

AN EVALUATION OF THE HEALTHY START PRENATAL SCREEN 1998 BIRTH COHORT

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Introduction:

In 1991, the Florida Legislature enacted Healthy Start, one of the most comprehensive maternal and child health initiatives in the nation (S. 383.14, F.S.). Program implementation began in April 1992. Healthy Start includes a universal prenatal and infant screen process developed to identify pregnant women and infants at increased risk for adverse birth outcomes. The screening process includes the use of Florida's Healthy Start Prenatal Risk Screening Instrument for pregnant women and Florida's Healthy Start Postnatal Screening Instrument for infants. The risk screening criteria for these tools were developed for Healthy Start by a multi-disciplinary task force that included epidemiologists, nurses, social workers, and policy and program representatives from key state and local maternal and child health partners.

The Healthy Start prenatal risk screen identifies women who are at an increased risk for preterm delivery or for delivering a low birth weight infant. A score of 4 or more on the screen indicates increased risk or a "positive" screen. Women who do not score 4 or more on the screen may be referred to Healthy Start by their health care provider or by self-referral. Universal screening is a primary goal of Healthy Start. Florida statute requires that all Florida prenatal care providers offer the prenatal screen to pregnant women at the first prenatal care visit (S. 383.14, F.S.). Healthy Start is unique in its use of a prenatal risk screen that includes demographic as well as environmental and social factors to identify women at-risk for adverse outcomes.

The Healthy Start Prenatal Risk Screen was developed in 1992 and revised in 1994. The initial screening criteria were selected based on the analysis of existing data, extensive literature review, and professional judgment. One year following implementation of the first screen, the prenatal screening data were matched to the corresponding birth record data for births that occurred in 1993. Screening risk factors on the prenatal screen were analyzed for association with low birth weight and preterm birth using the 1993 matched birth cohort data. The results from this analysis enabled the Healthy Start screening committee revise the tool to reduce the program caseload and improve identification of women who were more likely to experience an adverse birth outcome (low birth weight or preterm birth). The revised prenatal screen replaced the original screen in October 1994. This analysis examines the performance of the revised screen, compares the revised screen to the original screen, and investigates those risk factors that were included but were not weighted on the screen. The purpose of this analysis is to inform efforts toward revising and improving the current screen as a component of continuous quality improvement.

Methods:

Unadjusted risk ratios and confidence intervals were calculated for associations between adverse birth outcome and risk factors on the revised prenatal screen. The 1998 birth cohort data matched to the prenatal screen was used for this analysis (University of Florida, Perinatal Data Research Center and Florida Department of Health, Office of Planning, Evaluation, and Data Analysis, 2000). A total of 76,763 singleton, resident live birth records were matched to corresponding prenatal screens.

The findings from the analysis of the revised screening data were compared to risk ratios and confidence intervals from the original screen for associations between screening risk factors and adverse outcome (Thompson, Freeman, and Steele, 1993). The risk ratios and confidence intervals were then compared for statistical significance (Kanji, 1993, p. 134; Kahn and Sempos, 1998, p. 83).

The dependent variable, referred to as adverse outcome, was defined as birth weight less than 2000 grams or gestational age less than 34 weeks. Data analysis suggested 2000 grams was a logical statistical cut off point for poor outcome rather than the traditional measure of less than 2500 grams. Gestational age was calculated from last menstrual period, unless this information was missing, then the clinical estimation of gestational age was used. Independent variables were coded as indicated on the prenatal screening form. The form is provided as Attachment 1 and the coding is provided in Attachment 2. Several unweighted items that are collected on the screen, but not previously analyzed, were also examined in this analysis. All variables included in the analysis were coded using a binary scheme; coded one for those with the risk factor and coded zero for those without the risk factor (Hardy, 1993).

Results:

Performance of the Revised Prenatal Screen:

The primary finding of the analysis was that the majority of the weighted risk factors on the revised prenatal screen were associated with the adverse outcomes of low birth weight or preterm birth. Chart 1 shows that higher scores were more strongly associated with adverse outcome.

The results of the risk ratio analysis of the revised prenatal screen showed that 11 out of 15 analyzed risk factors were associated with adverse outcome (Table 1 and Chart 2). The black bar on the left of Chart 2 shows that women who scored 4 or more or at-risk on the prenatal screen were 1.77 times as likely to have an adverse outcome compared to women who did not score 4 or more on the screen. The prenatal screen is scored by assigning one point to all weighted risk factors with the exception of black race, which receives two points due to the higher statistical association with adverse birth outcomes (Table 1).

The remainders of the risk ratios on Chart 2 are listed in descending order of strength of association between the risk factor and adverse birth outcome. Those risk factors in medium

gray color were statistically significant. As expected, black race was most strongly associated with adverse outcome. The risk ratio for black race was 1.88, indicating that black women were almost two times or 188 percent as likely to experience an adverse outcome as women of any other race. Other risk factors are listed in descending order to the right on Chart 2, and show the risk ratio associations with adverse outcome.

There were a few weighted items on the prenatal screen that were weakly or not associated with low birth weight or preterm birth for the 1998 birth cohort. These items are shown on Chart 2 in light gray, the four bars on the right. However, maternal and child health research continues to suggest these items are indicators of risk. Florida continues to collect these data and consider women with these risk indicators, who also score 4 or more on the screen, as having an increased risk for adverse outcomes and in need of Healthy Start services.

Comparing the First and Second Prenatal Screens:

A goal of the screen revision was to focus resources on those at highest risk while decreasing the program caseload and keeping a proportional sensitivity. This screen classifies 37 percent of all pregnant women screened as “positive” or at an elevated risk for an adverse birth outcome. The sensitivity was 51 percent for the 1998 birth cohort (See Chart 3). Therefore, approximately 51 percent of the low birth weight and preterm births to women screened occurred within the group of the 37 percent of women classified as at-risk. This compares to the original screen that had a higher percent positive at 47 percent, and also a higher sensitivity of 61 percent.

