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MCH/CCS-04

The Effect of Welfare Reform on Low-Income Pregnant Women's Insurance Status and Prenatal Care Utilization

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Executive Summary of the Comprehensive Final Report

MCH/CCS-04

The Effect of Welfare Reform on Low-Income Pregnant Women's Insurance Status and Prenatal Care Utilization

Statement of the Problem

On August 22, 1996 Congress passed the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA), in which eligibility for Medicaid was decoupled from eligibility for welfare assistance. PRWORA eliminated the guarantee of cash assistance to all eligible individuals, limited receipt of benefits to no more than five years over a lifetime, and mandated that recipients adhere to work requirements to receive benefits. For low-income women, Medicaid is maintained as a federal entitlement; families who are not eligible for cash assistance may still qualify for Medicaid if they meet the eligibility standards for cash assistance that were in place on July 16, 1996.

Given this separation between qualification for cash assistance and for Medicaid, low-income women either losing or denied cash assistance may not know they are eligible for Medicaid or how to access benefits. In addition, because the eligibility rules for Medicaid are separated from those for cash assistance, among those receiving cash assistance, Medicaid enrollment rates may be affected. Also of concern is that women who are forced into mandatory job search either before enrolling in cash assistance or after one or two months of enrollment, are not eligible for transitional Medicaid assistance (TMA), since receiving 6-12 months of TMA is contingent on a family having received Medicaid in three of the six months before losing Medicaid eligibility due to increased income. Finally, because the Medicaid eligibility levels for non-cash assistance non-pregnant women are so low, even a moderately paying full-time job is likely to push non-pregnant women above the eligibility standard for Medicaid.

The insurance status of low-income women during pregnancy should not have been affected by welfare reform as the Medicaid expansions of the late 1980's/early 1990's allow a pregnant woman to be eligible for Medicaid if her income is less than 133% of the Federal Poverty Level (FPL). On the other hand, the insurance status of low-income women "prior" to pregnancy might have been significantly affected by welfare reform, especially among those very poor women who, regardless of pregnancy, would likely have been Medicaid recipients in the period before implementation of PRWORA. Understanding the impact of welfare reform on women's insurance status prior to pregnancy is important because lack of insurance coverage prior to pregnancy is related to a woman's health status as she enters pregnancy, and her pre-pregnancy health status is likewise related to health problems during pregnancy such as diabetes and hypertension. Very low-income women are at elevated risk for many of these health problems and lack of health insurance can exacerbate that risk. In addition, the insurance status of women prior to pregnancy may also affect the timing of a woman's entrance into prenatal care.

After several decades of policy efforts to improve access to and utilization of prenatal care, it is essential to monitor changes in welfare eligibility and health insurance coverage and develop policies to counteract any negative impacts of these changes on women's initiation and use of prenatal care. As such, this study examined the impact of the passage of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 on low-income women's insurance status and use of prenatal care.

Research Objectives

Among women who report public assistance as a source of income during the 12 months prior to the PRAMS interview:

- 1) the percent who report Medicaid insurance coverage for prenatal care will be lower in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).

- 1a) the percent who report Medicaid insurance coverage prior to pregnancy will be lower in the years following welfare reform (1998-2000) than in the year prior to the full implementation of welfare reform (1996).
- 2) the percent who report financial barriers to prenatal care will be higher in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).
- 3) the percent who have inadequate prenatal care (based on timing of entry into prenatal care and the APNCU) will be higher in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).
 - 3a) the percent who are both uninsured during pregnancy and have inadequate prenatal care (based on timing of entry into prenatal care) will be higher in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).

Among very low-income women who do not report public assistance as a source of income during the 12 months prior to the PRAMS interview:

- 4) the percent who report health insurance coverage during the prenatal period will be lower in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).
 - 4a) the percent who report health insurance coverage prior to pregnancy will be lower in the years following welfare reform (1998-2000) than in the year prior to the full implementation of welfare reform (1996).
- 5) the percent who report financial barriers to prenatal care will be higher in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).
- 6) the percent who have inadequate prenatal care (based on timing of entry into prenatal care and the APNCU) will be higher in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).
 - 6a) the percent who are both uninsured during pregnancy and have inadequate prenatal care (based on timing of entry into prenatal care) will be higher in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).

Study Design and Methods

This study used Pregnancy Risk Assessment Monitoring System data (PRAMS) data from 8 states (Alaska, Florida, Maine, New York State, Oklahoma, S. Carolina, Washington and West Virginia) for the years 1994-96 and 1998-2000 to examine the impact of the PRWORA on the insurance coverage and prenatal care utilization of women receiving public assistance as well as low-income women who are not recipients of public assistance. We used PRAMS variables related to sources of income, marital status and parity, and knowledge about each state's income eligibility for Medicaid in 1996 (prior to welfare reform) to define a population on public aid (at the time of the PRAMS interview, women whose only source of income was public aid, who were unmarried and who were multiparous), a similar population of a very low-income women not on public aid, and a comparison population of women whose incomes were greater than 400% FPL, and then compared the insurance and prenatal care experience of these three groups of women in the periods before and after welfare reform using simple statistical comparisons. Based on this analysis, it was clear that the major effect of welfare reform on low-income women's insurance status and prenatal care utilization was among a particular group of women—those with Medicaid payment for delivery but who were uninsured prior to pregnancy. We defined this group as being in the *Medicaid GAP* (n=71 in 1996 and 113 in 1998-2000). With this specific vulnerable population identified, more detailed univariate and multivariable analysis was then conducted to determine the effect of welfare reform on women in the *Medicaid GAP*. This more detailed analysis was based on data from 1996 and 1998-2000 as the data for the prior to pregnancy insurance information was not available before 1996 in most states.

Findings

For both very low-income women and women receiving cash assistance, Medicaid was the major payer for both prenatal care and delivery in both 1994-1996 and 1998-2000 with no significant change between the two time periods. However, for women on public aid at the time of their PRAMS interview, the percent with Medicaid insurance coverage prior to pregnancy declined from 75.1% in 1996 to 59.9% in 1998-2000 (only 1996 data were used as data for insurance prior to pregnancy were not available on the PRAMS questionnaire in 1994-1995). There were no significant changes in prenatal care utilization between 1994-1996 and 1998-2000 for any of the three major groups (> 400% FPL, public aid women, very low-income women). However, among a specific subgroup of public aid women, those with no insurance prior to pregnancy, there was a marginally significant ($p=0.08$) decrease in first trimester entry into prenatal care with the percentage in 1996 at 66.4%, dropping to 45.1% by 1998-2000. Likewise, among public aid women with Medicaid payment for delivery, there was also a marginally significant ($p=0.08$) decrease in first trimester entry from 67.4% in 1994-1996 to 22.8% in 1998-2000. These findings, coupled with the finding that there was a significant decline in the percent of Public Aid Only women with Medicaid insurance coverage prior to pregnancy even though 91% of these women had Medicaid coverage for their delivery in 1998-2000, suggested the need for more exploration.

