



**PROMOTING
ACCESS**

TO PRENATAL CARE:
*LESSONS FROM THE
CALIFORNIA EXPERIENCE*

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Promoting Access to Prenatal Care: Lessons from the California Experience

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EXECUTIVE SUMMARY

Improving access to prenatal care has been a public policy priority in the United States for the past 15 years. The U.S. Department of Health and Human Services Healthy People 2010 objectives for the nation include the goal that, by the year 2010, 90% of all pregnant women—including those in high-risk subgroups—begin prenatal care during the first three months of pregnancy. While health promotion and timely assessment and treatment of health risks are needed by all pregnant women, prenatal care can be particularly important for low-income women, who may lack ongoing preventive health care before pregnancy.

To improve access to prenatal care for uninsured low-income women, California began implementing major expansions in eligibility for Medi-Cal (California's Medicaid program) along with related reforms in the Medi-Cal system in 1989. These efforts corresponded to expansions in Medicaid maternity coverage and related systems reforms nationwide beginning during the late 1980s. This study was undertaken to better understand the impact of the Medicaid eligibility expansions and systems improvements on early prenatal coverage and access to care. The report examines access to prenatal care in California over the past two decades, using data from birth certificates and from a large, statewide-representative, population-based postpartum survey.

Key Findings:

- ***Significant progress has been made in improving access to prenatal care in California since 1989-1990, when major expansions in Medi-Cal maternity coverage and accompanying systems reforms were first implemented.***
 - Marked improvements in coverage and in the receipt of early prenatal care and adequate numbers of visits began in 1991. During the 1990s, the proportion of uninsured pregnant women dropped from approximately 13% to 3% overall. During that same time period, rates of first trimester prenatal care initiation rose from 73% to 84% and rates of adequate numbers of prenatal visits rose from 70% to 83%. In contrast, there were no improvements in receipt of early prenatal care during the 1980s. Information on coverage and numbers of visits was unavailable before 1989.
 - Use of prenatal care improved for all population groups during the 1990s, but improvements were considerably larger for certain key groups such as women with limited schooling, African American and Latina women, immigrant women, and teens. These groups, who historically have been least likely to receive recommended care, are disproportionately low-income and were the target populations of these expansions.

- The findings suggest that the Medi-Cal eligibility expansions, in combination with the related systems reforms, were likely to have had a substantial impact on access to prenatal care. The pattern and timing of the improvements in coverage and prenatal care use – and in particular the disproportionate improvements in care among vulnerable groups – cannot be explained solely by changes in the economy or by demographic or other secular trends. Poverty and unemployment actually increased in California during the early 1990s, and the proportion of births to immigrants, particularly Latinas, increased. Although it is not possible to separate the effects of expanded Medi-Cal eligibility from those of systems reforms affecting the Medi-Cal enrollment process, this analysis suggests that both were likely to have been important in improving access to prenatal care.
- ***Despite this progress, about one in six women who gave birth in 1999 still lacked early prenatal care. Efforts should continue to focus on low-income women (with family incomes at or below 200% of the federal poverty level), who comprise half of all women giving birth in California.***
- Despite major improvements in access during the 1990s, approximately one in six women giving birth in California still fail to receive early prenatal care. Thus, additional efforts will be needed to meet the Healthy People 2010 objective for early prenatal care – that 90% of pregnant women obtain care in the first trimester.
 - Although gaps between income groups have narrowed, low-income women remain less likely to receive early prenatal care. Only 75% of women with family incomes at or below 200% of poverty received early prenatal care, compared with 94% of higher-income women.
 - In California, low-income women comprise half (53% in 1999) of all women giving birth. In 1999, almost one-third lived below poverty – \$16,700 for a family of four in 1999 – and another 21% were “near-poor,” with incomes between 101% and 200% of the poverty level. Of women delivering in California in 1999, one-quarter had less than a high-school education and 41% were born outside the U.S. Almost one-half (45%) were Latina; white women comprised one-third of the total.
- ***Ensuring that pregnant women have insurance coverage during the first trimester of pregnancy could improve receipt of early prenatal care; coverage later in pregnancy is not sufficient to assure early care.***
- Since the Medi-Cal expansions were enacted, only a small fraction of California women (3% in 1999) have lacked insurance coverage throughout pregnancy. However, the effectiveness of coverage in removing financial

barriers to early prenatal care depends on when during the pregnancy coverage actually begins. In 1999, approximately 16% of all women with live births (and one-quarter of women with Medi-Cal during pregnancy) first obtained their prenatal coverage in the second or third trimesters of pregnancy. These women, who were uninsured throughout the first trimester, were markedly less likely to receive early prenatal care.

- Over two-thirds of low-income women who were uninsured before pregnancy (69% in 1999) tried to obtain Medi-Cal coverage during the first trimester of pregnancy and enrolled sometime during pregnancy. This indicates that most low-income women are motivated to obtain early prenatal coverage and, presumably, early care. However, 12% of women who met the income eligibility criteria in 1999 tried to enroll early but did not actually enroll in Medi-Cal until after the first trimester, and over one-third of these women did not receive early care.
 - Lack of awareness of pregnancy was an important reason for delays in trying to obtain Medi-Cal for prenatal care among uninsured women who met Medi-Cal income eligibility criteria. The impact of poverty also appeared to affect the timing of women's attempts to apply for Medi-Cal.
 - Among women who tried to obtain Medi-Cal in the first trimester, those who reported a perception that Medi-Cal workers were unhelpful were nearly four times more likely to enroll in Medi-Cal after the first trimester, even after accounting for differences in other characteristics.
- ***In addition to ensuring first-trimester coverage, efforts to increase use of family planning services and to address other 'non-insurance' factors are also important for promoting early prenatal care.***
- A woman cannot seek early coverage or prenatal care if she does not know that she is pregnant. Lack of awareness of pregnancy during the first trimester is a major barrier to early prenatal coverage and care. In 1999, among low-income women who had public or private coverage, 23% of those who did not have first-trimester prenatal care lacked early awareness of pregnancy, compared with only 5% of all low-income women with coverage.
 - Women with unintended pregnancies and pregnant teens were two to three times more likely to have had delayed awareness of pregnancy, suggesting that increases in effective use of family planning services (which could decrease unintended and teen pregnancies) might lead to increases in early awareness. African American women had a similarly increased risk of delayed awareness of pregnancy, suggesting a need for additional efforts to address the issue in this community.

- In addition to lack of early awareness of pregnancy, low-income women who had the following characteristics were one and one-half to two times more likely to lack early prenatal care:
 - Unintended pregnancy – again suggesting the importance of family planning in relation to prenatal care;
 - A belief that their receipt of prenatal care was not “very important” to those close to them – suggesting the need for community-wide outreach and education regarding the importance of prenatal care; and
 - Low educational attainment – suggesting the need for efforts beyond the health sector itself.

Policy Implications

The California experience reflects the importance of a strong dual emphasis on reducing systems barriers while fully utilizing federal options to expand eligibility criteria. Along with public information campaigns and outreach, this two-pronged approach is likely to have been key in achieving the favorable results observed in this study.

Access to health coverage early in the pregnancy is crucial for early prenatal care. The results of the study suggest that the following issues should be considered to further improve access to coverage during the first trimester:

- Additional training and encouragement for Medi-Cal workers to project a more helpful image and further facilitate women’s efforts to apply for coverage. Perceiving Medi-Cal workers as unhelpful was a barrier to timely enrollment among women who tried to apply in the first trimester.
- Assess whether presumptive eligibility is working as well as it could, and identify and address key obstacles. A substantial number of women who tried to obtain Medi-Cal in the first trimester did not enroll or start care until the second trimester or later.

The findings indicate that policies to improve access to early prenatal care must also focus on women *before* they become pregnant. The results repeatedly underscore the role of effective family planning services as a major factor influencing whether prenatal care begins in a timely fashion. Thus, policies to promote family planning are crucial not only because they reduce the rate of unintended pregnancy but also for improved receipt of prenatal care. In addition, this study’s findings suggest that policies must address broader issues such as low educational attainment and poverty that are beyond the immediate reach of the health sector but have profound influences on health and health care.

California succeeded during the early 1990s in improving access to coverage among pregnant women and improving the timeliness and adequacy of prenatal care, despite increasing poverty and unemployment during that time period. This indicates that even in the face of formidable challenges, this state and others can — with sufficient political will, support from federal policies, and attention to the multi-faceted nature of barriers to care — make further progress toward the goal of timely prenatal care for all pregnant women and, ultimately, toward optimal health and health care for children and families.

CHAPTER 1: OVERVIEW AND BACKGROUND

- Health promotion and timely detection and treatment of health risks are needed by all pregnant women. Early prenatal care can be particularly important for low-income women, who may have worse health and/or lack ongoing preventive health care before pregnancy and therefore are at higher risk for poor pregnancy outcomes.
- To improve access to prenatal care for uninsured low-income women, California began implementing major expansions in eligibility for Medi-Cal (California's Medicaid program) along with related reforms in the Medi-Cal system in 1989.
- This report was undertaken to better understand the impact of Medicaid eligibility expansions and systems improvements on early prenatal coverage and access to care. The findings are based on a series of studies conducted using data from California birth certificates and a statewide survey of childbearing women.
- The primary measures of access to prenatal care examined in this report are the timeliness of prenatal care initiation and the adequacy of the number of prenatal visits once care has begun.

Overview and Introduction

This report examines access to prenatal care in California over the past two decades and was undertaken to better understand the impact of the Medicaid eligibility expansions and systems improvements on early prenatal coverage and access to care. A range of factors that can affect use of pregnancy-related care are investigated, along with changes over time in the context of relevant policy initiatives. The report is based on findings from a series of studies conducted using data from California birth certificates and from a recent, population-based, statewide-representative survey of childbearing women. California's maternity population is diverse, comprised of women from a wide range of socioeconomic and racial/ethnic backgrounds and national origins. One of every eight births in the United States occurs in this state [Ventura et al., 2001], and California's efforts to improve access to prenatal care – and the challenges faced in trying to accomplish that goal – have resembled those of many other states. Thus, while based on California data, the findings presented here are likely to have national implications.

This chapter presents the background and rationale for this report. The next chapter uses birth certificate data to describe trends in use of prenatal care and insurance coverage among childbearing women in California from 1980 through 1999 and explores possible explanations for those trends. Chapters 3, 4 and 5 present new findings from a statewide survey of childbearing women in California. Chapter 3 focuses on the characteristics of California's maternity population in 1999, identifying those groups of women least likely to receive recommended prenatal care. Chapter 4 examines barriers to timely enrollment in Medi-Cal (California's Medicaid program) during pregnancy among uninsured low-income women, while Chapter 5 explores barriers other than lack of coverage that may affect women's receipt of early prenatal care. The report concludes with a discussion of the findings and policy recommendations in Chapter 6.

Methods

The information used in this report was derived from two main sources. Trends in women's characteristics, insurance coverage, and use of prenatal care were examined using California birth certificate records from 1980 through 1999. Current barriers to early Medi-Cal enrollment and early prenatal care initiation were studied using data from a postpartum survey, the 1999 Maternal and Infant Health Assessment (MIHA). Conducted annually in California since 1999 as a joint effort of the California Department of Health Services and the University of California, San Francisco, MIHA is a population-based mail/telephone survey completed by English- and Spanish-speaking mothers generally between 3 and 5 months after they give birth. In 1999, 3,483 women completed MIHA surveys, yielding a statewide-representative sample with an overall response rate of 70% and acceptable response rates in subgroups (see Technical Appendix). In addition to these two main data sources, the report also refers to results from an earlier statewide postpartum survey of over 10,000 women conducted during 1994-1995 by the authors with support from the Agency for Health Care Policy and Research (now AHRQ), the California Department of Health Services Maternal and Child Health Branch, and the Robert Wood Johnson Foundation. Interviews with several "key informants" (maternal and child health advocates, policy experts, and service providers throughout California) provided additional information regarding the policy context and implications. (See the Technical Appendix for a more detailed description of the data sources.)

The primary measures of access to prenatal care examined in this report are the timeliness of prenatal care initiation and the adequacy of the number of prenatal visits once care has begun. Based on self-reported information, women who began care in the first trimester of pregnancy were considered to have had early care, in contrast with women whose care was delayed (initiated after the first trimester) or who had no prenatal care. Based on birth certificate information on the number of prenatal visits, Kotelchuck's Adequacy of Received Services index [Kotelchuck, 1994] was used to classify women by whether they received an adequate number of prenatal visits for the time they were in care. This index is a ratio of the actual number of prenatal visits a woman had from her first visit until delivery to the expected number she should have received during that time according to ACOG criteria. Using this index, a woman who began care late may still be classified as having received an adequate number of visits.

The importance of early prenatal care

The U.S. Department of Health and Human Services Healthy People 2010 objectives for the nation include the objective that, by the year 2010, 90% of all pregnant women—including those in higher-risk subgroups—begin prenatal care during the first three months of pregnancy [USDHHS, 2000]. By allowing women and

providers to identify and address health problems and behaviors that may cause particular harm during early fetal development, first-trimester prenatal care can lead to improved outcomes [USDHHS 1989]. While health promotion and timely detection and treatment of health risks are needed by all pregnant women, early prenatal care can be particularly important for low-income women, who may have worse health and/or lack ongoing preventive health care before pregnancy and therefore are at higher risk for poor pregnancy outcomes. Early prenatal care is likely to matter most for women who are at elevated risk of poor birth outcomes due to smoking, poor nutritional status, HIV-positive status, or other serious health problems prior to pregnancy [Brown, 1988; Murray and Bernfield, 1988].

Defining the optimal content and number of prenatal visits has been more controversial than the importance of first-trimester care [Alexander and Korenbrot, 1995; Brown, 1988; Kogan et al., 1998; Kotelchuck, 1994]. The American College of Obstetrics and Gynecology (ACOG) currently recommends 13 visits for a woman who begins care in her third month of pregnancy and delivers in her 40th week of gestation [AAP/ACOG, 1997]. However, based on a critical review of the evidence, the Institute of Medicine and the United States Public Health Service have recommended 8 to 10 visits for low-risk women who begin care in the first trimester and do not experience complications [USDHHS/PHS, 1989; IOM, 1985]. Composite measures of the adequacy of prenatal care, such as the Kessner Index [Kessner et al., 1973] or Kotelchuck's Adequacy of Prenatal Care Utilization Index [1994], combine measurements of when care begins and the number of visits. Given the lack of consensus about the ideal number of prenatal visits, however, this analysis looks separately at the timing of initiation and the number of visits when studying prenatal care access, placing the greatest emphasis on early initiation.

