Social Determinants of Health: The San Joaquin Valley

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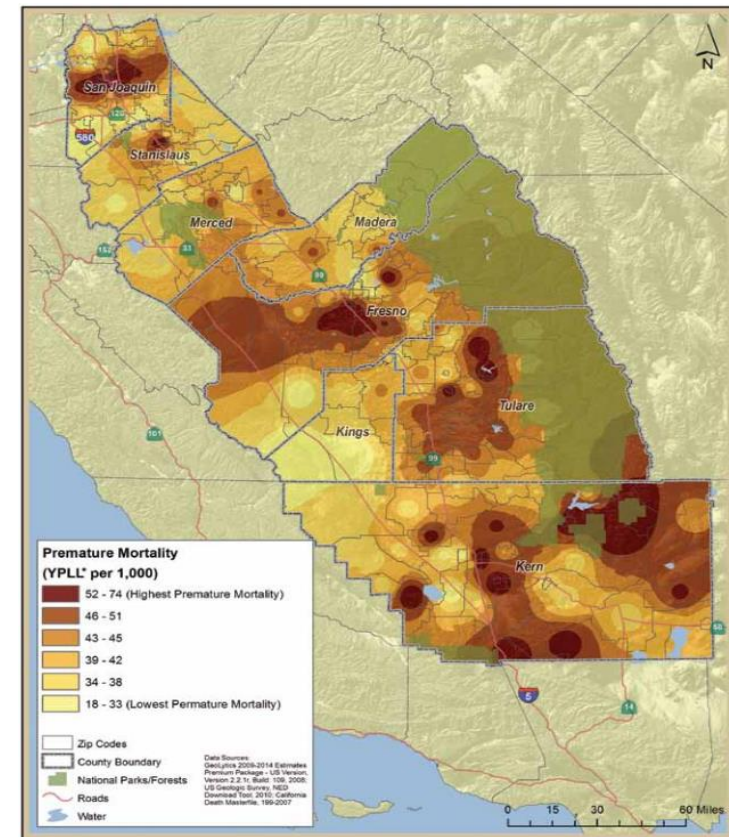
This Work was Supported By

Overview

- Background
- Social Determinants of Health (SDOH)
    1. SDOH for Unique Populations
- Data and Approach
- Health Outcomes Throughout Life-Course
    1. Preventable Hospitalizations in Children (0-14)
    2. Birth Outcomes in Young Women (15-30)
    3. Longevity in Elders (65+)
- Geographic Distribution of Indicators
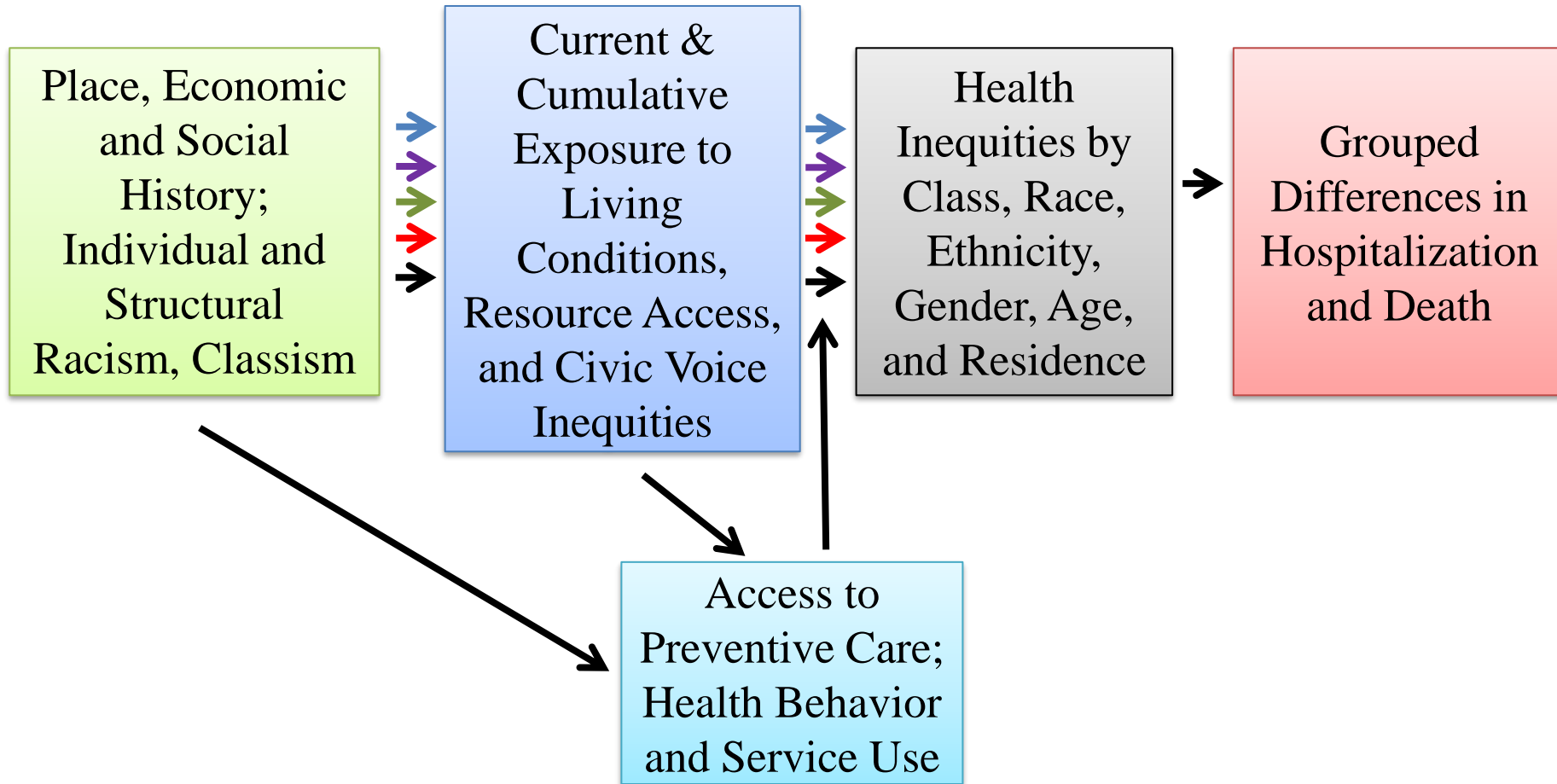- Discussion
- Implications and Strategy

