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5 **An Analysis of Health Equity in the San Joaquin Valley Region**

6 **by** Jahnvi Rameshbhai Patel (989442789) & Yusuf Ejaz (989441508)

7 **MSBA 286 — Capstone Project II (Section 1)**

8 **University of the Pacific**

9 **Fall 2023**

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An Analysis of Health Equity in the San Joaquin Valley Region

Abstract:

This report provides an analysis of health equity in California's North San Joaquin Valley region compared to other regions of the state. The analysis focuses on 58 counties in the 13 regions and examines 107 indicators related to health outcomes and social determinants of health. The data shows that on most indicators, the San Joaquin Valley fares worse than other parts of California, often by a significant margin. Key findings include lower rates of educational attainment, higher poverty levels, greater exposure to environmental pollution, reduced access to healthcare, and poorer health outcomes related to chronic disease, maternal-child health, mental health, and more. These disparities point to deep-rooted inequities in social determinants of health that contribute to gaps in wellbeing. The report provides a basis for understanding regional health needs and priorities for investment and intervention to advance health equity in the Valley. Recommendations focus on economic development, healthcare access, and education. While limited by use of county-level pre-pandemic data, the report offers valuable insights into persistent disparities to inform policy and action.

Keywords:

Health Index, NSJV counties, Regional Health Determinants

401. Introduction / Background

41 The San Joaquin Valley

42 **Landscape:** California's San Joaquin Valley (the Valley) is the southern part of what's known as
43 the Central Valley and is primarily rural, although it contains multiple urban centers. This report
44 includes information on twelve of the region's counties: Calaveras, Fresno, Kern, Kings,
45 Madera, Mariposa, Merced, San Benito, San Joaquin, Stanislaus, Tulare, and Tuolumne.

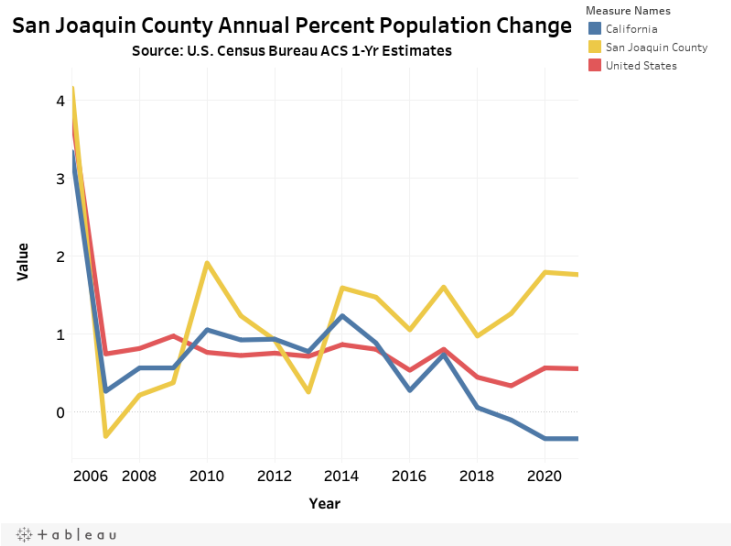
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47 **Challenges:** The Valley is known for its extremely hot, dry summers and densely foggy winters.
48 The area has long experienced a severe drought and is experiencing the effects of the climate
49 crisis in multiple ways, including record wildfires and low groundwater levels due to increased
50 water extraction for agricultural production (the region's primary industry). One of the most
51 polluted regions in both the state and the nation, the Valley experiences high levels of toxic
52 contamination in its air, water, and land.

53 Other challenges for residents of the San Joaquin Valley include low educational attainment⁸,
54 widespread poverty, a swiftly growing and exceptionally diverse population, significant health
55 needs, and limited public health and healthcare resources. Large portions of the landscape are
56 rural, creating significant challenges related to access to resources that support health, prosperity,
57 social connectedness, and longevity.

Assets and Strengths: Some of the Valley's most prominent challenges are also its greatest

assets, however. The diversity, commitment, ingenuity, and resiliency of the region's people have carried them through decades of hardship and adversity and make the Valley a unique and valuable place to live for many. As such, the region is one of the fastest growing in the state,



with a 2019 total population of over 4 million and a projected population of almost 6.5 million by 2060.

Economic Contribution: The San Joaquin Valley's economic contribution to both the nation and the state is significant; its largest contributions come through its agricultural and energy production. According to California's Department of Food and Agriculture, eight of the state's top ten agriculture producing counties in 2019 were Valley counties. In the same year, the twelve Valley counties highlighted in this report (just 21% of California's 58 counties) produced 60% of the state's income from agriculture. The Valley produced \$37 billion in agricultural products in 2019- more than twice the rest of the state and more than the state of Iowa, the next highest producer in the country. If it were its own state, the region would be the top agricultural producing state in the nation.

In addition, several of the largest oil fields in the country exist in the region; the San Joaquin basin in Kern County is the most prolific oil-producing area in California.