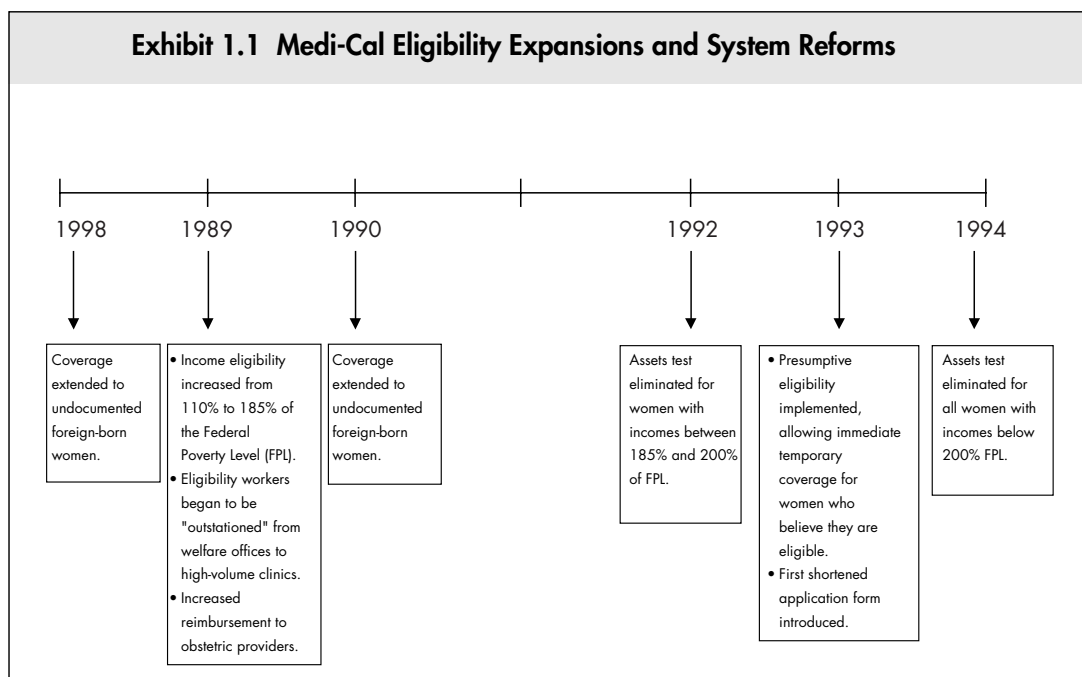
Efforts to improve receipt of prenatal care

With the goal of increasing the proportion of pregnant women who receive adequate prenatal care, federal legislation enacted during the late 1980s greatly expanded eligibility for maternity care coverage under the Medicaid program. In addition, related legislation in the early 1990s gave states the option of instituting significant systems reforms designed to improve access to timely coverage and care for Medicaid-eligible pregnant women [Gold et al., 1993]. Systems reforms included measures to make the application process easier, such as "outstationing" Medicaid eligibility workers at major sites providing prenatal care to low-income women, shortening the application form for maternity coverage, and waiving the assets test. They also included measures to remove additional obstacles to care, for example, instituting presumptive eligibility (immediate, temporary maternity coverage for women who believe they are eligible) and increasing provider reimbursement to improve provider availability. Exhibit 1.1 describes the sequence of eligibility expansions and major systems reforms in Medi-Cal, California's Medicaid program, during the late 1980s

and early 1990s. Medi-Cal is now a major source of coverage for California's maternity population: In 1999, 40% of newborns were born to mothers whose prenatal care was paid for by Medi-Cal [CA Vital Statistics, 1999].

During the late 1980s and early 1990s, California implemented major expansions in Medi-Cal eligibility and accompanying systems reforms.

Policies expanding Medicaid eligibility for maternity care coverage were based on the premise that improving access to coverage for pregnant women would improve access to prenatal care. Braveman et al [1993] found evidence suggesting an effect of Medi-Cal coverage on the adequacy of numbers of visits in California. However, several other large studies that assessed the impact of expansions in public coverage did not find evidence of significant improvements in early prenatal care initiation despite reductions in the proportions of uninsured pregnant women [Haas et al., 1993; Piper et al., 1990; Piper et al., 1994]. These studies have called into question the role of insurance in promoting access to prenatal care. However, because each of these studies relied on secondary data collected during the time period immediately after the expansions, the full impact of the expansions may not yet have been realized; this study examines statewide data on prenatal care utilization over a twenty-year period.



Furthermore, most secondary data sources do not include information on the timing of a woman's coverage. For example, only women who lack insurance coverage throughout their entire pregnancies are classified as "uninsured" according to the prenatal payer information currently recorded in birth certificate data in California and other states that include insurance information; thus, women who first receive coverage at the end of pregnancy are not distinguished from those who were covered throughout. Evidence suggests that many low-income pregnant women who are uninsured before pregnancy continue both to encounter delays in enrolling in Medicaid for maternity care and to experience delays in prenatal care initiation [Egertter et al., 2002; Katz et al., 1994]. For example, while only 2% of low-income women remained uninsured throughout pregnancy in California during 1994-1995, 44% of low-income women who obtained Medi-Cal during pregnancy enrolled after the first trimester and 66% of these women did not receive first-trimester prenatal care. Delayed private or Medi-Cal coverage was strongly associated with delayed initiation of care even after taking into account many maternal characteristics (age, education, income, parity, marital status, race/ethnic group, whether foreign-born or not) and potential "non-financial" barriers to early prenatal care (e.g., unintended pregnancy or ambivalence about the pregnancy, smoking as a marker for health-related attitudes or behaviors, transportation or child care problems, knowledge of the importance of prenatal care, and other obstacles) [Egertter et al., 2002]. This study includes data obtained from surveying a representative sample of women who recently gave birth in California, inquiring about a range of issues including whether or not they had insurance coverage during their pregnancy and the timing of their coverage for prenatal care.

Other factors associated with delayed care

Elevated rates of delayed prenatal care among women who have Medicaid coverage [Braveman et al., 1993; Dubay et al., 1995; Piper et al., 1990] or are otherwise eligible for free care [Haas et al., 1993] have led to additional concerns about barriers (referred to here as "non-insurance" barriers) apart from lack of insurance or inability to pay. Many such barriers have been cited in past literature, with or without strong evidence, including: problems with child care or transportation; conflicts with work or school schedules; lack of belief in the importance of prenatal care or lack of knowledge that care should begin early; negative perceptions or fear of health care providers or services; unplanned or unwanted pregnancy; denial, concealment, or lack of awareness of pregnancy; and emotional stress and family or personal problems [Brown, 1988; Goldenberg et al., 1992; Perez-Woods, 1990; USGAO, 1987]. Findings from an earlier study using 1994-1995 California data suggested that logistical barriers during pregnancy, such as lack of childcare, transportation problems, or inconvenient clinic hours, actually played a relatively minor role in delayed prenatal care compared with non-insurance barriers in effect before pregnancy, including low educational attainment, lack of family planning, and lack of a usual source of pre-pregnancy care [Braveman et al., 2000].

Non-insurance factors also create barriers to early prenatal care.

Particular concerns about prenatal coverage and care for immigrant women

State policies and federal welfare reform may have created barriers to prenatal care for immigrant women.

Immigrant women, who represented 45% of women with live births in California during 1999 [California birth certificate data, 1999], have been at higher risk for delays in prenatal coverage and care. Although Medi-Cal eligibility was extended to undocumented immigrants in 1988, analyses of 1991 Medi-Cal data suggested that immigrants were more likely than U.S.-born women to enroll in Medi-Cal after the first trimester [Norton et al., 1996]. Federal and State policy initiatives during the mid-1990s may have introduced additional barriers to first-trimester coverage and care for immigrant women. In November 1994, California voters passed Proposition 187, which, although never implemented, was intended to restrict access to public benefits, including Medi-Cal coverage, for undocumented immigrants. The Federal Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (or Welfare Reform Act) maintained public benefits for immigrants who were legally in the country before August 22, 1996, but specified that recently-arrived documented and all undocumented immigrants could be barred from receiving Medicaid except for emergencies. As a result, in November 1996, the California Department of Health Services submitted emergency regulations to the Office of Administrative Law requesting an end to prenatal care services for undocumented immigrants. Full implementation of these regulations was delayed in court, and a law passed by the California legislature in 1999 granted resident immigrant women eligibility for Medi-Cal coverage of pregnancy-related services without restrictions. A recent study of California, New York City, and Texas found a marked decrease in Medicaid coverage of births but no evidence either of an increase in the proportion of uninsured women or of an impact of federal welfare reforms on prenatal care use among foreign-born women compared to U.S.-born Latina women [Joyce et al. 2001].

Although Proposition 187 was never implemented, some evidence does suggest that its widely publicized passage and confusion about its status and provisions affected immigrants' use of health services at least temporarily [Fenton et al., 1997; Marx et al., 1996] and may have led some women to delay seeking Medi-Cal coverage during pregnancy [Moss et al., 1996]. The enactment of federal welfare reform in 1996 also may have caused confusion about Medi-Cal eligibility during pregnancy among many low-income women, particularly low-income immigrant women [Ellwood and Ku, 1998; Baumeister and Hearst, 1999; Park et al., 2000]. Anecdotal reports indicate that many women, especially immigrants, continue to have inaccurate perceptions and knowledge about their Medi-Cal eligibility status, concerns about having to pay Medi-Cal back for the cost of their prenatal care, and fears about how the application process could affect them and their families [Ellwood and Ku, 1998; Baumeister and Hearst, 1999].

CHAPTER 2: TRENDS IN PRENATAL CARE USE AND COVERAGE IN CALIFORNIA, 1980-1999

- Evidence from time trends over the past two decades suggests that the Medi-Cal expansions during the late 1980s and early 1990s, together with the accompanying systems reforms, are likely to have had a significant impact on improved receipt of prenatal care among key groups of women in California, including women with low educational attainment, women of color, and immigrants.
- Gaps in use of prenatal care between different populations narrowed considerably during the 1990s, beginning around 1991. The greatest improvements occurred among groups of women at greatest risk for receiving inadequate levels and timing of care.
- The disproportionate improvements in prenatal care use among vulnerable groups – which were not seen during the 1980s – coincided with implementation of the Medi-Cal expansions and related systems reforms. The improvements in care continued throughout the 1990s along with efforts to improve features of the Medi-Cal system.
- The pattern and scope of improvements in prenatal care use during the 1990s are difficult to explain without attributing a significant role to the Medi-Cal expansions and related systems reforms; they are unlikely to be due to changes in the economy or to demographic or other secular trends.

2.

TRENDS IN PRENATAL CARE USE AND COVERAGE IN CALIFORNIA, 1980-1999

This chapter examines trends in prenatal care utilization over the past twenty years in California, using birth certificate data to assess whether women received early (first-trimester) prenatal care and adequate numbers of prenatal care visits according to a widely used index [Kotelchuck, 1994]. These trends among childbearing women are examined overall and separately by maternal age, education, race/ethnicity, birthplace (U.S. versus other), number of previous births, marital status, and prenatal insurance coverage. While information on the timing of prenatal care initiation, age, race/ethnicity, birthplace, number of previous births, and marital status was available for all 20 years from 1980 through 1999, information on the number of prenatal visits, maternal education, and insurance coverage was not recorded in California birth certificates until 1989 and is thus only presented for the past 10 years.

Exhibit 2.1 displays the characteristics of the California delivery population from 1980 to 1999. Compared with women in 1980, women delivering in 1999 were more likely to be Latinas or Asian/Pacific Islanders, to have had more than one child, and to be 35 years of age or older, and a smaller percentage of women who gave birth in 1999 were teenagers. In addition, the proportion of births to women born outside of the United States increased markedly over these two decades, from 29% in 1980 to 45% in 1999.

As shown in Exhibit 2.2, the proportion of all childbearing women in California with early initiation of prenatal care fell from 77% to 73% from 1980 to 1990. In the 1990s, the rates increased substantially, from 73% to 84%, reversing the trend seen during the previous decade. A similar increase was seen during the 1990s in the proportion of women with adequate numbers of visits once they began prenatal care, from 70% in 1989 to 83% in 1999.

Exhibit 2.1. Characteristics of Women Giving Birth in California, 1980-1999

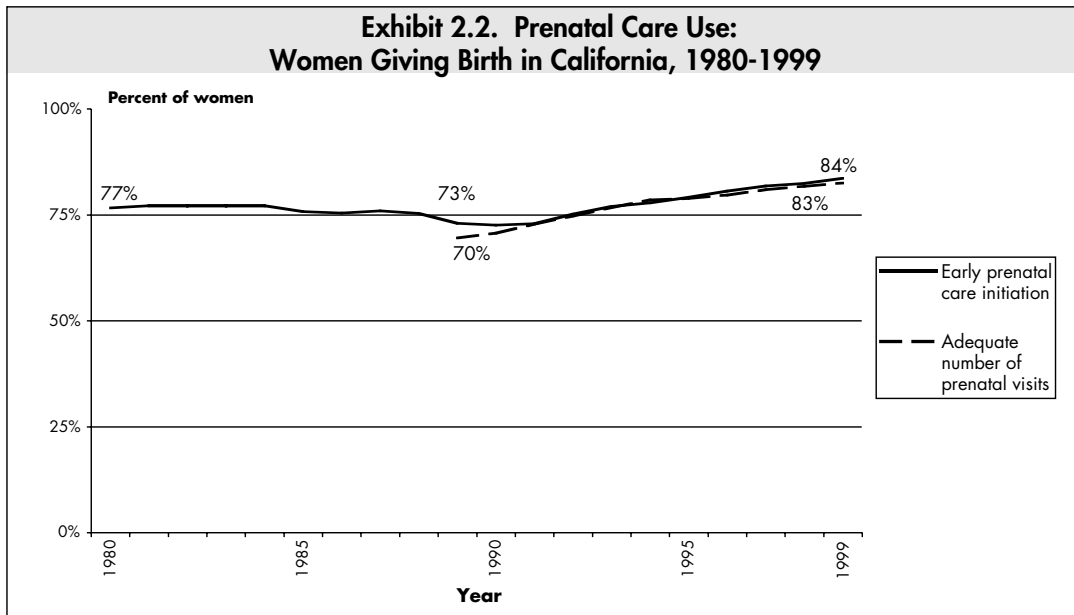
MATERNAL CHARACTERISTICS	Percent of Women		
	1980	1989	1999
All Women	100%	100%	100%
Age			
<20 years	14	12	11
20-34	81	78	73
>34	6	10	15
Race/Ethnicity			
African-American	9	9	7
Asian and Pacific Islander	6	9	11
White	55	44	33
Latina	29	37	48
Native American	1	1	1
Other	1	0	0
Birth Place			
US-born	71	62	55
Foreign-born	29	38	45
Marital Status			
Married	79	70	69
Unmarried	21	30	31
Education			
Less than high school		32	30
High school graduate	n/a	32	29
Some college		20	20
College graduate or more		16	21
Total Number of Live Births			
1	44	40	39
2-4	51	54	56
5+	5	6	5
Prenatal Insurance Coverage*			
Private		54	55
Medi-Cal	n/a	28	40
Uninsured		13	3
Other		5	2

Source: California birth certificate data on all births during the specified years.

*Only includes women who obtained some prenatal care.

Note: Information on level of educational attainment and principal prenatal payer was not added to the California birth certificate until 1989.