Background

- Place Matters Report of the San Joaquin Valley
  - The premature death rate in the poorest zip codes is nearly double the rate in the most affluent.
  - Premature mortality is highest in zip codes with higher % Latinos and higher poverty
  - Similar findings for life expectancy. 21 years differences between zip codes.

Years of Potential Life Lost Before 65

Premature Mortality
(YPLL* per 1,000)

- 52 - 74 (Highest Premature Mortality)
- 46 - 51
- 43 - 45
- 39 - 42
- 34 - 38
- 18 - 33 (Lowest Premature Mortality)

Zip Codes
County Boundary
National Parks/Forests
Roads
Water

Data Sources:
GeoLytics 2009-2014 Estimates
Premium Package - US Version,
Version 2.2.1, Build: 109, 2008;
US Geologic Survey: NED
Download Tool, 2010; California
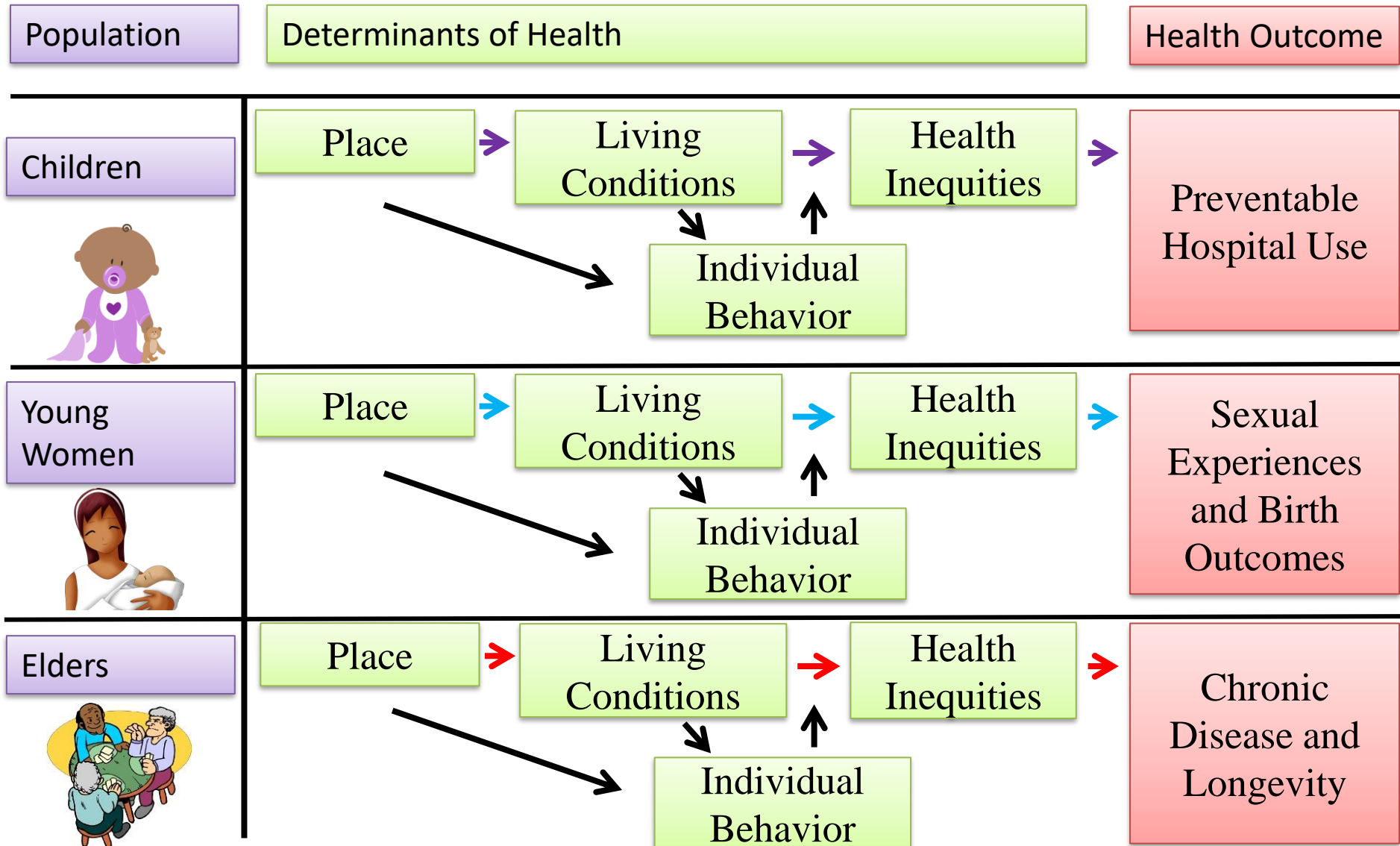Death Masterfile, 199-2007