Thus, based on these findings, we further restricted our analysis to public aid women with Medicaid payment for delivery, and then examined whether welfare reform as measured by time period (1996 versus 1998-2000) was an independent risk factor for having no insurance prior to pregnancy (*Medicaid GAP*) versus having Medicaid insurance prior to pregnancy (*non-Medicaid GAP*).

The crude odds ratio for the association between welfare reform and being in the *Medicaid GAP* was 3.00 (95% CI, 1.6-5.6); in other words, in the period after welfare reform, women on public aid with Medicaid insurance for delivery, were three times more likely to be uninsured prior to pregnancy than their counterparts in the period before welfare reform. In multivariable analysis, a race/ethnicity interaction was identified. The relationship between welfare reform and being in the *Medicaid GAP* for Whites and Hispanics combined was 11.9 (95% CI, 4.3-32.9), while the relationship between welfare reform and being in the *Medicaid GAP* for the African-Americans and Others group was 1.5 (95% CI, 0.6-3.6).

Public aid women in the *Medicaid GAP* in the period after welfare reform (1998-2000) were significantly less likely to obtain first trimester care ($p=.03$) compared to *Non-GAP* women and significantly more likely to state that they did not obtain prenatal care as early as they wanted. The crude odds ratio for the relationship between being in the *Medicaid GAP* and failure to access care in the first trimester in 1998-2000 was 2.6 (95% CI, 2.4- 2.8). In a multivariable model for the relationship between the *GAP* and first trimester initiation, an interaction with both race/ethnicity and education was found. While the estimate is unstable, women in the *GAP* with less than a High School (HS) education and who were White or Hispanic were almost 18 times as likely (95% CI, 4.3-71.0) as women not in the *GAP* to delay initiation of prenatal care beyond the first trimester. Although not significant, both women in the *GAP* who were African-American or Other race/ethnicity with less than high school education, and women who were White or Hispanic with a high school education or greater, had approximately 3X the likelihood of not receiving first trimester prenatal care compared to women not in the *GAP*. However, there was no association between being in the *GAP* and first trimester initiation for women who were African-American or Other with greater than a HS education.

Recommendations

The finding of a significantly increased *Medicaid GAP* among very low-income women after the implementation of welfare reform raises a major policy concern. Although the separation of eligibility for Medicaid from cash assistance, the continuation of Transitional Medicaid Assistance (TMA), and the assumption that women would gain private insurance as they moved from welfare to work, were all supposed to ensure continued access to insurance for very poor women in the aftermath of welfare reform, it is clear that many low-income women of reproductive age are only gaining access to insurance

once they are already pregnant and enter prenatal care. Not only are these uninsured women at increased risk of entering pregnancy with health problems, from the data presented here, it is clear that in the period after welfare reform, women in the *Medicaid GAP* are at significantly greater risk of delaying entry into prenatal care.

While the Healthy People 2000/2010 objective for prenatal care is for 90% of women to begin prenatal care in the first trimester of pregnancy, for women in the *Medicaid GAP*, it appears that this objective is far from being achieved; for example, public aid women in the *Medicaid GAP* had a first trimester initiation rate of 47.3% in 1998-2000 compared to 70.0 for women not in the *GAP*. These data suggest that a very vulnerable group of pregnant women are delaying entry into care, placing these women and their offspring at significant risk of adverse maternal, fetal and infant outcomes.

These findings have implications for the Medicaid expansions of the late 1980's and 1990's which provide Medicaid coverage for low-income as well as higher income women (39 states cover pregnant women at or above the federal mandate of 133% FPL and 13 states cover pregnant women at or above 200% FPL) during pregnancy and immediately postpartum. For women covered by the Medicaid expansions for pregnancy, there was no expectation of pre-pregnancy Medicaid coverage. In the aftermath of welfare reform, the insurance experience of these slightly higher income women is now becoming commonplace for a group of very poor women; prior to welfare reform these poor women were likely to be Medicaid insured prior to pregnancy, and now it appears that many are only gaining Medicaid coverage as they enter prenatal care. The results of this study indicate that lack of pre-pregnancy coverage is a major contributor to the delay of entry into prenatal care. As such, this finding suggests that the availability of Medicaid coverage during pregnancy may be an insufficient strategy for improving prenatal care utilization and pregnancy outcomes not because the relationship between prenatal care and pregnancy outcomes is uncertain, but rather because the Medicaid expansions (which now are the likely method of insurance coverage for very low-income women as well as moderately low income women during pregnancy) only pay for coverage once prenatal begins, or even worse, once a delivery takes place and a hospital seeks reimbursement for an uninsured woman. As such, the Medicaid expansions will continue to be of equivocal benefit if they pay for a woman's delivery but do not ensure that she has access to and is receiving preconception or early pregnancy care.

One strategy that many states are taking to partially increase the insurance coverage of non-pregnant women of reproductive age is the enactment of Medicaid family planning waivers. These waivers are used to extend Medicaid coverage for family planning services to non-pregnant women who are not receiving cash assistance. However, as this approach is limited to family planning services, even if broadly defined, it may not be sufficient to assist women to obtain health care coverage for chronic illnesses such as obesity and diabetes. Therefore, there is a concerted need to rethink the focus of both the Medicaid expansions and Medicaid family planning waivers and to consider Medicaid coverage for all uninsured women of reproductive age, pregnant or not, as a national strategy to improve prenatal care utilization and to improve pregnancy outcomes.

Finally, as welfare reform legislation is still being debated, it is critical to revisit the Medicaid-related provisions of this policy, and to consider whether approaches such as the separation of eligibility for Medicaid from cash assistance and the continuation of Transitional Medicaid Assistance (TMA) are sufficient safeguards to insure timely access to health care as women move from welfare to work. This becomes particularly important at a time when states are cutting their Medicaid budgets and are more likely to preserve children's coverage than adult coverage.

List of Products

- **Conference Presentations**

Adams, K., Gavin, N. and Handler, A. Determinants of insurance coverage and prenatal care use: the role of welfare reform. Presentation at the 131st Annual Meeting of the American Public Health Association, November 18, 2003.