**Exhibit 2.2. Prenatal Care Use:
Women Giving Birth in California, 1980-1999**



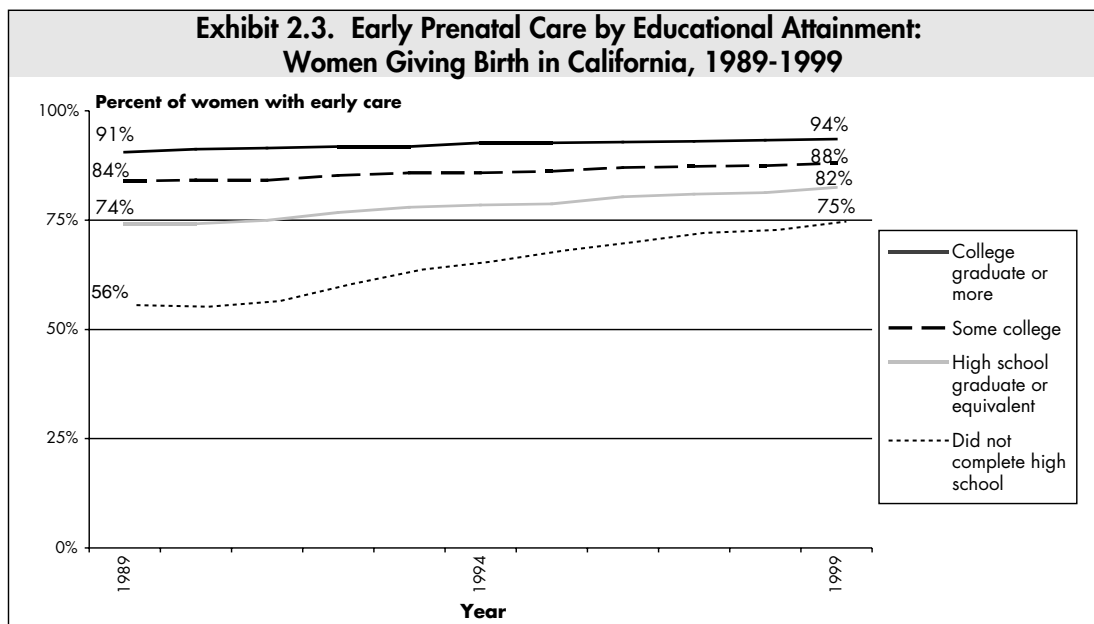
Source: California birth certificates.
 Note: "Early" prenatal care is care beginning in the first trimester (3 months) of pregnancy.
 "Adequate" number of visits was based on Kotelchuck's measure of adequacy, which takes into account when prenatal care began and gestational age at birth; data on number of visits unavailable before 1989.

Compared with a decade ago, more women are receiving early prenatal care and the recommended number of prenatal visits.

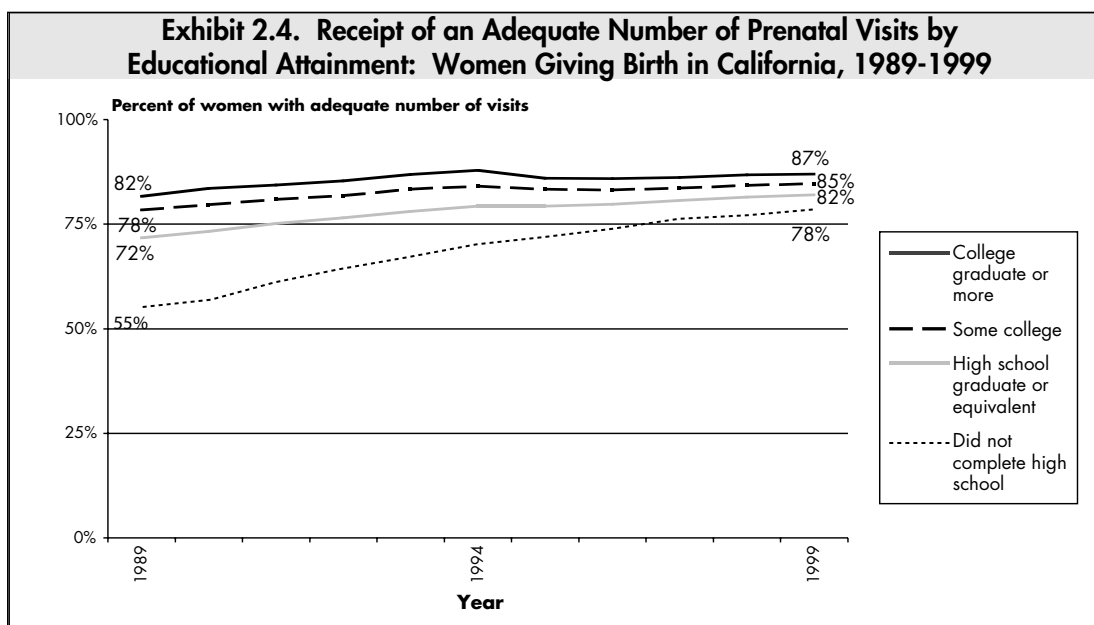
Looking at trends in prenatal care use within different subgroups of women (Exhibit 2.3, 2.4 and 2.5), the study found that women with lower educational attainment, women of African American, Asian/Pacific Islander, or Latina background (referred to collectively as "women of color"), immigrant women, adolescents, unmarried women, and women who had had five or more births were consistently less likely both to begin prenatal care in the first trimester and to receive an adequate number of visits compared to their counterparts. However, the gaps in use of prenatal care – for example, between women who had not graduated from high school and more educated women, between women of color and white women, and between immigrant women and US-born women – narrowed during the 1990s, when larger improvements occurred within the subgroups of women least likely to receive recommended care. The gaps generally narrowed most markedly during the early 1990s, although improvements continued throughout the decade.

From 1989 to 1999, disparities in timing of prenatal care initiation were greatly reduced between different groups of women (Exhibit 2.5). The proportion of women with early care among those who had not completed high school increased from 56% to 75%, compared with an increase from 91% to 94% among college graduates. Over the same ten-year period, the proportion of women of color with early care increased from 65% to 81%, while the proportion of white women with early care increased from 83% to 89%. Similarly, the proportion with early care increased among immigrant women from 65% to 82%, and from 78% to 85% among US-born women. Comparable patterns were seen for trends in the proportions of women who received adequate numbers of visits, with gaps in the receipt of adequate numbers of visits between vulnerable groups and their better-off counterparts persisting but narrowing from 1989 to 1999. Similar patterns of narrowing gaps were seen in both early prenatal care and adequate numbers of visits when comparing adolescents with older women, unmarried women with married women, and women who had 5 or more births with women with fewer births.

Significant improvements in prenatal care use occurred during the 1990s. These improvements were most dramatic for the groups of women who were least likely to receive recommended care.



Source: California birth certificates.
 Note: "Early" prenatal care is care beginning in the first trimester (3 months) of pregnancy.



Source: California birth certificates.
 Note: "Adequate" number of visits was based on Kotelchuck's measure of adequacy, which takes into account when prenatal care began and gestational age at birth; data on number of visits unavailable before 1989.

Exhibit 2.5. Use of Prenatal Care According to Women's Characteristics: Women Giving Birth in California, 1980-1999

MATERNAL CHARACTERISTICS	Percent with early care ¹					Percent with adequate number of visits ²		
	1980	1989	1999	% change 1980-89	% change 1989-99	1989	1999	% change 1989-99
All Women	77	73	84	-5	15	70	83	19
Age								
<20	60	54	71	-10	32	61	78	28
20-34	80	75	85	-6	13	70	82	18
>34	77	82	88	6	8	77	86	12
Race/Ethnicity								
African-American	75	67	81	-10	21	70	83	19
Asian and Pacific Islander	79	78	86	-2	11	73	84	14
White	83	83	89	0	7	78	86	10
Latina	65	61	80	-6	31	58	80	37
Native American	66	63	73	-5	16	66	78	19
Other	64	79	79	22	1	76	83	8
Birth Place								
US-born	80	78	85	-3	9	75	84	12
Foreign-born	68	65	82	-4	26	60	81	34
Marital Status								
Married	80	80	87	-1	9	73	83	14
Unmarried	62	58	76	-8	33	60	81	33
Education								
Less than high school		56	75		35	55	78	42
High school graduate	n/a	74	82	n/a	11	72	82	14
Some college		84	88		5	78	85	8
College graduate or more		91	94		3	82	87	6
Total Number of Live Births								
1	79	76	85	-4	12	73	84	15
2-4	77	73	84	-5	15	69	82	20
5+	60	54	70	-9	29	56	77	37
Prenatal Insurance Coverage*								
Private		84	90		7	79	84	7
Medi-Cal	n/a	57	76	n/a	34	63	81	30
Uninsured		63	73		17	53	76	42
Other		75	88		17	73	86	18

Source: California birth certificate data on all births during the specified years.

*Only includes women who obtained some prenatal care.

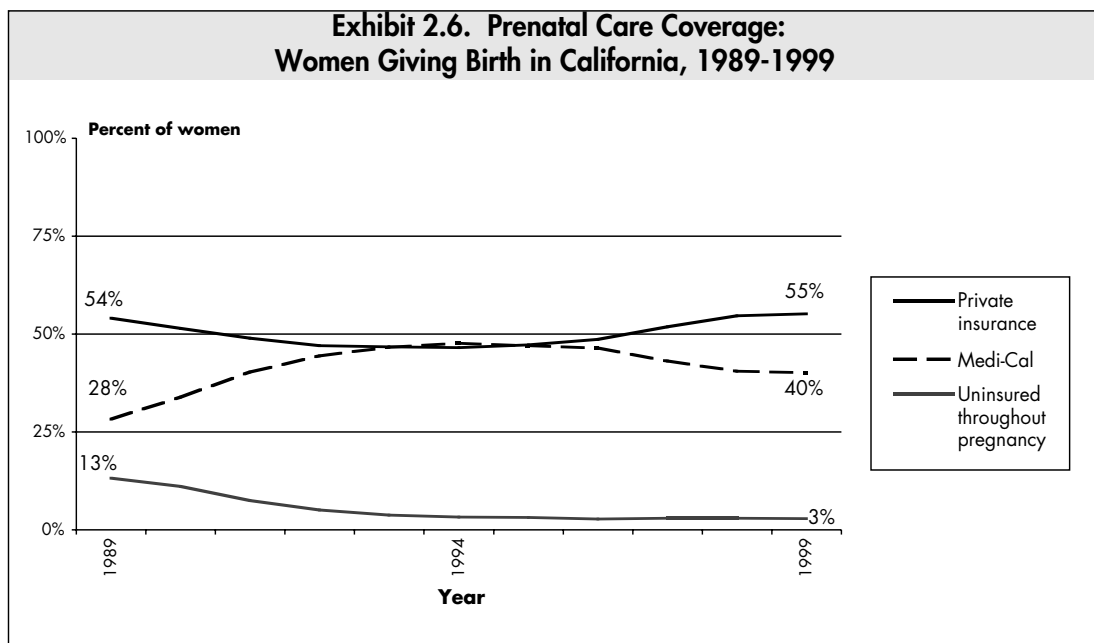
Note: Information on level of educational attainment, principal prenatal payer, and number of prenatal visits was not added to the California birth certificate until 1989.

¹Early prenatal care is care beginning in the first 3 months of pregnancy.

²Adequate number of visits as defined by Kotelchuck.

Trends in Prenatal Care Use by Education

How likely is it that the Medi-Cal expansions and related systems reforms contributed significantly to the observed improvements in prenatal care coverage and use? The proportion of women in California who were uninsured for prenatal care throughout pregnancy declined markedly following the implementation of eligibility expansions for Medi-Cal coverage of maternity care, from 13% in 1989 (the first year that insurance information was included in California birth certificate records) to 3% in 1994, remaining at that level through 1999 (Exhibit 2.6). The proportion of childbearing women with Medi-Cal coverage for prenatal care increased from 28% in 1989 to peak at 48% in 1994, but declined to 40% by 1999. The proportion of women with private coverage during pregnancy dropped from 54% in 1989 to 47% in 1992 through 1995, and subsequently increased to 55% by 1999. The initial increase in the proportion of women with Medi-Cal coverage corresponded with the period of time immediately following implementation of the major expansions in eligibility criteria, including coverage for undocumented immigrants as well as expanded income eligibility.



Source: California birth certificates (insurance), US Census Bureau (poverty), and US Bureau of Labor Statistics (unemployment).
 Note: Prenatal insurance coverage in birth certificates is the "principal prenatal payer" without regard for when coverage began. Insurance information was not available before 1989.
 Excludes women with no prenatal care, for whom no insurance information is available in birth certificate data.

We considered whether the observed decrease in Medi-Cal and increase in private coverage during the latter half of the 1990s could reflect misclassification between Medi-Cal and private insurance related to increased enrollment in Medi-Cal managed care plans; however, findings from a 1994-95 study suggested that such misclassification was not significant [Braveman et al., 1998]. Furthermore, the increase in the proportion of privately insured women during the latter 1990s coincided with a period of decreased unemployment and decreased poverty in California [US Census Bureau and Bureau of Labor Statistics data]. Given the continued low proportion of uninsured pregnant women in the later 1990s, the decline in Medi-Cal coverage during that period is most likely explained by increases in private coverage (and consequently reduced need for Medi-Cal coverage) related to improvements in the economy.

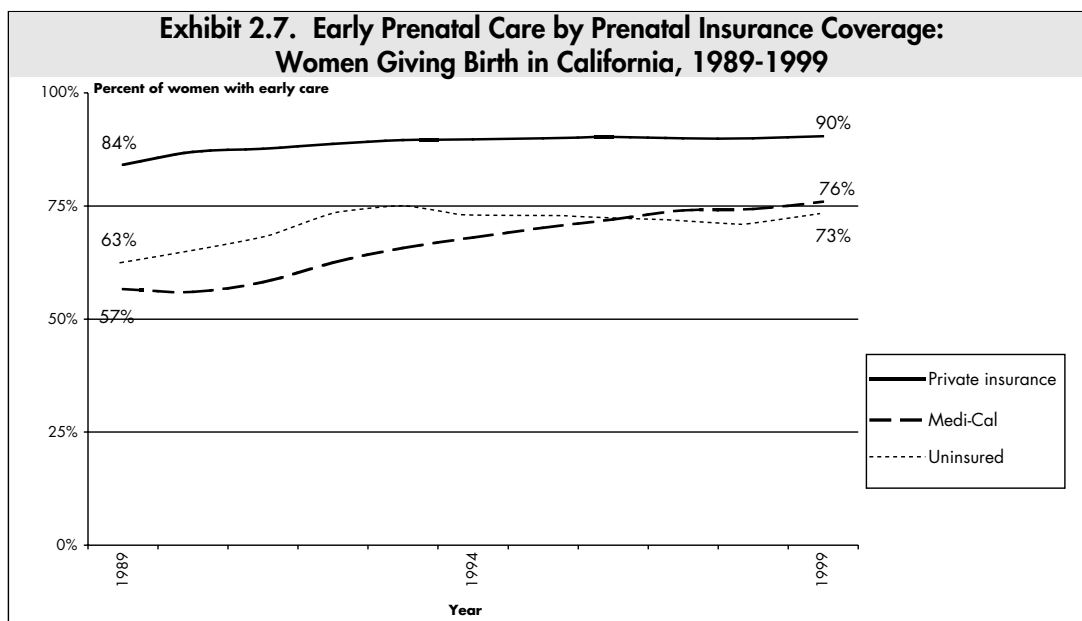
It is not possible to distinguish the separate effects of the different components of the Medi-Cal maternity coverage initiatives implemented from 1988 through the 1990s (see Exhibit 1.1 in Chapter 1), in part because the timing of these initiatives coincided or overlapped. Expansion of eligibility to undocumented immigrants was implemented in 1988, shortly before expansion of income eligibility criteria in 1989-90; both coincided with increased reimbursement to providers and outstationing of eligibility workers in 1989. Given that the major expansions in eligibility criteria (apart from removal of the assets criterion) were implemented by 1990, the continued improvements in prenatal care use throughout the 1990s suggest that ongoing efforts to improve systems, such as continued outstationing of Medi-Cal workers and the implementation of continuous eligibility and presumptive eligibility, may have played a significant role.