Additional analysis was conducted to compare the 1993 and 1998 screening risk ratios and confidence intervals for weighted items to determine if the changes identified between the two time periods were statistically significant and not due to random variation. Screening items that have significantly reduced associations with adverse outcome between 1993 and 1998 include black race, unintended pregnancy, unmarried, and difficulty making appointments (see Chart 4 and Table 3). No significant increases were identified for the association between risk

factors and adverse outcome since 1993. As mentioned, black race remains the risk factor most strongly associated with adverse outcome in 1998 (risk ratio=1.88). In fact, black race had a stronger relationship to adverse outcome than a Healthy Start score of 4 or more (risk ratio=1.77). However, black race was more strongly associated to adverse outcome in 1993 than in 1998 (risk ratio=2.14 compared to 1.88 respectively). Although the adverse birth outcome rate has not diminished substantially during that time period, race explains less of the risk for adverse birth outcome in 1998 than it did in the 1993 birth cohort. The reduction of the risk explained by black race, unintended pregnancy, unmarried, and trouble making appointments could possibly indicate a program effect of Healthy Start (Thompson, Simmons, and Graham, 2002).

Unweighted Risk Factors on the Revised Prenatal Screen:

The Healthy Start prenatal screen currently collects risk indicators that have not previously been highly statistically associated with adverse outcome in analysis. These include domestic violence, high stress, insurance type and availability, body mass index, and mother's birth weight less than 5.5 pounds. Of these, the risk factor that was most strongly associated with adverse outcome was mother's birth weight weighing less than 5.5 pounds with a risk ratio of 1.38 (See Chart 5 and Table 4). Although the type of health insurance reported was related to adverse outcome, the wording mattered. If a pregnant woman was asked if she had private insurance and she responded "no," her risk ratio for adverse outcome was 1.23. But if asked if she had no insurance and she responded "yes," her risk ratio for adverse outcome was 1.03 and not statistically significant.

Domestic violence (reported being hit or hurt) and high levels of stress were specifically added to the screen to determine their relationship to adverse outcome and for possible inclusion on the screen as weighted items. Both domestic violence and high stress were found to be associated with adverse outcome (risk ratio 1.22 and 1.16 respectively). Finally, mother's age was split into three categories; low-risk ages 18 to 39 and two high-risk groups, age less

than 18 and age greater than 39 (Chart 6 and Table 4). Only when the age categories were split in this way was it apparent that older mothers were more at-risk for adverse outcome than younger mothers compared to women age 18 to 39 (risk ratio 1.65 compared to 1.38, respectively). The revised prenatal screen combines these younger and older mothers into one risk group and the resulting risk ratio was 1.40. Combining the two at-risk age groups obscures their differences in risk for adverse outcome.

Conclusion:

The Healthy Start prenatal screen continues to perform well selecting a caseload that identifies half of the women who will experience adverse birth outcomes. The current prenatal screen has been used since October 1994. The sensitivity of the prenatal screen could possibly be improved by adding risk factors that were previously unweighted and by splitting age into three categories. Additionally, it might be helpful to use new statistical techniques in future analyses of the screening instruments. Many of the risk factors were correlated and logistic regression or similar statistical techniques would identify risk factors that are adjusted for other factors. A higher sensitivity may be achieved through applying advanced statistical methods.

The decision to revise the screening tools is the responsibility of the Healthy Start screening advisory group. Many issues are considered, such as the computer data collection systems and training the staff and health care providers, before the prenatal screen is modified. Using the current screen as a means to identify women with increased risk for adverse birth outcomes is important because it provides women better access to Healthy Start and other services to those women identified at increased risk. Finally, universal screening of all pregnant women in Florida has yet to be achieved and is a continuing goal of Healthy Start. The screening process continues to serve as a critical gateway for entry into systems of care for pregnant women. The screen also provides Florida with important information about the status of pregnant women and the resources needed to assure the best possible birth outcomes for all women.

Bibliography:

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MS/dt/cg/es

Black ink only Florida's Healthy Start Prenatal Risk Screening Instrument

Your name: First _____ Last _____ M.I. _____		Your County: _____		Today's Date (month, day, year): _____	
Your street address (apartment complex name/number): _____			Your city or town: _____		Your state: _____
Your mailing address (if different from street address): _____			Your city or town: _____		Your state: _____
Your home phone: _____	Your work phone or other: _____	Your birthdate (month, day, year): _____	Your age: _____	Your social security number: _____	Your race: black <input type="checkbox"/> white <input type="checkbox"/> other <input type="checkbox"/>
Are you married? yes <input type="checkbox"/> no <input type="checkbox"/>	Have you graduated from high school or received a GED? yes <input type="checkbox"/> no <input type="checkbox"/>		When you were born, did you weigh 5½ pounds or less? yes <input type="checkbox"/> no <input type="checkbox"/> don't know <input type="checkbox"/>		
Your weight before pregnancy: _____ lbs.	Your Height: _____ ft. _____ in.	Is this your first pregnancy? If no, give date your last pregnancy ended (include live birth, stillbirth, miscarriage, abortion). yes <input type="checkbox"/> no <input type="checkbox"/> Date: (month, year) _____			
Is your prenatal care covered by: Health Insurance/HMO <input type="checkbox"/> Medicaid <input type="checkbox"/> Other Health Insurance (Military, Indian Health, etc.) <input type="checkbox"/> No Coverage <input type="checkbox"/>					

Census Tract (local use)

To be completed by Health Professional

A<18 (1)
A>39 (1)
RB (2)
MN T (1)
PHN T

EN T (1)
W<110 (1)

SECTION 1: COMPLETED BY PATIENT

If you would like to be screened for Healthy Start, please write your initials under yes. If not, write your initials under no. Please sign your name at the bottom of this section.

Yes No (initials)

I am interested in being screened for Florida's Healthy Start. If yes, complete the following screening questions by checking the appropriate boxes.