Handler, A., Rosenberg, D., Adams, K., Zimbeck, M. And Rankin, K. Effect of welfare reform on the insurance status and prenatal care experience of public aid recipients. Presentation at the Eighth Annual Maternal and Child Health Epidemiology (MCH EPI) Conference, Clearwater Beach, Florida, December 12, 2002.

Handler, A., Rosenberg, D., Adams, K., Zimbeck, M. And Rankin, K. Effect of welfare reform on the insurance status and prenatal care experience of public aid recipients. Presentation at the 130th Annual Meeting of the American Public Health Association, Philadelphia, PA, November 13, 2002.

- **Related Papers Published**

Adams, K., Gavin, N., Handler, A., Manning, W. and Raskind-Hood, C. Transitions in Insurance Coverage from before pregnancy through delivery in nine states, 1996-1999. Health Affairs 2003; 22(1): 219-229.

- **Related Papers submitted**

Adams, E.K., Gavin, N., Manning, W. and Handler, A. Welfare reform, insurance coverage pre-pregnancy and delays in Medicaid enrollment: an Eight State Study. Submitted for publication to Inquiry.

- **Book Chapters**

Handler, A., Zimbeck, M., Chavkin, W. and Adams, E.K. The Impact of Welfare Reform on Women's Reproductive Health. In *Health and Welfare for Families in the 21st Century*. Edited by H. Wallace, G. Green, K. Jaros. Jones and Bartlett Publishers, Boston, 2003.

I. Introduction

A. Nature of the Research Problem

On August 22, 1996 Congress passed the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA), in which eligibility for Medicaid was decoupled from eligibility for welfare assistance [formerly called Aid to Families with Dependent Children (AFDC) and currently renamed as Temporary Assistance for Needy Families (TANF)]. The PRWORA went into effect on July 1, 1997. With TANF, there is no longer a guarantee of cash assistance to all eligible individuals, receipt of benefits is limited to no more than five years over a lifetime, and recipients must adhere to work requirements to receive benefits. For low-income women, Medicaid is maintained as a federal entitlement; families who are not eligible for TANF may still qualify for Medicaid if they meet the eligibility standards for AFDC that were in place on July 16, 1996 (new category of eligibility called Section 1931); these income eligibility levels were quite low, although the states had the option of expanding these income eligibility thresholds (Mann, 2002; Maloy et al., 2002).

Given this separation between qualification for TANF and for Medicaid, low-income women either losing or denied TANF assistance may not know they are eligible for Medicaid or how to access benefits. In addition, because the eligibility rules for Medicaid are separated from those for cash assistance, among those receiving TANF assistance, Medicaid enrollment rates may be affected. According to Rosenbaum and Darnell (August, 1996) “several studies, and 30 years of experience with Medicaid, underscore that the “take-up” rate for Medicaid (that is, the rate at which eligible persons enroll in the program) is significantly higher in the case of persons who automatically qualify for Medicaid because of their receipt of cash assistance (either AFDC or SSI). In the case of persons who must apply separately for Medicaid, the take-up rate is much lower...”. As such, it is possible that some women receiving TANF, because they are no longer automatically enrolled in Medicaid, may in fact, fail to enroll in Medicaid [Note: despite the separation of TANF from cash assistance, in practice, Medicaid is available to current cash assistance recipients, (KFF, April 2003)].

Also of concern is that women who are forced into mandatory job search either before enrolling in TANF or after one or two months of enrollment, are not eligible for transitional Medicaid assistance (TMA), since receiving 6-12 months of TMA is contingent on a family having received Medicaid in three of the six months before losing Medicaid eligibility due to increased income (Ellwood, 1999; Darnell, et al. 2000; KFF, 2002). Finally, because the Medicaid eligibility levels for non-TANF non-pregnant women are so low, even a moderately paying full-time job is likely to push non-pregnant women above the eligibility standard for Medicaid (O’Campo and Rojas-Smith, 1998). This is despite the fact that states had the option of expanding these income eligibility thresholds (Mann, 2002; Maloy et al., 2002). Unfortunately for the women losing access to Medicaid insurance, the prospect of obtaining private health insurance coverage is dismal. A survey of mothers who left welfare from 1995-1997 found that only 23% had private insurance coverage (Garrett and Holahan, 1999). A more recent survey of employed former TANF recipients found that 33.1% had employer health insurance in 1999 and 32.6% had employer health insurance in 2002 (Loprest, 2003).

In part because of this “Medicaid eligibility maze” (Ellwood, 1999), national data indicate a marked decline in the Medicaid rolls for families, children and pregnant women between 1994 and 1998, without a concomitant increase in private insurance, leaving many low income women and families uninsured (Chavkin et al., 2000; Wyn et al. 2001; Mann, et al., 2002). In contrast, there were increases in Medicaid enrollment for families, children and pregnant women between 1999 through 2001 (Ellis et al., 2002), resulting from efforts to improve coverage particularly for children through the State Children’s Health Insurance Program (SCHIP) (NGA, 2001; Ellis et al., 2002), as well as from recent downturns in the economy (Ellis et al., 2002). However, increases in Medicaid coverage in 2001 and 2002 were much greater for children than for adults (Hoffman and Wang, 2003).

The decrease in Medicaid enrollment that has occurred since 1996 (Ellwood, 1999; Gold, 1999; Families USA Foundation, May, 1999; Wise et al., 1999) has happened despite the fact that also operative during this time period have been expansions in the Medicaid program which by April 1990 were

requiring states to provide Medicaid coverage to pregnant women up to 133% of FPL (Strobino et al., 1999). In fact, the insurance status of low-income women **during pregnancy** should not have been affected by welfare reform as the Medicaid expansions of the late 1980's/early 1990's allow a pregnant woman to be eligible for Medicaid if her income is less than 133% of the Federal Poverty Level (FPL) [39 states and territories cover pregnant women at or above 133% of FPL and 13 states cover women at or above 200% FPL (NGA, 2003)].

On the other hand, the insurance status of low-income women “prior” to (independent of) pregnancy might have been significantly affected by welfare reform, especially among those very poor women who, would likely have been Medicaid recipients regardless of pregnancy, in the time period before implementation of PRWORA. Understanding the impact of welfare reform on women’s insurance status prior to pregnancy is important because lack of insurance coverage prior to pregnancy is related to a woman’s health status as she enters pregnancy (Hughes and Runyan, 1995; Jack and Culpepper, 1990), and her pre-pregnancy health status is likewise related to health problems during pregnancy such as diabetes and hypertension. Very low- income women are at elevated risk for many of these health problems (Kramer et al., 2000) and lack of health insurance can exacerbate that risk. (KFF, 2003; Misra et al., 2000; Jack and Culpepper, 1990).