Not only did coverage improve during the 1990s, but there were marked improvements in use of prenatal care. These improvements were evident across all insurance groups, including the uninsured, but were particularly noticeable among women with Medi-Cal (Exhibit 2.7¹). Thus, differences in prenatal care use by insurance type, which were substantial in 1989, had narrowed significantly by 1999. While gaps between insurance groups narrowed for both early initiation and adequate number of visits, more striking declines were seen in the size of the gaps between insurance groups in the adequacy of number of visits (Exhibit 2.8).

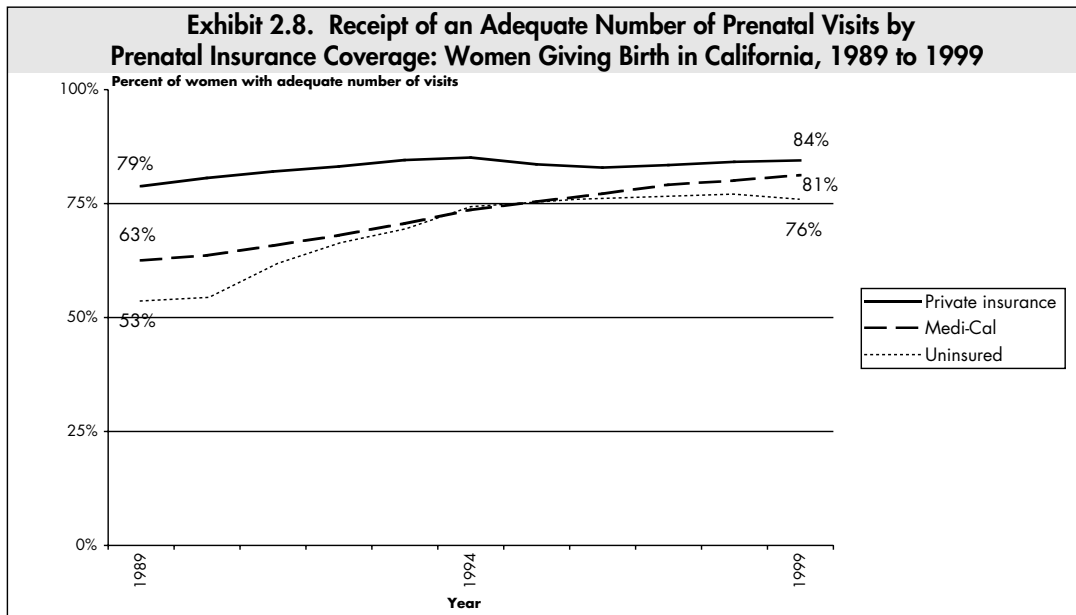
¹ Insurance information was not available in birth certificate records for women who received no prenatal care.

The narrowing of the gaps in use of care between women with Medi-Cal coverage and those with private insurance is consistent with a favorable effect of the systems reforms designed to streamline enrollment and increase provider availability for women eligible for Medi-Cal. It is particularly noteworthy that Medi-Cal coverage was associated with increases in the timeliness of initiation of care as well as the adequacy of numbers of visits during a time period when systems capacity was challenged by marked increases in enrollment.

These improvements in use of care among women covered by Medi-Cal may in part reflect the fact that the population of enrolled women following the income-eligibility expansions in 1989 and 1990 included a greater proportion of “near-poor” women with incomes between 101 and 200 percent of poverty; these women may have been more likely to use care according to recommended standards than their counterparts living in absolute poverty, to whom eligibility previously was restricted. A number of initiatives begun in the 1990s, described in the next section, also may have contributed to the increasing proportion of both insured and uninsured women who received timely care and adequate numbers of visits.



Source: California birth certificates.
 Note: Prenatal insurance coverage is defined as the "principal prenatal payer" without regard for when coverage began. Excludes women with no prenatal care.



Source: California birth certificates.

Note: Prenatal insurance coverage is defined as the "principal prenatal payer" without regard for when coverage began.

Trends in Prenatal Care Use by Type of Insurance

Other explanations for the observed patterns were considered, apart from the possible effects of the eligibility expansions and related systems reforms. The improvements were not likely to be due to changes in population characteristics; as seen earlier in Exhibit 2.1, the proportion of the delivery population who were women of color, immigrants, unmarried, or who had more than one birth – groups historically less likely to receive recommended prenatal care – actually increased during the 1990s. Although the proportion of women over the age of 34 or with more than a high school education also increased during the 1990s, this increase (which could have favorably affected overall prenatal care use) was likely to have been counter-balanced by the substantial increases in vulnerable subgroups. In addition, macro-economic changes could not explain the observed patterns of prenatal care use, since the prevalence of both poverty and unemployment increased in California during the early 1990s when the greatest improvements in use of prenatal care occurred.

A number of other California initiatives launched in the early 1990s also could have contributed to the improvements in prenatal care use. The Black Infant Health (BIH) Project, begun in 1990, provides pregnancy support services to African American communities in two cities and 14 counties in which 97% of births to African Americans occur statewide. However, the improvements realized across all racial/ethnic groups are unlikely to be the result of BIH. The improvements also were unlikely to be explained solely by the State-supported Access for Infants and Mothers (AIM) program that has provided prenatal coverage for women with incomes

201-300% of poverty since 1994 (and 0-300% of poverty in 1992 and 1993). This program covers on average between 3,500 and 4,500 women per year — less than one percent of all women giving birth in California [1998 AIM Fact Book] — while the observed changes in coverage and care were of far greater magnitude.

Other outreach and education programs may have contributed to but also could not fully explain the observed changes over time. Such programs include the Department of Health Services BabyCal campaign, a media campaign targeting low-income women launched in July 1991; the Perinatal Outreach and Education Program, begun in the early 1990s with the goals of improving prenatal care use among low-income women and reducing smoking and other substance use during pregnancy; and efforts targeted to pregnant teens including the Adolescent Family Life Program, which provides pregnant teens with individual case managers who help link them to education, health, social services and other assistance. These efforts, especially when considered together, may have contributed to the observed overall improvements in prenatal care use.

In summary, the pattern and timing of improvements both in coverage for and use of prenatal care among childbearing women in California over the past decade are difficult to explain without attributing a significant role to the Medi-Cal expansions and related systems reforms. The disproportionate improvements for vulnerable groups are particularly noteworthy, given both increases in poverty and unemployment in the early 1990s as well as obstacles potentially raised by federal welfare reforms and state initiatives intended to limit services for immigrants during the latter half of the decade. Despite these factors, women in the groups most likely to have been adversely affected – for example, women of low educational attainment, immigrants, women of color, and teens – experienced the most marked and sustained improvements in their receipt of prenatal care throughout the 1990s, at rates of improvement not observed among their less vulnerable counterparts. Our findings suggest that the major Medicaid maternity care expansions and related systems reforms, when considered as a whole, are likely to have succeeded to a great extent in reaching the intended target populations and improving their receipt of prenatal care in California.

CHAPTER 3: CALIFORNIA'S MATERNITY POPULATION: RESULTS OF A STATEWIDE SURVEY

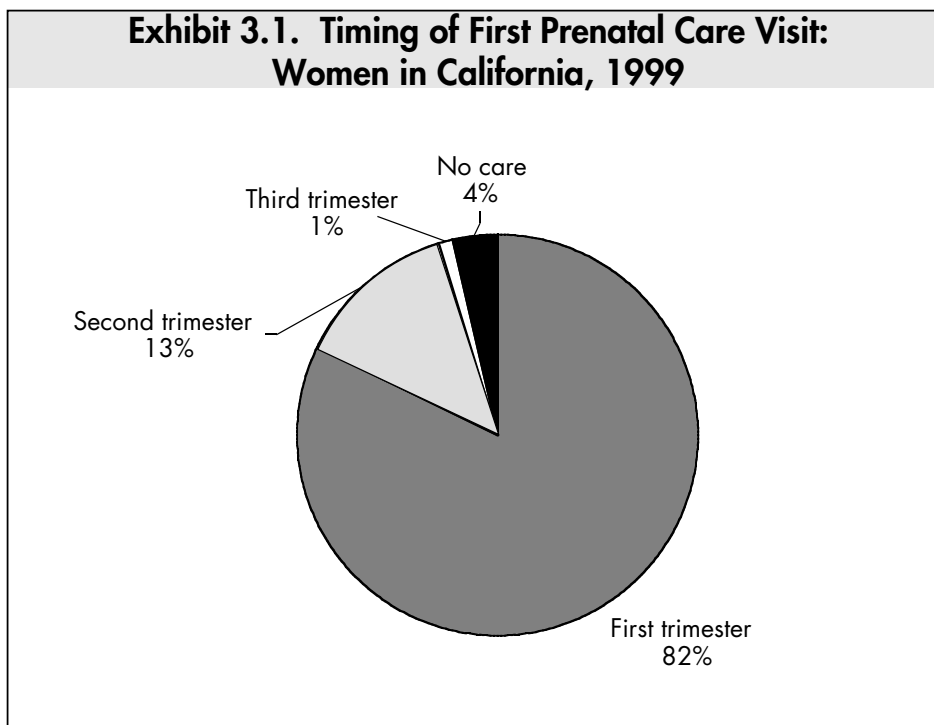
- While a large majority of women surveyed in California in 1999 initiated prenatal care in the first trimester (82%), the state will need to apply additional efforts to meet the Healthy People 2010 objective that 90% of pregnant women obtain care in the first trimester.
- Despite a narrowing of the gaps between groups at higher and lower risk of receiving inadequate prenatal care in the past decade, there was still marked variation in the receipt of early prenatal care across different groups in California's diverse population in 1999.
- Over half of childbearing women surveyed in California in 1999 were low-income (53%), and low-income women were far less likely to receive early prenatal care. One quarter of women with family incomes at or below 200% of poverty (25%) did not receive early prenatal care, compared with only 6% of higher-income women.
- Since the Medi-Cal expansions, relatively few California women have lacked insurance coverage throughout pregnancy. In 1999, however, approximately 16% of all women (and nearly one-quarter of women with Medi-Cal coverage at some point in pregnancy) did not get coverage until the second or third trimester of pregnancy, placing them at higher risk for receiving delayed prenatal care.

3.

CALIFORNIA'S MATERNITY POPULATION: RESULTS OF A STATEWIDE SURVEY

Although a rich source of historical data, birth certificates can only partially describe the characteristics of women giving birth in California. Birth certificate data was thus linked with information from the 1999 Maternal and Infant Health Assessment (MIHA) to: (1) gain a more complete picture of women's characteristics, health behaviors, and experiences; and (2) identify those groups of women whose access to prenatal care – reflected by their use of care – remains limited.

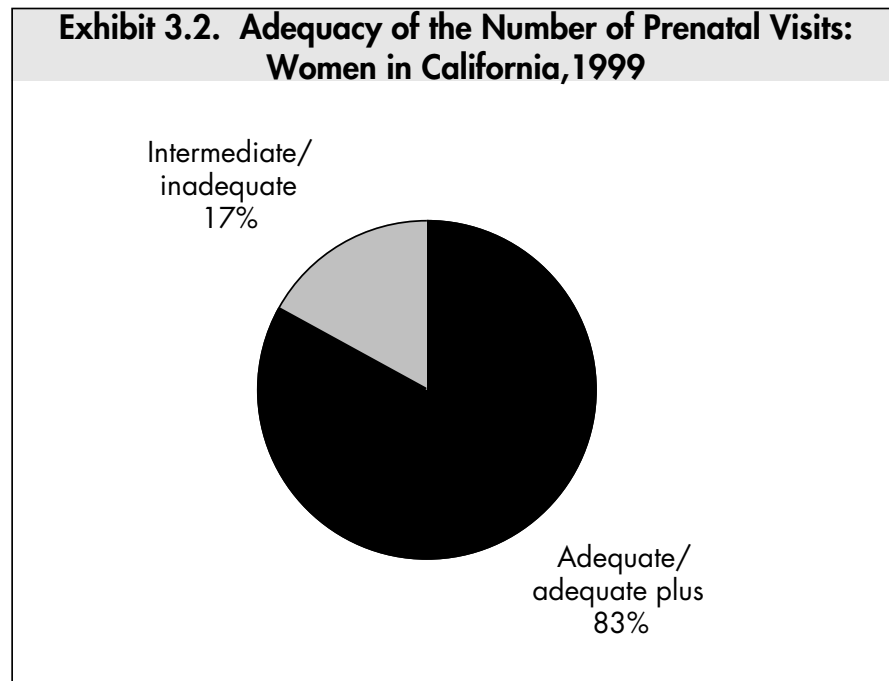
Exhibits 3.1 and 3.2 show the timing of prenatal care initiation and the adequacy of the number of prenatal visits for the MIHA sample of women who gave birth in California during 1999. Although a large majority of these women began prenatal care in the first trimester (82%), additional efforts will be necessary to meet the Healthy People 2010 objective for early prenatal care – that 90% of pregnant women begin care in the first trimester. Eighty-three percent of women surveyed for MIHA in 1999 received an adequate number of prenatal visits once they began care.



Source: California Maternal and Infant Health Assessment (MIHA), 1999.

Note: N=3,379 women who gave birth during 1999 and reported the timing of their prenatal care.

First trimester corresponds to the first three months of pregnancy, second trimester corresponds to months 4-6, and third trimester corresponds to the remainder of the pregnancy.



Source: California birth certificates.

Note: N=3,414 women who had information on number of visits in the birth certificate.

Based on Kotelchuck's measure of adequacy, which takes into account when prenatal care began and gestational age at birth.

Based on previous research, a number of maternal characteristics and behaviors/experiences were considered in relation to the timing of the first prenatal care visit and the adequacy of the number of prenatal visits received. Exhibit 3.3 displays maternal characteristics in addition to those described in birth certificate data (shown in Exhibit 2.5 in prior chapter). Despite the improvements over time described earlier, gaps in the receipt of early prenatal care remain apparent between different groups. As seen in Exhibit 2.5 and in Exhibit 3.3, the proportion of women who began care in the first trimester of pregnancy in 1999 varied markedly according to women's characteristics. Differences in receipt of adequate numbers of visits once women began care were much less striking. Given widespread agreement about the importance of early initiation of prenatal care – in contrast to lack of consensus about an optimal number of visits – as well as the larger disparities seen in early care across subgroups, the remainder of this report focuses on the timeliness with which women in California initiate prenatal care as the principal measure of access.

Despite the significant improvements in prenatal care use in California that coincided with major expansions in Medi-Cal maternity coverage during the 1990s, rates of early prenatal care were similar (around 70%) for uninsured and Medi-Cal-covered women in California during 1999. However, these findings typically reflect a woman's insurance status by the end of pregnancy, and provide

no information about when coverage was initiated during pregnancy. To explore the relationship between coverage and care in greater depth, information from the MIHA survey was used to evaluate the timing as well as the type of women's coverage during pregnancy; this approach has rarely been used because the necessary data have rarely been available.

