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ADOLESCENT HEALTH IN THE SAN JOAQUIN VALLEY:



Individual and Neighborhood Characteristics

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ADOLESCENT HEALTH IN THE SAN JOAQUIN VALLEY: Individual and Neighborhood Characteristics

ABSTRACT

Promoting healthy and appropriately timed pregnancies and births are key objectives for public health. This report examines reproductive health outcomes and determinants in the San Joaquin Valley (SJV), focusing on teen births and birth outcomes. 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. During the study period, the proportion of preterm births (PTB) 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. Rates of both teen birthing and adverse birth outcomes were higher for low income women of color living in neighborhoods with fewer economic opportunities and higher pollution. The SJV Public Health Consortium identified three specific opportunities their members can champion at the county level to improve reproductive health in the region:

- Promoting healthy and appropriately timed pregnancies and births are key objectives for public health
- Provide individually oriented education, health promotion, screening and interventions for women of reproductive age to reduce risk factors for adverse outcomes
- Investigate and increase the responsiveness of policies and programs to social, economic and environmental factors that impact pregnancy and early childhood outcomes

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Introduction

Promoting healthy and appropriately timed pregnancies and births are key objectives for public health. Research indicates that early investments in reproductive health initiatives improve the health and well-being of all individuals.1, 2 While substantial achievements have been made over the last 100 years, progress has slowed in the United States and we are now behind many peer high-income nations in achieving key maternal and child health goals as outlined by the World Health Organization.3 Further, there is much variability in outcomes across the US and California. An evidence-based consensus has emerged that potentially modifiable individual factors and more difficult but still modifiable environmental and social exposures dramatically impact reproductive health outcomes. The importance of a comprehensive assessment of reproductive health outcomes and determinants in the San Joaquin Valley (SJV) is key to improving the health of young women and future generations of SJV residents.

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,4 reductions in teen pregnancy and births has been a major focus of public health initiatives. A growing number of studies have shown that children born to mothers younger than age 18 are at greater risk for adverse birth outcomes while there is less consensus on health challenges for teen mothers.5,6 Teen parenting is also associated greater risk for postnatal depression, school dropout and adverse socioeconomic outcomes for the mother.7 Teen birth rates have declined steadily nationwide and by 2014 the rate was about 24 births/1000 adolescent females, which was almost 1/3 of the 1990 rate. Nonetheless, in 2013, adolescent mothers comprised 7.8% nationally and 7.0% in California of all births.8 There are also notable variations in teen child-bearing by race/ethnicity, social class, and place of residence nationally and in California: in an analysis of 2013 data, the California School-Based Health Alliance found that "……annually, for every 1,000 adolescent girls aged 15-19 living in California, there are 51 births to Latinas, 37 to African Americans, 12 to whites, and 9 to Asians."9 Because of the high public and private costs associated with teen child-bearing and the reductions in these outcomes linked to prevention programs, teen pregnancy prevention programs are broadly viewed as cost-effective strategies. Despite reductions in teen pregnancy prevention investments by California during the 2007/2009 recession, new Federal and philanthropic investments in replicating evidence-based models and recent California legal mandates to provide comprehensive reproductive health education and confidential access to health care have broadened access to these programs.

Young Women's Health

As more is understood of the causes of low-birth weight (LBW) and other poor pregnancy and birth outcomes, it is clear that a woman's health prior to conception is largely responsible for the health of her pregnancy and her infant at birth. Promoting the health of women before and during pregnancy is multifaceted, especially when considering social and environmental contexts. Research and interventions need to focus attention on the overall health and social experience of young women. For women of child-bearing age, sexually transmitted infections (STIs), key co-morbidities (smoking, obesity, drug use, stress, diabetes, and hypertension) and decreased access to prenatal care are known to be key determinants of poor outcomes for women and babies. Of these risk factors, obesity is one of the most significant indicators of poor maternal and infant health outcomes, associated with elevated blood pressure, gestational diabetes, birth complications, cesarean deliveries and higher rates of complications from those deliveries including infections, hernias or

life-threatening bleeding.10,11,12 In the SJV, 39% of women between the ages of 14-29 are overweight/obese, as compared to 32% of women in California.13

Additionally, contraception use and family planning counseling is critical for all women of reproductive age. Unintended pregnancy is associated with numerous adverse consequences, including delayed entry into prenatal care and an increased risk of harmful behaviors, especially among young women.14

Neonatal and Infant Health

For newborns, there are multiple measures of well-being that are complexly correlated. Adverse birth outcomes include LBW, pre-term birth (PTB), infant morbidity (failure to thrive and other diagnosed medical conditions) and infant mortality (birth - 1 year). Recent studies have pointed to PTB as a strong indicator of poor maternal and infant health and a helpful measure overall as it is associated with other poor infant health outcomes and long-term economic and social challenges for individuals and communities. One of the reasons that PTB is a good measure of women's health is that the most vulnerable stage of fetal development occurs between the fourth and tenth week of gestation.15 PTB has been attributed to maternal age (both teen pregnancies and for mothers over 35), chronic health conditions like high blood pressure, diabetes and folic acid deficiency and high risk behaviors including drug and alcohol use. March of Dimes and other national groups have highlighted reducing PTB as a key measure of progress in addressing women's reproductive health more generally. Regionally speaking, women who become pregnant in the SJV 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.