The insurance status of women prior to pregnancy may also affect the timing of a woman’s entrance into prenatal care (Egertter et al., 2002 and Braveman et al., 2003). In fact, the effect of welfare reform on prenatal care use is most likely to occur through a reduction in Medicaid coverage pre-pregnancy for women whose incomes are theoretically low enough to make them eligible for cash assistance or for welfare to work programs. This group of women, who before welfare reform were likely to be Medicaid recipients “prior” to pregnancy, in the aftermath of welfare reform, might only gain access to Medicaid at the time of their pregnancy or their first prenatal care visit. If lack of Medicaid coverage prior to pregnancy discourages these women from seeking prenatal care or causes them to delay prenatal care initiation, first trimester use would be decreased.

Most projects to monitor the impact of welfare reform (e.g., Urban Institute’s *Assessing the New Federalism*) have focused on the social well being of children and families, with little emphasis on the impact of welfare reform on women’s health (Chavkin et al., 1998; O’Campo and Rojas-Smith, 1998). After several decades of policy efforts to improve access to and utilization of prenatal care (IOM 1985; 1988; Behrman, 1995; Howell, 2001), it is essential to monitor changes in welfare eligibility and health insurance coverage and develop policies to counteract any negative impacts of these changes on women’s initiation and use of prenatal care. As such, this study examined the impact of the passage of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 on low-income women’s insurance status and use of prenatal care.

B. Purpose, Scope and Methods of Investigation

This study used Pregnancy Risk Assessment Monitoring System data (PRAMS) data from 8 states (Alaska, Florida, Maine, New York State, Oklahoma, S. Carolina, Washington and West Virginia) for the years 1994-96 and 1998-2000 to examine the impact of the PRWORA on the insurance coverage and prenatal care utilization of women receiving public assistance as well as low-income women who are not recipients of public assistance. We used PRAMS variables related to sources of income, marital status and parity, and knowledge about each state’s income eligibility for Medicaid in 1996 (prior to welfare reform) to define a population on public aid (at the time of the PRAMS interview, women whose only source of income was public aid, who were unmarried and who were multiparous), a similar population of a very low-income women not on public aid, and a comparison population of women whose incomes were greater than 400% FPL, and then compared the insurance and prenatal care experience of these three groups of women in the period before welfare reform and the period after welfare reform using simple statistical comparisons. Based on this analysis, it was clear that the major effect of welfare reform on low-income women’s insurance status and prenatal care utilization was taking place among a particular group of women, those with Medicaid payment for delivery but who were uninsured prior to pregnancy, women who we defined as being in the *Medicaid GAP*. With this

specific vulnerable population identified, more detailed univariate and multivariable analysis was then conducted to determine the effect of welfare reform on women in the *Medicaid GAP*. This more detailed analysis was based on data from 1996 and 1998-2000 as the data for the prior to pregnancy insurance information was not available before 1996 in most states.

Because of the complex sample survey design of PRAMS all estimates are weighted estimates and standard errors are calculated using SUDAAN. In all analyses, significance is set at $p < .05$. Marginally significant results ($.05 < p < .10$) are also reported.

C. Nature of the Findings

The majority of demographic characteristics for women with incomes greater than 400% FPL, women on public aid, and women who were very low-income but not on public aid did not change significantly over time (1994-96 versus 1998-2000). However, there was a marginally significant change ($p = .08$) in the racial/ethnic distribution for the public aid women; there was an increase in Hispanic women and a decrease in White women in this population between 1994-1996 and 1998-2000. Likewise, for women whose incomes were greater than 400% FPL, there was a significant increase in the percentage of Hispanic women between the two time periods. There was also a marginally significant change in the educational status of very low-income women between the two time periods, with an increase in the percent of women with greater than a high school education from 1994-1996 to 1998-2000.

Among women with incomes $> 400\%$ FPL, there were significant decreases in private insurance coverage for prenatal care and delivery although these percentages remained quite high. For both very low-income women and women receiving cash assistance, Medicaid was the major payer for both prenatal care and delivery in both 1994-1996 and 1998-2000 with no significant change between the two time periods. However, for women on public aid at the time of their PRAMS interview, the percent with Medicaid insurance coverage prior to pregnancy declined from 75.1% in 1996 to 59.9% in 1998-2000 (for this analysis only 1996 data were used as data for insurance prior to pregnancy were not available on the PRAMS questionnaire used in 1994-1995). There were no significant changes in prenatal care utilization between 1994-1996 and 1998-2000 for any of the three major groups ($> 400\%$ FPL, public aid women, very low-income women). However, among a specific subgroup of public aid women, those with no insurance prior to pregnancy, there was a marginally significant ($p = .08$) decrease in first trimester entry into prenatal care with the percentage in 1996 at 66.4%, dropping to 45.1% by 1998-2000. Likewise, among public aid women with Medicaid payment for delivery, there was also a marginally significant ($p = .08$) decrease in first trimester entry from 67.4% in 1994-1996 to 22.8% in 1998-2000. These findings, coupled with the finding that among the Public Aid Only women, there was a significant decline in the percent of women with Medicaid insurance coverage prior to pregnancy, while 91% of these women had Medicaid coverage for their delivery in 1998-2000, suggested the need for more exploration.

Thus, based on these findings, we further restricted our analysis to public aid women with Medicaid payment for delivery, and then examined whether welfare reform as measured by time period (1996 versus 1998-2000) was an independent risk factor for having no insurance prior to pregnancy (*the Medicaid GAP*) versus having Medicaid insurance prior to pregnancy (*non-Medicaid GAP*). The crude odds ratio for the association between welfare reform and being in the *Medicaid GAP* was 3.00 (95% CI, 1.6-5.6); in other words, in the period after welfare reform, women on public aid with Medicaid insurance for delivery, were three times more likely to be uninsured prior to pregnancy than their counterparts in the period before welfare reform. In multivariable analysis, a race/ethnicity interaction was identified. The relationship between welfare reform and being in the *Medicaid GAP* for Whites and Hispanics combined was 11.9 (95% CI, 4.3-32.9) while the relationship between welfare reform and being in the *Medicaid GAP* for the African-Americans and Others group was 1.5 (95% CI, 0.6-3.6).