Overall during 1999, only about 3% of the women in the MIHA survey sample were uninsured throughout pregnancy; 41% had Medi-Cal coverage and 52% had private insurance at some point during their pregnancies, while 4% had some other type of coverage. As shown in Exhibit 3.4, among surveyed women with private insurance, 91% had coverage that began before and continued throughout pregnancy, compared with only 38% of women who had Medi-Cal coverage for prenatal care. Approximately 16% of all women – one-quarter of women who had Medi-Cal coverage during pregnancy, but only 4% of women with private insurance – had no coverage during the first trimester of pregnancy. Waiting periods may explain why some privately insured women do not have prenatal coverage until after the first trimester. A recent March of Dimes study revealed that the health plans offered to employees of many small employers in the year 2000 often excluded maternity care coverage or had higher cost sharing for maternity care than for other services, and most required a waiting period for coverage averaging 3 months [10/01; available at http://www.modimes.org/files/final_mercer.pdf]. A higher percentage of people working for small employers are low-income compared to those working for larger employers (28% versus 19% respectively) [Reschovsky and Hadley, 2001].

Exhibit 3.3. Use of Prenatal Care According to Selected Maternal Characteristics: Women in California, 1999.

	Percent with the Characteristic	Percent with Early Prenatal Care	Percent with Adequate Number of Visits
MOTHERS' CHARACTERISTICS			
Household income (percent of federal poverty level)			
Missing income information	12	76	79
0-100% of poverty	32	71	80
101-200% of poverty	21	81	81
201-300% of poverty	10	87	86
301-400% of poverty	7	94	88
>400% of poverty	19	98	87
Smoking behavior during pregnancy			
Smoked	12	72	81
Did not smoke	88	84	83
Pregnancy intention			
Unintended	49	74	82
Intended	51	90	84
Source of pre-pregnancy care			
No usual source	26	74	79
Had a usual source	74	85	84
Importance of prenatal care to others			
Very important	92	84	83
Not very important	8	65	78

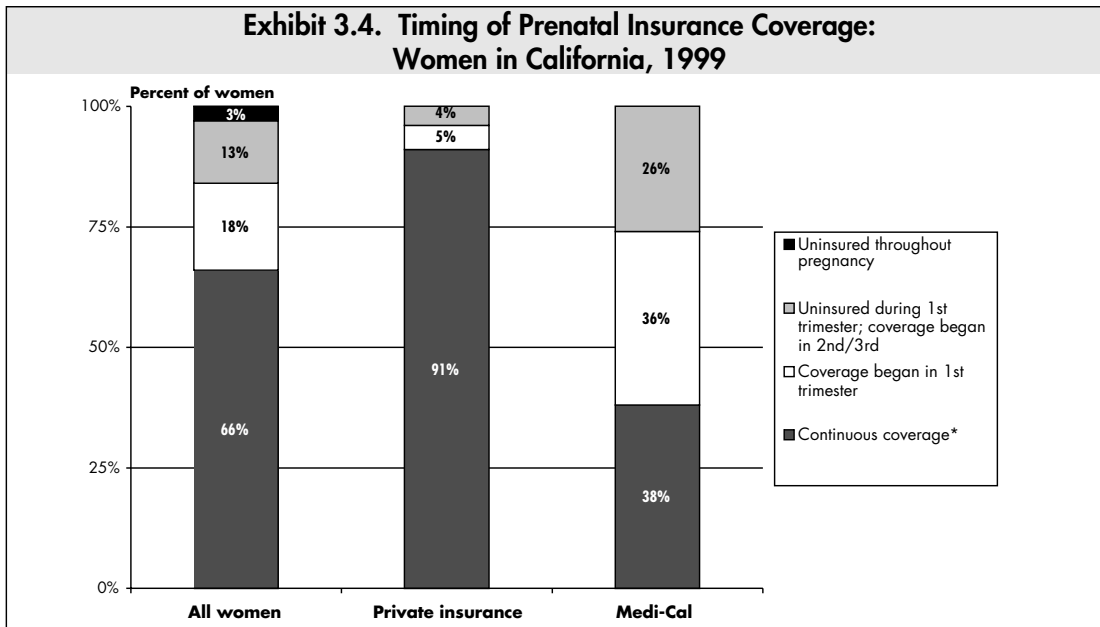
Source: California Maternal and Infant Health Assessment, 1999.

Note: N=3,483 women with live births in California during 1999.

More detailed descriptions of variables can be found in the technical appendix.

"Early" prenatal care is care beginning in the first 3 months of pregnancy.

Based on Kotelchuck's measure of adequacy, which takes into account when prenatal care began and gestational age at birth.



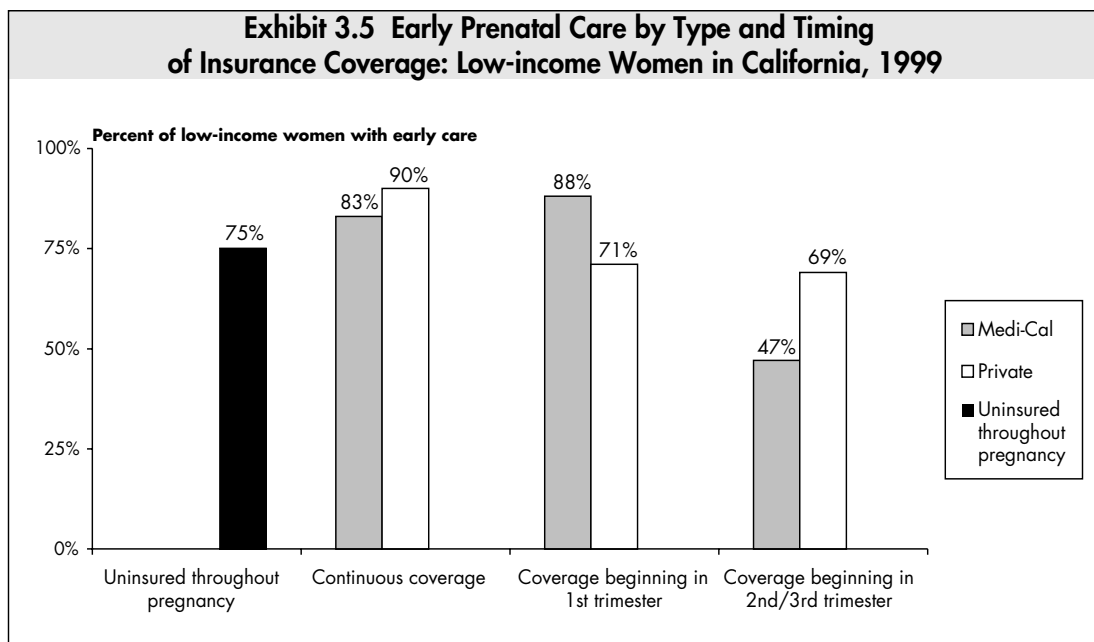
Source: California Maternal and Infant Health Assessment (MIHA), 1999.
 Note: N=3,343, excluding women who had both Medi-Cal and private coverage.
 *"Continuous" coverage is coverage that began before and continued throughout pregnancy.

The remaining chapters of this report focus on low-income women – that is, women whose family incomes were at or below 200% of poverty. Over half of the women delivering in California in 1999 were low-income (53%) (i.e., either poor or near-poor), and 25% of low-income women did not receive early prenatal care – compared with only 6% of women with higher family incomes. Relatively high rates of delayed or no care were found among teens, unmarried mothers, women with low educational attainment, African Americans, Latinas and foreign-born women; approximately 75% or more of women in each of these subgroups were low-income. Although it is often assumed that women are not low-income if they are privately insured, according to the MIHA survey in 1999, approximately 30% of childbearing women with private insurance during pregnancy were low-income (data not shown).

Targeted efforts to improve prenatal care access should continue to focus on low-income women, one-fourth of whom lack early care.

Women who lack coverage during the first trimester are at greatly increased risk of delayed or no prenatal care.

Exhibit 3.5 shows that, among the low-income women who were aware of their pregnancies in the first trimester, only women with private coverage before and throughout pregnancy as a group had already met the Healthy People 2010 objective for early care. It is noteworthy, however, that the rate of first-trimester care initiation also was relatively high (88%) among previously uninsured women who obtained Medi-Cal coverage during the first trimester, and that rates of early care were dramatically lower (47%) for women whose Medi-Cal coverage began in the second or third trimester. These findings confirm results from an earlier study that show that a lack of first-trimester coverage is associated with delayed prenatal care, even after controlling for a wide range of women’s characteristics and other potential barriers [Egerter et al., 2002]. (It is also noteworthy that 75% of women who remained uninsured throughout pregnancy still received early care; these women may have received charity care, paid out of pocket, or been granted presumptive eligibility under Medi-Cal but never enrolled.)



Source: California Maternal and Infant Health Assessment (MIHA), 1999.
 Note: N=1,558 women with family incomes ≤200% of poverty, excluding women who had "other" coverage or both Medi-Cal and private coverage, who did not report insurance type and/or timing, or who were unaware of their pregnancies in the first trimester.
 "Continuous" coverage is coverage that began before pregnancy and continued throughout pregnancy.
 "Early" prenatal care is defined as care beginning in the first trimester.

CHAPTER 4: IMPROVING EARLY ACCESS TO MEDICAID COVERAGE IN CALIFORNIA

- Although in 1999 almost all of California's maternity population had some type of health insurance before the end of pregnancy, approximately 16% of childbearing women surveyed in California were uninsured during the first trimester. Nearly 90% of women who lacked first-trimester coverage met income eligibility criteria for Medi-Cal maternity care coverage.
- A large majority of previously uninsured low-income women (69%) tried to obtain Medi-Cal coverage during the first trimester of pregnancy and eventually enrolled sometime during pregnancy. However, 12% of income-eligible women tried to enroll early but did not actually enroll in Medi-Cal until after the first trimester. Over one-third of those women did not receive early prenatal care.
- 20% of income-eligible women applied for Medi-Cal after the first trimester. Lack of awareness of pregnancy is an important reason for delays. Poverty – or challenges associated with poverty that were not measured in this study – also appeared to be a crucial obstacle affecting women's attempts to apply for Medi-Cal in the first trimester.
- A perception that Medi-Cal workers were unhelpful was a significant barrier to early enrollment faced by women who applied for Medi-Cal during the first trimester. Women who reported this barrier were nearly four times as likely as other women to have delayed enrollment.

4.

IMPROVING EARLY ACCESS TO MEDICAID COVERAGE IN CALIFORNIA

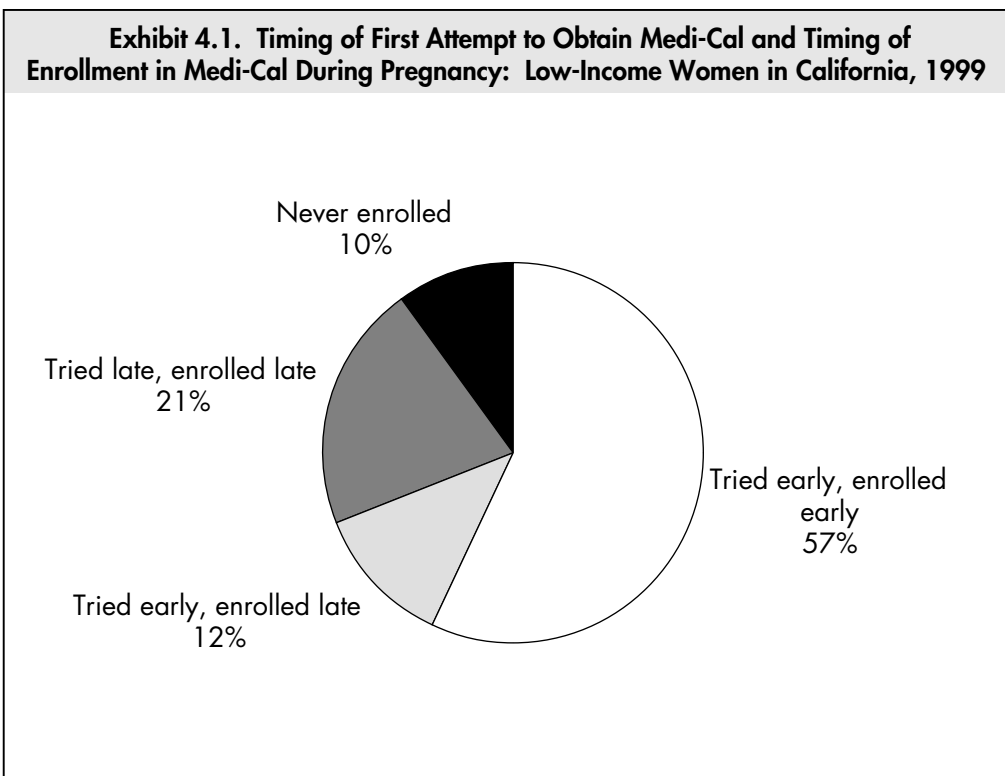
Despite improvements in coverage related to the major eligibility expansions and streamlining of the Medi-Cal application process in recent years, approximately 16% of women surveyed in 1999 lacked coverage during the first trimester when care should begin. These women were at markedly higher risk of delayed or no prenatal care compared with women who had first-trimester coverage. The overwhelming majority of women who lacked first-trimester coverage (87%) met the income criteria for Medi-Cal eligibility during pregnancy and were thus “income-eligible” for Medi-Cal coverage.

Using data from the 1999 California Maternal and Infant Health Assessment (MIHA), this chapter describes barriers to first-trimester Medi-Cal coverage experienced by low-income women in California. Questions in the MIHA survey focused on factors that could affect when a woman applies for and/or ultimately enrolls in Medi-Cal during pregnancy. The findings described here were based on information from the subset of 654 surveyed women who were uninsured before pregnancy, were income-eligible for Medi-Cal maternity coverage, and either obtained Medi-Cal coverage during pregnancy or remained uninsured.

Despite major improvements in prenatal coverage related to the Medicaid expansions and systems reforms, 16 percent of women who gave birth in California during 1999 were uninsured during the crucial first 3 months of pregnancy.