0   15   30   60 Miles

(*YPLL-Years of Potential Life Lost)

Social Determinants of Health (SDOH)

SDOH for Unique Populations

Data and Approach

- Community-Level Data
  - Census.gov
  - CalEnviroScreen
  - Regional Opportunity Index
  - Walk Score®
- Individual-Level Data
  - Birth Statistical Master Files
  - Death Statistical Master Files
  - Emergency Department Visits
  - Hospital Discharge Data
- Approach is to apply statistical methods to identify *individual* and *community* characteristics that are strongly associated with *specific* health outcomes

Health Outcome: Preventable Hospitalizations in Children

- Hospitalization for Ambulatory Care-Sensitive Conditions (ACSC)
  - These potentially preventable events were identified from the Agency for Healthcare Research and Quality's Prevention Quality Indicators which include:
    - Acute respiratory infection
    - Asthma
    - Dehydration
  - Criteria for analysis inclusion
    - Primary diagnosis of an ACSC
    - Ages 0 – 14
    - Child resides in the San Joaquin Valley
    - Hospitalized in 2012

Individual Characteristics: Preventable Hospitalizations in Children

Table 1: Demographic Characteristics for Population and ACSC Hospitalizations, Children Under 15 Years Old[1]										
Characteristic	Category	San Joaquin Valley		ACSC Hospitalizations						
				Total		White/Non-Hispanic		Hispanic & Other		African-American	
		N	%	N	%	N	%	N	%	N	%
Gender	Male	47,400	50	3,646	55**	973	54	2,371	55	302	57
	Female	47,200	49	2,906	44**	814	45	1,873	44	219	42
Age Group in Years	< 1	132,000	13	1,543	23**	372	20	1,075	25	96	18
	1 - 4	202,000	21	2,706	41**	772	43	1,768	41	166	31
	5 - 9	291,000	30	1,516	23**	413	23	944	22	159	30
	10 - 14	321,000	33	787	12**	230	12	457	10	100	19
Payer	Medi-Cal	543,000	57	4,414	67**	842	47	3175	74	396	76
	Private Coverage	332,000	35	1,726	26**	807	45	873	20	72	13
	Other Government	63,000	6	351	5	117	6	190	4	44	8
	Self-Pay	9,000	<1	61	<1	21	1	31	<1	9	1
Race/ Ethnicity	White/ Non-Hispanic	212,000	22	1787	27**						
	Hispanic & Other	684,000	72	4244	64**						
	African- American	51,000	5	521	8**						
Rate†				68		78		62		127	
Total		980,053		6,552		1,787		4,244		521	

[1]Population estimates for the San Joaquin Valley derived from the California Health Interview Survey.