Public aid women in the *Medicaid GAP* in the period after welfare reform (1998-2000) were significantly less likely to obtain first trimester care ($p = .03$) compared to *Non-GAP* women and significantly more likely to state that they did not obtain prenatal care as early as they wanted. The crude odds ratio for the relationship between being in the *Medicaid GAP* and failure to access care in the first

trimester in 1998-2000 was 2.6 (95% CI, 2.4- 2.8). In a multivariable model for the relationship between the *GAP* and first trimester initiation, an interaction with both race/ethnicity and education was found. While the estimate is unstable, women in the *GAP* with less than a High School (HS) education and who were White or Hispanic were almost 18 times as likely (95% CI, 4.3-71.0) as women not in the *GAP* to delay initiation of prenatal care beyond the first trimester. Although not significant, both women in the *GAP* who were African-American or Other race/ethnicity with less than high school education, and women who were White or Hispanic with a high school education or greater, had approximately 3X the likelihood of not receiving first trimester prenatal care compared to women not in the *GAP*. However, there was no association between being in the *GAP* and first trimester initiation for women who were African-American or Other with greater than a HS education.

A similar analysis was performed for very low-income women falling into the *Medicaid GAP*, those with Medicaid insurance for delivery but with no insurance prior to pregnancy. The crude odds ratio for the relationship between welfare reform and being in the *Medicaid GAP* for this group of women was 2.8 (95% CI, 0.9-8.4). Likewise, for these very low-income women, the crude odds ratio for being in the *Medicaid GAP* in 1998-2000 and failure to access care in the first trimester was 1.05 (95% CI, 0.3-3.3). (No additional *GAP* focused analysis was conducted with the very low-income women).

The finding of a significantly increased *Medicaid GAP* among very low-income women (women on public aid and their very low income counterparts) after the implementation of welfare reform raises a major policy concern. Although the separation of eligibility for Medicaid from cash assistance, the continuation of Transitional Medicaid Assistance (TMA), and the assumption that women would gain private insurance as they moved from welfare to work, were all supposed to ensure continued access to insurance for very poor women, it is clear that many low-income women of reproductive age are only gaining access to insurance once they are already pregnant and enter prenatal care. For these women, lack of pre-pregnancy insurance may significantly affect their health status as they enter pregnancy, placing them at higher risk of poor pregnancy outcomes due to untreated or unmanaged chronic health conditions (Misra et al., 2000). Not only are these uninsured women at increased risk of entering pregnancy with health problems, from the data presented here, it is clear that in the period after welfare reform, women in the *Medicaid GAP* who are cash assistance recipients during pregnancy are at significantly greater risk of delaying entry into prenatal care. Despite discussions of the efficacy of prenatal care in the 1990's with respect to improving rates of low birthweight and prematurity (Huntington and Connell, 1994; Fiscella, 1995), there is sufficient evidence to suggest that adequate prenatal care remains an important public health strategy for improving maternal and infant outcomes. Adequate use of prenatal care is associated with both appropriate use of pediatric care (Kogan, 1998a) and improved maternal health (Fiscella, 1995; Carroli et al., 2001), and prenatal care serves as an entry point into the health care system for women at social or economic risk (Fiscella, 1995; Kogan et al., 1998b). In addition, three recent studies have demonstrated improved outcomes associated with prenatal care use (Vintzileos et al. 2002a, 2002b, 2003).

While the Healthy People 2000/2010 objective for prenatal care is for 90% of women to begin PNC in the first trimester of pregnancy (DHHS, Healthy People 2010), for women in the *Medicaid GAP*, it appears that this objective is far from being achieved; for example, public aid women in the *Medicaid GAP* had a first trimester initiation rate of 47.3% in 1998-2000 compared to 70.0 for women not in the *GAP*. These data suggest that our most vulnerable group of pregnant women are delaying entry into care, placing these women and their offspring at significant risk of adverse maternal, fetal and infant outcomes.

These findings also have implications for the Medicaid expansions of the late 1980's and 1990's which provide Medicaid coverage for low-income as well as higher income women [39 states cover pregnant women at or above the federal mandate of 133% FPL and 13 states cover pregnant women at or above 200% FPL; (NGA, 2003)] during pregnancy and immediately postpartum. For women covered by the Medicaid expansions for pregnancy, there was no expectation of pre-pregnancy Medicaid coverage. In the aftermath of welfare reform, the insurance experience of these slightly higher income women is now becoming commonplace for a group of very poor women; prior to welfare reform these poor women were

likely to be Medicaid insured prior to pregnancy, and now it appears that many are only gaining Medicaid coverage as they enter prenatal care. The results of this study suggest that this lack of pre-pregnancy coverage is a major contributor to the delay of entry into prenatal care.

This finding suggests that the availability of Medicaid coverage during pregnancy may be an insufficient strategy for improving prenatal care utilization and pregnancy outcomes not because the relationship between prenatal care and pregnancy outcomes is equivocal, but rather because the Medicaid expansions (which now are the likely method of insurance coverage for very low-income women as well as moderately low income women during pregnancy) only pay for coverage once prenatal begins, or even worse, once a delivery takes place and a hospital seeks reimbursement for an uninsured woman. In other words, if a woman's Medicaid coverage only begins with her entry into prenatal care or with delivery, and the timing of entry into prenatal care is affected by a woman's prior to pregnancy insurance status, the potential for the Medicaid expansions to have a positive effect on pregnancy outcomes is substantially weakened, possibly explaining the equivocal findings with respect to prenatal care utilization and pregnancy outcomes associated with the Medicaid expansions (Piper et al. 1990; Haas, et al. 1993; Braveman et al., 1993; Ray et al., 1997; Long and Marquis, 1998; Baldwin et al., 1998; Dubay et al., 2001; Howell, 2001).

II. Review of the Literature

A. The Personal Responsibility and Work Opportunity Act and its Potential Impact on Medicaid and Private Insurance Coverage and Prenatal Care Utilization

On August 22, 1996 Congress passed the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA), in which eligibility for Medicaid was decoupled from eligibility for welfare assistance [formerly called Aid to Families with Dependent Children (AFDC) and currently renamed as Temporary Assistance for Needy Families (TANF)]. The PRWORA went into effect on July 1, 1997. With TANF, there is no longer a guarantee of cash assistance to all eligible individuals, receipt of benefits is limited to no more than five years over a lifetime, and recipients must adhere to work requirements to receive benefits. For low-income women, Medicaid is maintained as a federal entitlement; families who are not eligible for TANF may still qualify for Medicaid if they meet the eligibility standards for AFDC that were in place on July 16, 1996 (new category of eligibility called Section 1931). Given this separation between qualification for TANF and for Medicaid, women who are either losing or who are denied TANF assistance may not know they are eligible for Medicaid or how to access benefits. In addition, because the eligibility rules for Medicaid are separated from those for cash assistance, among those receiving TANF assistance, Medicaid enrollment rates may be affected. According to Rosenbaum and Darnell (August, 1996) "several studies, and 30 years of experience with Medicaid, underscore that the "take-up" rate for Medicaid (that is, the rate at which eligible persons enroll in the program) is significantly higher in the case of persons who automatically qualify for Medicaid because of their receipt of cash assistance (either AFDC or SSI). In the case of persons who must apply separately for Medicaid, the take-up rate is much lower...". This suggests that some women receiving TANF, because they are no longer automatically enrolled in Medicaid, may in fact, fail to enroll in Medicaid. [Note: despite the separation of TANF from cash assistance, in practice, Medicaid is available to current cash assistance recipients, (KFF, April 2003)].