Ultimately, PTB is a "canary in the coal mine," highlighting a health crisis facing women as a result of poor social, economic, environmental and overall health contexts. PTB has a cyclical impact on poverty for individuals and communities, with each birth costing over $50,000 on average, or $26.2 billion nationwide annually.16 This total is a low estimate of health care costs, labor and delivery costs, early intervention services, special education services and lost work and salary—all costs that will impact individuals, employers and communities alike.

Individuals, Neighborhoods and Health

A common set of individual and neighborhood factors have been linked to maternal and child health outcomes. Many of these same factors have been

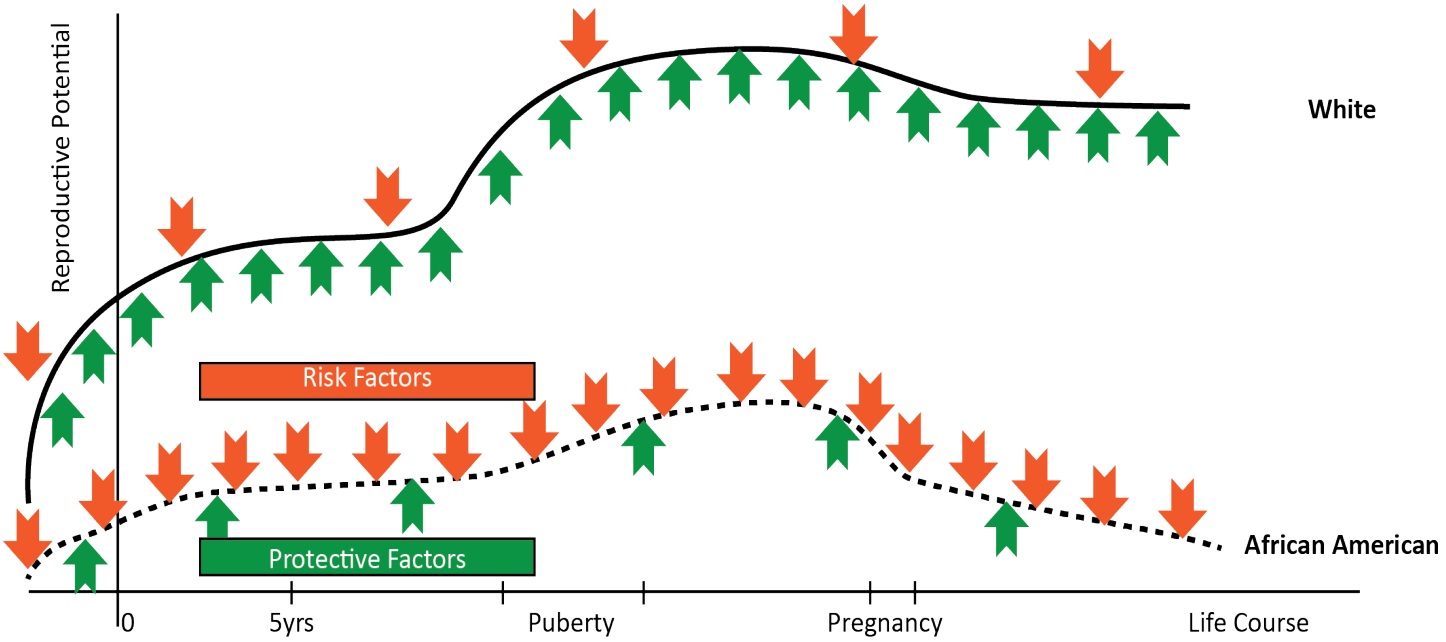
linked to teenage pregnancy and child-bearing. 17,18 Women with individual risk factors such as poverty, low education, challenging work, and racial/ethnic "minority" status face greater stresses before and during pregnancy, have less access to preventive care and pregnancy care, and have more adverse 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.

The life course perspective addresses the health outcomes throughout a person's life as the result of complex relationships between biological, behavioral, psychological, environmental and social protective and risk factors. For example, traditionally, in an attempt to decrease the incidence of low infant birth weights, clinics, obstetricians, and public health organizations have focused on prenatal care for women as soon as pregnancy is discovered. Despite these efforts, PTB rates have ceased to significantly decline, and the disparities between the most and least vulnerable populations continue to rise.2 As more is understood about the causes of low-birth weight, it has become

clear that a woman's health and environment prior to conception, as discussed above, is largely responsible for the health of her pregnancy and her infant at birth.19 The life course perspective suggests that these disparities result from differences in protective and risk factors between groups of women over the course of their lives. As a result, the health, environment and socioeconomic status of one generation directly affects the health status of the next.

