

SOCIAL AND ENVIRONMENTAL DETERMINANTS OF POPULATION HEALTH IN THE SAN JOAQUIN VALLEY

Reproductive Health in the San Joaquin Valley: An Analysis of Teen Birthing and Adverse Birth Outcomes 2009-2013

Promoting healthy and appropriately timed pregnancies and births are key objectives for public health. While substantial achievements have been made, the United States is now behind many peer high-income nations in achieving key World Health Organization maternal and child health. This reflects great variability in outcomes across the US and California. An evidence-based consensus has emerged that both modifiable individual factors and modifiable neighborhood exposures dramatically impact reproductive health outcomes. This report examines reproductive health outcomes and determinants in the San Joaquin Valley (SVJ), focusing on teen births and birth outcomes.

Teen Child-Bearing

Because pregnancy and child-bearing by teenagers is associated with long term negative social, economic and health outcomes for the teen mother, her child and the larger society, reductions in teen pregnancy and births has been a major focus of public health initiatives. By 2014 the teen birth rate was about 24 births/1,000 adolescent females, almost 1/3 of the 1990 rate. California teen child-bearing varies by race/ethnicity, *social* class, and place of residence. The recent California legal mandates to provide comprehensive reproductive health education and confidential access to health care have broadened access to effective programs, but many also face barriers to accessing care.

Birth Outcomes: Preterm Birth

For newborns, there are multiple measures of well-being that are complexly correlated. Adverse birth outcomes include low birth weight (LBW), preterm birth (PTB), infant morbidity (failure to thrive and other diagnosed medical conditions) and infant mortality (birth - one year). Recent studies have pointed to PTB as the most consistent indicator of poor maternal and infant health. PTB is associated with other poor infant health outcomes and long-term economic and social challenges for individuals and communities. PTB has been attributed to maternal age, chronic health conditions, and high risk behaviors. According to March of Dimes data, women who become pregnant in the SVJ face a much higher risk of PTB compared to other regions within the state, particularly women of color and those who reside in low-income communities.

A common set of individual and neighborhood factors have been linked to adverse maternal and child health outcomes such as PTB. Many of these same factors have been linked to teenage pregnancy and child-bearing. Women with individual risk factors such as poverty, low education, challenging work, and racial/ethnic "minority" status face greater stresses before and during pregnancy, have less access to preventive care and pregnancy care, and have more adverse birth outcomes. Similarly, living in poor,

segregated, conflict-filled and polluted neighborhoods seems to increase risk for adverse birth outcomes beyond the effect of individual factors. These stark differences are explored in research utilizing the life course perspective, a combination of early programming, and cumulative pathway theories.

Current San Joaquin Valley Public Health Consortium Programs Supporting the Health of Young Women

San Joaquin Valley Public Health Consortium (SJVPHC) member local health departments have extensive programming centered on women and children. The success of these initiatives hinge on state and federal policies and funding priorities. Notable reductions in funding for public health maternal and child health initiatives in California have also influenced the range and scope of interventions supporting this vulnerable population. Despite these factors, Table 1 shows diverse examples from the SJV county local health departments of ongoing initiatives and activities to promote the health of young women. By examining variations across the SJV, this analysis can help local health departments and their partners identify additional avenues to improve the health of young women.

Table 1. Selected San Joaquin Valley Public Health Initiatives to Improve Adolescent Reproductive Health

County	Examples of Current Initiatives
Kings	<ul style="list-style-type: none"> • Provides Family Planning Access, Care, and Treatment (FPACT) for women and men to decide for themselves the number, timing, and spacing of their children • Through Targeted Case Management Program, Public Health Nurses assist children under age 21 and others at risk access to needed services
Fresno	<ul style="list-style-type: none"> • Fresno Community Health Improvement Partnership (FCHIP) provides a stage for improvements in health through collaboration, alignment, and leveraged resources • Partnership with Fresno State, UCSF and others to reduce the burden of adverse birth outcomes, such as preterm birth and infant mortality • In partnership with UCSF, the health department produced a Youth Community Health Assessment of Resources and Trends (CHART) which examined: community context, social norms, social networks, relationships and sexual behaviors, condom use, STD knowledge and attitudes, and access to existing STD testing and treatment services • Promoting Adolescent Health Through School-Based HIV/STD Prevention is an initiative designed to assist schools with reducing: teen pregnancy rates, HIV/STD rates, disparities in HIV and other STDs experienced by specific adolescent sub populations, chronic absenteeism and dropout rates
Madera	<ul style="list-style-type: none"> • Provide reproductive health education using the Be Proud Be Responsible curriculum and information about where to locate services that are accessible and youth friendly