812. Literature Review

82 In our research project, we have extensively delved into key sources that have significantly
83 shaped our approach. Among these sources, "[CalEnviroScreen 4.0](#)" and "[An Analysis of Health
84 Equity in the San Joaquin Valley Region](#)" have played pivotal roles in guiding our work.

85 Although we have not conducted a precise tally of the multitude of papers and sources we have
86 reviewed, cited, or included in our literature table, these two references have served as the
87 cornerstones of our project. "CalEnviroScreen 4.0" has provided invaluable insights into the
88 uneven distribution of environmental impacts, shedding light on the disproportionate burden of
89 pollution borne by certain communities. On the other hand, "An Analysis of Health Equity in the
90 San Joaquin Valley Region" has acted as our guiding compass, revealing the intricate interplay
91 of health disparities and the social determinants of health within the region.

92 These sources have not only influenced the objectives of our project but have also honed our
93 methodologies. They have consistently reminded us of the paramount importance of addressing
94 the root causes of health inequities and the imperative of considering social determinants of
95 health. While we may not have quantified the exact number of papers in our review, what
96 remains indisputable is that we have meticulously utilized reputable research to construct a
97 robust foundation for our project. Our journey is characterized by a commitment to being well-
98 informed, data-driven, and deeply dedicated to the noble mission of advancing health equity in
99 the North San Joaquin Valley.

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3. Data / Problem Analytics

3.1 Data

Identification of areas of high need for the region were identified through this analysis of [Healthy Places Index](#) (HPI) data, however, and these informed the final selection of indicators included in the analysis.

Data for each county in California was then downloaded from the following websites:

- [PLACES: Local Data for Better Health](#)
- [County Health Rankings and Roadmaps](#)
- [KidsData](#)
- [County Health Status Profiles](#)
- [CalEnviroscreen 4.0](#)

3.2 Methods

Data Collection: Our data collection process has been marked by meticulousness. We have sourced our data from reputable and highly regarded outlets, including the CDC's "PLACES: Local Data for Better Health," "County Health Rankings and Roadmaps," "KidsData," and others. Our primary aim has been to ensure not only the abundance but also the reliability of the data we employ.

Data Cleaning: The data cleaning phase is akin to tidying a room before commencing a project. We have actively engaged in data cleaning by thoroughly reviewing our datasets in software like

Excel. During this process, we have addressed missing information, resolved inconsistencies, and painstakingly organized the data to ensure its reliability and freedom from errors.

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Variable Construction: The creation of variables has been instrumental in building the foundation for our analysis. We have defined and developed meaningful variables derived from raw data, aligning them closely with our research objectives. Each variable serves as a crucial puzzle piece contributing to the larger research landscape.

Regional Groupings: Filters were applied in Excel and SPSS to datasets downloaded from the above sources, based on four regional/sub-regional categories:

<i>Central San Joaquin Valley (Central SJV)</i>	The eight valley-floor counties traditionally described as the San Joaquin Valley (Fresno, Kern, Kings, Madera, Merced, Stanislaus, San Joaquin, and Tulare)
<i>San Joaquin Valley-Adjacent (SJV-Adjacent)</i>	The four SJVPHC counties that lie adjacent to the <i>Central San Joaquin Valley</i> counties listed above (Calaveras, Mariposa, San Benito, and Tuolumne)
<i>San Joaquin Valley (SJV)</i>	All twelve San Joaquin Valley counties (eight <i>Central SJV</i> and four <i>SJV-Adjacent</i>)
<i>CA</i>	All 58 counties in the state, including the twelve in the <i>SJV</i> regional grouping
<i>Non-San Joaquin Valley (Non-SJV)</i>	The 46 counties in the state located outside the San Joaquin Valley

3.3 Data Analysis: Data for these regional groupings was then analyzed according to the data value type provided in each dataset (prevalence, rate per 1,000, etc.), most frequently by calculating means. While numerators for each county were provided in some datasets for some indicators, data collected for many indicators included only state and county percentages (for example, % of adults who smoke). Where raw numbers were provided, regional and state percentages were calculated by adding numerators and denominators for all counties and dividing the total numerator by the total denominator to identify regional/state percentage. For indicators that included data in rates, indexes, or percentages, means were calculated across

counties using the data as provided. Age-adjusted rates were used where provided in the original datasets.

4. Discussion

For most indicators both social determinants and health outcomes- the San Joaquin Valley region fares worse than other California counties, often by a large difference.

Out the 107 indicators measured, the 3 NSJV regions show the greatest need for investment and resources on 76 (71%).