The life course perspective integrates critical periods and early life events with an emphasis on the wear and tear a person experiences through time. This approach considers the many levels of influence (adopted from the socio-ecological model: societal, community, relationship and individual)20 contributing to women's health. For example, in the Figure 1 below, differences in risk factors (downward arrows) and protective factors (upward arrows) over one's life course affect health and development and contribute to disparities in birth outcomes.21 The two pathways reflected in the figure are for white women as compared to African American women, populations with distinctly different health and birth outcomes. Reproductive potential addresses how one's health status at any given age may influence reproductive health and future birth outcomes.

Figure 1. Reproductive Potential Throughout the Life Course by Race/Ethnicity



The early programming mechanism22 presumes that early periods of life are sensitive developmental periods and that experiences and exposures that occur in this phase may permanently alter organ systems and other bodily functions, causing lasting and irreversible change. If these experiences and exposures are negative, a person may be relegated to poor health and disease throughout their life, particularly in regard to their own reproductive potential. The periods of time considered to be most influential are in utero and early childhood and can be affected by disease, poor health behaviors and stress.

The cumulative pathway mechanism23 indicates that "wear and tear" experienced throughout one's life can become cumulative, or snowballing, in its effect on one's health. This mechanism focuses primarily on the cumulative effects of stress and research invoking this principal has demonstrated that those who experience chronic stress can be adversely affected and experience negative reproductive health outcomes such as PTB. In the SJV, many factors contribute to chronic stress for young women, including high levels of pollution, less access to education and career development opportunities, less access to healthcare, and lack of social support. Analysis often "controls" for many

of these influences but the lingering stress and poor health associated with these circumstances remains ever present when comparing racial sub-groups of women, as indicated in analyses present in this report.

Current SJVPHC Programs supporting the Health of Young Women

The link between the health of young women, neighborhood poverty, race/ethnicity and other factors has implications for San Joaquin Valley Public Health Consortium (SJVPHC) member local health departments because of their extensive programming centered on women and children. The success of these initiatives hinge on state and federal policies and funding priorities.24 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.25 Despite these factors, Figure 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	• 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	• 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	• 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	• 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	• 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	• 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	• 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

Methods

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. Approval from the California Department of Public Health Vital Statistics Advisory Committee (VSAC) and the California Health and Human Services Agency's Committee for the Protection of Human Subjects (CPHS) was obtained.

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. Neighborhood-level indicators of economic opportunity were selected from the ROI to investigate communities with the most need in the SJV.

California Health Interview Survey (CHIS) was used to estimate preconception health indicators among young women in the SJV. Data is publicly available through UCLA's Center for Health Policy and Research online system, Ask CHIS.

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.

