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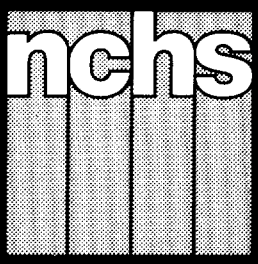

Vital and Health Statistics

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Comparability of the Birth Certificate and 1988 Maternal and Infant Health Survey

March 1993

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control and Prevention
National Center for Health Statistics

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Vital and Health Statistics

Comparability of the Birth Certificate and 1988 Maternal and Infant Health Survey

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No. 116

This report compares responses to the 1988 National Maternal and Infant Health Survey maternal questionnaire to similar items from the birth certificate, including demographic factors and items pertaining to the current and past pregnancies.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control and Prevention
National Center for Health Statistics

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Symbols

- - -	Data not available
. . .	Category not applicable
-	Quantity zero
0.0	Quantity more than zero but less than 0.5
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision (estimate is based on fewer than 20 births in numerator or denominator)

Comparability of the birth certificate and 1988 Maternal and Infant Health Survey

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Introduction

Information from birth certificates is widely utilized in the United States. Among the major uses of birth certificate data are annual statistical tabulations and research in areas concerning maternal and child health. Since birth certificate data are so commonly used, it is important to examine the validity of the birth certificate information. One method of assessing the quality of birth certificate data is to compare the information on the birth certificate with an independent source of information from the same birth. This was done in 1985, when survey data from the 1980 National Natality Survey (NNS) was compared with corresponding birth certificate data for a sample of births that occurred in the United States (1). Although that comparison provided much useful information, its generalizability may be limited because the maternal survey portion of the NNS included only married mothers.

The 1988 National Maternal and Infant Health Survey (NMIHS) allows for the assessment of birth certificate data for a broader cross-section of the population than the NNS allowed. The purpose of this report is to compare responses from the National Maternal and Infant Health Survey with birth certificate information for items common to both sources of data.

NOTE: We are grateful to Mary Glenn Fowler, M.D., M.P.H., and Robert L. Heuser for their reviews of this report.

Data source and limitations

The 1988 NMIHS was conducted by the National Center for Health Statistics to examine factors concerning maternal health, pregnancy outcome, and infant health. The NMIHS collected information on independent samples of live births, fetal deaths, and infant deaths that occurred in the United States in 1988 (2). The analyses in this report focus only on information from the live birth sample.

Data for each infant in the NMIHS live birth sample were derived from four different sources: A questionnaire completed by the mother anywhere from 6–30 months after the birth of the child; the mother's prenatal care provider(s); the hospital where the infant was born; and the infant's birth certificate. This report compares information from the maternal questionnaire only with information from the birth certificate. Future reports will include data from the prenatal care provider and hospital portions of the NMIHS.

The live birth sample contains an over-representation of low-birth-weight infants (infants with a birth weight of less than 2,500 grams) to allow for detailed analysis of factors associated with prematurity and growth retardation. Additionally, because black women in the United States have a high risk of adverse pregnancy outcome, the live birth cohort contains an oversampling of black infants. The NMIHS was made nationally representative by the calculation of a sample weight for each record that accounts for the survey's sampling scheme and for survey nonresponse. In this report, the sample weights were not utilized in the calculation of comparability rates to permit the reporting of the actual numbers upon which the comparisons were based. No substantial differences were found when comparability rates with the sample weights were compared with comparability rates calculated without the sample weights.

Of the 13,417 mothers that were contacted for the survey, 9,953 responded, yielding an overall response rate of 74 percent. This report is limited to the 4,956 black mothers and 4,695 white mothers that responded to the survey, because there were too few mothers of other races to allow for meaningful comparisons among those groups. Table A shows the total number of sampled live births for white and black mothers, along with response rates and reasons for nonresponse. Because pregnancy characteristics and outcomes differ by race, all comparisons, with the exception of Hispanic origin, are reported separately for black and white persons. For those comparisons, maternal race on the birth certificate was used to determine race.