The tables below show the results of the analysis for each of the regional groupings by indicator:

155	Indicator	Southern Border	Inland Empire	Los Angeles County	Orange County	Central Coast	North San Joaquin Valley	Central San Joaquin Valley	Kern County	Eastern Sierra	Bay Area	Sacramento	Redwood Coast	North State
	High School Completion	87.48%	82.11%	80.04%	86.61%	83.68%	78.54%	75.64%	75.95%	91.20%	89.40%	89.02%	87.90%	90.01%
	Some College	72.56%	57.14%	65.80%	72.74%	62.78%	51.87%	54.36%	49.67%	61.00%	78.28%	69.05%	60.08%	64.51%
	Children Living in Poverty	16.95%	16.55%	18.40%	11.00%	13.60%	21.30%	25.38%	25.30%	18.19%	9.76%	15.14%	24.58%	21.23%
	Children Enrolled in Free or Reduced Lunch Program	63.00%	68.00%	69.00%	50.00%	57.33%	68.00%	76.00%	72.00%	52.00%	43.78%	50.86%	67.75%	58.27%
	Children Living in Single-Parent Households	27.00%	24.00%	25.00%	18.00%	20.00%	24.00%	25.00%	26.00%	24.00%	19.00%	20.00%	26.00%	28.00%
	Median Household Income	70,863	76,454	77,356	100,210	87,609	69,151	60,397	57,926	68,447	111,622	75,981	53,837	57,397
	Unemployment	9.05%	4.15%	4.90%	3.20%	4.32%	6.10%	6.93%	6.90%	4.26%	3.06%	5.44%	4.55%	4.87%
	Homeownership	56.00%	64.31%	46.25%	56.96%	59.72%	56.76%	58.05%	59.27%	74.02%	58.69%	63.16%	63.79%	68.99%
	Overcrowded Housing	25.83%	24.89%	31.87%	26.17%	24.71%	23.10%	24.28%	24.01%	16.77%	22.14%	18.99%	21.79%	18.84%
	Severe Housing Cost Burden	19.00%	18.50%	24.00%	20.00%	18.83%	17.33%	16.75%	17.00%	14.71%	17.22%	15.71%	18.00%	16.36%
	Adverse Childhood Experiences	61.00%	65.00%	62.00%	60.00%	66.50%	64.33%	66.00%	65.00%	62.57%	60.11%	62.57%	66.00%	66.09%
	Residential Segregation Index (Non-White/White)	55.66%	41.87%	58.04%	49.46%	58.35%	47.52%	52.43%	51.55%	22.38%	55.34%	48.41%	62.71%	50.63%
	Income Inequality	5.14%	4.49%	5.37%	4.71%	4.58%	4.49%	4.61%	4.97%	4.09%	4.94%	4.72%	5.17%	4.73%
	Exercise Opportunities	89.00%	89.00%	98.00%	99.00%	92.17%	89.00%	75.00%	86.00%	70.29%	97.67%	88.43%	75.25%	68.00%
	Not Proficient in English	13.00%	7.50%	13.00%	9.00%	9.17%	10.67%	11.75%	10.00%	1.43%	6.89%	6.14%	2.75%	2.36%
	Rural	10.35%	4.65%	0.60%	0.10%	11.75%	10.27%	17.53%	10.20%	68.14%	4.53%	18.60%	35.45%	60.16%
	Broadband Access	89.90%	90.99%	90.08%	93.68%	92.03%	89.14%	86.14%	87.50%	84.11%	93.25%	89.27%	85.22%	81.12%
	Social Associations	5.55	4.25	6	6.7	6.72	4.77	4.5	4.3	6.13	6.98	5.89	6.65	7.19
	Drinking Water Violations	100.00%	100.00%	100.00%	0.00%	83.33%	100.00%	100.00%	100.00%	57.14%	66.67%	57.14%	75.00%	18.18%
	Drinking Water Contaminants	384.15	547.99	608.23	426.74	465.18	731.51	643.54	670.07	509.06	301.59	386.31	315.42	357.87
	Pesticides	268.24	21.12	5.43	63.44	2,241.96	1,138.16	456.35	673.14	0.89	15.58	442.4	37.78	240.3
	Air- Toxic Chemical Release from Facilities	206.02	606.69	3,699.37	3,699.58	155.42	265.47	2,242.21	186.99	13.25	432.88	353.81	3.87	57.8
	Air- Maximum 8 Hour Ozone Particulate Matter	0.05	0.06	0.05	0.05	0.04	0.05	0.06	0.06	0.05	0.04	0.05	0.03	0.05
	Air- Diesel Particulate Matter	0.16	0.2	0.28	0.19	0.11	0.18	0.12	0.16	0.01	0.07	0.1	0.04	0.04
	Food Insecurity	13.00%	9.10%	11.30%	8.40%	8.53%	11.87%	12.93%	13.00%	10.27%	7.84%	10.13%	13.38%	11.97%