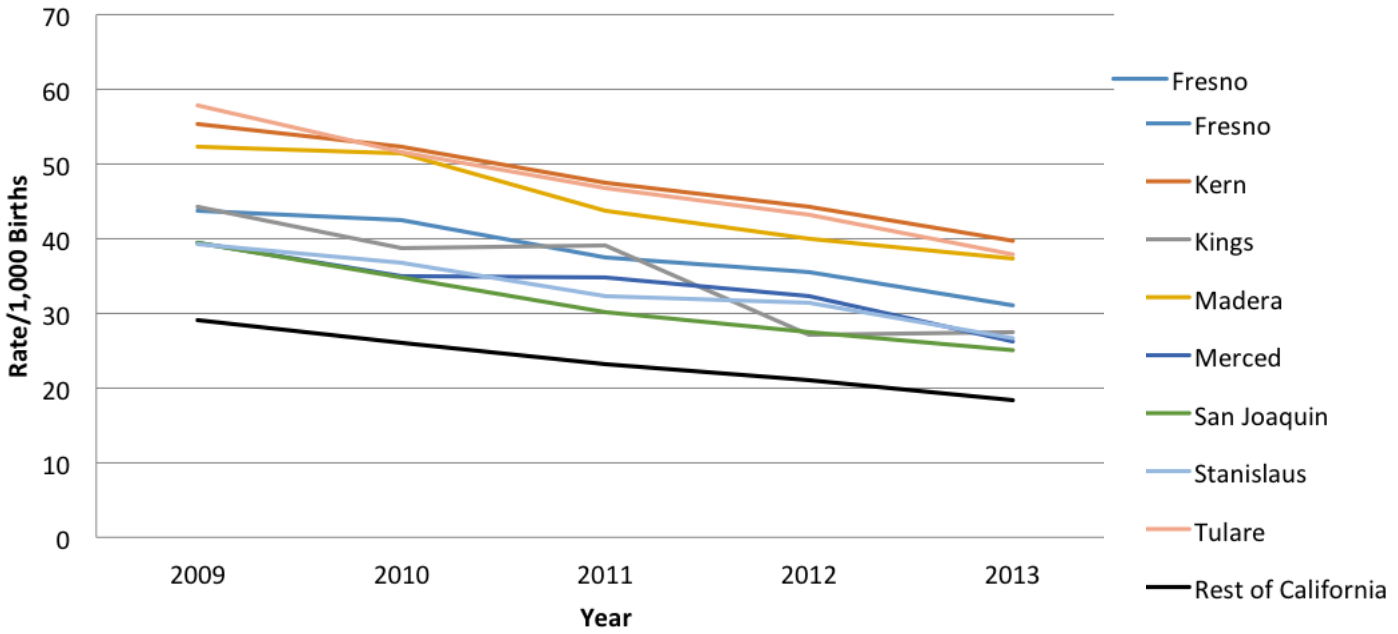
Analysis

For the purpose of this report, teen births and PTB are treated as the primary health outcomes of interest throughout this report. Descriptive analysis was conducted on all health outcomes to uncover rates and proportions by population characteristics. Each health outcome in the SJV region is compared to the state on a variety of platforms including by county, demographic characteristics and geographic distribution. An extensive, in-depth analysis of teen births and PTBs is presented showing the proportion of PTBs as well as a multilevel model incorporating neighborhood determinants that contribute to maternal health outcomes beyond individual characteristics. All analyses are presented in figures, tables, and maps below.

Findings

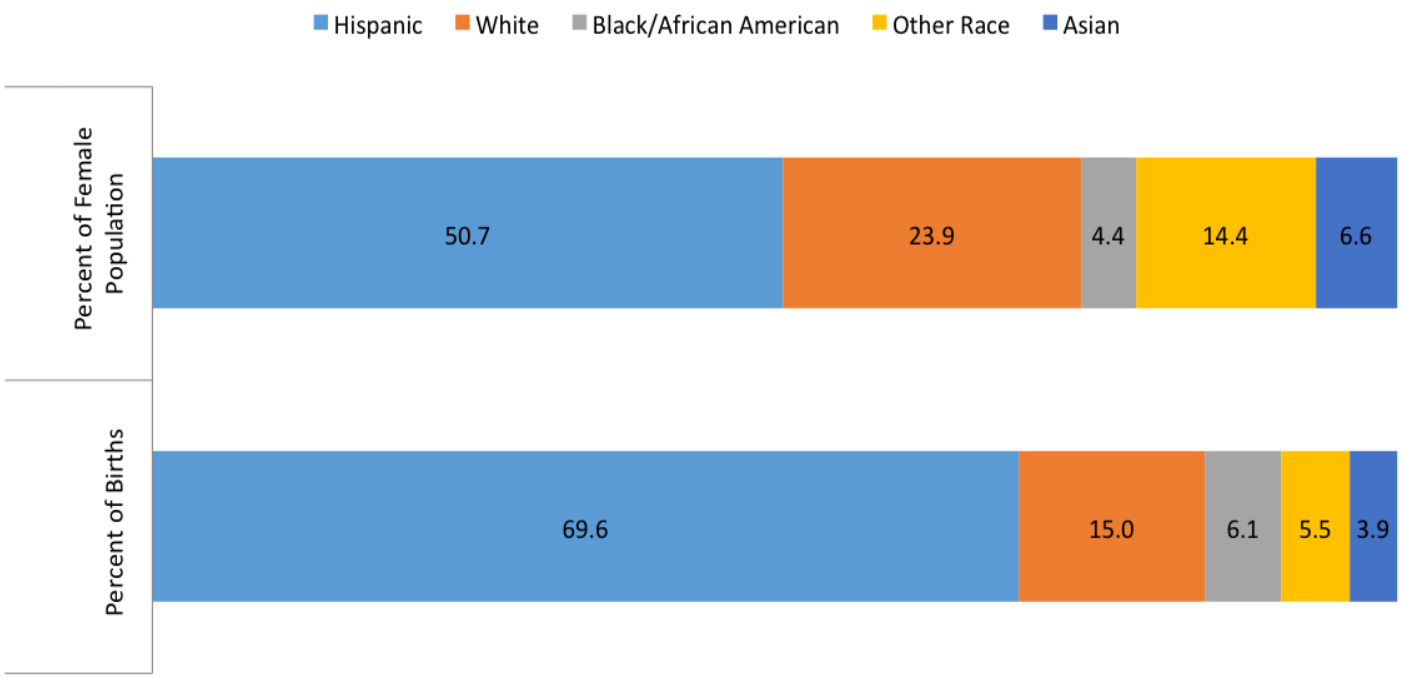
The SJV counties is home to some of the youngest populations and has some of the highest rates of teen birth observed in the state of California. Figure 2 illustrates that all eight counties of the SJV have significantly higher rates of teen births than the state as a whole. Six of the eight counties have a teen birth rate 50% greater than that of the state. From 2009 to 2013, all observations of teen birth rates were greater in each of the eight counties when compared to the rest of the state. Furthermore, Kern, Madera, and Tulare County had significantly higher teen birth rates than the other SJV counties. Tulare County had the highest teen birth rate (54/1,000 in population). Despite having some of the highest rates of teen birth in the nation, Figure 2 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.