For some survey respondents, information for individual survey questions or birth certificate items was missing. Comparability rates between corresponding items from the maternal survey and the birth certificate are based only on records that contain valid responses for both items. The number of missing observations for each item is

Table A. Number and rate of respondents and nonrespondents for the maternal questionnaire, by category of respondent and race of mother: National Maternal and Infant Health Survey, 1988

Category of respondent	White[1]		Black[1]	
	Number	Rate[2]	Number	Rate[2]
Total number of births sampled	5,947	...	7,055	...
Respondents	4,695	78.9	4,956	70.2
Nonrespondents:				
Unable to locate mother	544	9.1	1,119	15.9
Refused survey	250	4.2	254	3.6
Could not contact mother	124	2.1	320	4.5
Certificate excluded by State	200	3.4	195	2.8
Nonresident of the United States	43	0.7	31	0.4
Mother gave baby for adoption	22	0.4	32	0.5
Mother deceased	5	0.1	21	0.3
Mother claims no pregnancy	16	0.3	18	0.3
Other noninterview	48	0.8	109	1.5

[1]As defined by the birth certificate.

[2]The number of records in each category divided by the the total number of births sampled multiplied by 100.

provided in the detailed tables. Additionally, in 1988, data concerning Hispanic origin and parental education were not reported on birth certificates in all States. Comparisons for those items are based only on the records of respondents residing in States which collected that information on the birth certificate (see the individual tables for lists of the States).

Birth certificate data were used as the denominators for the comparison rates in this report. Although this facilitates the examination of potential misclassification of information on birth certificates, it is important to note that there is no systematic method for determining whether the response on the birth certificate or the maternal survey is the most accurate, should they differ.

Demographic measures

Race and Hispanic origin of mother and father

Over 98 percent of mothers reported the same race on both the birth certificate and the mother's questionnaire (tables B and 1). The level of agreement was similar for black and for white mothers. For the father's race, the comparability between the birth certificate and the maternal questionnaire was also approximately 98 percent among both black and white fathers (tables B and 2). For the mother's race, the rate of item nonresponse was similar for black and white mothers. Approximately 2 percent of records were missing data on the mother's race from the birth certificate and/or the maternal survey. However, approximately 43 percent of black mothers' records and 11 percent of white mothers' records were missing data on the father's race from at least one of the sources. Among the black mothers missing data on the father's race, 91 percent were missing data only from the birth certificate. Among those records, over 98 percent of the fathers were reported as black on the maternal questionnaire.

Data from the District of Columbia and the 30 States that collected parental Hispanic origin on the birth certificate in 1988 show that the agreement on Hispanic origin as reported on the birth certificate and on the maternal questionnaire was over 97 percent for both mothers and fathers (tables C and 3,4).

Nativity of mother

Overall agreement for maternal nativity was greater than 99 percent among both white and black women (tables D and 5). Nearly all of the mothers identified on their infant's birth certificate as being born in the United States also reported being native born on the maternal questionnaire. The rate of agreement was slightly lower among mothers identified as being foreign born, but the number of foreign born mothers was small.

Age of mother and father

While the mother's age at the birth of her infant is reported directly on the birth certificate, her age at delivery in the NMIHS was calculated using the mother's and the infant's date of birth. The overall agreement for mother's age, using grouped intervals, was approximately 97 percent among both black and white mothers (tables E and 6). When considered by individual year, the agreement for mother's age dropped to 92.0 percent for black mothers and 93.2 percent for white mothers. Item nonresponse for mother's date of birth on the maternal questionnaire was low; 3.9 percent for black mothers and 2.5 percent for white mothers. There were no missing data for maternal age on the birth certificates because records with missing values for that variable are given an imputed age.

Table B. Percent of responses from the mother's questionnaire in agreement with the birth certificate for race of parents, by race: United States, 1988

Race	*Mother*	*Father*
	Percent	
Total	98.4	98.2
White	98.3	98.4
Black	98.4	97.9

Table C. Percent of responses from the mother's questionnaire in agreement with the birth certificate for Hispanic origin of parents, by Hispanic origin: United States, 1988

Hispanic origin	*Mother*	*Father*
	Percent	
Total	97.9	97.6
Hispanic	98.1	95.8
Non-Hispanic	97.9	97.9

NOTE: Hispanic origin was collected on the birth certificate in 1988 in the 30 following States and the District of Columbia: Alabama, Arizona, Arkansas,California, Colorado, Connecticut, Florida, Georgia, Hawaii, Illinois, Indiana, Kansas, Kentucky, Maine, Massachusetts, Mississippi, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Tennessee, Texas, Utah, Washington, and Wyoming.