Merced	<ul style="list-style-type: none"> • Merced County’s Nurse Family Partnership (NFP) program engages low-income, first-time pregnant teens • Adolescent Family Life Program works with teens that are pregnant and parenting • Through its Partnerships for Community Health (PICH) programs, the County is seeking to reduce marketing of tobacco products to youth and increase availability of health-promoting resources in school settings
San Joaquin	<ul style="list-style-type: none"> • Adolescent Family Life works with teens that are pregnant or parenting • Cal-Learn works with pregnant and parenting teens who receive CalWORKS (California Work Opportunity and Responsibility to Kids) aid and services to complete high school, become independent and form healthy families • Black Infant Health empowers pregnant and mothering African American women to make healthier choices for themselves and their families
Stanislaus	<ul style="list-style-type: none"> • Provide family PACT and reproductive health services, a special teen-friendly clinic • Provide services for young adults (13-21 years) include free STI/HIV testing, birth control, reproductive health exams and one-on-one counseling • The Teen Pregnancy Prevention (TPP) program contracts with school districts to provide comprehensive sexual health education • Administer the Adolescent Family Life Program (AFLP) and Cal-Learn programs which provide case management to pregnant and parenting teens
Tulare	<ul style="list-style-type: none"> • Provide Adolescent Family Life Program for teenagers who are parents or will soon become parents California Personal Responsibility Education Program educates youth most at risk for unintended pregnancy and sexually transmitted diseases • Cal-Learn is a program targeting teens in the California Work Opportunity and Responsibility to Kids (CalWORKS) program who are under 19 years of age, who are pregnant or parenting child, and who have not obtained a high school diploma

Data Sources and Approach

This report utilizes data from a variety of statewide governmental agencies. Hospital discharge data and the birth statistical master files for the years 2009-2013 were obtained from the Office of Statewide Health Planning and Development (OSHPD) and the California Department of Public Health (CDPH), respectively. The Office of Environmental Health Hazard Assessment (OEHHA) identified and grouped key indicators to produce the CalEnviroScreen (CES) score. Pollution burden and population characteristics are the two indices that create the cumulative impact score from the CES 2.0. Indicators that compose the pollution burden score, including particulate matter 2.5 (PM2.5) and diesel particulate matter, were used to highlight neighborhood level influences on women’s health. The Regional Opportunity Index (ROI) is an index that helps to target resources and economic opportunity in California’s communities developed by UC Davis Center of Regional Change. All data files mentioned above provided information on place of residence (zip code or census tract), age, sex, and other non-identifiable demographics. All rates and population estimates were based on 2010 Census files.

Findings: Teen Births

The SJV counties has some of the highest rates of teen birth observed in the state of California, but they have seen dramatic reductions in teen birthing in recent years. Figure 1 illustrates that all eight counties of the SJV have significantly higher rates of teen births than the state as a whole. The Figure also demonstrates a clear downward trend over time for California and the SJV Counties. An 11% decrease in teen births was observed for California over the five year period, while a similar trend was observed for each of the the SJV counties. In addition to having higher rates of teen births than other parts of the State, the rates also vary notably by residence in the Valley as shown in Figure 2.