Figure 2. Rate of Teen Births by Year, SJV, 2009-2013



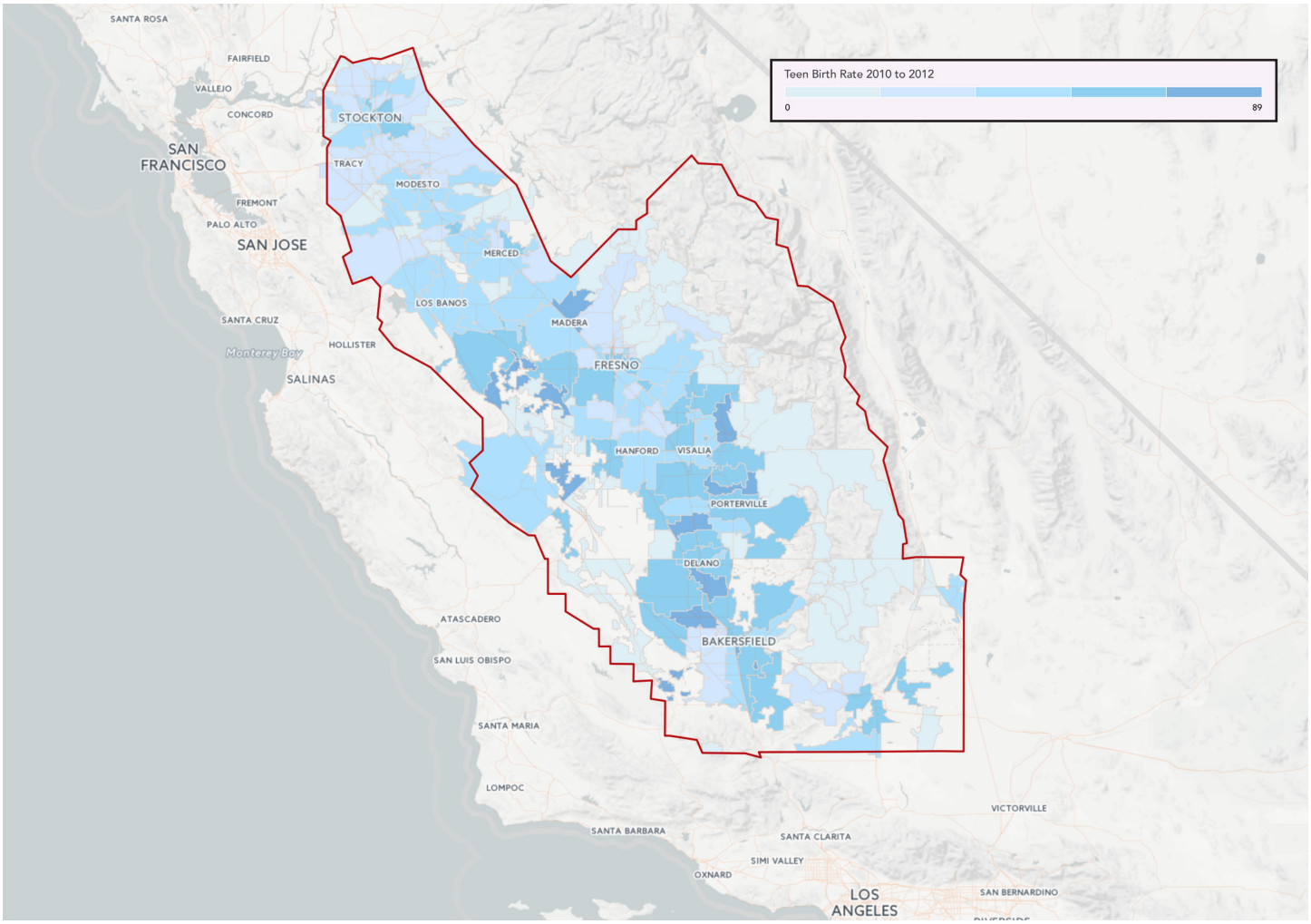
As shown in Figure 3, about 50% of the female population between the ages of fifteen and nineteen are Latina. Whites are 24% of this population and "Others," Asians, and African Americans compose 14%, 7%, and 4%, respectively. The lower bar displays the distribution of teen births by race/ethnicity. The distribution of teen births is significantly different than that of the general population. Latinas and African Americans share a disproprotionate burden of teen pregnancies in the SJV. Latinas display a 19% increase in the teen birth distribution while whites show a 9% decrease than what may be expected from the general population. Although African Americans represent a small percentage of the population, they compose almost 1.5 times more of the teen birth distribution than they do of the general population, this is the largest increase of any race/ethnicity.

Figure 3. Percentage of Teen Births and Population by Race/Ethnicity, SJV, 2010-2012



The eight SJV counties have a greater rate of teen birth than the state (22 per 1,000 births) as a whole. The county birth rates for Stanislaus, Merced, Fresno, Madera, Kings, Kern, and Tulare were 35.8, 41.66, 46.3, 49.8, 50.6, 53.4, and 53.7 per 1,000 live births, respectively. Figure 4 illustrates the geographic distribution of teen birth rates by zip code. The shading of zip codes is relative to the state rate of 22 teen births per 1,000 in the population. Each county in the SJV has at least three zip codes with a teen pregnancy rate of 36 per 1,000, or greater, demonstrating the magnitude and pervasiveness throughout the region. Teen birth rates are highly varied by geographic location, 44% of the communities in the SJV have a teen pregnancy rate that is one standard deviation greater than California's average and 32% are two standard deviations greater.