Table D. Percent of responses from the mother's questionnaire in agreement with the birth certificate for nativity of mother, by race and nativity: United States, 1988

Nativity of mother	*White*	*Black*
	Percent	
Total	99.6	99.8
Native born	99.8	99.8
Foreign born	95.8	*

Table E. Percent of responses from the mother's questionnaire in agreement with the birth certificate for age of parents, by race and age: United States, 1988

Age	Mother		Father	
	White	Black	White	Black
	Percent			
All ages	97.6	96.9	71.6	68.2
Under 18 years	93.8	96.5	*	*
18–19 years	96.2	94.7	*	*
20–24 years	97.7	97.7	62.0	66.6
25–29 years	97.6	97.4	69.6	69.1
30–34 years	98.5	96.7	76.5	73.6
35–39 years	97.4	96.1	77.5	69.2
40 years and over	100.0	94.9	98.8	94.1

NOTES: Agreement is for grouped data. Father's age reported on the birth certificate is his age at the time of the infant's birth, while father's age reported on the questionnaire is his age at the time of completion of the questionnaire.

Table F. Percent of responses from the mother's questionnaire in agreement with the birth certificate for education of parents, by race and education: United States, 1988

Completed years of education	Mother		Father	
	White	Black	White	Black
	Percent			
Total	85.9	79.5	84.3	75.4
11 years or fewer	83.5	80.0	82.7	71.7
12 years	85.7	77.8	83.8	77.9
13–15 years	82.6	79.8	75.0	68.5
16 years or more	92.7	86.2	92.7	79.5

NOTES: Data for California, New York State (exclusive of New York City), Texas, and Washington are excluded because the information was not collected on the birth certificate in these States in 1988. Agreement is for grouped data.

The NMIHS did not collect information regarding the father's age at the date of the birth of the infant. The NMIHS reports the father's age at the time the maternal survey was completed (6–30 months after delivery of the infant), while the birth certificate reports the father's age at the date of the birth of the infant. Consequently, the rate of agreement between the birth certificate and the maternal questionnaire by father's age group was relatively low, approximately 68 percent among black fathers and 72 percent among white fathers (tables E and 7). When considered by individual year, the agreement was lower; 8.1 percent and 6.0 percent for black fathers and white fathers, respectively. Subtracting one year from the father's age as reported on the NMIHS to estimate the effect of the reporting differences increased the rates of agreement between the two data sources. For the grouped ages, the agreement rate increased to 84.0 percent among black fathers and 89.4 percent among white fathers. Individual year comparability improved as well; 46.6 percent among black fathers and 54.3 percent among white fathers. As was the situation with race, more data were missing for father's age than for mother's age. For black mothers 45.6 percent and for white mothers 10.9 percent were missing data on father's age on either the birth certificate and/or the maternal questionnaire.

Education of mother and father

In 1988, parental education was reported on the birth certificates of all States except for California, New York State (exclusive of New York City), Texas, and Washington. The overall agreement for mother's education was approximately 80 percent among black mothers and 86 percent among white mothers (tables F and 8). For both races, the highest comparability rates were among those mothers reporting at least 16 years of education. Agreement for father's education was somewhat lower than that for mother's education for both black and white fathers (tables F and 9). As was true for the mothers, the highest levels of agreement were among those fathers reporting at least 16 years of education.

Several explanations may account for discrepancies in education level between the birth certificate and the maternal questionnaire. First, some parents may have completed more school in the period between the birth of the infant and the time the questionnaire was administered. Second, the questionnaire considers a high school graduate as having completed 12 years of education, regardless of how long it took to obtain a high school diploma. The birth certificate simply reports the number of years of schooling. Finally, the questionnaire but not

the birth certificate, distinguishes academic from vocational training. For example, of those women reporting 12 years of education on the questionnaire, but more than 12 years on the birth certificate, approximately 75 percent of white mothers and 62 percent of black mothers reported additional vocational training on the questionnaire.

Overall, 3.1 percent of black mothers and 2.1 percent of white mothers were missing data on maternal education. Father's education was missing for approximately 50 percent of the black mothers and 13 percent of the white mothers. As was the case for father's race and age, the majority of the missing data on father's education was missing from the birth certificate only.

Marital status

The overall agreement for marital status at the time of birth of the infant was approximately 94 percent among black mothers and 96 percent among white mothers (tables G and 10). Comparability between the birth certificate and the questionnaire was the highest among unmarried black mothers and married white mothers. Approximately 5 percent of black and white mothers were missing information on marital status at the time of birth.