	Limited Access to Healthy Food	5.77%	7.52%	1.46%	1.26%	4.27%	4.33%	5.71%	7.16%	8.62%	1.89%	6.67%	8.24%	11.58%
	Food Environment Index (0 to 10)	7.35	7.95	8.1	8.8	8.52	7.73	7.48	7.1	7.56	8.87	7.83	7.18	7.09
	Uninsured (Adults and Children)	8.50%	9.00%	10.00%	8.00%	9.00%	8.67%	9.25%	10.00%	8.43%	5.56%	7.29%	8.50%	7.55%
	Uninsured Adults	3.62%	3.94%	3.38%	3.13%	4.45%	3.54%	3.73%	3.94%	5.12%	2.97%	3.93%	3.77%	3.95%
	Uninsured Children	15.70%	13.95%	12.70%	9.50%	11.30%	15.10%	17.50%	17.10%	7.69%	7.40%	10.09%	10.13%	8.98%
	Physical Exam (Self-Report)	62.95%	62.30%	63.20%	63.50%	61.37%	60.83%	60.88%	59.50%	60.79%	60.36%	61.17%	60.23%	60.74%
	Dental Visit (Self-Report)	59.45%	57.95%	59.70%	66.80%	64.60%	57.33%	54.53%	54.50%	64.89%	761.87%	63.66%	59.15%	60.77%
	Primary Care Physicians	53.96	52.12	74.44	100.48	73.49	56.38	48.65	49.48	49.71	113.01	77.08	64.23	54.12
	Other Primary Care Providers	89.94	71.74	79.92	81.73	68.12	60.87	87.54	72.25	68.56	80.62	70.01	92.52	92.12
	Mental Health Providers	322.37	263.31	417.59	353.05	535.71	249.57	286.37	228.73	296.1	607.11	345.13	522	417.07
	Dentists	64.28	65.75	94.19	120.97	80.2	57.73	56.32	50.89	57.03	112.95	68.9	70.89	73.43
	Preventable Hospital Stays	2018.00	2420.50	2458.00	1627.00	1758.83	2785.00	2610.75	2674.00	2016.86	1833.44	2546.14	1756.50	2247.55
	Early Prenatal Care	66.70%	85.05%	87.00%	90.50%	86.58%	81.20%	82.38%	82.20%	75.56%	89.92%	78.66%	77.90%	74.37%
	Adequate Prenatal Care	62.15%	67.70%	77.80%	83.40%	82.38%	69.57%	76.40%	75.20%	71.09%	67.19%	73.61%	74.70%	73.18%
	Annual Flu Vaccinations	38.00%	32.00%	39.00%	48.00%	48.00%	39.00%	37.00%	33.00%	36.71%	47.11%	42.43%	31.00%	28.27%
	Lack of Physical Activity (Self-Report)	26%	24%	22%	21%	21%	26%	28%	28%	19%	18%	21%	22%	21%
	Insufficient Sleep (Self-Report)	35%	36%	34%	32%	31%	34%	35%	35%	32%	30%	33%	34%	33%
	Excessive/Binge Drinking (Self-Report)	20%	20%	18%	17%	21%	20%	19%	18%	23%	20%	20%	21%	22%
	Smoking (Self-Report)	12%	13%	11%	11%	12%	14%	15%	15%	14%	10%	13%	16%	16%
	Frequent Physical Distress (Self-Report)	12%	11%	10%	9%	10%	12%	13%	13%	10%	8%	10%	12%	11%
	Premature Deaths (Died Before Age 75)	320	360	290	220	250	390	368	440	427	231	319	458	413
	Years of Potential Life Lost (Died Before Age 75)	6000	7050	5600	4400	5150	7667	7250	8700	6950	4600	6414	9475	9780
	Child Deaths	30.0	40.0	30.0	30.0	33.3	43.3	42.5	50.0	50.0	28.9	40.0	50.0	65.0
	Cancer Diagnosis, Except Skin (Self-Report)	5.6%	5.7%	5.2%	4.8%	5.5%	6.3%	7.0%	7.3%	6.2%	4.4%	6.0%	7.6%	7.2%
	Breast Cancer Deaths	17.7	20.2	18.3	18.5	17.5	21.2	18.0	20.4	19.7	16.1	17.5	19.8	18.5
	Colorectal Cancer Deaths	11.4	13.9	12.3	10.5	10.6	14.1	13.1	12.1	15.9	10.8	12.1	14.6	11.8
	Lung Cancer Deaths	18.9	25.4	20.6	21.5	22.1	29.3	25.5	29.2	29.8	21.7	28.6	36.4	30.1
	Prostate Cancer Deaths	16.5	22.6	18.6	17.4	17.3	20.9	17.4	21.7	16.2	18.6	20.7	21.2	19.5
	Chronic Kidney Disease Diagnosis (Self-Report)	3.1%	2.8%	2.8%	2.5%	2.7%	3.1%	3.3%	3.3%	2.6%	2.3%	2.7%	3.0%	2.9%
	Chronic Liver Disease & Cirrhosis Deaths	11.9	15.8	12.8	10.8	13.5	17.7	18.5	18.4	17.9	8.6	15.9	28.0	20.9
	Chronic Obstructive Pulmonary Disease Diagnosis (Self-Report)	5.6%	5.7%	5.2%	4.8%	5.5%	6.5%	7.0%	7.3%	6.2%	4.4%	6.0%	7.6%	7.2%