- | Yes | No | N/A | (check marks) |
|---|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | | 1. Do you have any problems which prevent you from keeping your health care or social services appointments? |
| <input type="checkbox"/> | <input type="checkbox"/> | | 2. Have you moved more than 3 times in the last 12 months? |
| <input type="checkbox"/> | <input type="checkbox"/> | | 3. Do you feel unsafe where you live? |
| <input type="checkbox"/> | <input type="checkbox"/> | | 4. Do you or any member of your household go to bed hungry? |
| <input type="checkbox"/> | <input type="checkbox"/> | | 5. In the last 2 months, have you used any form of tobacco? |
| <input type="checkbox"/> | <input type="checkbox"/> | | 6. In the last 2 months, have you used drugs or alcohol (including beer, wine, mixed drinks)? |
| <input type="checkbox"/> | <input type="checkbox"/> | | 7. In the last year, has anyone hit you or tried to hurt you? |
| a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> | | | 8. How do you rate your current stress level? (a) low, (b) medium, (c) high |
| a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/> | | | 9. If you could change the timing of this pregnancy, would you want it (a) earlier, (b) later, (c) not at all, (d) no change |
| <input type="checkbox"/> | <input type="checkbox"/> | | 10. Have you considered adoption for this pregnancy? |
| <input type="checkbox"/> | <input type="checkbox"/> | | 11. Do you now, or have you ever had, problems with depression? |
| <input type="checkbox"/> | <input type="checkbox"/> | | 12. Do you have a history of receiving mental health counseling? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 13. Is your partner unemployed? |

1Y (1)
2Y T (1)
3Y (1)
4Y (1)
5Y (1)
6Y T (1)

7Y T
8C T
9C T (1)
10Y T
11Y T
12Y T
13Y T

Yes No (initials) If you would like to participate in the program if invited, please write your initials under yes. If not, initial no.

If I am invited, I accept the invitation to participate in Florida's Healthy Start. The best time to contact me is:

Please initial yes or no for consent to release information on this form and any information from the initial contact for the purposes below.

Yes No (initials)

The information on this form is confidential, and will not be released without my written consent. I hereby authorize the release of any information on this form and any information from the initial contact to Healthy Start care coordination providers, Healthy Start Coalitions, and where available, Healthy Families Florida for the following purposes: for care coordination services, to pay for claims for services, to evaluate service delivery, or to screen for program eligibility. This includes any medical, psychiatric, psychological, alcohol/drug abuse, sexually transmitted disease, tuberculosis, HIV/AIDS, and adult or child abuse information that is included on this form or provided by me during the initial contact.

Signature of patient or guardian _____ Date (mm/dd/yy) _____

SECTION 2: BY PROVIDER

- | Yes | No | N/A |
|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | |
14. Did patient's last pregnancy result in a miscarriage, stillbirth, a baby less than 5½ pounds, a baby born more than 3 weeks early, or a baby that stayed in the hospital after the patient went home?
15. Does patient have any illness that requires continuing medical care? Specify illness: _____

14Y (1)
15Y (1)

Name and Title of Health Care Provider: _____		Provider's ID: _____	Provider's Phone Number: _____
Provider's Mailing Address: _____	City or Town: _____	Zip Code: _____	County Where Practice is Located: _____
<input type="checkbox"/> CHD Provider <input type="checkbox"/> DOH Contracted Provider <input type="checkbox"/> Private Provider	LMP (mo,day,year) _____	EDD (mo,day,year) _____	Trimester of pregnancy at first prenatal visit: _____
Previous Obstetrical History: Enter the number of infants in each area. (Use zero for none.) Term _____ Preterm _____ Abortion _____ Living _____ Low Birth Weight (less than 5½ pounds) _____			

=2T (1)
2 or 3T T

Healthy Start Screening Score _____	CHECK ONE <input type="checkbox"/> Invited to participate in Healthy Start based on score. <input type="checkbox"/> Invited to participate in Healthy Start based on factors other than score. Specify: _____ <input type="checkbox"/> Not referred for Healthy Start.
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I have explained the Healthy Start program, and if screened, the screening score.

Provider's/Interviewer's Signature and Title

Date (mm/dd/yy)

Attachment 2

**Florida Healthy Start Prenatal Risk Screening Factors
and Risk Scoring Points ¹**

Questions answered by patient

Your age:

- 1 < 18 = 1 point
- 2 > 39 = 1 point

- 3 Your race: black white other
black = 2 points

- 4 Are you married? Yes no
no = 1 point

- 5 Have you graduated from high school or received a GED? Yes no
no = 1 point

- 6 Your weight before pregnancy:
< 110 = 1 point

- 7 Do you have any problems which prevent you from keeping your health care or social services appointments?
yes = 1 point

- 8 Have you moved more than 3 times in the last 12 months?
yes = 1 point

- 9 Do you feel unsafe where you live?
yes = 1 point

- 10 Do you or any member of your household go to bed hungry?
yes = 1 point

- 11 In the last 2 months, have you used any form of tobacco?
yes = 1 point

- 12 In the last 2 months, have you used drugs or alcohol (including beer, wine, mixed drinks)?
yes = 1 point

- 13 In the last year, has anyone hit or tried to hurt you?
not scored

- 14 How do you rate your current stress level? (a) low, (b) medium, (c) high
not scored

- 15 If you could change the timing of this pregnancy, would you want it (a) earlier, (b) later, (c) not at all, (d) no change
c = 1 point

Questions answered by health care provider

- 16 Did patient's last pregnancy result in a miscarriage, stillbirth, a baby less than 5 1/2 pounds, a baby born more than 3 weeks early, or a baby that stayed in the hospital after the patient went home?
yes = 1 point
- 17 Does patient have any illness that requires continuing medical care? Specify illness:
yes = 1 point
- 18 Trimester of entry at first prenatal visit:
second trimester = 1 point

¹ Points are totaled for each patient. A total score of 4 or more is considered a positive screening. A total score of 3 or less is considered a negative screening.