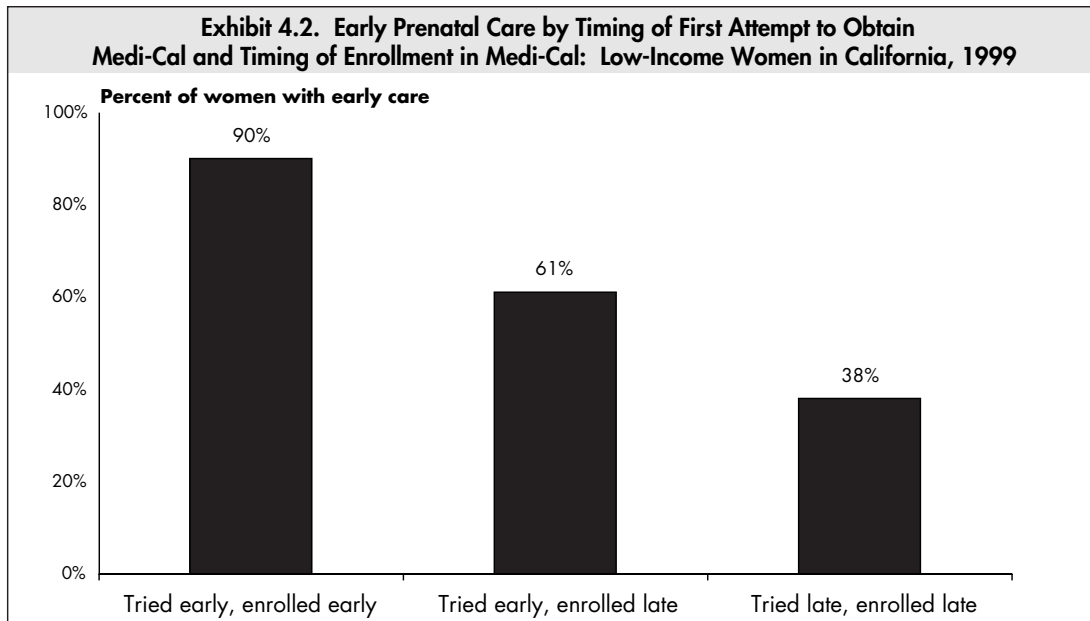
Because a woman must be aware of her pregnancy before she seeks coverage for prenatal care, the study considered when these women first knew they were pregnant. Only 6% of the previously uninsured income-eligible women studied were not aware of their pregnancies during the first trimester. Among the subgroup who did not attempt to apply for Medi-Cal during the first trimester, however, 21% lacked early (first trimester) awareness of pregnancy—indicating that lack of early awareness could be an important barrier to timely Medi-Cal enrollment among income-eligible women (data not shown). The remainder of this chapter focuses on those women in the sample who were aware of their pregnancies during the first trimester. As shown in Exhibit 4.1, 57% of these 611 women both tried to obtain and enrolled in Medi-Cal in the first trimester of pregnancy (tried early and enrolled early); 12% tried to obtain Medi-Cal in the first trimester but did not enroll until after the first trimester (tried early and enrolled late); 21% did not try to obtain Medi-Cal and therefore did not enroll until after the first trimester (tried late and enrolled late); and 10% never enrolled, although some applied. Thus, 69% tried to obtain Medi-Cal in the first trimester and ultimately enrolled at some time during pregnancy, indicating that most of these women were motivated to seek early coverage and, presumably, early care.

Most income-eligible women seek early Medi-Cal coverage and begin their prenatal care in the first trimester.



Source: California Maternal and Infant Health Assessment (MIHA), 1999.

Note: N=611 women who had family incomes \leq 200% of poverty, were uninsured prior to pregnancy, were aware of their pregnancies in the first trimester, and for whom information on sociodemographic characteristics was available. "Early" is during the first trimester of pregnancy; "late" is after the first trimester.



Source: California Maternal and Infant Health Assessment (MIHA), 1999.

Note: N=611 women who had family incomes $\leq 200\%$ of poverty, were uninsured prior to pregnancy, were aware of their pregnancies in the first trimester, and for whom information on sociodemographic characteristics was available.

"Early" defined as during the first trimester of pregnancy. "Late" defined as after the first trimester.

The majority of these women initiated prenatal care in the first trimester (74%). As seen in Exhibit 4.2, however, the percentage with early (first trimester) prenatal care varied both by when women first tried to obtain Medi-Cal and by when they actually enrolled. Among women who had early Medi-Cal enrollment, 90% began prenatal care in the first trimester – a rate of early care equaling the Healthy People 2010 objective. By contrast, only 61% of women who tried early but enrolled late began prenatal care in the first trimester. (Although they lacked first-trimester Medi-Cal coverage, these women may have begun care under presumptive eligibility or may have obtained charity care and/or paid out of pocket.) Among women who tried late and enrolled late, only 38% obtained first-trimester care.

Among previously uninsured women with early Medi-Cal enrollment, 90% had early prenatal care—a rate equaling the Healthy People 2010 objective.

Poor women were less likely than near-poor women to try to obtain Medi-Cal during the first trimester.

Based on the literature and discussions with key informants, the following potential non-insurance barriers to first-trimester Medi-Cal coverage were examined:

- Not knowing how or where to apply for Medi-Cal;
- Difficulties getting through to Medi-Cal on the telephone;
- Perceiving contact people at Medi-Cal as unhelpful;
- Difficulties filling out the application;
- Problems getting to the Medi-Cal office;
- Lack of a permanent address;
- Fears that enrolling might cause problems for the baby's father (regarding his responsibility for child support, for example);
- Fears that she might have to repay Medi-Cal later;
- Fears that applying for Medi-Cal could cause immigration problems;
- Unintended pregnancy (unintended around the time of conception); and
- Initial unhappiness about being pregnant (on first learning of the pregnancy).

The study also examined the following maternal characteristics that, based on the literature and through diverse pathways, could have influenced when women applied and enrolled in Medi-Cal: family income, age, education, total number of live births, race/ethnicity, birthplace, and marital status.

Among women who tried early to enroll in Medi-Cal, delayed enrollment was four times more likely among women who reported a perceived lack of helpfulness among Medi-Cal contact personnel.

Taking into account all of these potential barriers and maternal characteristics, only income appeared to be related to delays in trying to obtain Medi-Cal coverage during pregnancy. Women whose families lived below the federal poverty level were more likely than their near-poor counterparts (with incomes 101-200% of poverty) to try to obtain Medi-Cal after the first trimester, regardless of when they actually enrolled. This may reflect more numerous and/or more severe day-to-day challenges faced by women living in absolute poverty that could make it more difficult for them to seek early coverage and care.

The study also examined the likelihood of delayed Medi-Cal enrollment among those Medi-Cal enrollees who tried to apply early. Taking into account the barriers and maternal characteristics noted above, delayed enrollment was nearly four times more likely for women who reported that Medi-Cal contact personnel were not helpful. Difficulties filling out the Medi-Cal application and not knowing how or where to apply warrant further investigation as potential barriers, although they were not statistically significant after taking other factors into account.

Compared with all income-eligible women who eventually enrolled in Medi-Cal, immigrant women had similar patterns of prenatal care use, timing of first attempt to obtain Medi-Cal, and timing of Medi-Cal enrollment. However, immigrant women who had strong fears of problems with Medi-Cal or immigration status may be under-represented in the MIHA sample, which uses a mail and telephone methodology for data collection.

Although only 10% (or 63) of the income-eligible women in this sample remained uninsured throughout pregnancy, on a statewide basis this group represents approximately 10,000 women; hence, identifying and addressing the important barriers for these women could have a significant public health impact. Compared with their counterparts who enrolled in Medi-Cal during pregnancy, women who remained uninsured were more likely to be foreign-born Latinas or to speak Spanish at home. It is noteworthy that more than half of the income-eligible women who did not enroll in Medi-Cal during pregnancy (61%) indicated that they had applied at some point. Those who applied for Medi-Cal appeared somewhat more likely to have been age 20 or older, foreign-born, Latina, Spanish-speaking, and poor compared with women who did not apply. These results suggest that many immigrant women are applying for Medi-Cal but not enrolling, although why these women do not enroll is unclear.

Barriers were generally similar for immigrants and for the overall sample, but immigrant women with strong fears may have been under-represented.

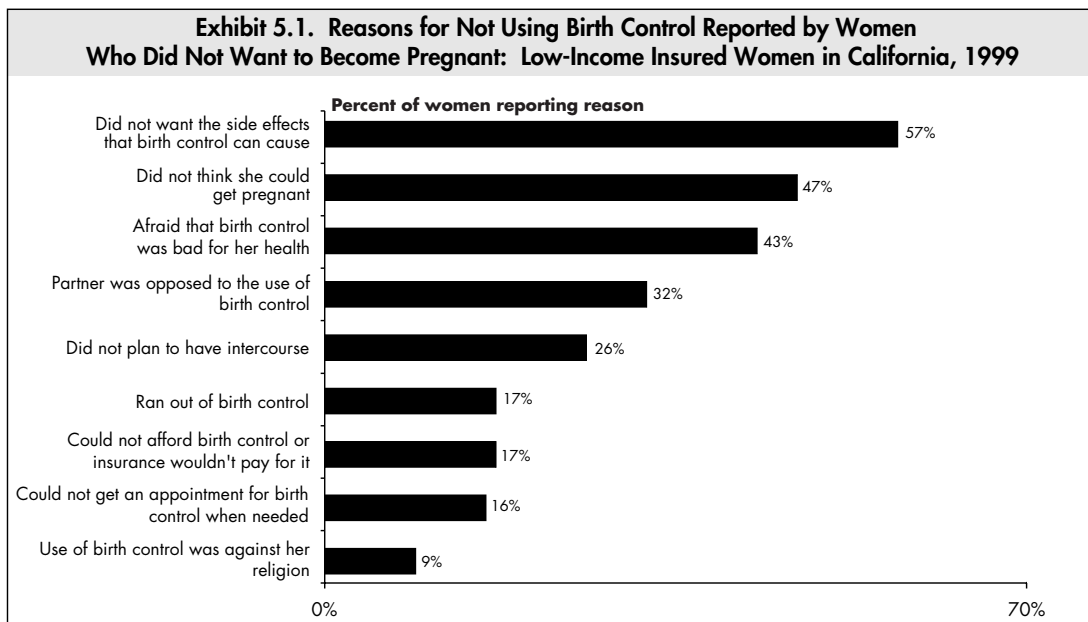
CHAPTER 5: NON-INSURANCE BARRIERS TO EARLY PRENATAL CARE

- Lack of awareness of pregnancy during the first trimester represents a major barrier to early prenatal care among insured women. Twenty-three percent of low-income insured women who had delayed or no prenatal care lacked early awareness of pregnancy.
 - Unintended pregnancy and teen pregnancy were associated with delayed awareness of pregnancy among insured women.
 - African American women also were at elevated risk of delayed awareness, suggesting the need for additional targeting of relevant efforts to this community.
- Low-income women who have low educational attainment, unintended pregnancy, or believe that their receipt of prenatal care is not "very important" to others close to them are at higher risk for delayed prenatal care.

5.

NON-INSURANCE BARRIERS TO EARLY PRENATAL CARE

Previous chapters demonstrate that, despite improvements in prenatal coverage and care during the 1990s associated with the Medi-Cal expansions, lack of first-trimester insurance coverage remains a significant barrier to early prenatal care among low-income women. In addition to insurance barriers, low-income pregnant women also face ‘non-insurance’ barriers to early care apart from inability to pay for care [Braveman et al., 2000; Byrd et al., 1996; Giblin et al., 1990; Harvey and Faber 1993; Kalmuss and Fennelly, 1990; Lia-Hoagberg et al., 1990; Mayer, 1997; McDonald and Coburn, 1988; Moore and Hepworth, 1994; Nothnagle et al., 2000; Poland et al., 1987; Sable et al., 1990; St. Clair et al., 1989; St. Clair et al., 1990]. Based on data from the 1999 California Maternal and Infant Health Assessment (MIHA) linked with birth certificate data, this chapter describes factors other than lack of coverage that are associated with delayed or no prenatal care. This chapter focuses on a subset of 1,623 women in the MIHA survey sample who were insured (covered either by Medi-Cal or private insurance) during the first trimester of pregnancy and who either reported family incomes at or below 200% of poverty or did not report income information.¹



Source: California Maternal and Infant Health Assessment (MIHA), 1999.
 N=1,042 women with family incomes \leq 200% of poverty who had private or Medi-Cal coverage during the first trimester of pregnancy.

¹ Women with missing information on income, who constituted 12% of the entire MIHA sample, were included as a separate category in these analyses after preliminary analyses suggested that many were likely to be low-income.

A woman cannot seek early prenatal care if she is not aware that she is pregnant.

Because awareness of pregnancy is an essential precursor to seeking prenatal care, the study first examined factors related to women's awareness of pregnancy during the first trimester. Overall, the vast majority (95%) of these insured low-income women were aware of their pregnancies early. Among the subset of women with delayed or no prenatal care, however, 23% lacked first-trimester awareness. Taking into account other maternal characteristics, health behaviors, and experiences, the following factors were significantly related to lack of early awareness of pregnancy: age younger than 20; being African American; and unintended pregnancy. Teenagers were twice as likely as older women to be unaware of their pregnancies in the first trimester; African American women were also twice as likely to lack early awareness compared with white women; and women with unintended pregnancies were three times as likely to lack early awareness. When immigrant women were examined separately, unintended pregnancy was the only statistically significant risk factor for delayed awareness of pregnancy.

Low-income insured women who were under 20 years old, were African American, or had an unintended pregnancy were 2 to 3 times more likely to be unaware of their pregnancies during the first trimester.

Given both the observed association between early awareness and unintended pregnancy and the likely association between unintended pregnancy and use of family planning, the study examined potential barriers to use of family planning reported by the subgroup of low-income insured women who had not planned to become pregnant. Over half of these women reported that they had not used birth control because they were concerned about side effects (Exhibit 5.1); nearly half reported believing that they could not get pregnant as a reason for not using contraception; two-fifths were afraid that using birth control would be bad for their health; nearly one-third had partners opposed to the use of birth control; and over one-quarter had not planned to have sex. Due to the structure of the questionnaire, the study could not examine how each of these frequently reported factors was associated with actual use of family planning methods, however, and it should be kept in mind that a widely prevalent factor may not necessarily act as a significant barrier to family planning.

The study next examined non-insurance factors apart from lack of early awareness of pregnancy that could be obstacles to early prenatal care, focusing on women who were aware of their pregnancies in the first trimester. Taking into account whether the woman's coverage began before pregnancy or in the first trimester, her total number of births, and whether she smoked (as a potential marker of other health-related attitudes, beliefs, or behaviors), the study examined the relationships between prenatal care initiation and family income, age, education, marital status, race/ethnicity (combined with birthplace for Latinas), unintended pregnancy, whether the woman had a usual source of health care before becoming pregnant, and whether the woman reported that her receipt of prenatal care was "very important" to others close to her.

Women in this sample who had less than a high-school education, whose pregnancies were unintended, or who reported that others close to them felt that their receipt of prenatal care was not “very important” were one and one-half to two times more likely than otherwise similar women to have had delayed or no prenatal care; other characteristics or potential barriers were not found to be significant. These three factors are plausible either as barriers to early care in themselves or as markers of barriers that could affect women with insurance coverage. Even among low-income women, those with lower educational attainment may experience greater difficulties in dealing with bureaucracies, including health care delivery systems, and in coping with a range of challenges such as transportation, child care, or meeting other responsibilities that might conflict with obtaining prenatal care. Those who work may have less control over their work schedules than women with higher education. Even when she is aware of her pregnancy early, a woman whose pregnancy is unintended could experience delays in seeking prenatal care related to ambivalence about the pregnancy and whether to continue it. A woman whose mother, partner, or other close relatives or friends do not consider early prenatal care to be important could receive less material and moral support for seeking early care.

Among insured low-income women who knew they were pregnant during the first trimester, those with low educational attainment, an unintended pregnancy, or who believed that their receipt of prenatal care was not “very important” to others close to them were 1½ to 2 times more likely to have delayed or no prenatal care.

CHAPTER 6. IMPROVING ACCESS TO PRENATAL CARE: CONCLUSIONS AND POLICY RECOMMENDATIONS

- Significant progress has been made in improving access to prenatal care for California women since 1989-1990, when major expansions in Medi-Cal maternity coverage and related systems reforms were first implemented.
- Both the timing and pattern of improvements in use of prenatal care, and in particular the disproportionate improvements seen among vulnerable groups of women, appear to be attributable in large part to the Medi-Cal expansions, along with the related systems reforms.
- Ensuring that pregnant women have insurance coverage during the first trimester of pregnancy could help improve rates of early prenatal care.
- Further efforts are needed to enroll more women in Medi-Cal during their first trimester of pregnancy. These efforts should focus on training Medi-Cal workers to project a helpful image, to facilitate the application and enrollment process, and to treat all pregnant women applying for Medi-Cal as eligible until proven ineligible.
- In addition to ensuring first trimester coverage, efforts to increase use of family planning and to address other 'non-insurance' factors are also important for promoting early prenatal care.
- Community outreach and education about the importance of prenatal care may be important strategies to improve early prenatal care.
- The strong association of low educational attainment and poverty with delayed prenatal care initiation indicates the need for those concerned with prenatal care to expand the policy focus beyond the health care sector.