	Chronic Lower Respiratory Disease Deaths	23.7	42.6	25.4	24.0	25.8	41.0	36.0	56.1	34.4	21.0	35.9	49.2	47.2
	Asthma Diagnosis (Self-Report)	9.5%	10.0%	9.2%	9.0%	9.7%	10.1%	10.5%	10.2%	9.0%	10.0%	10.0%	10.8%	10.6%
	Asthma ER Visits	62.3	54.3	53.8	31.6	42.0	75.9	71.3	66.8	44.7	51.2	44.8	70.7	48.0
	Coronary Heart Disease Diagnosis (Self-Report)	5.8%	5.7%	5.3%	4.8%	5.4%	6.1%	6.5%	6.6%	5.7%	4.6%	5.6%	6.4%	6.1%
	Cardiovascular Disease ER Visits	14.3	18.1	14.0	10.4	11.9	18.5	19.8	18.7	14.1	10.8	15.1	17.3	13.3
	Coronary Heart Disease Deaths	67.9	103.2	96.6	72.6	60.5	97.8	99.8	116.7	110.0	56.2	84.8	94.1	86.1
	High Blood Pressure Diagnosis (Self-Report)	28.6%	29.2%	26.4%	25.2%	26.1%	29.1%	29.7%	29.1%	27.4%	24.4%	26.5%	29.1%	28.2%
	Stroke Diagnosis (Self-Report)	2.9%	2.9%	2.7%	2.3%	2.6%	3.1%	3.3%	3.4%	2.7%	2.2%	2.7%	3.2%	3.0%
	Stroke Deaths	36.1	38.9	32.9	36.3	39.2	45.9	39.8	37.5	41.7	33.7	42.5	50.5	39.2
	Obesity (Self-Report)	32.3%	36.9%	28.8%	23.0%	29.7%	33.6%	35.4%	35.0%	29.7%	24.3%	30.8%	31.9%	31.5%
	Diabetes Diagnosis (Self-Report)	11.7%	11.2%	10.3%	9.1%	9.6%	11.6%	12.5%	12.5%	8.7%	8.6%	9.6%	10.0%	9.4%
	Diabetes Prevalence	12%	12%	10%	9%	10%	12%	13%	13%	9%	9%	10%	10%	9%
	Diabetes Deaths	29.9	27.7	26.1	14.9	17.5	28.7	23.8	43.2	12.2	16.6	21.1	23.2	23.0
	Gonorrhea Incidence (Males 15 - 44)	1761.9	1961.0	16105.0	2327.7	190.6	493.9	415.0	1051.7	13.3	1072.4	360.3	62.8	53.2
	Syphilis Incidence (Primary and Secondary, Males)	252.2	313.7	2103.0	444.0	36.9	93.3	52.0	167.3	1.9	137.3	65.8	7.4	17.9
	Congenital Syphilis Incidence	148.85	176.95	114.10	61.10	73.20	226.13	177.43	287.10	0.00	44.43	245.45	0.00	324.10
	Chlamydia Diagnosis	476.00	461.00	528.00	345.00	332.00	469.00	572.00	590.00	159.00	364.00	308.00	382.00	244.00
	Chlamydia Incidence (3 Years)	571.00	526.00	622.00	412.00	420.00	539.00	628.00	702.00	276.00	478.00	379.00	434.00	286.00
	HIV Prevalence	365.90	372.90	595.00	264.20	167.95	190.57	181.98	269.30	157.69	440.58	165.41	210.10	103.36
	HIV Prevalence (3 Years)	369.00	381.00	609.00	272.00	169.00	185.00	179.00	258.00	192.00	452.00	163.00	216.00	127.00
	Infant Death Rate (3 Years)	3.20	4.45	3.50	2.60	3.08	4.60	4.75	5.60	1.21	2.41	3.59	4.63	2.50
	Infant Death Rate (7 Years)	4.00	5.00	4.00	3.00	3.00	5.00	5.00	6.00	1.00	3.00	4.00	5.00	2.00
	Low Birth Weight Infants (3 Years)	6.70	7.55	7.40	6.60	6.42	6.80	6.95	7.60	5.97	6.57	6.37	6.73	6.53
	Low Birth Weight Infants (7 Years)	6.20%	7.16%	7.23%	6.26%	6.20%	6.61%	6.77%	7.37%	5.90%	6.52%	6.41%	6.41%	7.24%
	Teen Birth Rate (3 Years)	13.75	12.75	9.40	6.50	11.77	16.03	19.35	21.00	10.44	6.37	10.17	17.30	13.24
	Teen Birth Rate (7 Years)	22.42	19.07	15.19	10.81	15.67	22.37	29.65	31.53	14.81	9.15	15.14	24.64	18.62
	Total Tooth Loss (Self-Report)	10.65%	11.45%	9.30%	8.00%	9.42%	12.70%	13.78%	14.40%	9.87%	7.16%	10.06%	12.73%	11.62%
	Drug Overdose Deaths (3 Years)	21.90	23.75	17.90	21.10	23.23	21.33	17.50	41.80	26.44	21.53	19.09	50.20	28.32
	Drug Overdose Deaths (3 Years) Age-Adjusted	21.22	18.77	14.21	15.50	17.76	17.29	13.45	31.54	17.53	18.92	13.60	40.21	15.71
	Frequent Mental Distress (Self-Report)	14.65%	15.10%	14.80%	12.80%	14.50%	15.60%	15.90%	16.40%	15.46%	12.96%	14.96%	16.60%	16.28%
	Alcohol-Im													