**Chart 1: Percentage with Adverse Outcome By Prenatal Score, 1998
Birth Cohort (Adverse Outcome = Low Birth Weight<2000 or Preterm
Birth<34 Weeks Gestation)**

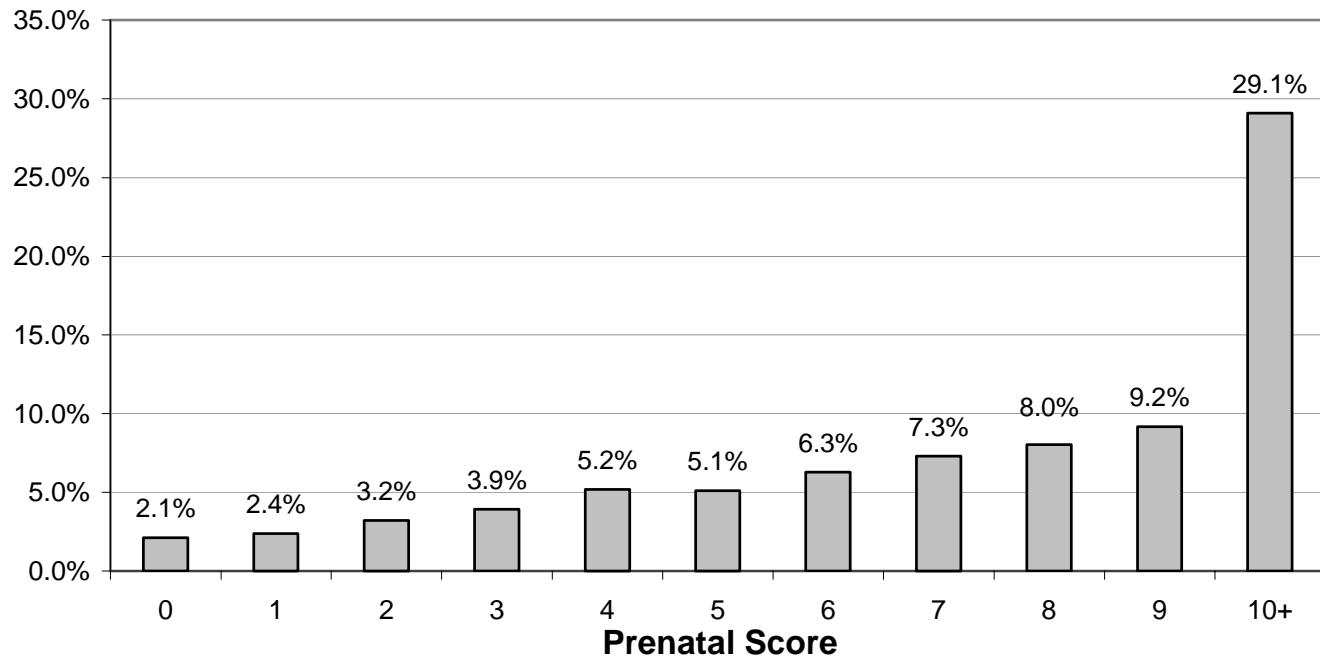


Chart 2: Unadjusted Risk Ratios for Adverse Outcome by Healthy Start Prenatal Screen Risk Factors, 1998 Birth Cohort

(Adverse Outcome=Low Birth Weight < 2000 grams
or Preterm Birth < 34 Weeks Gestation)