Figure 1. Rate of Teen Births by Year, SJV, 2009-2013

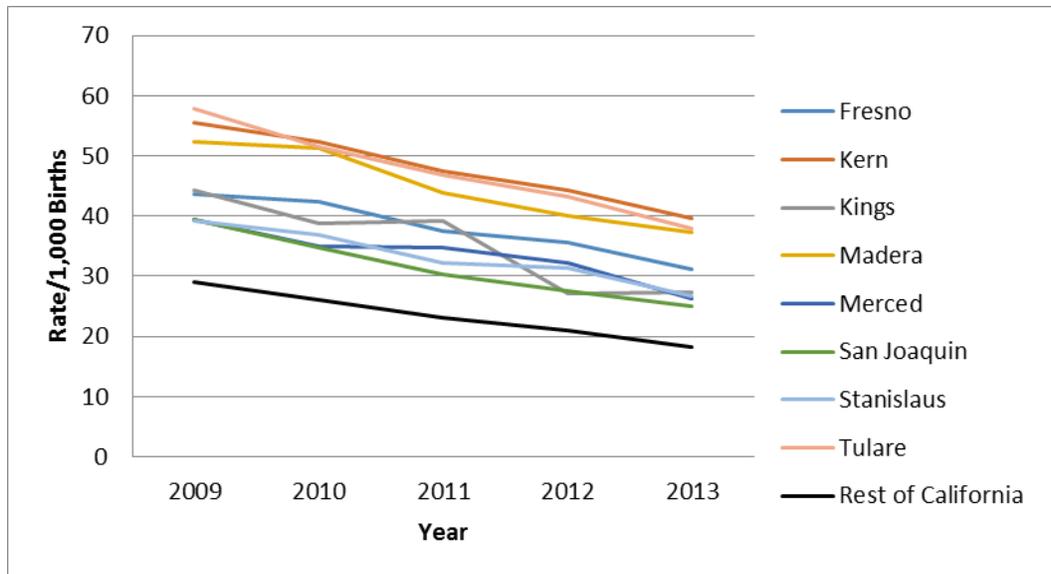
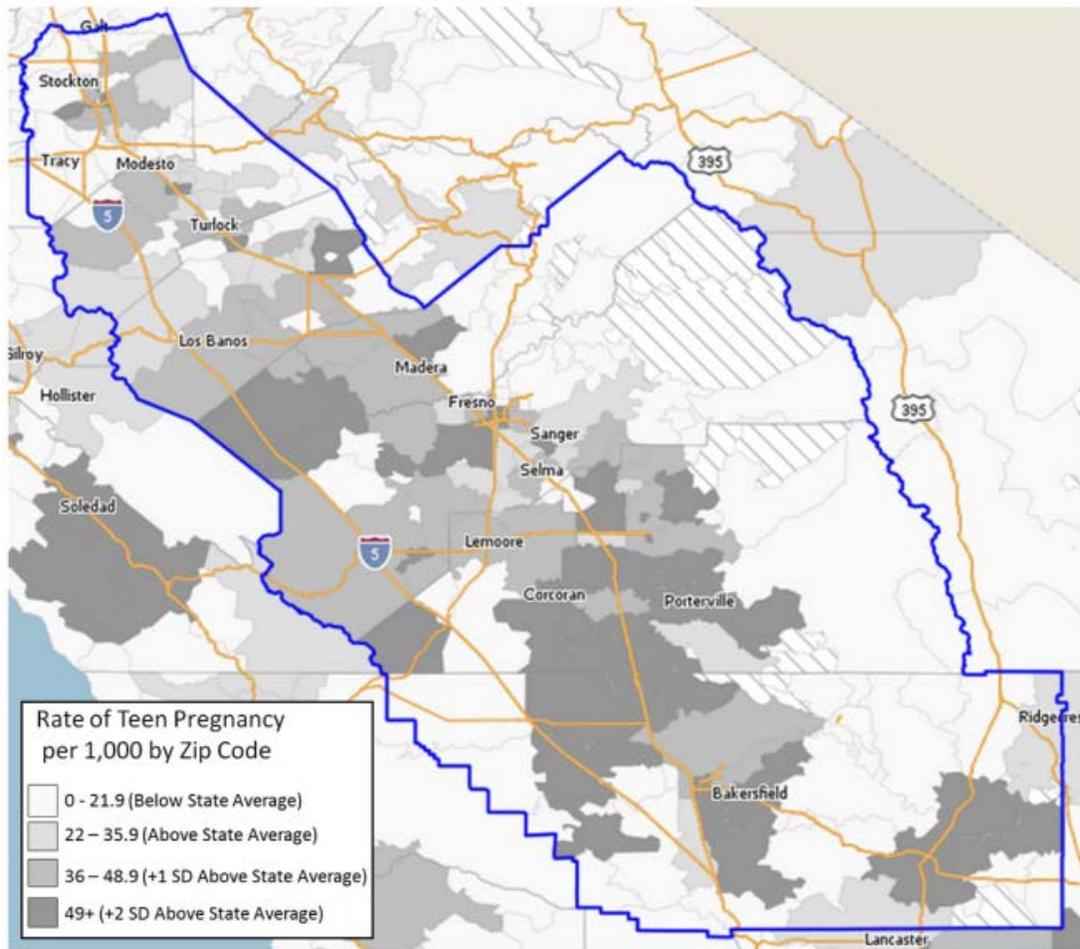


Figure 2. Rate of Teen Births (15 -19 years of age) by Zip Code, SJV, 2010-2012

Rate of Teen Pregnancy (Age Under 20) by Zip Code, San Joaquin Valley, 2010 - 2012