Likewise, women leaving welfare assistance for work may fail to use the transitory Medicaid benefits which are available to them for 12 months. Finally, because the Medicaid eligibility levels for non-TANF non-pregnant women are so low (1996 AFDC income eligibility criteria) even a moderately paying full-time job is likely to push women above the eligibility standard for Medicaid (O'Campo and Rojas-Smith, 1998), This is despite the fact that states had the option of expanding these income eligibility thresholds (Mann, 2002; Maloy et al., 2002). Unfortunately for these women, the prospect of obtaining private health insurance coverage is dismal. A survey of mothers who left welfare from 1995-1997 found that only 23% had private insurance coverage (Garrett and Holahan, 1999). A more recent

survey of employed former TANF recipients found that 33.1% had employer health insurance in 1999 and 32.6% had employer health insurance in 2002 (Loprest, 2003).

In part because of this “Medicaid eligibility maze” (Ellwood, 1999), national data indicate a marked decline in the Medicaid rolls for families, children and pregnant women between 1994 and 1998, without a concomitant increase in private insurance, leaving many low income women and families uninsured (Wyn et al. 2001; Mann, 2002). In contrast, there were increases in Medicaid enrollment for families, children and pregnant women between 1999 through 2001 (Ellis et al., 2002), resulting from efforts to improve coverage particularly for children through the State Children’s Health Insurance Program (SCHIP) (NGA, 2001; Ellis et al., 2002), as well as from recent downturns in the economy (Ellis et al., 2002). However, increases in Medicaid coverage in 2001 and 2002 were much greater for children than for adults (Hoffman and Wang, Dec. 2003).

The decrease in Medicaid enrollment that has occurred since 1996 (Ellwood, 1999; Gold, 1999; Families USA Foundation, May, 1999; Wise et al., 1999) has happened despite the fact that also operative during this time period have been expansions in the Medicaid program which by April 1990 were requiring states to provide Medicaid coverage to pregnant women up to 133% of FPL (Strobino et al., 1999). In fact, the insurance status of low income women during pregnancy should not have been affected by welfare reform as the Medicaid expansions of the late 1980’s/early 1990’s allow a pregnant woman to be eligible for Medicaid if her income is less than 133% of the Federal Poverty Level (FPL) [39 states and territories cover pregnant women at or above 133% of FPL and 13 states cover women at or above 200% FPL (NGA, 2003)]. On the other hand, the insurance status of low-income women “prior” to (independent of) pregnancy might have been significantly affected by welfare reform, especially among those very poor women who, regardless of pregnancy, would likely have been Medicaid recipients in the period before implementation of PRWORA.

B. The Importance of Prenatal Care

The objective of prenatal care is to reduce maternal and infant morbidity and mortality. According to the US Public Health Service Expert Panel on the Content of Prenatal Care (DHHS, 1989) quality prenatal care should consist of risk assessment and risk reduction measures, health education and psychosocial support, as well as medical screening and related interventions when warranted. Studies that compare women who utilize prenatal care to those who do not have historically shown better pregnancy outcomes for the users of prenatal care (Peoples and Siegel, 1983; IOM 1985; Murray and Bernfield, 1988).

Studies in the 1990’s including some of the studies which examined the effect of Medicaid expansions on prenatal care utilization and pregnancy outcomes did not unequivocally demonstrate an improvement in pregnancy outcomes, particularly low birth weight and prematurity, associated with an increase in health insurance coverage for prenatal care ((Piper et al.1990; Haas et al., 1993; Braveman et al., 1993; Ray et al., 1997; Long and Marquis, 1998; Baldwin et al., 1998; Dubay, et al.2001; Howell, 2001). Some of these studies seemed to call into question the efficacy of prenatal care and the strategy of expanding financial access to prenatal care as a way to improve pregnancy outcomes (Huntington and Connell 1994; Fiscella, 1995). However, it is recognized that studies of the effectiveness of prenatal care are plagued by the issue of selection bias (i.e., women who use prenatal care are likely to differ in other ways than just their use of care from those who don’t) (Bell and Zimmerman, 2003), by difficulties in evaluating the content of prenatal care, particularly for women of varying risk status, and by the fact that examinations of prenatal care’s efficacy focus primarily on those outcomes which are easy to measure such as birthweight (Rosenberg, 1998).

While evidence suggests that increasing access to prenatal care in the US is not likely on its own to have a major impact on the rising rates of low birthweight and prematurity in the US (Martin, 2003), three recent studies using national data files and more sophisticated approaches such as stratified analysis have demonstrated improved outcomes associated with prenatal care use (Vintzileos et al 2002a, 2002b 2003). Prenatal care has other benefits as well. Several studies have demonstrated that improved prenatal care utilization is associated with more appropriate use of pediatric care (Kogan, 1998a).

Increasing access to prenatal care is also an important strategy in improving maternal health (Fiscella, 1995; Carroli et al., 2001); in addition, prenatal care serves as an entry into the health care system for women at social or economic risk (Fiscella, 1995; Kogan et al., 1998a). Finally, at the point that effective interventions for prevention of preterm delivery are discovered, prenatal care is likely to play a major role in their delivery, particularly if these interventions in whole or in part are biomedical [e.g., a form of progesterone called 17P has recently been evaluated and found to be effective for recurrent preterm delivery, (Meis et al., 2003)] rather than social in nature (Kogan et al., 1998a).

C. Overview of Prenatal Care Utilization Trends

There are several ways to measure prenatal care utilization: the timing of entry into prenatal care, the proportion of women with no care and/or late entry into care, the number of visits during the pregnancy, as well as the use of an index of adequacy which combines several of these measures. Specifically, prenatal care indices incorporate information on the timing of the initiation of care, the number of visits over the course of the pregnancy, and the woman's gestational age at delivery as well as information on the expected number of visits based on the American College of Obstetricians and Gynecologists (ACOG) recommendation for the timing of prenatal care visits (Kotelchuck, 1994). They provide a more comprehensive picture of utilization than the single variable measures. During the 1990's the Kotelchuck Adequacy of Prenatal care Utilization Index (APNCU) emerged as the index utilized by the National Center for Health Statistics (NCHS) in its reports of vital statistics (Kotelchuck, 1994).