Table G. Percent of responses from the mother's questionnaire in agreement with the birth certificate for marital status of parents, by race and marital status: United States, 1988

Marital status	*White*	*Black*
	Percent	
Total	95.9	93.9
Married	97.4	91.6
Unmarried	88.6	95.1

For the majority of the United States, marital status is reported directly on the birth certificate. However, for eight States (California, Connecticut, Maryland, Michigan, New Hampshire, North Carolina, Ohio, and Texas) parental marital status is inferred by comparing the surnames of the mother, father, and, if necessary, the child. This method of determining marital status on the birth certificate may explain some of the discrepancy between the birth certificate and the maternal questionnaire, particularly among populations of women most likely to retain their maiden name after marriage.

Pregnancy history measures

Live birth order

On the birth certificate, live birth order is determined directly from an item specifying the total number of live births the mother had, including the current birth. The NMIHS maternal questionnaire asked for detailed descriptions of factors associated with all previous pregnancies, including live births, stillbirths, miscarriages, and induced abortions. Live birth order from the maternal questionnaire was calculated as the sum of the prior live births plus the current birth.

The overall agreement rate for live birth order was approximately 82 percent among black mothers and 89 percent among white mothers (tables H and 11). The agreement was slightly less when birth orders higher than four were examined individually, not combined as in table H. For black or white mothers, the comparability was the highest when the current birth was reported as the first birth. The agreement between the maternal questionnaire and the birth certificate was lower with each subsequent birth. Information necessary to compare live birth order was missing for 4.2 percent of black mothers and 3.0 percent of white mothers.

The birth certificate was more likely to report a high live birth order than was the maternal questionnaire (table 11). Among black mothers, 29.6 percent of records reporting a live birth order of four or higher on the birth certificate reported fewer than four live births on the questionnaire. Conversely, of records with a live birth order of four or higher on the maternal questionnaire, 9.8 percent reported fewer than four live births on the birth certificate. The situation was similar among white mothers, where the respective percents were 23.2 percent and 5.6 percent.

Prior fetal deaths

The number of prior fetal deaths from the birth certificate was defined as the sum of reported pregnancy terminations (spontaneous and induced) occurring before and after 20 weeks of gestation. The number of prior fetal deaths reported on the NMIHS maternal questionnaire was calculated as the sum of all reported stillbirths, miscarriages, and induced abortions.

Table H. Percent of responses from the mother's questionnaire in agreement with the birth certificate for live birth order, by race and live birth order: United States, 1988

Live birth order	*White*	*Black*
	Percent	
All live births	88.8	82.4
1st live birth	97.8	95.9
2nd live birth	84.0	77.0
3rd live birth	80.6	73.0
4th or higher live birth	76.7	70.4

Table J. Percent of responses from the mother's questionnaire in agreement with the birth certificate for prior fetal deaths, by race and number of fetal deaths: United States, 1988

Fetal deaths	*White*	*Black*
	Percent	
Total	81.0	77.7
None	86.0	88.7
1 prior fetal death	69.9	50.8
2 prior fetal deaths	57.7	35.2
3 or more prior fetal deaths	51.8	35.1

Approximately 78 percent of black mothers and 81 percent of white mothers had the same number of prior fetal deaths recorded on the maternal questionnaire and the birth certificate (tables J and 12). The agreement was the highest for women with no fetal deaths reported on the birth certificate and decreased with each additional fetal death. Approximately 4 percent of black mothers and 3 percent of white mothers were missing information needed to calculate the number of prior fetal deaths.

The distribution of the number of prior fetal deaths was similar whether data from the birth certificate or the maternal questionnaire was examined (table 12). However, on an individual record level, the agreement between the two sources was not high. Unlike the situation for live birth order, there was no consistent trend for either the birth certificate or the maternal questionnaire to report a higher number of prior fetal deaths.

Pregnancy measures

Plurality

The agreement for plurality of the delivery was over 99 percent among both black mothers and white mothers (tables K and 13). Singleton births were more likely to be identified on both the maternal questionnaire and the birth certificate than were multiple births. Data on plurality was missing from the questionnaires of 5.5 percent of the black mothers and 4.4 percent of the white mothers. The birth certificates had no missing values for plurality.

Timing of prenatal care initiation

The timing of the first prenatal care visit as reported on the birth certificate is derived from an item specifying the month of pregnancy prenatal care began (for example, first, second, etc.). The maternal questionnaire asked the mother, "How many weeks pregnant were you when you went for your first prenatal visit?"