Our analysis suggests, teen pregnancy varies by individual level indicators as well as across communities in the SJV. We examined the odds ratios and 95% confidence intervals in multivariate analysis. Women of color are at significantly higher risk for teen births, when compared to white women. Specifically, Latinas, African-Americans, Asians, and “Other” were at 2.28, 1.63, 2.10, and 2.10 times more likely for teen births than Whites, respectively. Foreign-born women were found to be 0.45 times less likely to have a teen birth than US-born women. Mothers on Medi-Cal and other public insurance types are 4.57

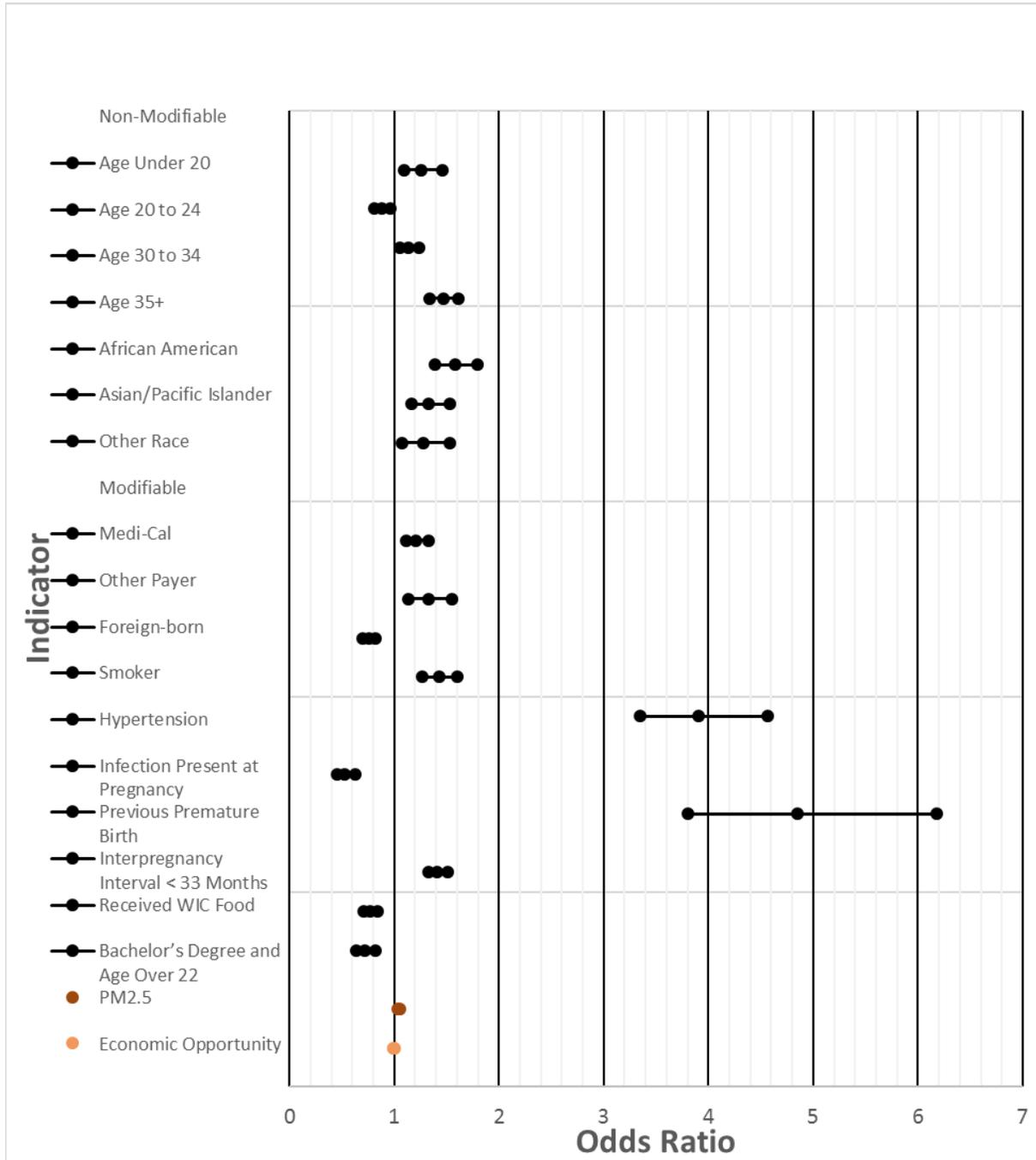
and 2.87 times more likely to have a teen birth than mothers with private coverage, respectively. Neighborhood poverty is positively associated with teen birth rates. In communities where at least 18% of the population was living two times below the Federal Poverty Level, the odds for teen birth were 1.38 times greater than in affluent communities. In communities considered to be in extreme poverty, where at least 33% of individuals were living two times below the Federal Poverty Level, the odds for teen birth were 1.46 times greater than in affluent communities.