156 The tables below show the rank of the analysis for each of the regional groupings by indicator:

Southern Border Rank	Inland Empire Rank	Los Angeles County Rank	Orange County Rank	Central Coast Rank	North San Joaquin Valley Rank	Central San Joaquin Valley Rank	Kern County Rank	Eastern Sierra Rank	Bay Area Rank	Sacramento Rank	Redwood Coast Rank	North State Rank
6	9	10	7	8	11	11	12	1	3	4	5	2
3	10	5	2	7	12	11	13	8	1	4	9	6
6	5	8	2	3	10	13	12	7	1	4	11	9
7	9	11	2	5	9	13	12	4	1	3	8	6
12	5	8	1	3	5	8	10	5	2	3	10	13
7	5	4	2	3	8	10	11	9	1	6	13	12
13	3	8	2	5	10	12	11	4	1	9	6	7
12	3	13	10	6	11	9	7	1	8	5	4	2
11	10	13	12	9	6	8	7	1	5	3	4	2
11	9	13	12	10	7	4	5	1	6	2	8	3
3	8	4	1	13	7	10	8	5	2	5	10	12
10	2	11	5	12	3	8	7	1	9	4	13	6
11	2	13	6	4	2	5	10	1	9	7	12	8
5	5	2	1	4	5	11	9	12	3	8	10	13
12	6	12	7	8	10	11	9	1	5	4	3	2
7	4	2	1	8	6	9	5	13	3	10	11	12
6	4	5	1	3	8	10	9	12	2	7	11	13
9	13	7	4	3	10	11	12	6	2	8	5	1
8	8	8	1	7	8	8	8	3	5	3	6	2
4	9	10	6	7	13	11	12	8	1	5	2	3
8	4	2	6	13	12	10	11	1	3	9	5	7
6	10	12	13	4	7	11	5	2	9	8	1	3
4	11	4	4	2	4	11	11	4	2	4	1	4
8	12	13	11	6	10	7	8	1	4	5	2	2
11	4	7	2	3	8	10	11	6	1	5	13	9
7	10	2	1	4	5	6	9	12	3	8	11	13
10	5	4	2	3	7	9	12	8	1	6	11	13
6	9	12	4	9	8	11	12	5	1	2	6	3
5	9	3	2	12	4	6	9	13	1	8	7	11
11	9	8	4	7	10	13	12	2	1	5	6	3
3	4	2	1	5	8	7	13	9	11	6	12	10
8	10	7	2	4	11	12	13	3	1	5	9	6
9	10	4	2	5	12	11	7	11	3	6	8	8
3	9	7	5	12	13	4	8	11	6	10	1	2
8	11	4	6	2	12	10	13	9	1	7	3	5
9	8	3	1	4	10	12	13	11	2	7	6	5
6	8	9	1	3	13	11	12	5	4	10	2	7
13	5	3	1	4	8	6	7	11	2	9	10	12
13	11	3	1	2	10	4	5	9	12	7	6	8
7	11	5	1	1	5	8	10	9	3	4	12	13
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10	13	7	3	2	7	10	10	3	1	5	7	5
5	5	2	1	10	5	4	2	13	5	5	10	12
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6	7	4	1	3	9	8	12	11	2	5	13	10
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2	6	2	2	5	9	8	10	10	1	6	10	13
5	6	3	2	4	10	9	12	8	1	7	13	11
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4	10	8	1	2	11	9	13	13	3	6	12	5
1	6	2	3	5	10	7	9	11	4	8	13	12
2	13	7	5	3	10	4	12	1	6	9	11	8
10	6	6	2	4	11	12	13	3	1	4	9	8
3	6	4	2	5	8	11	10	9	1	7	13	12
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2	10	4	3	5	9	8	13	6	1	7	12	11
4	6	3	1	5	8	11	10	9	2	7	13	12
9	8	7	1	2	13	12	10	3	6	4	11	5
8	6	3	2	4	9	12	13	6	1	5	11	9
7	10	5	1	3	11	13	12	6	2	8	9	4
3	11	8	4	2	9	10	13	12	1	5	7	6
8	12	4	2	3	10	13	9	6	1	5	9	7
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9	13	3	4	1	10	12	11	4	2	6	8	7
11	9	8	3	5	10	12	12	2	1	5	7	4
9	9	5	1	5	9	9	13	1	1	5	5	1
12	10	9	2	4	11	8	13	1	3	5	7	6
10	11	13	12	4	7	6	8	1	9	5	3	2
10	11	13	12	4	7	5	9	1	8	6	2	3
7	8	6	4	5	10	9	12	1	3	11	1	13
10	8	11	5	4	9	12	13	1	6	3	7	2
10	8	11	4	5	9	12	13	1	7	3	6	2
10	11	13	8	4	6	5	9	2	12	3	7	1
10	11	13	9	3	5	4	8	6	12	2	7	1
6	9	7	4	5	10	12	13	1	2	8	11	3
6	9	6	3	3	9	9	13	1	3	9	9	2
7	12	11	6	3	9	10	13	1	5	2	8	4
2	10	11	4	2	8	9	13	1	7	5	5	12
9	7	3	2	6	10	12	13	5	1	4	11	8
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7	8	3	2	4	10	12	13	5	1	6	11	9
7	9	2	4	8	5	1	12	10	6	3	13	11
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4	7	5	1	3	9	10	12	8	2	6	13	11
2	5	1	6	12	7	10	9	13	3	4	11	8
4	7	3	1	5	9	10	11	8	2	6	12	13
4	6	3	1	5	8	8	11	8	1	7	13	12
4	7	1	2	6	9	8	11	10	3	5	13	12
4	5	2	1	6	8	7	10	12	3	9	13	11
3	5	9	1	4	13	10	11	6	7	2	12	8
11	9	3	4	8	6	1	12	7	10	2	13	5
6	9	11	5	7	12	10	13	1	8	3	4	2
2	9	5	1	4	8	7	12	13	3	6	10	11
5	3	9	2	4	1	13	7	10	8	11	6	12
2	8	1	3	7	6	4	10	11	5	9	13	12
2	7	1	3	8	5	6	10	11	4	9	13	12
7	5	3	2	9	8	10	4	1	6	11	12	13
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11	4	3	2	6	8	9	5	1	10	7	13	12
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7	2	1	3	10	5	6	4	13	8	9	12	11
7	2	4	5	3	8	6	1	13	9	10	12	11
6	9	8	7	11	10	12	13	5	4	3	1	2
9	8	1	1	4	11	12	13	6	3	10	5	7
9	7	11	4	6	10	12	13	2	1	5	7	3