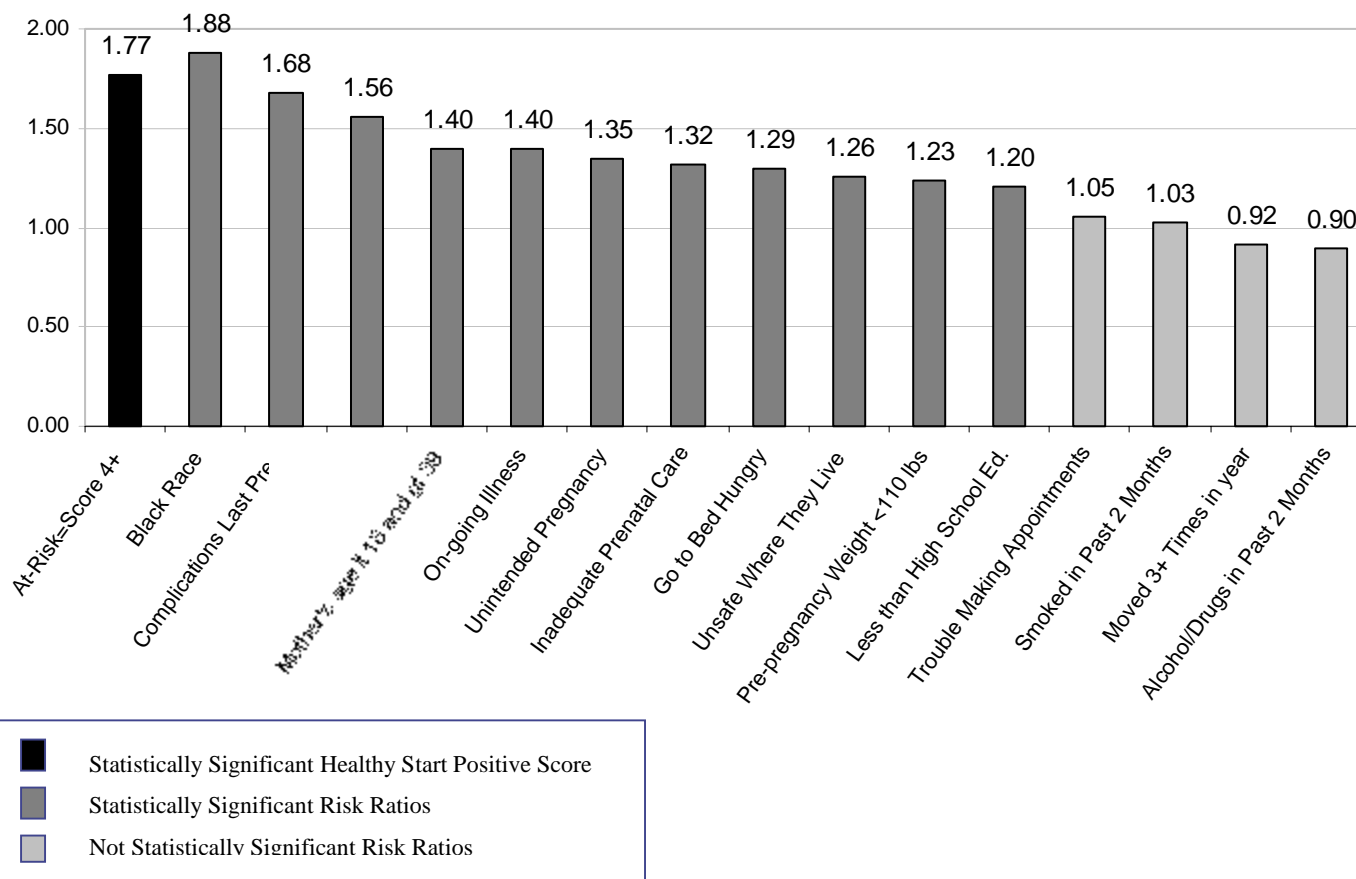


Table 1: Percentage and Risk Ratio of Currently Scored Risk Factors Associated with Adverse Birth Outcomes Defined as Birth Weight less than 2000 Grams or Preterm Births Occurring Prior to 34 weeks of Gestation, 1998 Birth Cohort.

Currently Scored Risk Factors	Number without an Adverse Outcomes without the Risk Factor	Number without an Adverse Outcomes with the Risk Factor	Number of Adverse Outcomes without Risk Factor	Number of Adverse Outcomes with Risk Factor	% Adverse Outcome for Women without Risk Factor	% Adverse Outcome for Women with Risk Factor	Risk Ratio	Confidence Interval	Score
Positive=Score of 4 or more	46819	26851	1514	1579	3.13%	5.55%	1.77	(1.65 to 1.90)	4+
Black Race	76763	22388	1678	1415	3.17%	5.94%	1.88	(1.75 to 2.01)	2
Complications Last Pregnancy	62352	11303	2355	737	3.64%	6.12%	1.68	(1.55 to 1.82)	1
Unmarried	35696	37974	1150	1943	3.12%	4.87%	1.56	(1.45 to 1.68)	1
Mother's age <18 or >39	65110	8560	2605	488	3.85%	5.39%	1.40	(1.28 to 1.54)	1
On-going Illness	67641	6000	2746	346	3.90%	5.45%	1.40	(1.25 to 1.56)	1
Unintended Pregnancy	66950	6720	2720	373	3.90%	5.26%	1.35	(1.21 to 1.50)	1
Inadequate Prenatal Care	50079	23573	1900	1192	3.66%	4.81%	1.32	(1.23 to 1.41)	1
Go to Bed Hungry	71733	1928	2987	105	4.00%	5.16%	1.29	(1.07 to 1.56)	1
Unsafe Where They Live	71145	2516	2959	133	3.99%	5.02%	1.26	(1.06 to 1.49)	1
Pre-pregnancy Weight <110 lbs	66124	7474	2707	381	3.93%	4.85%	1.23	(1.11 to 1.37)	1
Less than High School Education	48508	25157	1900	1193	3.77%	4.53%	1.20	(1.12 to 1.29)	1
Trouble Making Appointments	69395	4257	2902	188	4.01%	4.23%	1.05	(0.91 to 1.22)	1
Smoke Cigarettes in Past 2 Months	55299	18362	2305	787	4.00%	4.11%	1.03	(0.95 to 1.11)	1
Moved 3 or more Times in year	67317	6343	2847	245	4.06%	3.72%	0.92	(0.81 to 1.04)	1
Alcohol or Drugs in Past 2 Months	62243	11418	2657	435	4.09%	3.67%	0.90	(0.81 to 0.99)	1

Risk factors below the dashed line are not statistically significant.

Chart 3: Sensitivity and Percent Positive for Original and Second Prenatal Screens using 1993 and 1998 Birth Cohort Data