The overall agreement for timing of the first prenatal care visit varied by maternal race; 67 percent for black mothers and 85 percent for white mothers (tables L and 14). Among mothers who are reported as having received first trimester prenatal care on the birth certificate, over 87 percent of the black mothers and 95 percent of the white mothers also reported first trimester care on the NMIHS questionnaire. However, fewer than 40 percent of the women reported as having initiated prenatal care later than the first trimester on the birth certificate also reported delayed initiation of care on the maternal questionnaire.

Opportunities for errors in reporting the timing of prenatal care initiation exist for both the birth certificate and the maternal questionnaire. The method of collection of data for the birth certificate varies depending on the site of delivery. Some centers collect information directly from the mothers, while others abstract it from medical records. There are opportunities for error in both methods, particularly if the mother switched prenatal care providers during pregnancy (3). Information regarding the timing of prenatal care collected on the NMIHS questionnaire may be inaccurate because of the time lag between prenatal care and the completion of the maternal questionnaire. Up to 3 years can separate those events.

Table K. Percent of responses from the mother's questionnaire in agreement with the birth certificate for plurality, by race and plurality: United States, 1988

Plurality	*White*	*Black*
	Percent	
Total	99.7	99.1
Singleton	99.8	99.5
Twin or higher	96.4	89.0

Table L. Percent of responses from the mother's questionnaire in agreement with the birth certificate for trimester of first prenatal care, by race and trimester: United States, 1988

Trimester first prenatal care	*White*	*Black*
	Percent	
Total	84.9	66.9
First trimester	95.4	87.2
Second trimester	39.7	33.2
Third trimester or no care	32.6	36.2

Table M. Percent of responses from the mother's questionnaire in agreement with the birth certificate for number of prenatal care visits, by race and number of visits: United States, 1988

Number of prenatal care visits	*White*	*Black*
	Percent	
Total	46.5	39.6
No visits	51.7	50.4
1–6 visits	35.7	36.3
7–10 visits	32.9	34.6
11–16 visits	57.3	45.2
17 or more visits	44.0	34.2

NOTE: Agreement is for grouped data.

Number of prenatal care visits

The overall agreement rate for the number of prenatal care visits the mother received was lower than 50 percent among both black and white mothers, even after grouping of data (tables M and 15). The relatively poor comparability between the birth certificate and the questionnaire for this item may be partially due to the same

factors that influence the reporting of timing of the initial prenatal care visit. An additional factor that may affect the reporting of the number of prenatal care visits is the variation in determining exactly what constitutes a prenatal care visit. The reporting of appointments for pregnancy tests, sonograms, and other prenatal tests as a prenatal care visit may vary depending upon where the test occurred and whether the mother or the facility supplied the information for the birth certificate.

Gestational age

Gestational age from the birth certificate is measured by subtracting the date of the mother's last menstrual period (LMP) from the date of the infant's birth. The duration of the pregnancy as reported on the maternal questionnaire came from a question that asked, "How many weeks did this pregnancy last?"

Overall, the agreement between gestational age, as reported in 4- to 5-week intervals, between the questionnaire and the birth certificate was 66 percent among black mothers and 79 percent among white mothers (tables N and 16). The agreement was substantially higher among births of 38–42 weeks gestation than among births of less than 38 weeks gestation. This finding may support evidence showing that the LMP measure of gestational age is at its most accurate when assessing full-term births (4).

Among both the black and the white populations, the proportion of infants reported in each gestational age category below 33 weeks was slightly higher on the maternal questionnaire than on the birth certificate (table 16). However, 20.2 percent of black infants were reported as having a gestational age of 33–37 weeks on the birth certificate, compared with 11.1 percent on the maternal questionnaire. Fifty-three percent of black infants were given a gestational age of 38–42 weeks on the birth certificate, compared with 65 percent on the maternal questionnaire. Fifty-two percent of black infants reported as being 33–37 weeks gestation on the birth certificate were reported as having a gestational age of 38–42 weeks on the maternal questionnaire. The discrepancy among white infants was less, but still high. Among white infants with a gestational age of 33–37 weeks on the birth certificate, 27.6 percent had a gestational age of 38–42 weeks on the maternal questionnaire. These variations in the reporting of gestational age may be important when examining prematurity as a pregnancy outcome. Unfortunately, deciding whether the birth certificate or the maternal questionnaire provides the most accurate estimate of gestational age is not possible from this information.