6

IMPROVING ACCESS TO PRENATAL CARE: CONCLUSIONS AND POLICY RECOMMENDATIONS

This report examines access to prenatal care in California over the past two decades. Although some conclusions may apply uniquely to California, most will have considerable relevance for other states and nationally, partly because one in every eight births in the U.S. occurs in California [Ventura et al., 2001].

Significant progress has been made in improving access to prenatal care for California women since 1989-1990, when major expansions in Medi-Cal maternity coverage and related systems reforms were first implemented. Responding to major expansions in Federal Medicaid maternity coverage policy in the late 1980s, during 1989-1990 California raised the income eligibility criterion for Medi-Cal during pregnancy from around 100% to 200% of the federal poverty level. By 1989, provider reimbursement also had been markedly increased and outstationing of eligibility workers had been implemented. The goal of these eligibility expansions and systems reforms was to improve access to prenatal care for women who otherwise would lack insurance coverage, and the study findings indicate that significant progress has occurred. Marked improvements were seen beginning in 1991, and these improvements continued through the 1990s, as a series of related efforts to further facilitate Medi-Cal enrollment and access to care were phased in. The most significant improvements in prenatal care use were observed among those population subgroups most likely to include the low-income women targeted by the expansions – for example, women of low educational attainment, women of color, immigrant women, unmarried women, women with four or more previous births, and teen mothers. The improvements occurred and continued despite increased poverty and unemployment during the early 1990s and despite federal welfare reform and other legislation restricting access to Medi-Cal in the mid-1990s.

Both the timing and pattern of improvements in use of prenatal care, and in particular the disproportionate improvements seen among vulnerable groups of women, appear to be attributable in large part to the Medi-Cal expansions, along with the related systems reforms. The independent effects of expanding eligibility and improving systems cannot be distinguished, but the evidence overall suggests that each is likely to have contributed to the observed improvements in use of prenatal care during the 1990s. The increased proportion of births covered by Medi-Cal and coincident reductions in the proportion of uninsured births during the early 1990s suggest a significant

impact of expanded eligibility criteria. Improvements in the receipt of early care among women covered by Medi-Cal after 1991 suggest that features of the expansions intended to improve the enrollment process (such as outstationing eligibility workers, streamlining the application process, presumptive eligibility, and waiving the assets test) or to increase provider availability (by increasing reimbursement rates) probably also contributed to improved access. Evidence for this includes the fact that care continued to improve despite the absence of further expansions of eligibility after 1990, and despite the additional demands on system capacity created by expanded eligibility; however, it is possible that some of the improvement in use of care among women covered by Medi-Cal may have been due to expanding eligibility to a group of women who were more likely to use care according to recommended standards – for example, the near-poor as contrasted with the poor.

Efforts related to both eligibility criteria and systems improvements should be sustained, and this unsung public health victory should receive greater acknowledgment. The apparent success of the Medicaid expansions and accompanying reforms in California demonstrates that, despite challenges, public policies and programs designed to improve prenatal care access can be effective when political will is combined with enabling resources to simultaneously address multiple facets of a problem.

Based on the findings of this study, policy efforts to improve prenatal care access should continue to focus primarily on low-income women, who constitute the majority – not a small subgroup – of childbearing women in California. Despite major improvements in access during the 1990s, about one in six childbearing women in California still fails to receive early prenatal care. Among the 53% of childbearing women in California who have family incomes at or below 200% of poverty (the income eligibility cut-off for Medi-Cal maternity coverage since 1990), only 75% received early care in 1999 – a rate considerably below the Healthy People 2010 objective of 90%. The high prevalence of low incomes among childbearing women in California deserves attention in itself. It has implications for overall social and economic policies, as well as health policies, given the numbers of children born into families struggling with the challenges of poverty or near-poverty.

Ensuring that pregnant women have insurance coverage during the first trimester of pregnancy could help improve rates of early prenatal care. Since the Medi-Cal expansions, only a small fraction of childbearing women in California (3% overall during 1999) have lacked insurance coverage throughout pregnancy. The findings reported here show, however, that approximately 16% of all women with live births (and one-quarter of women with Medi-Cal during pregnancy) were uninsured during the first trimester of pregnancy. These women were at greatly increased risk of delayed or no prenatal care.

Further efforts are needed to enroll more women in Medi-Cal during their first trimester of pregnancy. The findings reported here suggest that the following should be considered:

- Additional efforts should be considered to train and encourage Medi-Cal workers to: project a helpful image; facilitate the application and enrollment process as much as possible; and treat all pregnant women as eligible until proven ineligible. Study findings show that most uninsured pregnant women (87%) qualify for Medicaid. Thus, it would seem reasonable for Medi-Cal workers to assume that pregnant Medi-Cal applicants are likely to be eligible and to serve primarily as facilitators of the enrollment process.
- Our findings also suggest that difficulties filling out the Medi-Cal application and not knowing how or where to apply warrant further investigation as barriers to early coverage. A new, simplified, and more user-friendly application form has just been made available for use in the Medi-Cal and Healthy Families programs statewide; this is a promising development and its ease of use should be evaluated. The need for expanding and/or improving the effectiveness of outreach strategies to let women know how and where to apply for Medi-Cal should also be considered.
- The findings reported here suggest that presumptive eligibility for Medi-Cal may not be working as well as it should. If the program were fully effective, delays in prenatal care initiation among women who first attempted to apply for Medi-Cal during the first trimester should have been relatively rare or far less frequent. Based on discussions with key informants, the functioning of presumptive eligibility might be improved by more systematic efforts to explain the program and to identify participating providers in the materials women receive when they apply for Medi-Cal. Our key informants also underscored the problem of limited provider participation in (and sometimes understanding of) presumptive eligibility. Additional orientation for participating providers may be needed.

Barriers to coverage and care appeared to be similar for immigrants and the general population of childbearing women. Although immigrant women appeared somewhat less likely than non-immigrants to begin prenatal care in the first trimester, they reported similar barriers to timely coverage and care. However, because only women who spoke English or Spanish were included in the MIHA survey, the immigrants described in the majority of this report may not be representative of all immigrant childbearing women in California, including Asians who did not speak English. In addition, women with the greatest immigration fears and problems may be underrepresented in this report because they may be less likely to participate in the MIHA survey.

A woman cannot seek early prenatal coverage or care if she is unaware that she is pregnant; evidence from this report supports the need to link preconception or family planning strategies with prenatal strategies to improve coverage and care during pregnancy.

Providing non-categorical coverage for low-income adults might help to reduce some barriers to early prenatal care faced by low-income women. Women who are covered prior to pregnancy may be more likely to have a regular source of care before pregnancy and to have access to family planning; both of these factors have been linked with women's receipt of early prenatal care [Braveman et al., 2000; Goldenberg et al., 1992; Brown, 1988]. Women with ongoing coverage that continues after pregnancy may be more likely to use family planning services, which would benefit them and their families and could also affect their use of prenatal care during subsequent pregnancies. California's request for a Medicaid Section 1115² waiver to extend coverage to non-elderly adults in families with children who qualify for Healthy Families (S-CHIP) has been approved but not yet implemented. This expansion could improve access to prenatal care as well as family health care and well-being overall, but it is unclear what action will now be taken at the state level, given a budget crisis not anticipated at the time of requesting the waiver. Coordination of both Medi-Cal and Healthy Families with the Family PACT program (a California program providing coverage of family planning services for low-income women and men) could potentially promote both increased family planning and early prenatal care. Increasing use of family planning services should improve early awareness of pregnancy and reduce the rate of unintended pregnancies.

Linking eligibility for a range of different categorical programs (e.g., coverage for reproductive health services and coverage for children) for low-income families also could potentially contribute to more timely Medi-Cal coverage of pregnant women through increased use of family planning and improved connections with health care providers (who could increase the timeliness of diagnosis of pregnancy and referral to a Medi-Cal obstetric provider).

Efforts to address factors not related to coverage are also important for promoting early prenatal care. Outreach and education about the importance of prenatal care may also be important strategies to improve early prenatal care. Given our finding that early care was significantly less likely to occur among women who felt that their prenatal care was not "very important" to others, outreach and education to promote early prenatal care should probably be targeted broadly to low-income communities rather than only to low-income women of reproductive age.

² Medicaid Section 1115 waivers, authorized by the Social Security Act, allow states more flexibility to extend the Medicaid program to populations that normally would not qualify for coverage.

The impact of low educational attainment and poverty on prenatal care initiation indicate the need for those concerned with prenatal care to expand the policy focus beyond the health care sector. Policy efforts to achieve desired rates of early prenatal care should also focus on women before they become pregnant and address issues outside the immediate control of the health sector. Addressing issues beyond the health care arena calls for multisectoral planning and additional resources directed to address relevant problems such as low educational attainment and the multiple challenges associated with poverty. Improving women's educational achievement and both encouraging the use of and reducing barriers to family planning are important for many reasons; our findings suggest they should be serious considerations among policy options to improve access to early prenatal care.

CONCLUSION

Now and in the near future in California and other states, additional efforts may be needed to sustain the accomplishments of the last decade. In light of the worsening economy nationwide and widespread job losses, it is likely that more Americans, including women, will live in poverty and more will be uninsured, with likely detrimental consequences on receipt of prenatal care. In the year 2000, 18.5 percent of women aged 18-44 were uninsured; rates were considerably higher among African American and Latina women [Urban Institute estimates, 2002]. Although many newly unemployed people qualify to continue their health insurance coverage under federal COBRA-1985 regulations, many will be unable to afford the premiums and thus will become uninsured. Nationwide, Medicaid "...is under increasing strain due to declining tax revenues, rising health care costs and increasing caseloads" [Henry J. Kaiser Family Foundation, Kaiser Commission on Medicaid and the Uninsured, 2002]. Given that the size of the budget shortfall in California exceeds \$20 billion, significant budget cuts affecting health and other social services and/or public health programs such as outreach and education are already anticipated at the state and county levels in California. These cuts also could lead to reversals in women's improved use of prenatal care.

California succeeded in improving prenatal coverage and care in the 1990s despite more restrictive federal legislation and increases in poverty and unemployment during that time period. This indicates that this state and others can — with sufficient political will at the state and federal levels, attention to the multi-faceted nature of barriers to care, and conscientious application of the best available knowledge — make further progress toward the goal of timely prenatal care for all women.

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ACCESS TO PRENATAL CARE IN CALIFORNIA

TECHNICAL APPENDIX

OVERVIEW OF METHODS

This section provides a general description of the data sources, study samples, variables, and analysis plans used in Chapters 2-5. The data sources and variables are described in more detail in subsequent sections.

CHAPTER 2

Data source: California birth certificate records, 1980-1999.

Sample: All women delivering in California during 1980-1999 (n=10,192,512).

Dependent variables: Timing of prenatal care initiation, adequacy of the number of visits, principal payer for prenatal care.

Independent variables: Maternal age, education, parity, race/ethnicity, place of birth, marital status, principal payer for prenatal care.

Statistical analyses: Overall and within subgroups, we calculated the proportion of women each year with early prenatal care (1980-1999) and with an adequate number of prenatal visits (1989-1999). We also calculated the proportion of women from 1989-1999 who had private, Medi-Cal, or “other” prenatal insurance coverage, or who were uninsured. Using bivariate analyses, we then determined the percent of women with early prenatal care and adequate numbers of visits by insurance and by maternal characteristics.

Statistical software used: SAS

CHAPTER 3

Data source: Maternal and Infant Health Assessment (MIHA), 1999.

Sample: All women in MIHA (n=3,483)

Dependent variables: Timing of prenatal care initiation, adequacy of the number of visits, awareness of pregnancy.

Independent variables: Awareness of pregnancy, family income, principal payer for prenatal care, maternal age, education, parity, race/ethnicity, place of birth, marital status, whether the woman smoked during pregnancy, whether the pregnancy was unintended, whether the woman had a usual source of pre-pregnancy care, and whether she believed that her receipt of prenatal care was “very” important to those close to her.

Statistical analyses: We first described prenatal care utilization overall and by maternal characteristics for all women in the weighted MIHA data set. We then described (i) the timing of prenatal insurance coverage and (ii) the timing of prenatal care initiation by when prenatal coverage began.

Statistical software used: SUDAAN

CHAPTER 4

Data source: Maternal and Infant Health Assessment (MIHA), 1999.

Sample: Women in the MIHA sample who: reported family incomes during pregnancy at or below 200% of poverty and thus were income-eligible for Medi-Cal maternity coverage; were uninsured before pregnancy and either obtained Medi-Cal coverage during pregnancy or remained uninsured; and provided information on sociodemographic characteristics, the timing of their first attempts to get Medi-Cal, and the timing of their Medi-Cal enrollment (n=654).

Dependent variables: Timing of prenatal care initiation, timing of Medi-Cal enrollment, timing of first attempt to apply for Medi-Cal, awareness of pregnancy.

Independent variables: Awareness of pregnancy, family income, maternal age, education, parity, race/ethnicity, place of birth (for Latinas only), and marital status.

Statistical analyses: Using weighted MIHA data, we first calculated the percent of women with delayed awareness of pregnancy among all women and among women with delayed or no Medi-Cal enrollment. Then, among women who were aware that they were pregnant in the first trimester, we examined maternal characteristics and the prevalence of potential barriers to timely Medi-Cal application and enrollment. We next determined when during pregnancy these women (*i*) first tried to apply for Medi-Cal and (*ii*) actually enrolled. We also examined the timeliness of prenatal care initiation in relation to when women first tried to apply for Medi-Cal and when they actually enrolled in Medi-Cal.

Using logistic regression, we examined the barriers to a first trimester (timely) attempt to obtain Medi-Cal among women in our sample who tried to apply for Medi-Cal at some time during pregnancy (n=585), regardless of whether they actually enrolled during pregnancy. We also examined independent barriers to timely Medi-Cal enrollment among women who tried to obtain Medi-Cal in the first trimester (n=425). We first calculated the unadjusted odds of a delayed first attempt to obtain Medi-Cal or of delayed Medi-Cal enrollment for each potential barrier separately. All barriers found to be statistically significant in unadjusted analyses were then entered into a multiple logistic regression model, controlling for sociodemographic characteristics (maternal age, total number of live births, family income, education, marital status, race/ethnicity, and place of birth for Latina women).

Statistical software used: SUDAAN

CHAPTER 5

Data source: Maternal and Infant Health Assessment (MIHA), 1999.

Sample: Women in the MIHA sample who were covered by either Medi-Cal or private insurance during the first trimester of pregnancy and either reported family incomes at or below 200% of poverty or did not report income information (n=1,623).

Dependent variables: Timing of prenatal care initiation, awareness of pregnancy.

Independent variables: Awareness of pregnancy, family income, maternal age, education, parity, race/ethnicity, place of birth (for Latinas only), marital status, whether the woman smoked during pregnancy, whether the pregnancy was unintended, whether the woman had a usual source of pre-pregnancy care, and whether she believed that her receipt of prenatal care was “very” important to those close to her.