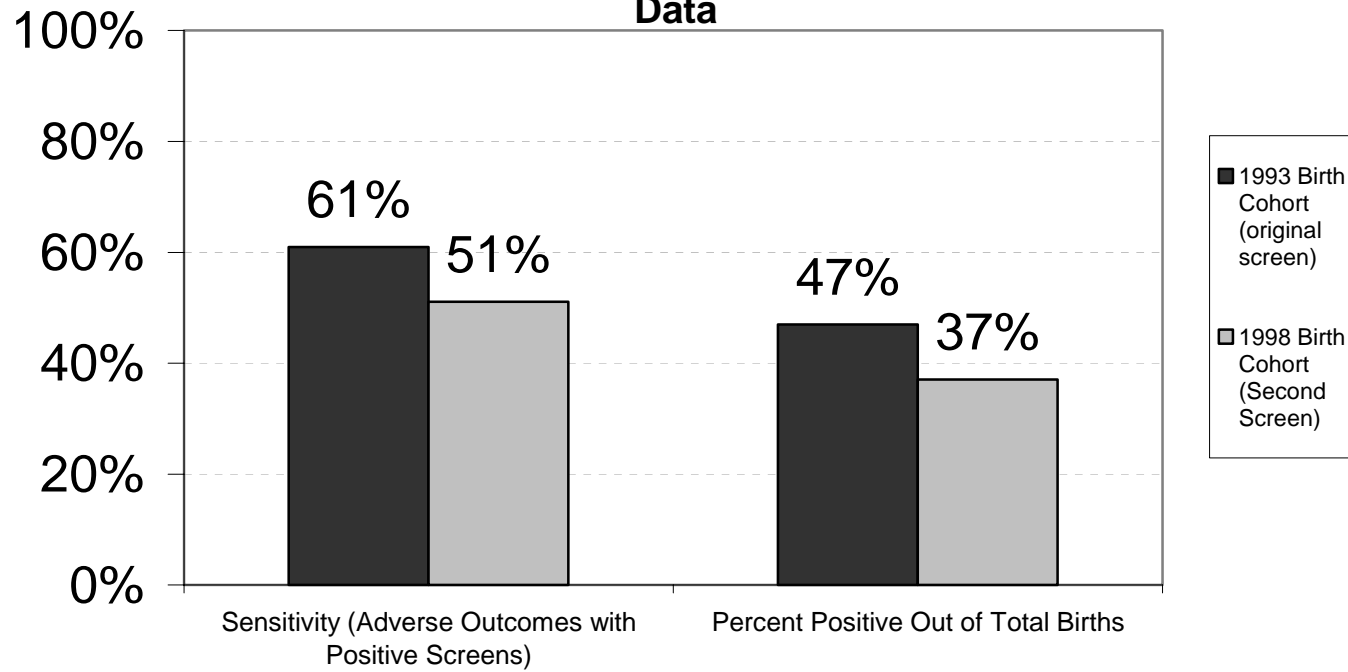


Table 2: Percent Positive and Sensitivity for the Healthy Start Prenatal Screen Associated with Adverse Birth Outcome Defined as Birth Weight less than 2000 Grams or Preterm Birth Prior to 34 Weeks of Gestation, 1998 Birth Cohort.

	Total Number of Prenatal Screens Matching to Birth Records	Number of Births Screened 4 or more (Positive) by the HS Prenatal Screen	Number of Adverse Outcomes Scored Positive	Total Number of Adverse Outcomes	Percentage of Adverse Outcome Statewide	Percent Positive Out of Total Births	Positive Screens with an Adverse Outcome (Sensitivity)
1998 Births with Prenatal Screens	76763	28430	1579	3093	4.03%	37.04%	51.05%

Chart 4: Significant Unadjusted Risk Ratio Reductions for Adverse Outcome Between Original and the Revised Prenatal Screen, 1993 and 1998 Birth Cohorts

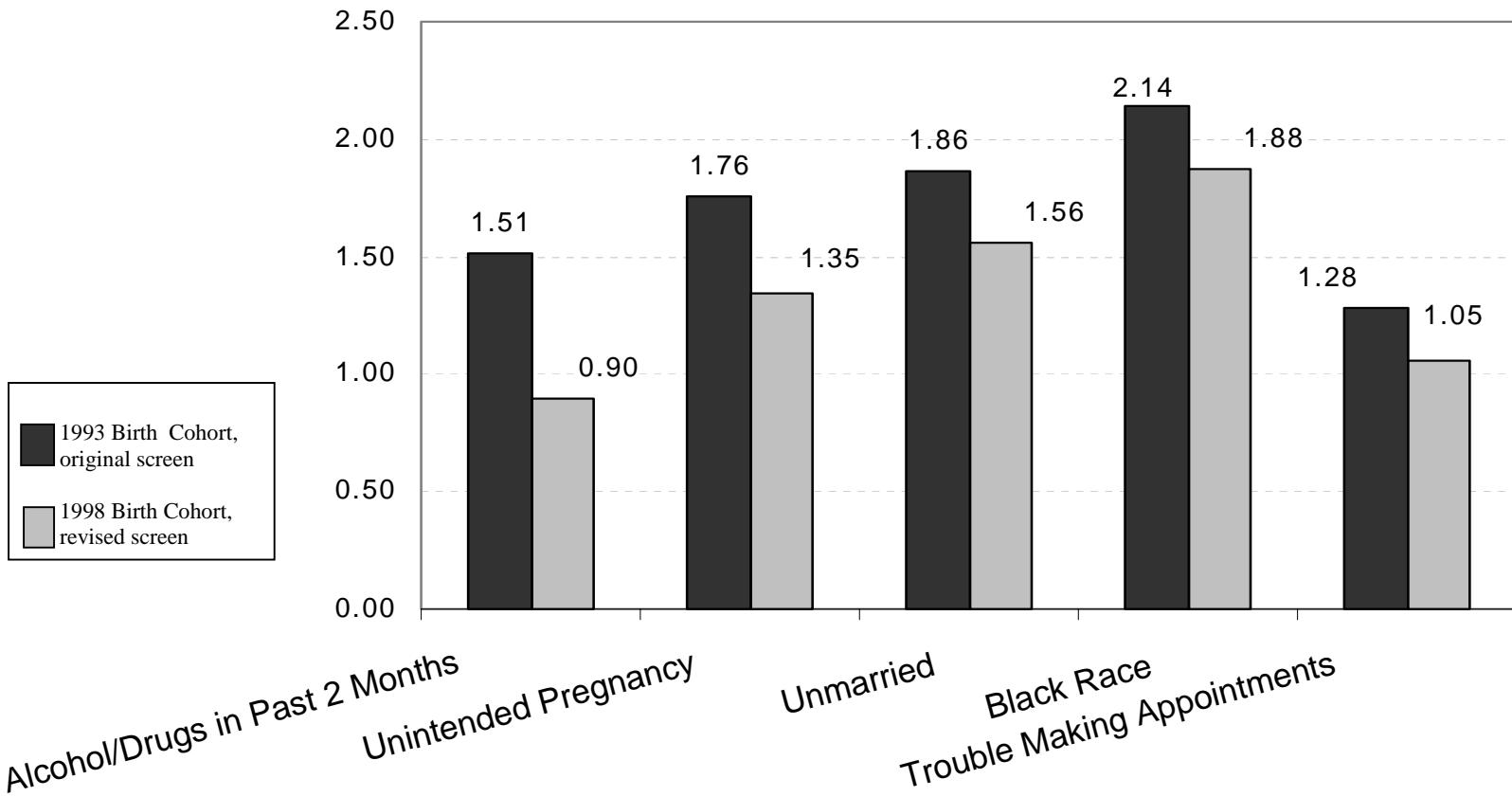


Table 3: A Comparison of Risk Ratios for Adverse Birth Outcome, Defined as Birth Weight less than 2000 Grams or Preterm Birth Prior to 34 Weeks of Gestation, Between Items on the First Prenatal Screen Compared to the Revised Prenatal Screen Represented by 1993 and 1998 Birth Cohort Data Respectively.