Table N. Percent of responses from the mother's questionnaire in agreement with the birth certificate for length of pregnancy, by race and gestational age: United States, 1988

Gestational age	*White*	*Black*
	Percent	
Total	78.7	66.0
Less than 24 weeks	*	41.9
24–28 weeks	73.7	64.8
29–32 weeks	61.6	44.4
33–37 weeks	57.9	29.1
38–42 weeks	91.5	89.7
Greater than 42 weeks	*	*

NOTE: Agreement is for grouped data.

Discussion

The degree of comparability between data collected on the birth certificate and information reported on the 1988 National Maternal and Infant Health Survey maternal questionnaire was dependent on the item examined. In general, agreement rates were slightly higher among white mothers than among black mothers. Parental race and Hispanic origin, maternal nativity, maternal age, and plurality all had agreement rates of over 95 percent for both black and white mothers.

Responses to other items common to the birth certificate and the maternal questionnaire, such as number of fetal deaths, gestational age, and measures of prenatal care, were not highly comparable between the two data sources. While the overall distribution of most of the variables was similar for the birth certificate and the maternal questionnaire, the lack of comparability for those items may limit the utility of individual-level analyses using that information. Particularly, indices of prenatal care adequacy that are based on gestational age and number of prenatal care visits as reported on birth certificates may be of questionable validity, since the agreement in the reporting of either of those factors was relatively low.

Although the sampling and weighting scheme of the NMIHS was designed to produce a nationally representative sample of U.S. live births in 1988, these comparability results may not completely represent the population as a whole. Since the NMIHS included an oversampling of low-birth-weight births, the findings of this report may be different than if a random sample of births was chosen. Overall survey nonresponse and individual item nonresponse were not considered in this analysis and may also limit the generalizability of each comparison. However, as mentioned earlier in this report, utilizing the weights that account for the survey sampling scheme and survey nonresponse did not affect the comparability rates. There is also potential for bias among the respondents of the maternal questionnaire. Mothers who received the questionnaire late or who delayed completing and returning the questionnaire may have had more difficulty recalling details of the index pregnancy, particularly time-dependent items such as timing of prenatal care, than did mothers who completed the questionnaire promptly. Additionally, this time lag could have made it possible for responses to the maternal questionnaire to be confused with a more recent pregnancy than the one referred to on the birth certificate.

The comparability rates between the birth certificate and the 1988 NMIHS maternal questionnaire are generally somewhat lower than those between the birth certificate and the 1980 National Natality Survey (1). The exception was the agreement for parental race, which was higher in this report. The comparability of other variables reported here, such as parental Hispanic origin, marital status, and number of prenatal care visits, was not measured in the NNS report. A possible explanation for the apparent decline in comparability is that the NMIHS was composed of a higher risk population than was the NNS. The information on either the birth certificate or the maternal questionnaire may be less likely to be accurately reported for the NMIHS population.

From these analyses, one cannot conclude whether the birth certificate information is accurate for any given item. However, a high rate of agreement between the birth certificate and the maternal questionnaire may support the validity of a particular data item, while a low rate of agreement may highlight a source for potential problems. This report should be helpful in determining which variables commonly used in the reporting of national natality data are likely to be accurately reported on the birth certificate.

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Table 1. Number of responses by race of mother on birth certificate and mother's questionnaire: United States, 1988

Race on birth certificate	Race on mother's questionnaire					
	Total	White	Black	Asian or Pacific Islander	Eskimo/Aleut/ American Indian	Missing
Total	9,953	4,588	4,810	250	96	209
White	4,695	4,516	27	21	29	102
Black	4,956	47	4,778	22	8	101
Asian or Pacific Islander	216	8	1	203	–	4
Hawaiian	10	1	–	9	–	–
Chinese	40	–	–	40	–	–
Japanese	20	1	–	19	–	–
Filipino	45	2	1	41	–	1
Other	101	4	–	94	–	3
Eskimo, Aleut, and American Indian	70	8	–	1	59	2
Other	1	1	–	–	–	–
Missing	15	8	4	3	–	–

Table 2. Number of responses by race of father on birth certificate and mother's questionnaire: United States, 1988