The Healthy People 2010 goal for prenatal care is for 90% of women to begin prenatal care in the first trimester of pregnancy (DHHS, Healthy People 2010). However, in 2002, only 83.7% of women began PNC in the first trimester of pregnancy (Martin et al., 2003). During the 1980's, rates of early entry into PNC were essentially stagnant despite the beginnings of the Medicaid expansions for pregnant women and children; however, there has been a steady rise in first trimester initiation since 1989 when the rate was 75.5% (Martin et al., 2002) and this rise has occurred among both African-Americans and Latinas (Martin et al., 2002). Likewise, the proportion of women with late or no care also worsened during the 1980's, but has improved since 1990 when it was 6.1%, to the 2002 rate of 3.6% (Martin et al., 2003).

The Healthy People 2000/2010 goal for adequate prenatal care [includes adequate and adequate plus care as defined by Kotelchuck (1994)] is also 90%. In 2002, 74.6% of women had either adequate (42.8%) or adequate plus (31.9%) care compared to 66.9% in 1990 (Martin et al., 2003). Improvements in both first trimester initiation and adequacy of prenatal care during the 1990's can be at least partially be attributed to the Medicaid expansions of the late 1980's/early 1990's (Howell, 2001; Dubay et al., 2001).

D. Overview of Factors Influencing the Use of Prenatal Care

A variety of factors influence the utilization of prenatal care. The Institute of Medicine's 1988 report *Prenatal Care: Reaching Mothers, Reaching Infants* presented four categories of obstacles to adequate prenatal care utilization: 1) inadequate capacity in the prenatal care delivery system relied on by low income women, 2) problems in the organization, practices, and atmosphere of prenatal care services, 3) cultural and personal barriers, and, 4) financial barriers. While all of these factors impact the likelihood of a woman accessing and utilizing care, the IOM recommended giving top priority to the elimination of financial barriers to prenatal care utilization. As such, the IOM report provided support for the Medicaid expansions that had begun prior to the release of the report (SOBRA 1986, OBRA 1987, OBRA 1988) and were continued after its release (OBRA 1989 and OBRA 1990). While financial barriers play a major role in prenatal care utilization, data also show that once differences in women's financial access are accounted for, other barriers increase in importance (Augustyn and Maiman, 1994; LaViest et al., 1995). More recent studies of the factors affecting prenatal care utilization conducted by Braveman and her colleagues in California confirm this earlier work. In one of these studies, Nothnagle et al. (2000) established that financial barriers are still very important in explaining no or late prenatal care but are not sufficient to completely explain the relationship between uninsuredness and inadequate

care; the authors suggest that attention to planning pregnancies and reducing poverty remains key. In another study of barriers to timely care among women with either Medicaid or private insurance before and during pregnancy (Braveman et al., 2000), risk factors for untimely care were unwanted or unplanned pregnancy, lack of a regular provider before pregnancy began, no schooling beyond high school and transportation problems. Women's initiation and utilization of prenatal care is clearly a complex set of activities influenced both by individual and environmental factors, with insurance coverage remaining an important part of the mix.

E. Trends in Insurance Coverage for Pregnant Women

The major strategy for eliminating financial barriers to care is the provision of insurance coverage. Despite the Medicaid expansions of the late 1980's and 1990, the 1990 to 1997 trend in health insurance coverage of pregnant women was downward (Thorpe, 1999). While increasing in the early 1990s, the percentage of pregnant women covered by Medicaid declined from almost 24 percent in 1993 to only 15 percent by 1997. The increase in private insurance over this time period was not enough to offset this trend, leaving almost 14 percent of pregnant women without coverage (Thorpe, 1999). Lack of coverage was concentrated among low-income women; over 28 percent of pregnant women in poverty were uninsured versus only 3 percent of those earning at least 3 times the poverty level (Thorpe, 1999). While the Medicaid coverage of pregnant women declined during the late 1990's, the percentage of deliveries covered by Medicaid has continued to increase. In 2000, Medicaid paid for 36.5% of all births (NGA, 2003), in contrast to 1985 when Medicaid only paid for 17% of all births (AGI, 1987).

In 2000, 37% of poor women (incomes < 100% FPL) and 27% of near poor women (100%-199% FPL) with children were uninsured compared to 6% of non-poor women with children (\geq 200% FPL) (Mann, et al. 2002). (Note: these data are for women with children, not pregnant women). While there were increases in Medicaid enrollment for families, children and pregnant women between 1999 through 2001 (Ellis et al., 2002), resulting from efforts to improve coverage particularly for children through the State Children's Health Insurance Program (SCHIP) (NGA, 2001; Ellis et al., 2002), as well as from recent downturns in the economy (Ellis et al., 2002), the increases in Medicaid coverage in 2001 and 2002 were much greater for children than for adults (Hoffman and Wang, Dec. 2003).

F. The Relationship between Insurance Coverage and Prenatal Care Utilization

Studies have documented the role of health insurance, as well as the specific role of Medicaid, in improving access to care in general, relative to being uninsured (Berk and Schur, 1998). While studies of the role of insurance in the receipt and adequacy of prenatal care in particular, are often mixed, some indicate that the uninsured are more likely, relative to Medicaid to receive late or no prenatal care (Kalmuss and Fennelly, 1990). National data from the 1988 National Maternal and Infant Health Survey indicate that the uninsured have fewer prenatal care visits than privately insured women but these data show little difference between Medicaid and uninsured women (Kaestner, 1999). However, multivariable analysis using these data indicated that the differences between insurance groups found in the descriptive data do not hold once the timing of entry into care is considered. That is, Medicaid and uninsured women receive similar numbers of visits and are as likely to receive adequate prenatal care as privately insured women who start their care in the same trimester (Kaestner, 1999). Thus, the primary reason for the lower levels of care for Medicaid and uninsured women is their delay in initiation. Similarly, in a recent study, Braveman, 1999 et al. showed that among California women whose incomes were at 300% of the federal poverty level or less, the greatest percentage of women with untimely care (first visit occurred after the first trimester or woman had no prenatal care) were found among the uninsured women as compared to women on Medi-Cal (California Medicaid program) or private insurance.

In a recent study on timing of insurance coverage and the use of prenatal care among low-income women, Egarter et al. (2002) found that rates of untimely initiation of care were highest among women who were uninsured throughout pregnancy or whose insurance coverage began after the first trimester, although previously uninsured women who actually obtained coverage in the first trimester had high rates of first trimester initiation of prenatal care. While in this study, the relationship between

the timing of access to care and timing of access to insurance is not completely disentangled, the findings are suggestive of an important relationship between pre-pregnancy insurance status, insurance status during pregnancy, and prenatal care utilization.