† Rate of preventable hospitalizations per 10,000.

* Z-test comparing population to ACSC hospitalizations, p < .01.

SDOH: Preventable Hospitalizations in Children

Community by Individual-level Indicators with Significant Associations with ACSC Hospitalizations						
Community-level Indicators	All Children	Under 1	Medi-Cal	White	African American	Latino/ Other
Pollution Burden Score	↑	↑	↑	↑	↑	↑
Low Poverty	-	-	-	-	-	-
Simpson Diversity Index	↑	↑	↑	-	↑	↑
Primary Care-Shortage Areas	↑	↑	↑	-	-	↑
Pollution Burden Score X Low Poverty	↓/-	-	↓/-	-	-	-

Source: Lessard LN, Alcala E, & Capitman JA (2015). *Journal of Pediatrics*.

Health Outcome: Premature Birth

- Premature Birth
  - Premature birth < 37 gestational weeks
  - Criteria for inclusion in analysis
    - Mother aged 15 - 40 who reside in the San Joaquin Valley
    - Birth between 2009 - 2013

SDOH: Premature Birth

Community-level Indicators	Sig.	Individual-level Indicators	Sig.
		Non-Modifiable	
Economic Opportunity	↓	white	Ref
Particulate Matter 2.5	↑	African American	↑
		Latino	-
Housing	-	Asian/Pacific Islander	↑
Civic Life Opportunity	-	Other Race/Ethnicity	↑
Education	-	Private Insurance	Ref
		Medi-Cal	↑
		Other Insurance	↑
		Modifiable	
		Mother with 4-year Degree	↓
		Smoke	↑
		Hypertension	↑
		WIC Services	↓
		Previous Premature Birth	↑
		Inter-pregnancy Period <33 M	↑

Health Outcome: Years of Life Lost in Mexican American Elders

- Years of Life Lost
  - Life expectancy – age at death = years of life lost
    - Life expectancy adjusted for gender and age group
  - Criteria for inclusion in analysis
    - Death occurred at age 65+
    - Identified as Mexican American or white
    - Resided in the San Joaquin Valley

Individual Characteristics: Years of Life Lost in Mexican American Seniors

Measures of Longevity for Adults Aged 65 and Older by Gender and Race/Ethnicity				
	Female		Male	
Measure	White	Mexican American	White	Mexican American
Life Expectancy at Age 65				
Nationwide [a]	20.3	22	17.6	19.4
California	21.9	22.2	20.7	21.1
San Joaquin Valley	20.9	21.8	18.6	20.6
Mean (SD) Years				
Age at Death	83.3 (8.7)	80.9* (8.4)	80.4 (8.6)	79.1* (8.4)
Years of life lost [b]	-0.21 (5.0)	1.01* (5.0)	-0.15 (4.5)	0.53* (4.6)

* p < .01.
[a] Hispanic estimate by the Centers for Disease Control and Prevention, 2010
[b] negative values exceed life expectancy

Source: Alcala E & Capitman JA (2015). *Hispanic Journal of Behavioral Sciences*. In Press.

SDOH: Years of Life Lost in Mexican American Seniors

Community-level Indicators	Sig.	Individual-level Indicators	Sig.
Walk Score®	↓	Married	↓
Poverty	↑	High School	Ref
Primary Care-Shortage Area	-	No High School Diploma	↓
Percentage of Hispanics	-	4-year Degree or More	↓
		US-Born White	Ref
		US-Born Mexican	↑
		Foreign-Born Mexican	↑
		Cause of Death	
		Circulatory	Ref
		Neoplasm	↑
		Respiratory	↑
		Central Nervous System	↓
		Endocrine	↑
		Other Cause	↑

Source: Alcala E & Capitman JA (2015). *Hispanic Journal of Behavioral Sciences*. In Press.

