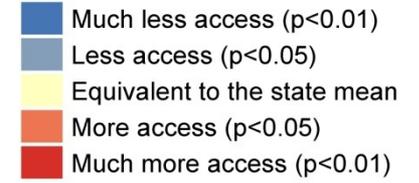
# Result for Penetration Rates

3 year penetration rate for adults aged 25-44 with Serious Mental Illness (SMI) by census tract

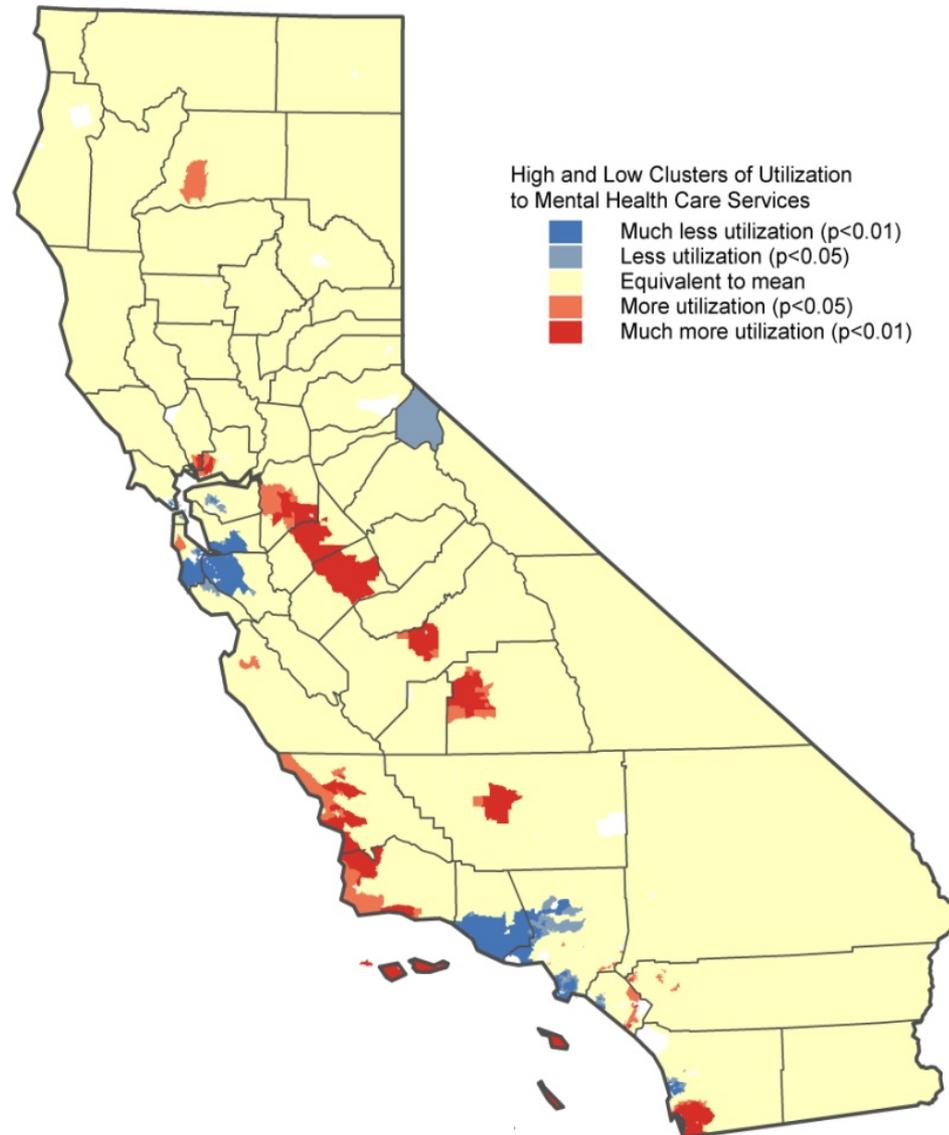


Mean penetration rate = 7.4%  
Standard deviation = 5.6%

High and Low Clusters of Access to Mental Health Care Services



# Result for Utilization Rates





# Map Comparisons

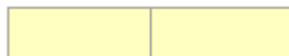


SED County Name	All Patients (age 12-17)		Male		Female		White		Black		Hispanic		Asian/Pacific Islander		Native Am/ Alaskan Native	
	A	U	A	U	A	U	A	U	A	U	A	U	A	U	A	U
	Alameda	22	24	20	2	37	19	91	9	51	26	16	41	70	3	82
Alpine									nd	nd	nd	nd	nd	nd		
Amador			14		14						25			nd		
Butte	88	12	74	43	90	2			39	24	29	15			90	
Calaveras			14		29						29					
Colusa	40		20		60						60			nd		
Contra Costa	6	20	7	24	41	35	36	*	32	12	11	49	31		20	8
Del Norte												40				
El Dorado	69	26	63	26	72		41				20	13				
Fresno	21	77	9	77	75	75	77	74	1	2		76	3			96
Glenn	20		40		20										67	
Humboldt	88		92		72		15		11						85	
Imperial			39						8		57			nd	100	
Inyo	43				67								nd	nd		
Kern	64	70	6	29	66	68	60		18		56	56	3	18		
Kings									78						100	67
Lake	42		75	8	58						10	8	50			
Lassen									100		33					
Los Angeles	54	54	54	60	60	55	68	30	17	47	17	58	3	14	66	18

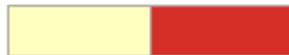
# Interpretation

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there are no data for the specified population



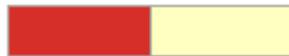
access and utilization are equivalent to the state mean



access is equivalent to the state mean, but utilization is high



access is equivalent to the state mean, but utilization is low



access is high, but utilization is equivalent to the state mean



access is low, but utilization is equivalent to the state mean



access and utilization are high (potential overuse of services)



access is high and utilization is low



access is low and utilization is high (potentially sicker individuals)



access and utilization are low (more services may be needed)

\* Numbers inside boxes indicate the percentage of census tracts of that color

# Map Comparisons



SED County Name	All Patients (age 12-17)		Male		Female		White		Black		Hispanic		Asian/Pacific Islander		Native Am/ Alaskan Native	
	A	U	A	U	A	U	A	U	A	U	A	U	A	U	A	U
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Fresno	21	77	9	77	75	75	77	74	1	2		76	3			96
Glenn	20		40		20										67	
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Imperial			39						8		57			nd	100	
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Kern	64	70	6	29	66	68	60		18		56	56	3	18		
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# Next Steps



- Understanding service access without understanding mental health need only tells a part of the story
- Need can be determined in CA using data from the California Health Interview Survey (CHIS)
  - UCD and UCLA collaboration to create an assessment of need\*
  - Kessler-6 is a tested and robust indicator of severe psychological stress
  - Sheehan Disability Scale captures impairment due to emotional or mental health
  - There is potential to map the CHIS data for CA

\*Padilla-Frausto I, Grant D, Aguilar-Gaxiola S. "Assessing Adult Mental Health Needs In California Using the California Health Interview Survey (CHIS)." Report for the MHSOAC, 11/2010.

# Summary



- Hot spot analysis provides an opportunity to see statistically significant patterns in large datasets which may help guide resource allocation and track change over time
- Access to care and utilization could be refined to show how the population receiving services compares to the population in need

Questions?