III. Study Design and Methods

A. Study Design

This pre-post comparison of sampled birth cohorts used PRAMS data from eight states [Alaska, Florida, Maine, NYS, Oklahoma, South Carolina, Washington, West Virginia (the original proposal included Georgia but data from Georgia for 1997 and 1998 were deemed problematic by the CDC so Georgia was excluded)] to examine the insurance coverage status and prenatal care utilization of women receiving public assistance and very low-income pregnant women not receiving public assistance during the three years prior to (1994-1996) and three years following (1998-2000) the enactment of PRWORA. These eight PRAMS states were selected because data were available for the years of interest and because each of these states collects information on household income.

As we were trying to determine the impact of welfare law changes, our focus was necessarily on those women who were either recipients of public assistance during their pregnancies or whose incomes and demographic characteristics were such that they might have been recipients of public assistance had welfare reform not occurred. Focus on the first group allowed us to obtain information about the impact of welfare reform on Medicaid coverage and prenatal care utilization for women who are recipients of AFDC/TANF or cash assistance. Focus on the second group allowed us to obtain information about the impact of welfare reform on insurance coverage and prenatal care utilization for very low-income women who are not recipients of public assistance.

The study's original main hypotheses were divided into two groups: hypotheses **1-3a** focused on women who report the receipt of public assistance as a source of income during the 12 months prior to the PRAMS interview (eight states); hypotheses **4-6a** focused on very low-income women, women whose incomes are similar to women who receive AFDC/TANF but who are not AFDC/TANF recipients (five states: Alaska, Maine, New York, Oklahoma, S. Carolina).

Original Study Hypotheses:

Among women who report public assistance as a source of income during the 12 months prior to the PRAMS interview:

- 1) the percent who report Medicaid insurance coverage for prenatal care will be lower in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).
 - 1a) the percent who report Medicaid insurance coverage prior to pregnancy will be lower in the years following welfare reform (1998-2000) than in the year prior to the full implementation of welfare reform (1996).
- 2) the percent who report financial barriers to prenatal care will be higher in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).
- 3) the percent who have inadequate prenatal care (based on timing of entry into prenatal care and the APNCU) will be higher in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).
 - 3a) the percent who are both uninsured during pregnancy and have inadequate prenatal care (based on timing of entry into prenatal care) will be higher in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).

Among very low-income women who do not report public assistance as a source of income during the 12 months prior to the PRAMS interview:

- 7) the percent who report health insurance coverage during the prenatal period will be lower in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).
 - 4a) the percent who report health insurance coverage prior to pregnancy will be lower in the years following welfare reform (1998-2000) than in the year prior to the full implementation of welfare reform (1996).
- 8) the percent who report financial barriers to prenatal care will be higher in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).
- 9) the percent who have inadequate prenatal care (based on timing of entry into prenatal care and the APNCU) will be higher in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).
 - 6a) the percent who are both uninsured during pregnancy and have inadequate prenatal care (based on timing of entry into prenatal care) will be higher in the years following welfare reform (1998-2000) than in the years prior to the full implementation of welfare reform (1994-1996).

For each hypothesis, pooled analysis as well as state-specific examinations were conducted. For hypotheses 1-3a, the analyses were initially conducted with women who reported any receipt of public aid but a decision was made to take the more conservative approach and focus on the population who reported that public aid was their **only** source of income (*See Section III C. below*).

After exploring all of the hypotheses 1-6 in a univariate fashion, a decision was made to examine the effect of welfare reform on a more limited group, women who had Medicaid insurance payment for delivery but lacked insurance prior to pregnancy, women in the *Medicaid GAP*. The first set of these more refined analyses examined the impact of welfare reform measured as time period (1996 versus 1998-2000) on a woman's likelihood of falling into the *Medicaid GAP*. The second set of analyses focused on the relationship between being in the *Medicaid GAP* in the post-welfare reform period (1998-2000) and prenatal care utilization, particularly initiation of care in the first trimester. For these *Medicaid GAP* examinations, both univariate and multivariable analyses were conducted. Analyses focused on the *Medicaid GAP* were primarily conducted for the public aid "only" women; however, we also conducted crude analyses for the *Medicaid GAP* for very low-income women not receiving public assistance.

B. Population Studied

This study focuses on post-partum women from eight PRAMS states: Alaska, Florida, Maine, NYS, Oklahoma, South Carolina, Washington, West Virginia. In all PRAMS states, new mothers are randomly selected monthly from birth certificates by stratified systematic sampling with a random start. All states oversample women at risk for adverse pregnancy outcomes; however, stratification variables such as birthweight and race/ethnicity vary among the states. Sampled mothers are sent a self-administered questionnaire two to six months after delivery; non-respondents are contacted again via telephone. This methodology enables most states to achieve a $\geq 70\%$ overall response rate. Sample sizes range from 1300 to 3000 women annually (1057-2312 annual average for the years 1994-1996 and 1186-2179 annual average for 1998-2000 in the eight states reported on here).

C. Sample Selection

The focus of this study was on women in two time periods (1994-1996 and 1998-2000) who reported public assistance as a source of income (**Public Aid women**) at the time of the postpartum interview and their very low-income counterparts not receiving public assistance (**Very Low-Income women not on Public Aid**). In addition, in our initial analyses we also included **Women with Incomes > 400% FPL** to explore trends in insurance and prenatal care utilization for a higher income population. Our most refined analyses focused on women in the *Medicaid GAP*, women with Medicaid payment for delivery with no source of insurance prior to pregnancy. *Medicaid GAP* analyses were conducted among

Public Aid women and Very Low-Income women not on Public Aid. The four main groups (**Public Aid women, Very Low-Income women not on Public Aid, Women with incomes > 400% FPL, Medicaid GAP women**) are described below. Figure 1 demonstrates the path we took to construct our groups and indicates the sample size for each.

Equipment Listing

Grant: R40MC00209

The Effect of Welfare Reform on Low-Income Pregnant Women's Insurance Status and Prenatal Care Utilization

Acquisition Date	Description	Model/Serial #	Cost	Condition/Location
8/9/01	1700 MHZ Pentium computer	Dell Optiplex GX400	\$2593.95	UIC-School of Public Health, Currently, in use by Dr. Deborah Rosenberg
	Laser Jet Printer	2200 Series PCL 6		

The computer and printer continue to be used by Dr. Rosenberg. Analysis is continuing with the project dataset as we prepare papers for publication.