Geographic Distribution: Place Indicators

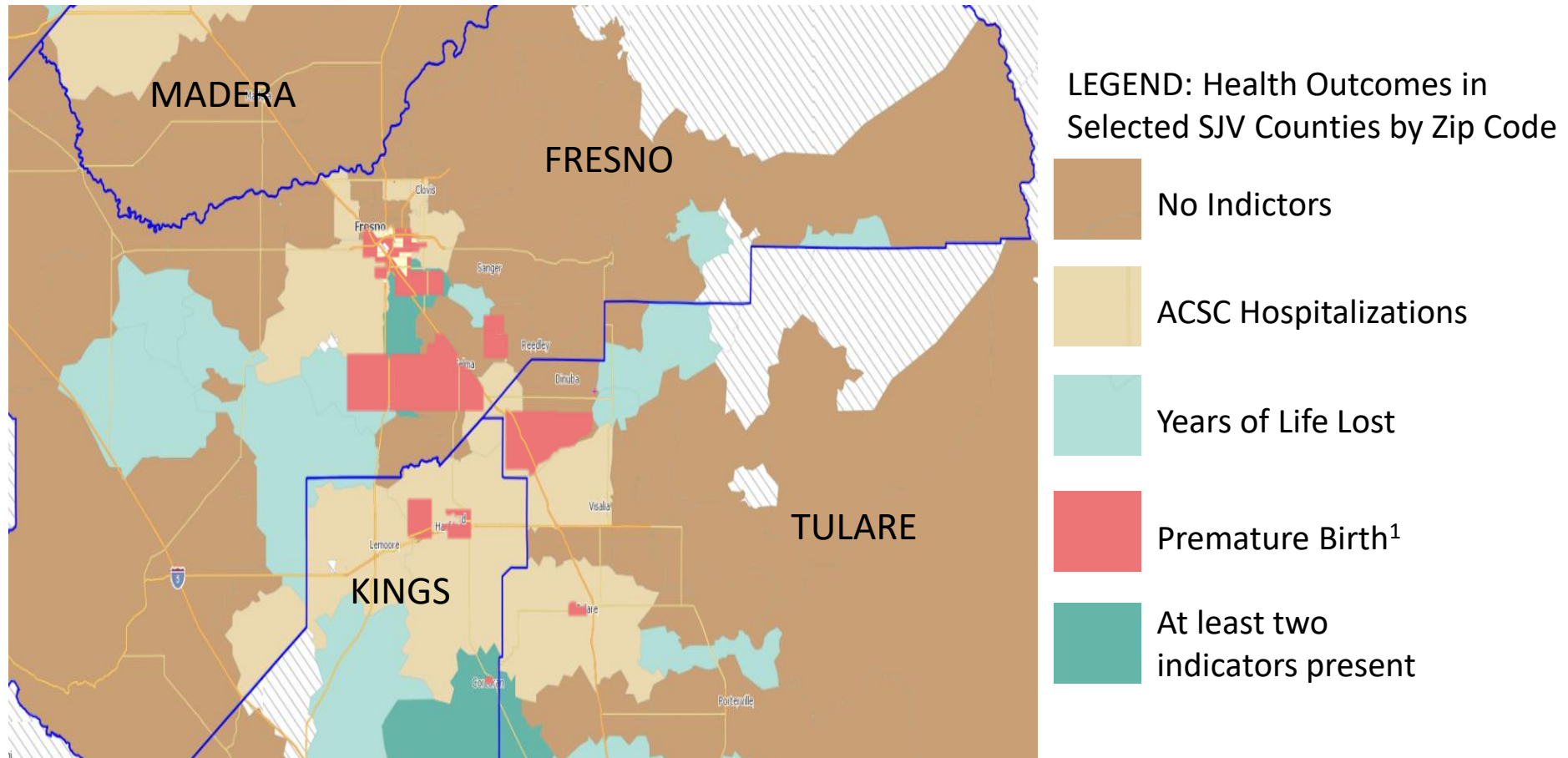| Indicator	Poverty	Simpson Index	PM2.5	Walk Score	% African American
Correlation Matrix of Community Characteristics					
Poverty	1				
Simpson Index	-0.022	1			
PM2.5	-0.012	.263**	1		
Walk Score	.321**	.387**	.343**	1	
% African American	.140*	.575**	0.099	.348**	1
% Latino	.721**	0.021	0.126	.334**	-0.062

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Geographic Distribution: Health Outcomes

Geographic Distribution of Top Quintile of ACSC Hospitalizations, Years of Life Lost, and Premature Birth

LEGEND: Health Outcomes in Selected SJV Counties by Zip Code

- No Indictors
- ACSC Hospitalizations
- Years of Life Lost
- Premature Birth[1]
- At least two indicators present

[1] Premature birth at census tract level. Health outcomes are predicted mean values after controlling for individual- and community-level variables.

Discussion

Implications for Strategy

- If specific SDOH affect specific health inequities, how does this influence community strategy to produce fair health outcomes?
- Options
  - Narrowly-focused collective impact effort (e.g. PTBi)
  - Broad focus on multiple aspects of living conditions (e.g. general plan changes and implementation advocacy)
  - Broad focus collective impact collaborative (e.g. community health improvement plan)
- Is your Place Matters initiative adopting one of these strategies? Or others?
- How is your Place Matters initiative tracking and articulating policy approaches across different aspects of SDOH and different inequitable health outcomes?

Questions?