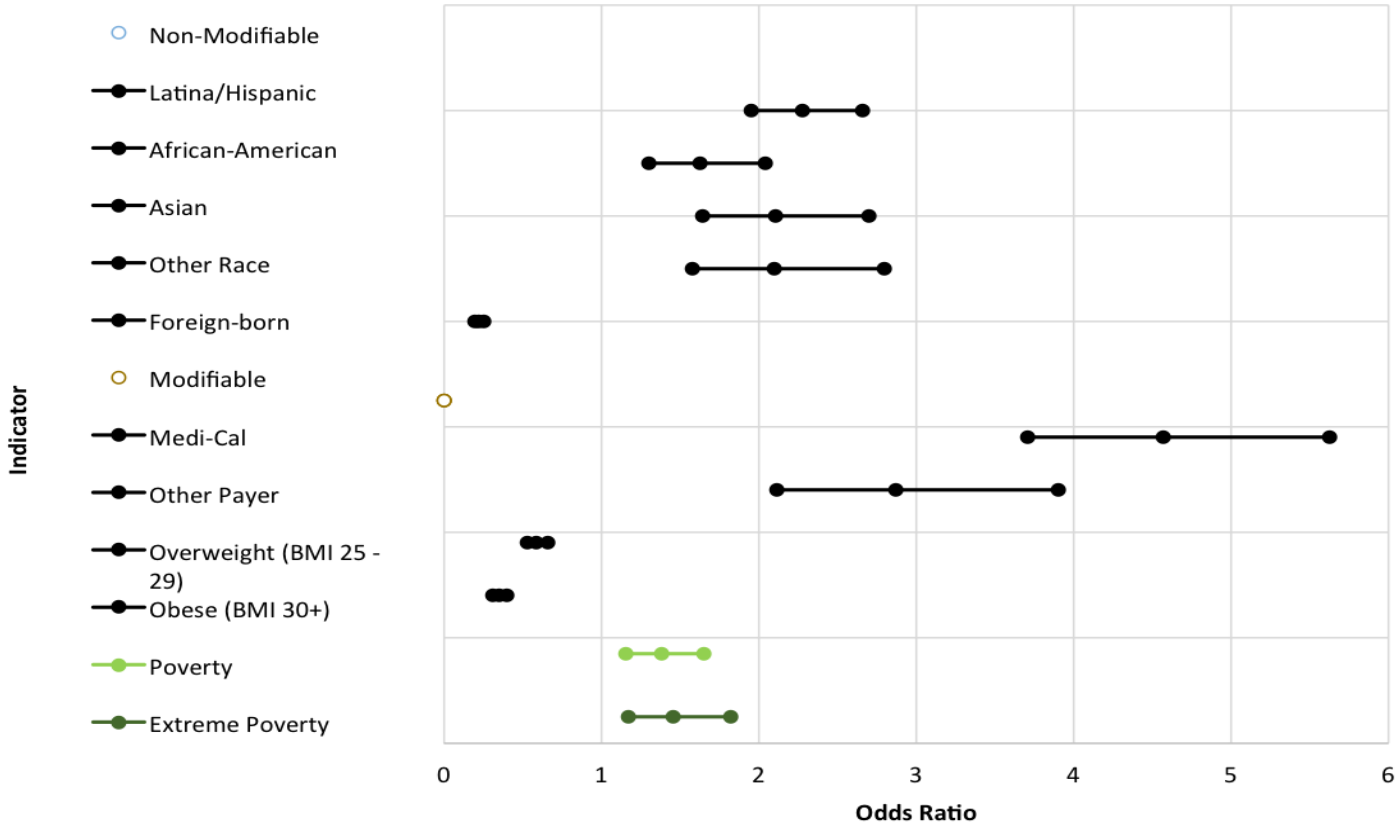
Figure 4. Rate of Teen Births (15 -19 years of age) by Zip Code, SJV, 2010-2012



Poverty and Teen Births

In Figure 5, we the results of a hierarchical regression model which controls for individual and neighborhood level factors and their association with teen births. Our analysis suggests that teen pregnancy varies by individual level indicators as well as across communities in the SJV. In Figure 5, we illustrate the odds ratios and 95% confidence intervals for indicators that are significantly associated with teen births. Figure 5 shows that all 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 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

Figure 5. Modifiable and Non-Modifiable Determinants of Teen Births, SJV, 2009-2013



Despite geographic variation in birth outcomes, Table 2 shows that mothers across age groups consistently received prenatal care in the SJV. Mother's younger than the age of 20 received the lowest rate of prenatal care at 93.8%. Women between the ages of 30 and 34 received the highest rate at 96.7%. Prenatal care services tended to increase with the age of the mother but there were no significant differences across age groups. Although 95.9% of mothers aged 35 years or older received prenatal care, this age group presented the highest risk for premature birth, low-birth weight, and infant mortality. Women who gave birth prior to 20 years of age were more similar to the oldest age group across birth outcomes than to any other age group. The youngest and oldest age groups were the only two age group that had significantly higher rates of low-birth weight and infant mortality when compared to the overall group. Mother's between the ages of 25 and 29 had the lowest rates of premature birth and low-birth weight.