Preterm Birth

During the study period, the proportion of PTBs was greater within the SJV region, 9.4%, than the state, 8.8%. Overall, the SJV has higher rates of premature birth than the state. There was considerable variation by residence and other factors within the SJV, as well. Figure 3 displays individual and neighborhood level indicators significantly associated with preterm birth (PTB), as determined by a hierarchical regression model. Odds ratios and 95% confidence intervals are displayed in order to show the magnitude of the relationship between each indicator and PTB. Indicators are categorized into two groups, modifiable and non-modifiable.

Mothers who were older than 29 years of age were found to be at significantly higher risk for PTB, in comparison to mothers between the age of 25 and 29. Mothers between the age of 20 and 24 were significantly less likely for PTB. African-Americans were at significantly greater risk than Whites, with an OR of 1.58. Asians and “other” races/ethnicities were also at significantly greater risk than Whites, with 1.33 and 1.28 odds ratio, respectively. Modifiable indicators were found to have a greater association with PTB when compared to non-modifiable. Having a previous PTB, hypertension, or smoking increased risk for PTB. Mothers on Medi-Cal and other forms of public insurance were at 1.21 and 1.33 times more likely to have a PTB than mothers who had private insurance. Although individual-level indicators explained for the majority of variation in PTB, particulate matter 2.5 (PM2.5) and economic opportunity measured at the zip code level were significantly associated with PTB even after controlling for individual level differences. PM2.5 was significant and positively associated with PTB. The indicator for poverty—economic opportunity—was significant and negatively associated with PTB. This suggested that in communities where economic opportunity was highest, the lowest rates of PTB were observed.

Figure 3. Modifiable and Non-Modifiable Determinants of Preterm Birth Multilevel Regression Analysis, SJV, 2009-2013



Discussion and Recommendations

Although rates of teen birthing are elevated in the SJV relative to California, the 2009-2013 period saw continued year-to-year reductions in these rates throughout the region. Teen birthing varied by individual and neighborhood factors, with individual and neighborhood poverty as the strongest predictors. Despite notably high rates of pregnancy care engagement, the SJV has higher rates of adverse birth outcomes than California as a whole. A number of the individual and neighborhood factors associated with PTB rates explain elevated risk compared to other CA region and variability within the region. Women of color with low education and prior PTBs as well as those in communities with high diesel pollution and low economic opportunity were at greatest risk for PTB.

The local health departments have taken varied strategies to promote reproductive health in order to have maximum impact on communities. Generally, these strategies have targeted modifiable characteristics of individuals. The San Joaquin Valley local health departments have a long history of providing free STI/HIV testing as well as in reducing tobacco marketing. The findings within this report suggest that the San Joaquin Valley continues to host reproductive disparities which are pervasive among women who are of color, low education status, low socioeconomic status, and young.

Potential Initiatives to Reproductive Health

The SJV Public Health Consortium identified three specific opportunities that county public health departments can champion at the county level:

- 1) *Promote high quality and culturally responsive reproductive clinical care in patient-centered systems, informed by scientific consensus and national best practice evidence.* In the SJV, several counties are fostering opportunities to train and retain physicians, advanced practice nurse and other practitioners that are multi-lingual and culturally sensitive. They are developing new partnerships to increase access to quality, coordinated and evidence-based care.
- 2) *Provide individually oriented education, health promotion, screening and interventions for women of reproductive age to reduce risk factors for adverse outcomes.* The “promotora” or community health worker (CHW) model is being implemented to provide social, economic and health support for women. CHWs visit women in home settings to promote preventive measures including breastfeeding, nutrition, homemaker assistance, healthcare system navigation, etc. Developing sustainable funding for these programs is a high priority goal for several SJV counties.
- 3) *Investigate and increase the responsiveness of policies and programs to social, economic and environmental factors that impact pregnancy and early childhood outcomes.* This multi-level, interdisciplinary goal requires new collaborations and unique partnerships. Some counties in the SJV are coordinating across sectors to consider the built environment and adopt health-friendly policies and improve the physical infrastructure for healthy living. Those invited to engage and frame new policies include government agencies, businesses, employers, developers, and families.

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