

# Social Determinants of Health: The San Joaquin Valley

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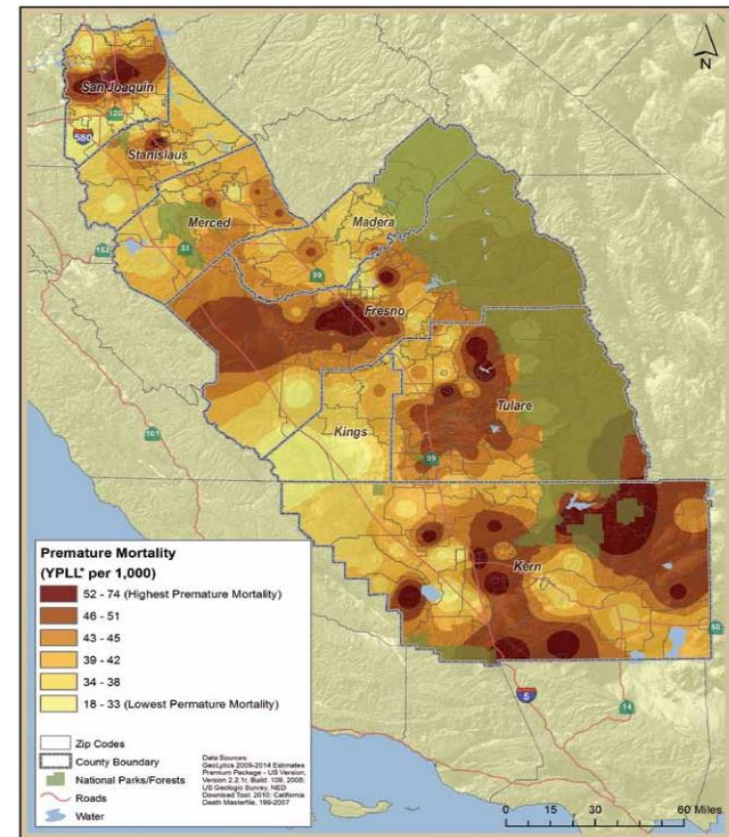
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# Background