Statistical analyses: We first compared the percent of women with delayed awareness of pregnancy overall and among women with delayed or no prenatal care. Using multiple logistic regression, we then examined factors related to delayed awareness of pregnancy. Using univariate methods, we examined barriers to use of family planning among women who were not using birth control but did not want to become pregnant. Focusing on women in the sample with early awareness of pregnancy, we used multiple logistic regression to determine the significant non-insurance factors related to timing of prenatal care initiation. All analyses were conducted using weighted MIHA data.

Statistical software used: SUDAAN

DATA SOURCES

Birth Certificate Records

Data were obtained from the California Department of Health Services, Center for Health Statistics' Birth Statistical Master File public-use files for live births occurring to California residents. For analyses described throughout the report, birth certificate files provided information on maternal age, parity, gestational age of the infant, and the number of prenatal visits. For the analyses reported in Chapter 2, birth certificates were the sole source of data on the following variables: timing of prenatal care initiation, adequacy of the number of visits, principal payer for prenatal care, maternal age, education, parity, race/ethnicity, place of birth, marital status, and principal payer for prenatal care. The total sample for Chapter 2 included all women who gave birth to live infants in California from 1980 through 1999; only information from the first-born infant's birth certificate was included for multiple births. Because data on education and principal prenatal payer were first available in California birth certificates in 1989, analyses including those variables were limited to the subsample of live births to California resident women from 1989 through 1999; in addition, data on principal payer were available only for women with some prenatal care.

Limitations of birth certificate data: Birth certificate data provide limited data for exploring barriers to care. They do not describe when prenatal insurance coverage began during pregnancy, when women were first aware of their pregnancies, family income, or whether pregnancies were planned or wanted.

The Maternal and Infant Health Assessment (MIHA)

Data for Chapters 3-5 in this report were obtained from the 1999 California Maternal and Infant Health Assessment (MIHA), a collaborative project of the California Department of Health Services, Maternal and Child Health Branch, and researchers at the University of California, San Francisco. MIHA is an annual statewide-representative survey of mothers delivering live infants in California. The MIHA sampling frame includes women who are California residents ages 15 years or older, with births resulting in no more than triplets. The MIHA sample is selected according to region of residence in California, maternal race/ethnicity, and maternal

education. African Americans are over-sampled to allow for a sufficient sample size to measure changes in maternal and child health outcomes in that group of women and infants over time, given concern over their elevated rates of low birth weight and infant mortality.

The 1999 MIHA survey includes questions about insurance coverage before and during pregnancy, barriers to Medi-Cal enrollment, pregnancy intendedness/wantedness and family planning, timing of prenatal care initiation, barriers to early prenatal care, health behaviors during pregnancy, infant follow-up care, breastfeeding, infant sleep position, other measures of maternal and infant health, and socioeconomic and demographic characteristics of the women. Self-administered surveys were mailed to women in English and Spanish 10-14 weeks after they gave birth. Reminder postcards were mailed to non-respondents about three weeks after the initial mailing, and a second mailing of the questionnaire was sent out to the remaining non-respondents approximately two weeks after the postcard. We attempted to contact by telephone those women who did not respond by mail, as well as those whose surveys were returned due to incorrect addresses. Questionnaires were completed by telephone for about 26% of respondents. Nearly 79% of the surveys were completed in English and 21% in Spanish.

In 1999, 3,483 women completed the MIHA survey, yielding an overall response rate of 70.1%. Somewhat lower, but still acceptable, response rates were seen for subgroups that traditionally are less likely to participate in mail/telephone surveys: 63% of African Americans, 64% of Latina women born outside of the United States, and 62% of women who were not high-school graduates responded. The MIHA study sample appears very similar to the population of eligible births statewide during the study period, taking into consideration the deliberate over-sampling of African Americans (see Technical Appendix Exhibit 1). The survey data were linked with birth certificate data for 1999 to provide additional information on the MIHA sample.

Appendix Exhibit 1. Characteristics of women in the MIHA study sample compared with birth certificate data: California, 1999.

Characteristics ¹	Women in MIHA study, unweighted data (n=3,483)	All women sampled for MIHA (including non-responders) (n=4,967)	Women in MIHA study, weighted data (n=156,513)	All eligible births in California (Feb-May, 1999) (n=156,514)	All births in California (Feb-May, 1999) (n=157,310)
	%	%	%	%	%
Principal prenatal payer					
Uninsured throughout pregnancy	1.9	2.5	1.9	2.6	2.7
Medi-Cal	39.1	42.6	39.2	38.9	39.0
Private	57.1	52.9	56.7	56.4	56.3
Other	2.0	2.1	2.2	2.0	2.1
Age					
15-17 years	4.3	4.3	3.9	4.0	4.2
18-19 years	7.6	8.0	7.0	7.0	6.9
20-34 years	73.7	73.9	74.5	73.7	73.5
35 years or more	14.4	13.8	14.6	15.4	15.3
Level of education					
<= 8th grade	10.2	12.0	10.9	11.8	11.9
Some high school	19.0	21.0	18.2	17.9	17.9
High school graduate	27.0	27.4	27.6	29.3	29.2
Some college	21.2	20.5	20.2	20.0	20.0
College graduate or more	22.6	19.1	23.0	21.1	21.0
Parity					
1st birth for this woman	40.7	38.8	40.7	39.2	39.4
2-4 births	54.8	55.7	55.0	55.9	55.7
5 or more births	4.5	5.5	4.3	4.9	4.9
Ethnicity					
African American	15.4	17.2	6.7	6.6	6.6
Asian/Pacific Islander	8.4	8.6	10.2	11.5	11.4
European American	34.1	29.3	36.0	34.7	34.7
Latina	41.5	44.3	46.3	46.7	46.8
Other	0.6	0.7	0.8	0.6	0.6
Birthplace outside of United States	37.2	39.8	41.0	43.4	43.3
Delayed prenatal care	15.9	18.1	16.8	16.4	16.5
Low birthweight infant	5.7	6.4	5.2	5.4	5.4

¹ The variables used in this comparison were selected from those available in the confidential birth certificate data file for California, 1999 (e.g., marital status was not available in the confidential data and is therefore not presented here).

MIHA data are statistically weighted during analyses so that results can be generalized to the statewide population of eligible women with live births in 1999. The main component of the analysis weights is the inverse of the sampling fraction (i.e., the probability that a given woman will be selected for the sample), used to adjust for the stratified sampling design and for the over-sampling of African American women. The second component of the analysis weights is a post-stratification adjustment for non-response bias; based on the observed non-response after sampling, this adjustment is intended to compensate for bias due to differences in known characteristics between responders and non-responders. The effect of the non-response adjustment is to give additional weight in the final sample to the responses of respondents with characteristics similar to those of women who did not respond, based on the assumption that these two groups of women would provide similar answers to the survey questions. We checked the validity of this procedure by comparing statewide estimates based on survey data and on birth certificate data for variables included in both sources, before and after adjustment for non-response. After adjustment, findings based on survey data were more similar to those based on birth certificate data, indicating that adjustment for non-response was appropriate (see Technical Appendix Exhibit 1).

Limitations of MIHA: MIHA is only conducted in English and Spanish; women (e.g., recent Asian immigrants) who do not read or speak either language are likely to be under-represented in these data. Although the MIHA sample is representative of childbearing women statewide, the implementation of the Medi-Cal expansions and the improvements in prenatal care examined in this report were likely to vary across counties within California and MIHA data do not provide reliable county-level estimates. However, MIHA does provide representative estimates for three regions — the San Francisco Bay Area, Los Angeles County, and San Diego County — where approximately half of the state’s births occur. In addition, the 1999 MIHA survey had only limited information on barriers among the 80 uninsured women who were income-eligible but did not enroll in Medi-Cal at any time during pregnancy, particularly if they had never tried to obtain Medi-Cal coverage. The structure of the 1999 survey also did not allow us to examine certain potential barriers to prenatal care use, such as transportation or child care, which have been reported in the literature.

The Access to Maternity Care Study

We occasionally refer in this report to a postpartum survey of mothers who gave birth in California during 1994/1995. In this survey, which was called the Access to Maternity Care study, thirty- to 45-minute, structured, face-to-face interviews were conducted in English or Spanish with 10,132 postpartum women during their delivery stays at 19 California hospitals from August 1994 through July 1995. The survey included detailed questions on income, insurance, sociodemographic characteristics, and prenatal care utilization, and on women’s knowledge, attitudes, beliefs, and circumstances during pregnancy that could affect their use of prenatal care. Using 1991 statewide birth certificate data, participating hospitals were randomly selected from eight strata defined according to their delivery population characteristics (proportion of African-American births, geographic region of the State, and-

proportion of privately insured deliveries). Military hospitals, hospitals participating in California's Centers for Disease Control and Prevention-affiliated Pregnancy Risk Assessment Monitoring System, and hospitals with fewer than 600 deliveries in 1991 were excluded. At least two hospitals were selected in each of the eight strata.

Women at the sampled hospitals were eligible to be interviewed if they had live births during the hospital stay, spoke English or Spanish, were at least 15 years old and legally emancipated if under 18, and were not incarcerated during pregnancy; they were ineligible if nursing staff believed being interviewed would interfere with their care. Based on these criteria, nearly 93% of the 19,796 women delivering at the study hospitals during the study period were eligible to participate. Approximately 8% of eligible women declined to participate, 2% ended the interview before completion, and 35% were discharged before interviewers could approach them; overall, completed interviews were obtained from 55% (n=10,165) of all eligible women including those discharged before interviewers could approach them, or 86% of eligible women who were approached. The final sample of 10,132 excluded 33 women who had received all of their prenatal care outside of California. The overall weighted sample appeared representative of the statewide delivery population. [Braveman, et al., 1999]

Limitations of ATM data: Although the overall ATM sample appeared to be representative of the statewide maternity population in 1994/1995, findings from this study cannot be generalized to very young teenagers, rural residents, or immigrants who do not speak English or Spanish.

VARIABLE DEFINITIONS

The variables described below were used in one or more chapters of this report.

- *Timing of first prenatal care visit* (defined as *early prenatal care* if the first visit occurred during the first trimester — i.e., first three months — of pregnancy; *delayed care* if the first visit occurred in the second or third trimester; or *no care*). For Chapter 2, this information was obtained from birth certificate data; all other chapters used self-reported time of prenatal care initiation based on MIHA data.
- *Adequacy of the number of prenatal visits* (an *adequate number of visits* was defined as at least 80% of the recommended number of prenatal visits for the time from first visit to delivery; a *less than adequate number of visits* was defined as fewer than 80% of the recommended number of visits for the time in care). Using Kotelchuck's index [Kotelchuck, 1994], the adequacy of the number of visits was calculated using information from birth certificates.
- *Timing of Medi-Cal enrollment* (*early enrollment* in the first trimester of pregnancy, compared with *delayed enrollment* in the second or third trimester). Used only in Chapter 4, derived from MIHA data.

- *Timing of first attempt to obtain Medi-Cal* (an attempt to obtain Medi-Cal in the first trimester was considered *early*, all other attempts were considered *delayed*). Used only in Chapter 4, derived from MIHA data.
- *Timing of pregnancy awareness* (*early awareness of pregnancy* in the first trimester, and *delayed awareness* after the first trimester). Based on a woman's self-report in MIHA data of when she first knew for sure that she was pregnant.
- *Family income* (as a percentage of the federal poverty level, which was \$16,700 for a family of four in 1999). Income was determined based on self-reported estimates in MIHA data of total family income in 1999, before taxes, and on the number of people supported by that income. In the MIHA survey, women were asked to choose a category that most closely matched their total family income from all sources (including jobs, welfare, disability, unemployment, child support, interest, dividends, and support from a family member). These categories were then used, along with the number of people supported by that income, to calculate income as a percent of the federal poverty level for the given family size. To conform with eligibility criteria for Medi-Cal, pregnant women were counted as two people.
- *Principal payer for prenatal care* (*uninsured throughout pregnancy, Medi-Cal, private, or other [including military coverage and other governmental coverage]*). For the analyses of trends in Chapter 2, this information was obtained from birth certificate data; women with Medi-Cal, private, or other coverage were considered to be insured regardless of when their coverage began during pregnancy. In birth certificate data, principal payer was only recorded for women who received prenatal care. In other chapters, we used MIHA data to examine when coverage began relative to pregnancy (i.e., before pregnancy, first trimester, second/third trimester).
- *Age* (Chapter 2: *8-17 years, 18-19 years, 20-34 years, 35 years or older*; Chapters 3-5: *15-19 years, 20 years or older*). Maternal age was obtained from birth certificate data. In Chapters 3-5, small numbers precluded examining 15-17 year-olds separately from older teens. The MIHA survey did not include girls younger than 15 years, who represent a very small proportion of childbearing women in California (0.09% in 1998 [CA DHS, 2000]).
- *Education* (Chapter 2: *less than high school, high school graduate or equivalent, some college, college graduate/plus*; Chapters 3-5: *less than high school, high school graduate or equivalent, more than high school*). For Chapter 2, education in number of completed years was obtained from birth certificate data and grouped according to standard levels, i.e., a woman completing 8 years was considered to have finished eighth grade, 12 years was considered high school, and 16 years was considered college. For all other chapters, we used women's self-reports of completed educational level based on MIHA data.

- *Parity, or number of live births* (Chapter 2: *1st birth, 2nd-4th birth, or 5th or subsequent birth*; Chapters 3-5: *1st birth/ primiparous or greater than 1st birth /multiparous*). Information on parity was obtained from birth certificate data. Although women who have had 5 or more live births are often considered at high risk of poor prenatal care utilization, limited numbers precluded examining these women separately in Chapters 3-5.
- *Race/ethnicity* (grouped in mutually exclusive categories as *African American, Asian/Pacific Islander, European American [including Middle Eastern, as is standard practice of the U.S. Census Bureau], Latina, Native American and “Other”*). We conceptualized race/ethnicity as reflecting the large geographic region of a woman’s family origin, which could affect her (or her baby’s) experiences or her responses to them. In Chapter 2, the information on race/ethnicity was obtained from birth certificate data, and women were grouped either as European American or as women of color. In Chapters 3-5, self-reported race/ethnicity was obtained from MIHA data; because of small numbers, we combined women of Asian, Pacific Islander, Native American, and “other” ethnicities.
- *Birthplace (born in the United States or immigrant)*. This information was obtained from birth certificate data.
- *Marital status* when the baby was born (*married or unmarried*). Imputed marital status is included in the public-use birth certificate data used in Chapter 2. In Chapters 3-5, marital status was obtained from self-reported MIHA data.
- *Smoking during pregnancy (smoked versus never smoked)*. Examined as a marker of women’s general health-related behaviors and attitudes that might influence prenatal coverage and care. Obtained from MIHA data.
- *Whether the pregnancy was unintended*. Included because delayed awareness of pregnancy both could occur more often in unintended pregnancies and could reflect a woman’s feelings about being pregnant, each of which could influence whether and when a woman seeks prenatal coverage and care. Obtained from MIHA data.
- *Whether the woman had a usual source of pre-pregnancy care*. Included because it could affect a woman’s likelihood of experiencing delays in prenatal care related to confirming pregnancy, finding an obstetric provider, and/or getting information about Medi-Cal. Obtained from MIHA data.
- *Whether the woman believed that her receipt of prenatal care was “very” important to those close to her*. Included as a previously reported barrier to early prenatal care. Obtained from MIHA data.



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