Currently Scored Risk Factors	% Adverse Outcome without Risk Factor	% Adverse Outcome with Risk Factor	1998 Risk Ratio	Lower Confidence Interval	Upper Confidence Interval	1998 Confidence Interval	1993 Risk Ratio	1993 Confidence Interval	Difference between 1998 and 1993 Risk Ratio	Statistical Significance of the Difference, p value
Alcohol or Drugs in Past 2 Months *	0.04	0.04	0.90	0.81	0.99	(0.81-0.99)	1.51	(1.20-1.90)	-0.61	0.00
Unintended Pregnancy	0.04	0.05	1.35	1.21	1.50	(1.21-1.50)	1.76	(1.57-1.97)	-0.41	0.00
Unmarried	0.03	0.05	1.56	1.45	1.68	(1.45-1.68)	1.86	(1.68-2.06)	-0.30	0.00
Black Race	0.03	0.06	1.88	1.75	2.01	(1.75-2.01)	2.14	(1.95-2.34)	-0.26	0.01
Trouble Making Appointments	0.04	0.04	1.05	0.91	1.22	(0.91-1.22)	1.28	(1.14-1.43)	-0.23	0.02
Smoke Cigarettes in Past 2 Months **	0.04	0.04	1.03	0.95	1.11	(0.95-1.11)	1.12	(0.99-1.26)	-0.09	0.12
Moved 3 or more Times in year	0.04	0.04	0.92	0.81	1.04	(0.81-1.04)	0.97	(0.85-1.11)	-0.05	0.27
Pre-pregnancy Weight <110 lbs ***	0.04	0.05	1.23	1.11	1.37	(1.11-1.37)	1.28	(1.16-1.42)	-0.05	0.31
Mother's age <18 or >39	0.04	0.05	1.40	1.28	1.54	(1.28-1.54)	1.38	(1.23-1.54)	0.02	0.58
Less than High School Education	0.04	0.05	1.20	1.12	1.29	(1.12-1.29)	1.06	(0.95-1.18)	0.14	0.97
On-going Illness	0.04	0.05	1.40	1.25	1.56	(1.25-1.56)	1.23	(1.06-1.43)	0.17	0.91
Complications Last Pregnancy	0.04	0.06	1.68	1.55	1.82	(1.55-1.82)	1.47	(1.33-1.62)	0.21	0.98
Unsafe Where They Live ****	0.04	0.05	1.26	1.06	1.49	(1.06-1.49)	1.04	(0.90-1.21)	0.22	0.95
Go to Bed Hungry ****	0.04	0.05	1.29	1.07	1.56	(1.07-1.56)	1.04	(0.90-1.21)	0.25	0.96
Inadequate Prenatal Care	0.04	0.05	1.32	1.23	1.41	(1.23-1.41)	0.81	(0.71-0.92)	0.51	1.00

The difference between the risk factors below the dashed line are not statistically significant.

* The first screen asks about only alcohol. The revised differs with the original screen that asks about both alcohol and drugs.

** On the first screen a woman was considered to smoke if she smoked ten or more cigarettes a day. The revised screen asked if a woman smoked in the past two months

*** The first screen used the cut off of 115 lbs., whereas 110 lbs was the cutoff used in the revised screen.

**** The first screen combined both unsafe and hungry into the same question whereas hunger and unsafe were split into two questions for the revised screen

Chart 5: *Examining Additional Risk Factors:*
Unadjusted Risk Ratios for Adverse Outcome from Unweighted
Items on the "New" Prenatal Screen, 1998 Birth Cohort