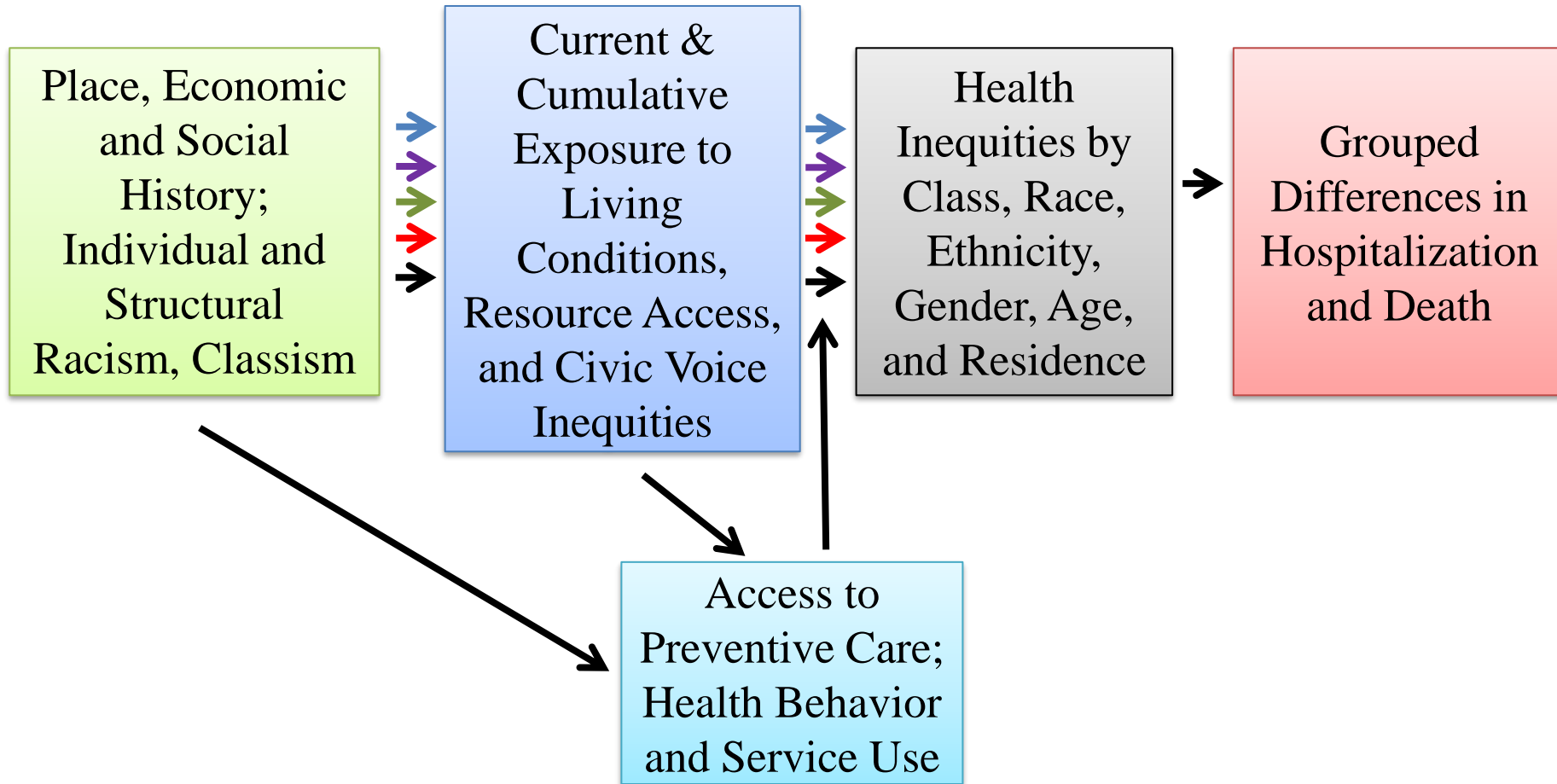
- Place Matters Report of the San Joaquin Valley
  - The premature death rate in the poorest zip codes is nearly double the rate in the most affluent.
  - Premature mortality is highest in zip codes with higher % Latinos and higher poverty
  - Similar findings for life expectancy. 21 years differences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