157 **Indicators for which NSJV Counties Fare the Worst:**

Indicators	Non NSJV	NSJV	Diff
Average of Some College (%) (2015-2019)	61.75%	51.46%	10.29%
Average of Rural (%) (2021)	20.21%	10.33%	9.88%
Average of Children Enrolled in Free or Reduced Lunch Program (%) (2020-2021)	60.67%	68.00%	7.33%
Average of High School Completion (%) (2017-2021)	83.60%	76.87%	6.73%
Average of Adverse Childhood Experiences	63.48%	67.67%	4.19%
Average of Adequate Prenatal Care (%) (2019-2021)	73.73%	69.57%	4.17%
Average of Homeownership (%) (2017-2021)	60.77%	56.76%	4.00%
Average of No Leisure-Time Physical activity (%) (2020)	22.47%	26.40%	3.93%
Average of Dental Visit (%) (2021)	61.05%	57.33%	3.72%
Average of Median Household Income (#) (2019)	74841.7	69150.7	5691.0
Average of Gonorrhea Incidence (Males, 3 Years) (#) (2018-2020)	2471.0	493.9	1977.1
Average of Years of Potential Life Lost (3 Years) (#) (2018-2020)	6780.8	7666.7	885.9
Average of Pesticides (#) (2019-2021)	377.2	1138.2	761.0
Average of Toxic Chemical Release from Facilities (#) (2021)	952.2	265.5	686.8
Average of Preventable Hospitalizations (#) (2021)	2164.0	2785.0	621.0
Average of Drinking Water Contaminants Index (#) (2021)	468.0	731.5	263.5
Average of Violent Crime Rate (#) (2014 & 2016)	409.3	640.4	231.1
Average of Syphilis Incidence (Males, 3 Years) (#) (2018-2020)	299.9	93.3	206.6
Sum of Other Primary Care Providers (#) (2021)	366.3	182.0	184.3

158

159 **5. Theoretical and Managerial Implications**

160 **5.1 Managerial Implications**

161 Provide regional information to local health departments to support the important work they do
 162 in their jurisdictions and provide a tool for increased collaboration across counties.

163 **5.2 Theoretical Implications**

164 Inform policymakers, communities and community-based organizations about similarities and
 165 disparities within the region and across regions in California (both related to health outcomes and

to their social determinants), and to support their efforts to improve health and quality of life in the Valley.

5.3 Limitation

Several limitations to this analysis have been identified, as follows:

➤ While an attempt was made to use the most recent available data, the included data was collected prior to the COVID-19 pandemic. It is likely that conditions in the state and its regions (including the San Joaquin Valley) have been hugely affected by the pandemic, and this should be considered when reading the report.

➤ Aggregated, county-level data, rather than data on individual persons, was used in the analysis. Because of this, differences in county population sizes are not accounted for. All counties hold the same weight in the analysis, regardless of size.