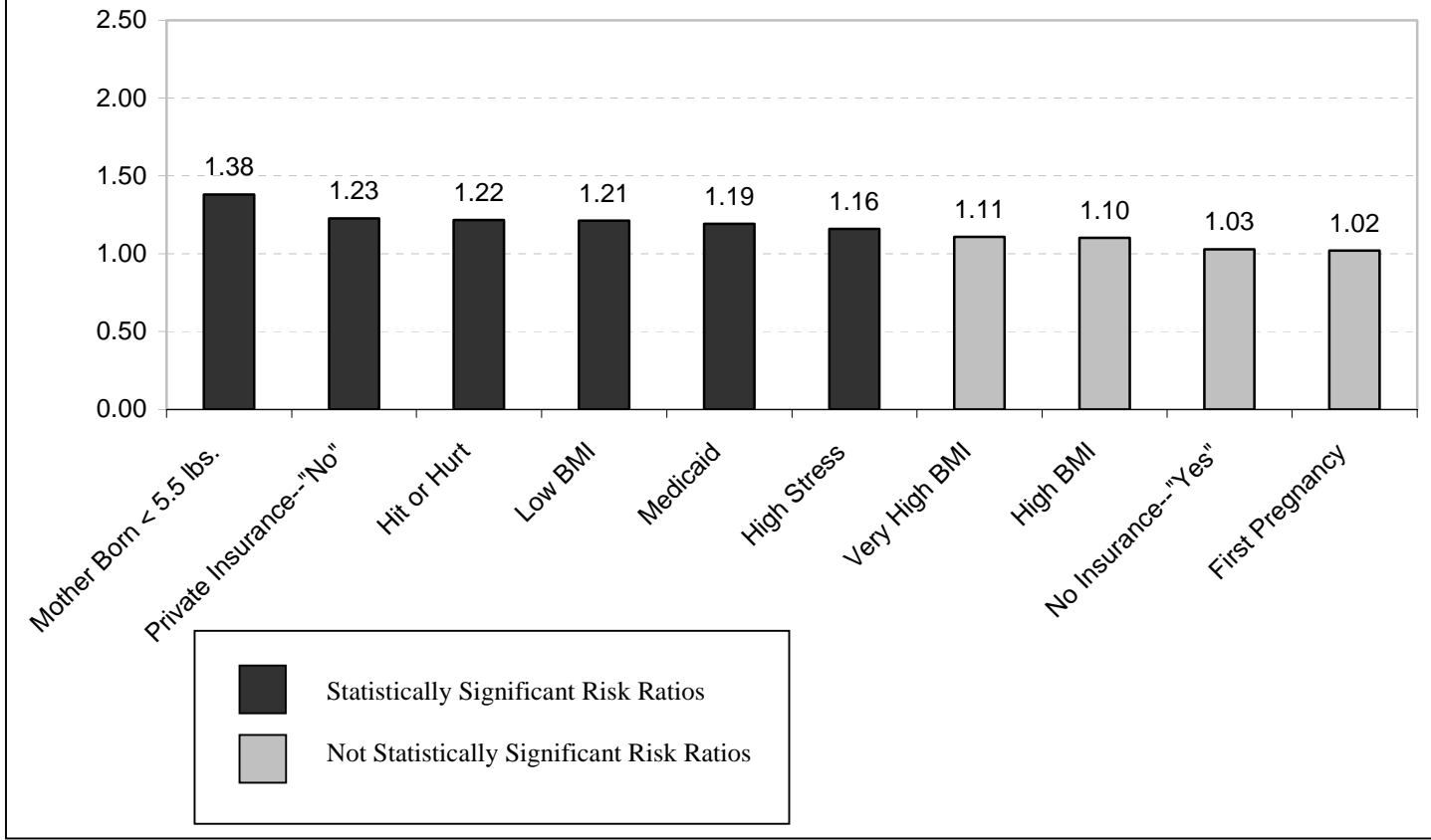
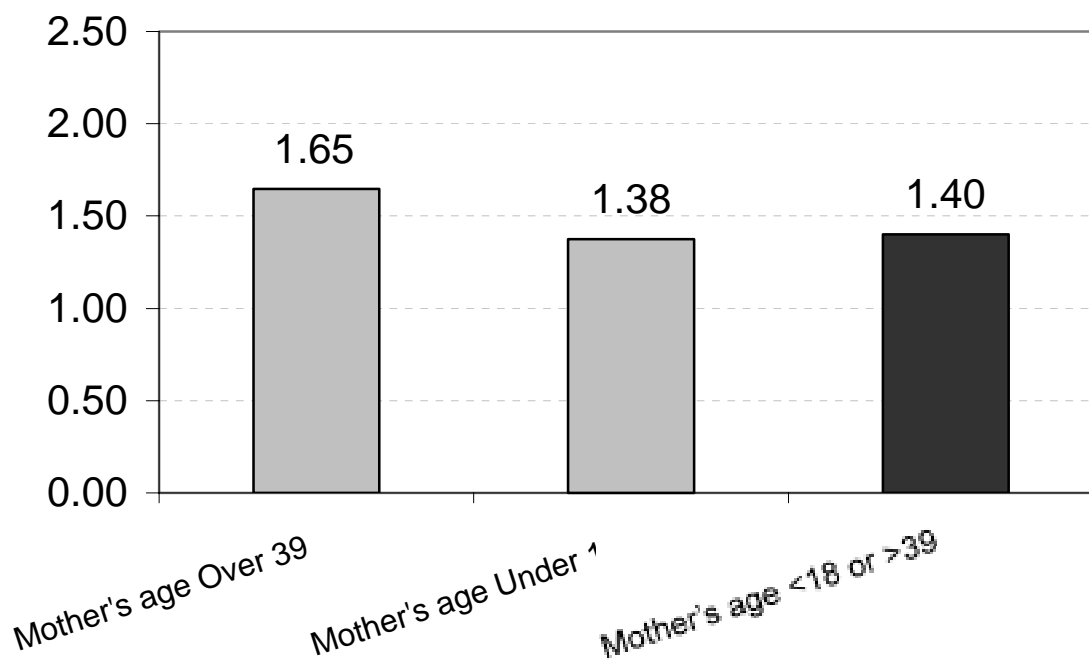


Chart 6: Risk Factor--Mother's Age

Split into two categories: Over 39 and Under 18 and were compared to the combined category used currently. Reference group were women ages 18 to 39. Unadjusted Risk Ratios 1998 Birth Cohort (all are statistically significant at $p < 0.05$)



Legend:
■ Age Risk Factor Split
■ Current Age Risk Factor

Table 4: Percentage and Risk Ratio of Currently Unscored Risk Factors Associated with Adverse Birth Outcomes Defined as Birth Weight less than 2000 Grams or Preterm Birth Prior to 34 Weeks of Gestation, 1998 Birth Cohort.

Unscored items	Number without an Adverse Outcome without the Risk Factor	Number of Adverse Outcomes without Risk Factor	Number without an Adverse Outcome with the Risk Factor	Number of Adverse Outcomes with Risk Factor	% Adverse Outcome for Women without Risk Factors	% Adverse Outcome for Women with Risk Factors	Risk Ratio	Confidence Interval
Mother's age Over 39	65110	2605	843	57	3.85%	6.33%	1.65	(1.28 to 2.12)
Mother Born Under 5 and Half lbs.	65748	2646	7922	447	3.87%	5.34%	1.38	(1.25 to 1.52)
Mother's age Under 18	65110	2605	7717	431	3.85%	5.29%	1.38	(1.25 to 1.52)
No Private Insurance	21601	777	52069	2316	3.47%	4.26%	1.23	(1.13 to 1.33)
Hit or Hurt	69891	2902	3711	189	3.99%	4.85%	1.22	(1.05 to 1.40)
Low BMI	67561	2785	6109	308	3.96%	4.80%	1.21	(1.08 to 1.36)
Medicaid	42468	1644	31202	1449	3.73%	4.44%	1.19	(1.11 to 1.28)
High Stress	62124	2542	11478	548	3.93%	4.56%	1.16	(1.06 to 1.27)
Very High BMI	68453	2851	5217	242	4.00%	4.43%	1.11	(0.98 to 1.26)
High BMI	61191	2524	12479	569	3.96%	4.36%	1.10	(1.01 to 1.20)
No Insurance	56923	2374	16747	719	4.00%	4.12%	1.03	(0.95 to 1.12)
First Pregnancy	48397	2017	25273	1076	4.00%	4.08%	1.02	(0.95 to 1.10)

Risk factors below the dashed line are not statistically significant.