Years of Potential Life Lost Before 65

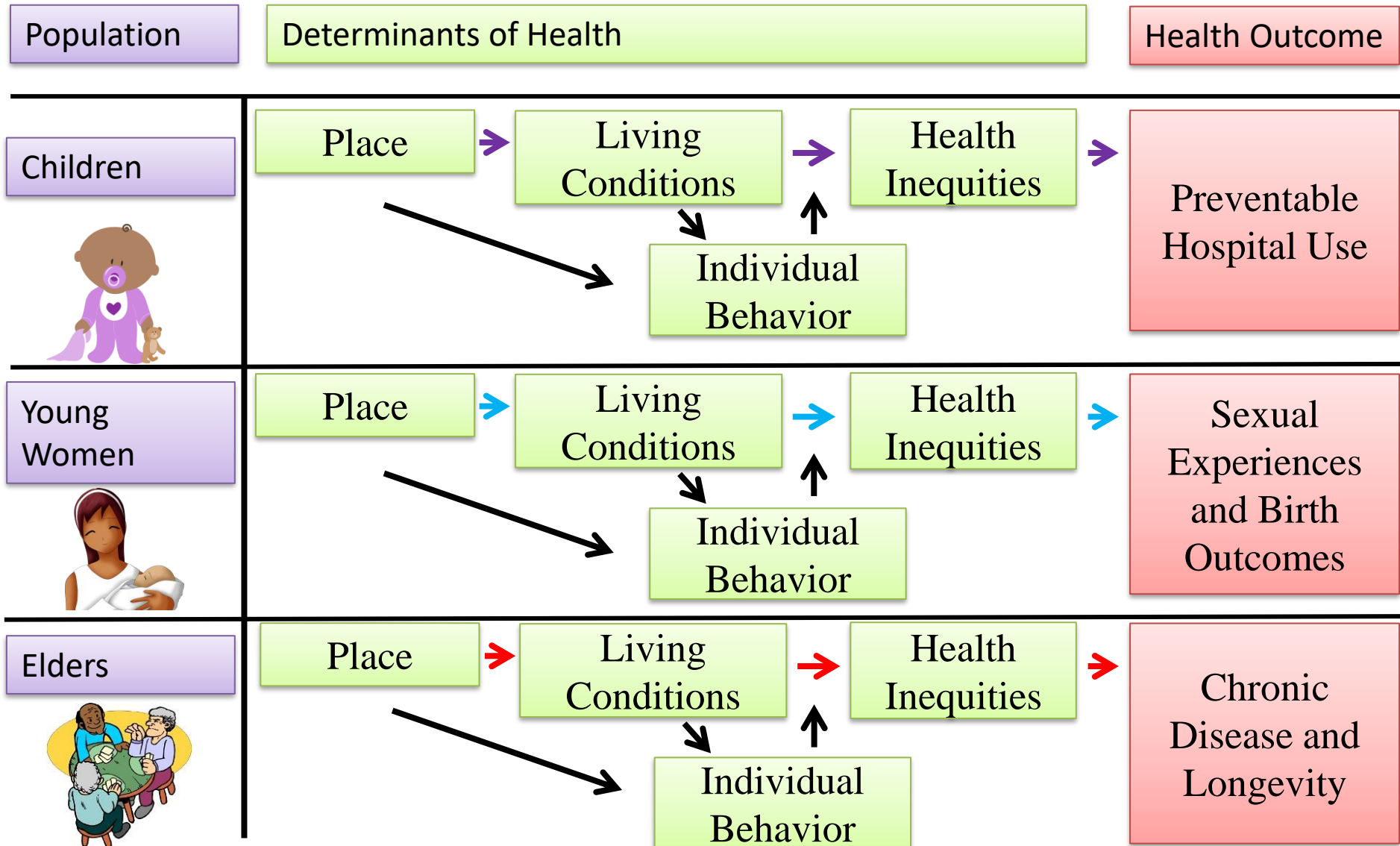


(\*YPLL-Years of Potential Life Lost)

# 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<sup>1</sup>**

| 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              |    |
| <b>Total</b>       |                     | <b>980,053</b>     |    | <b>6,552</b>          |      | <b>1,787</b>       |    | <b>4,244</b>     |    | <b>521</b>       |    |

<sup>1</sup>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 | ↓/-          | -       | ↓/-      | -     | -                | -             |





# 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. |
|----------------------------|------|------------------------------|------|
|                            |      | <i>Non-Modifiable</i>        |      |
| 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              | ↑    |
|                            |      | <i>Modifiable</i>            |      |
|                            |      | 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**

| Measure                         | Female      |                  | Male        |                  |
|---------------------------------|-------------|------------------|-------------|------------------|
|                                 | White       | Mexican American | White       | Mexican American |
| Life Expectancy at Age 65       |             |                  |             |                  |
| Nationwide <sup>a</sup>         | 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 <sup>b</sup> | -0.21 (5.0) | 1.01* (5.0)      | -0.15 (4.5) | 0.53* (4.6)      |

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



# 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        | ↑    |
|                            |      | <i>Cause of Death</i>       |      |
|                            |      | Circulatory                 | Ref  |
|                            |      | Neoplasm                    | ↑    |
|                            |      | Respiratory                 | ↑    |
|                            |      | Central Nervous System      | ↓    |
|                            |      | Endocrine                   | ↑    |
|                            |      | Other Cause                 | ↑    |



# Geographic Distribution: Place Indicators

**Correlation Matrix of Community Characteristics**

| Indicator          | Poverty | Simpson Index | PM2.5  | Walk Score | % African American |
|--------------------|---------|---------------|--------|------------|--------------------|
| 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             |