Race on birth certificate	Race on mother's questionnaire					
	Total	White	Black	Asian or Pacific Islander	Eskimo/Aleut/ American Indian	Missing
Total	9,953	4,411	4,886	209	100	347
White	4,178	3,992	19	20	25	122
Black	3,088	41	2,929	15	7	96
Asian or Pacific Islander	174	8	–	157	1	8
Hawaiian	9	2	–	7	–	–
Chinese	38	–	–	38	–	–
Japanese	13	1	–	12	–	–
Filipino	27	1	–	22	–	4
Other	87	4	–	78	1	4
Eskimo, Aleut, and American Indian	52	7	–	2	42	1
Other	1	1	–	–	–	–
Missing	2,460	362	1,938	15	25	120

Table 3. Number of responses by Hispanic origin of mother on birth certificate and mother's questionnaire: United States, 1988

Hispanic origin on birth certificate	Hispanic origin on mother's questionnaire			
	Total	Hispanic	Non-Hispanic	Missing
Total	6,916	780	5,937	199
Hispanic	676	652	13	11
Non-Hispanic	5,993	122	5,689	182
Missing	247	6	235	6

NOTE: Hispanic origin was collected on the birth certificate in 1988 in the 30 following States and the District of Columbia: Alabama, Arizona, Arkansas,California, Colorado, Connecticut, Florida, Georgia, Hawaii, Illinois, Indiana, Kansas, Kentucky, Maine, Massachusetts, Mississippi, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Tennessee, Texas, Utah, Washington, and Wyoming.

Table 4. Number of responses by Hispanic origin of father on birth certificate and mother's questionnaire: United States, 1988

Hispanic origin on birth certificate	Hispanic origin on mother's questionnaire			
	Total	Hispanic	Non-Hispanic	Missing
Total	6,913	727	5,788	398
Hispanic	564	522	23	19
Non-Hispanic	4,555	92	4,215	248
Missing	1,794	113	1,550	131

NOTE: Hispanic origin was collected on the birth certificate in 1988 in the 30 following States and the District of Columbia: Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Florida, Georgia, Hawaii, Illinois, Indiana, Kansas, Kentucky, Maine, Massachusetts, Mississippi, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Tennessee, Texas, Utah, Washington, and Wyoming.

Table 5. Number of responses by race and nativity of mother on birth certificate and nativity on mother's questionnaire: United States, 1988

Race and nativity on birth certificate	Nativity on mother's questionnaire			
	Total	Native born	Foreign born	Missing
White				
Total	4,695	4,100	463	132
Native born	4,204	4,079	9	116
Foreign born	244	10	228	6
Missing	247	11	226	10
Black				
Total	4,956	4,443	272	241
Native born	4,626	4,402	11	213
Foreign born	13	–	13	–
Missing	317	41	248	28

Table 6. Number of responses by race and age of mother on birth certificate and age of mother on mother's questionnaire: United States, 1988

Race and age on birth certificate	Age on mother's questionnaire								
	Total	Under 18 years	18–19 years	20–24 years	25–29 years	30–34 years	35–39 years	40 years and over	Missing
White									
Total	4,695	154	318	1,189	1,456	1,070	342	48	118
Under 18 years	165	152	7	1	–	–	–	2	3
18–19 years	324	–	305	10	2	–	–	–	7
20–24 years	1,220	2	4	1,167	17	5	–	–	25
25–29 years	1,508	–	2	6	1,432	23	5	–	40
30–34 years	1,080	–	–	5	4	1,035	7	–	29
35–39 years	352	–	–	–	1	7	330	1	13
40 years or over	46	–	–	–	–	–	–	45	1
Black									
Total	4,956	475	614	1,536	1,202	666	233	39	191
Under 18 years	509	469	16	1	–	–	–	–	23
18–19 years	639	4	592	19	9	1	–	–	14
20–24 years	1,589	1	4	1,501	20	10	–	–	53
25–29 years	1,238	–	2	6	1,161	18	5	–	46
30–34 years	692	–	–	9	9	634	4	–	36
35–39 years	246	1	–	–	3	3	222	2	15
40 years or over	43	–	–	–	–	–	2	37	4

Table 7. Number of responses by race and age of father on birth certificate and age of mother on mother's questionnaire: United States, 1988