➤ The Non-SJV grouping includes counties with several diverse geographical sub-regions (from far northern rural to urban Los Angeles), whereas the SJV group and its sub-groups (Central SJV and SJV-Adjacent) are more homogeneous geographically. In addition, this grouping includes a much larger number of counties (46 as opposed to just twelve, for example).

➤ No statistical analysis was conducted, and it can therefore not be confirmed whether identified differences are not the result of chance.

188 ➤ Logical assumptions must be made about possible connections between social determinants of
189 health and health outcomes based on the results of this analysis, as we did not include an
190 investigation of how indicators included in the report relate to each other. In addition,
191 information about historical and existing systems and root causes for disparities was not included
192 (for example, probable causes for lower high school completion rates in the Valley). A great deal
193 of evidence¹⁸ has established a connection between social conditions (such as structural racism
194 and poverty) and health outcomes, however, and it is now widely accepted to address social
195 conditions as determinants of health.

196

197 ➤ Data on race/ethnicity was available for only a handful of indicators and the data for different
198 racial and ethnic groups that was collected did not include all the racial and ethnic groups that
199 exist in the state and the Valley. In addition, many of the numbers for several racial/ethnic
200 groups were missing for smaller counties. Racial and ethnic breakdowns and comparisons will be
201 provided in a separate, upcoming report.

202

203 ➤ Data for several indicators was missing or unreliable for smaller counties, both in the Valley and
204 in other counties in the state.

205

206 ➤ The report does not include information at the level of individual counties, which would provide
207 additional context and clarity about the findings. A follow-up analysis of data for individual
208 counties in the Valley is planned for the near future.

209

210➤ Several indicators (all of those from the CDC PLACES dataset) are based on self-report data
211 from the Behavioral Risk Factor Surveillance Survey (BRFSS), and therefore dependent on
212 respondents' knowledge about their health conditions and willingness to disclose them. It is
213 possible that some respondents had undiagnosed health conditions they were not aware of when
214 interviewed.

215

216**6. Conclusion**

217. We have learned from an expansive body of research that health is determined largely by the
218 social conditions we find ourselves in, based on where we live at all levels- from the home we
219 live into the nation we live in. The findings presented here show notable disparities in the social
220 determinants of health in multiple areas of life, including education, economic well-being,
221 pollution, and access to healthy foods. It is not therefore surprising that regional disparities
222 related to health outcomes were also found in this analysis, with the San Joaquin Valley region
223 having the greatest need for support in improving outcomes of health for all its residents.

224

225**Recommendations:**

226**1) Economic Development**

- 227● Provide tax incentives, grants, and workforce training funds to support growth of clean energy,
228 ag-tech, and advanced manufacturing jobs. Target skills training in solar, wind, energy storage,
229 precision agriculture, robotics, and automation.
- 230● Invest in infrastructure like high-speed internet, transit, and utilities to attract businesses. Create
231 "innovation hubs" with incubator space, shared facilities, and streamlined regulations.

- 232● Fund downtown revitalization, mixed-use development, and placemaking initiatives to spur
- 233 investment in struggling communities. Prioritize walkable design and small business support.
- 234● Increase microloan programs, entrepreneurship training, and minority business mentorships.
- 235 Offer legal/accounting advice and marketing help.

236

2372) **Healthcare Access**

- 238● Expand Medi-Cal coverage and enrollment assistance to increase health insurance rates. Fund
- 239 more clinics, telehealth, urgent care, and mobile health access.
- 240● Support pipeline programs and loan forgiveness to attract more healthcare workers of all types to
- 241 the region. Ensure adequate linguistically/culturally competent staff.
- 242● Invest in maternal, infant, and early childhood home visiting programs to improve prenatal care
- 243 access and reduce ACEs.
- 244● Implement place-based interventions like lead remediation, smoke-free housing, air filtration
- 245 systems, and urban greening to address environmental health risks.

246

2473) **Education**

- 248● Increase funding for high-quality universal pre-K programs to foster early learning. Expand
- 249 Head Start enrollment.
- 250● Provide college prep, mentoring, and financial aid/scholarship programs to improve graduation
- 251 and college attainment rates.
- 252● Enhance school-based health services, mental health support, nutrition programs, and social
- 253 services to address barriers to learning.

- 254● Fund more adult education, technical training, and upskilling programs. Offer skills certificates,
255 apprenticeships, and work-based learning.

256

2578. References

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Time	Contents
Saturday September 9, 2023	Project Group Forms
Wednesday September 27, 2023	Project Proposal Presentation
Saturday October 7, 2023	Made progress on the introduction part
Saturday October 14, 2023	Made progress on the literature review
Saturday October 28, 2023	Made progress on the data collection & preparation
Saturday November 11, 2023	Made progress on the data analysis and visualization
Saturday December 2, 2023	Made progress on the findings and discussions
Saturday December 9, 2023	Made progress on the conclusion
Wednesday December 13, 2023	Final Project Paper Submission and Final Project Presentation Slides Submission