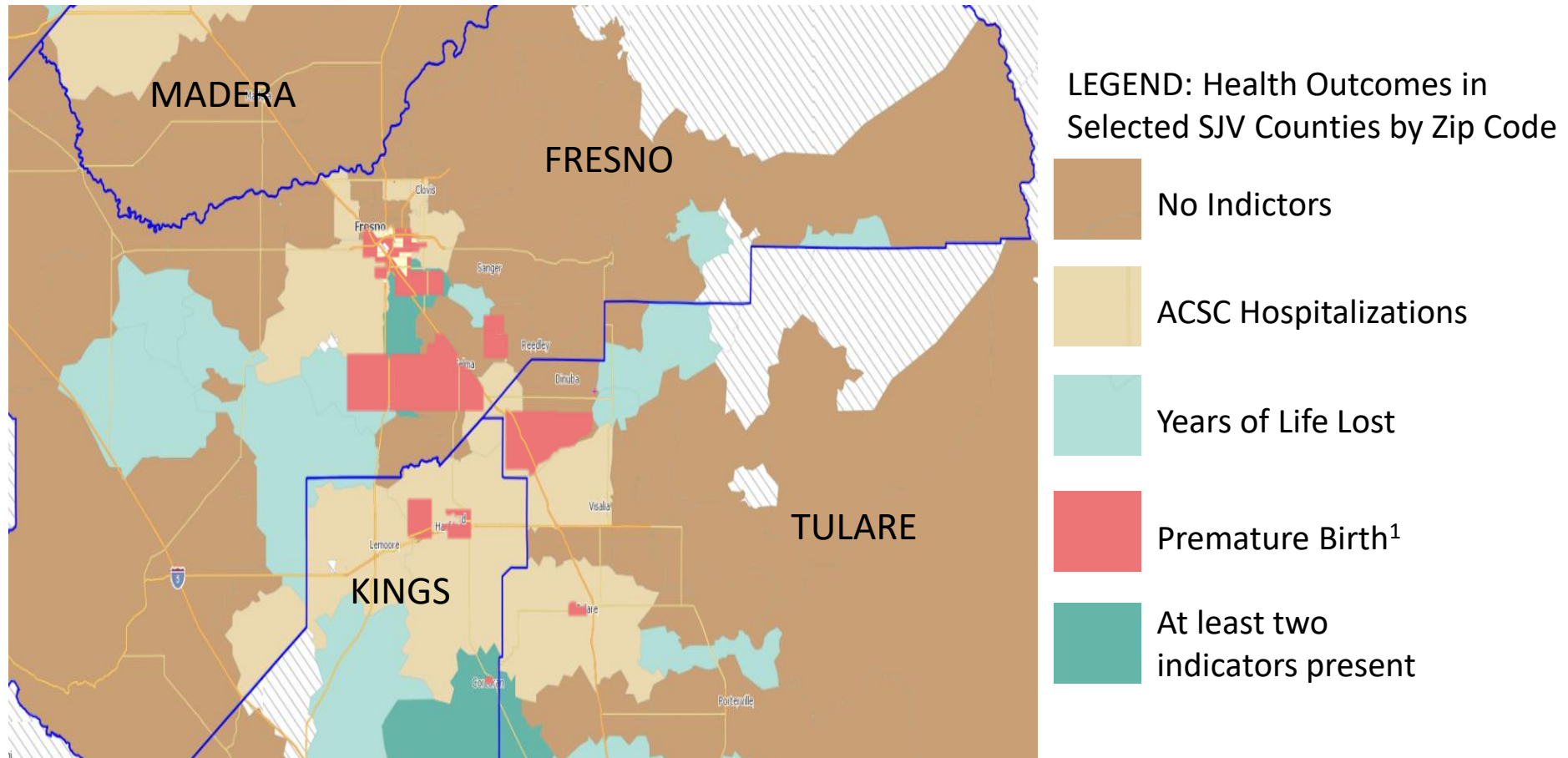
\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . 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



<sup>1</sup> 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?