Table 2. Rates and Percentages of Birth Outcomes by Mothers' Age, SJV, 2009-2013

Indicator	Younger than 20	20 to 24	25 to 29	30 to 34	35+	All
Received Prenatal Care	93.8%	95.1%	96.3%	96.7%	95.9%	95.7%
Premature Birth	9.8%	9.3%	9.2%	10.3%	12.0%	9.8%
Low Birth Weight	8.5%	6.7%	6.5%	7.3%	8.6%	7.2%
Rate of Infant Mortality per 1,000 Births	3.6	2.7	2.9	2.9	4.3	3.1

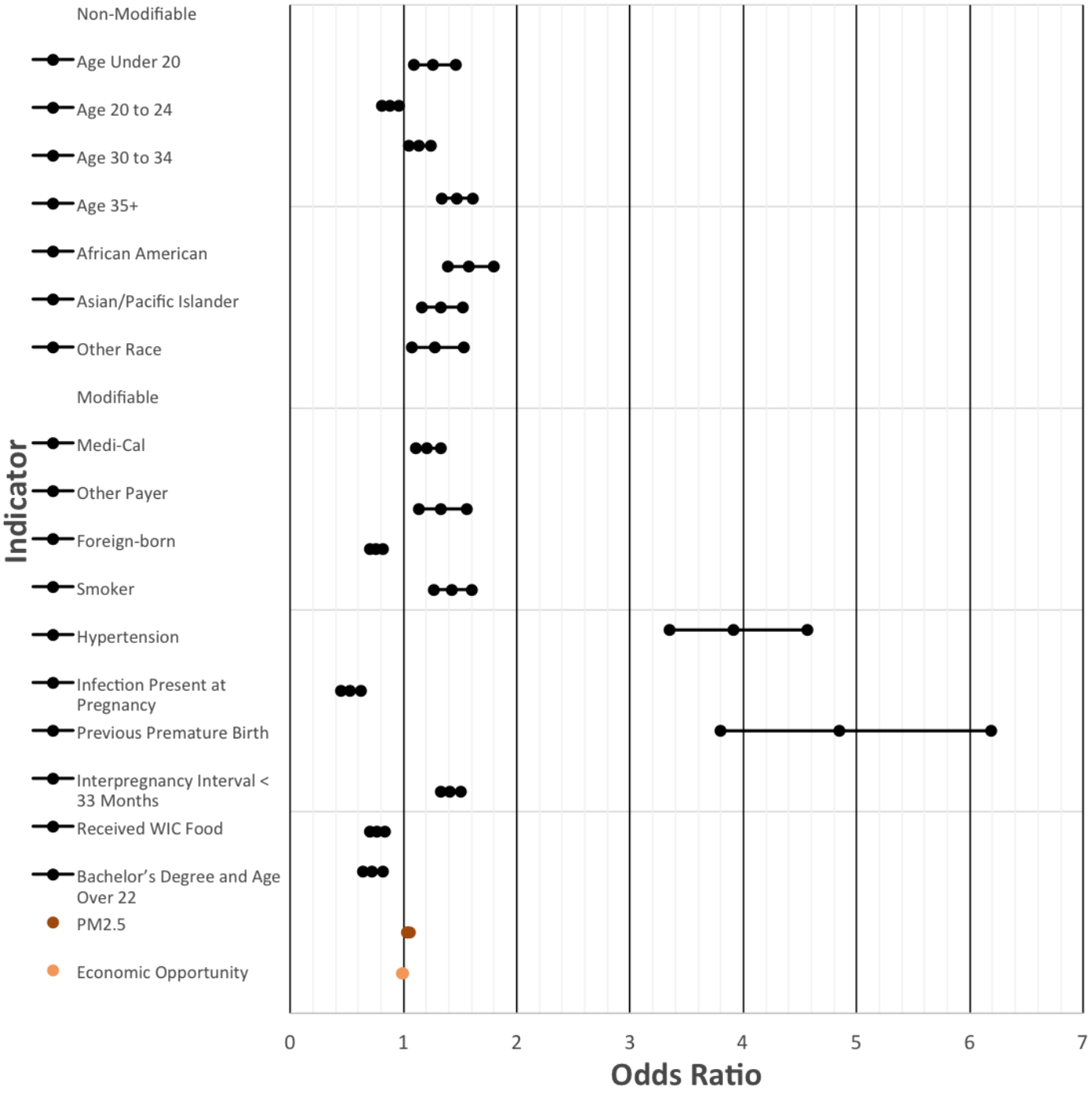
Social Determinants of Health

Figure 6 displays individual and neighborhood level indicators that are 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.

As expected, there were significant differences in the risk for PTB by the mother's age. 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. However, the youngest group and the oldest group presented the greatest risk for PTB in comparison to mothers between the age of 25 and 29, with 1.26 and 1.47 times the risk, respectively. Mothers between the age of 20 and 24 were significantly less likely for PTB than the reference group, 0.88 odds ratio (OR). 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. Similar to Table 3, having a previous PTB, hypertension, or mothers who smoked were at greatest risk for PTB, with 4.85, 3.91, and 1.43 times more likely than their counterparts (mothers who did not present any of these indicators), respectively. 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. Mothers who had an infection present throughout pregnancy, who received WIC services, or earned a Bachelor's Degree were significantly less likely to have a PTB. We hypothesize that these individuals represent groups who have greater access to preventive care and who are closely monitored by a medical team.

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 odds ratio for PM2.5 was 1.03, which indicated that for every percentage increase in PM2.5 a 3% increase in PTB was expected. This environmental factor is extremely concerning, given the proximity of urban centers in the SJV to high-transit and shipping veins, notable I-5 and I-99. 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. The odds ratio for economic opportunity was 0.99, which indicated that for every percentage increase in economic opportunity a 1% decrease in PTB was expected. This indicator captures those neighborhoods that have the highest percentages of employed adults and families with income over 200% of the federal poverty level where employment rates are sustained.

Figure 6. Modifiable and Non-Modifiable Determinants of Preterm Birth, SJV, 2009-2013



Discussion and Recommendations

More investigation into the individual and community level factors is needed to adequately understand and improve the environment in which young women grow, are educated, work and raise families. To support individual women, researchers and health practitioners recommend comprehensive health care and reproductive life planning before and between each pregnancy in the form of comprehensive preconception care.26, 27 This preventive approach emphasizes behaviors and health conditions that must be addressed before conception to have maximum impact. Thus, it requires more than a single visit for care and involves health promotion and disease management by combining the best of medical care, healthy behaviors, strong support, and safe environments for all women of reproductive ages.

In terms of neighborhood and socioeconomic influences, environments that have few resources, are polluted and possibly violent inflict a persistent stress on young women prior to and during pregnancy and has been shown to substantially impair their ability to experience a healthy pregnancy. Exploring opportunities to improve these environments, as well as provide women support and tools to manage the resulting stress and depression, would benefit present and future generations.

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. Efforts are being made to provide reproductive education in different settings to reach youth and families including schools, faith-based organizations, and the within the local health department buildings. The San Joaquin Valley local health departments have a long history of providing free STI/HIV testing as well as in reducing tobacco marketing in communities that have been historically susceptible to these indicators of poor reproductive health. However, 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 educations status, low socioeconomic status, and young.

There is evidence that there are modifiable protective factors associated with reproductive health outcomes that may warrant further inquiry. For example, these data suggest that WIC services are associated with reduced risk for premature birth. Nonetheless, it is difficult to determine what it is about WIC services that may contribute to this positive outcome. Also, mothers who had an infection present during pregnancy were at reduced risk for negative birth outcomes. We suspect that this may represent a group of mothers who were supported by a group of medical professionals who were tracking the pregnancy closely.

Although a large proportion of the health outcomes presented above can be explained by mothers' characteristics, associations between modifiable community characteristics and birth outcomes should be highlighted. Communities of poverty were strongly associated with poor birth outcomes which is consistent with previous findings. When we used variables describing communities of economic opportunity, we found a reduced risk for poor birth outcomes, compared to those with less economic opportunity. By using community measures of poverty and economic opportunity, the case for socioeconomic disparities in health is strengthened. Beyond community measures for socioeconomic status (i.e., poverty and economic opportunity), environmental associations were found, specifically, an association between air pollution and premature birth.

Potential Initiatives to Improve Young Women's Health

County Public Health Departments play a key role in encouraging and providing leadership towards improving Maternal and Child Health equity, particularly in diverse contexts. In particular, there are three specific opportunities that Public Health Departments can champion at the county level:

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 engaging in this effort by identifying and fostering opportunities to train and retain physicians and providers in other medical specialties (Nurse Practitioners, Registered Nurses, etc.) that are multi-lingual and culturally sensitive. Public Health Departments are also engaging practitioners to discuss developing new partnerships that will increase access to quality, coordinated and evidence-based care.

Provide individually oriented education, health promotion, screening and interventions for women of reproductive age to reduce risk factors that might affect pregnancy outcomes.

The "promotora" or community health worker (CHW) model has received significant attention recently as an opportunity 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. Ideally, CHWs are members of the communities in which they serve, providing both context and a role model for women in need of support. Developing and funding these programs is a high priority goal for several SJV counties.

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.

Limitations

ICD-9 codes are used to determine maternal co-morbidities and though evaluating principal ICD-9 codes has been used extensively to estimate burden of disease, it remains an imperfect process. ICD-9 codes are reported by a physician for billing purposes and there may be discrepancy between practitioners in terms of what is considered the most pressing health condition to report initially.

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