Race and age on birth certificate	Total	Age on mother's questionnaire: Under 18 years	18–19 years	20–24 years	25–29 years	30–34 years	35–39 years	40 years and over	Missing
White									
Total	4,695	5	76	662	1,352	1,386	721	390	103
Under 18 years	24	1	21	1	–	–	–	–	1
18–19 years	93	–	22	70	–	1	–	–	–
20–24 years	756	–	–	462	278	2	2	1	11
25–29 years	1,399	–	1	5	954	406	3	2	28
30–34 years	1,184	–	–	–	3	897	270	3	11
35–39 years	529	–	–	–	1	4	407	113	4
40 years or over	264	–	–	–	1	2	–	252	9
Missing	446	4	32	124	115	74	39	19	39
Black									
Total	4,956	32	229	1,269	1,366	940	500	388	232
Under 18 years	54	10	38	3	1	–	–	–	2
18–19 years	127	–	29	90	–	–	–	–	8
20–24 years	672	–	2	440	211	3	4	1	11
25–29 years	854	–	2	10	572	229	9	6	26
30–34 years	594	–	1	2	9	420	130	9	23
35–39 years	287	–	–	1	3	8	193	74	8
40 years or over	203	1	–	–	3	4	3	174	18
Missing	2,165	21	157	723	567	276	161	124	136

NOTE: Father's age reported on the birth certificate is his age at the time of the infant's birth, while father's age reported on the questionnaire is his age at the time of completion of the questionnaire.

Table 8. Number of responses by race and education of mother on birth certificate and education on mother's questionnaire: United States, 1988

Race and education on birth certificate	Total	Education on mother's questionnaire: 0–8 years	9–11 years	12 years	13–15 years	16 years or more	Missing
White							
Total	3,468	112	447	1,400	840	644	25
0–8 years	105	72	14	9	4	2	4
9–11 years	487	25	375	69	11	1	6
12 years	1,419	5	47	1,207	135	15	10
13–15 years	781	2	1	97	641	35	5
16 years or more	627	3	–	6	37	581	–
Missing	49	5	10	12	12	10	–
Black							
Total	4,213	118	1,107	1,765	846	313	64
0–8 years	122	63	43	10	1	1	4
9–11 years	1,211	36	900	221	22	5	27
12 years	1,808	16	137	1,392	223	22	18
13–15 years	708	2	13	99	556	27	11
16 years or more	300	–	–	8	33	257	2
Missing	64	1	14	35	11	1	2

NOTE: Data from California, New York State (exclusive of New York City), Texas, and Washington are excluded because the information was not gathered on the birth certificates from those States in 1988.

Table 9. Number of responses by race and education of father on birth certificate and education on mother's questionnaire: United States, 1988

Race and education on birth certificate	Education on mother's questionnaire						
	Total	0–8 years	9–11 years	12 years	13–15 years	16 years or more	Missing
White							
Total	3,468	120	408	1,384	627	820	109
0–8 years	82	54	15	4	1	–	8
9–11 years	343	23	243	62	3	–	12
12 years	1,269	13	56	1,048	113	20	19
13–15 years	598	–	2	96	442	49	9
16 years or more	784	–	–	17	40	724	3
Missing	392	30	92	157	28	27	58
Black							
Total	4,213	100	686	2,117	632	311	367
0–8 years	44	25	5	9	2	–	3
9–11 years	365	14	229	89	5	3	25
12 years	1,204	11	73	901	139	32	48
13–15 years	360	–	4	80	239	26	11
16 years or more	223	1	4	8	31	171	8
Missing	2,017	49	371	1,030	216	79	272

NOTE: Data from California, New York State (exclusive of New York City), Texas, and Washington are excluded because the information was not gathered on the birth certificates from those States in 1988.

Table 10. Number of responses by race and marital status of parents on birth certificate and marital status on mother's questionnaire: United States, 1988

Race and marital status on birth certificate	Marital status on mother's questionnaire			
	Total	Married	Unmarried	Missing
White				
Total	4,695	3,663	772	260
Married	3,851	3,576	96	179
Unmarried	844	87	676	81
Missing	–	–	–	–
Black				
Total	4,956	1,670	3,034	252
Married	1,767	1,522	139	106
Unmarried	3,188	148	2,894	146
Missing	1	–	1	–

Table 11. Number of responses by race and live birth order on birth certificate and live birth order on mother's questionnaire: United States, 1988

Race and live birth order on birth certificate	Live birth order on mother's questionnaire					
	Total	1st live birth	2nd live birth	3rd live birth	4th or higher live birth	Missing
White						
Total	4,695	2,210	1,355	675	321	134
1st live birth	2,030	1,913	29	10	4	74
2nd live birth	1,516	204	1,242	31	2	37
3rd live birth	737	61	67	582	12	15
4th or higher live birth	403	26	15	51	303	8
Missing	9	6	2	1	–	–
Black						
Total	4,956	2,193	1,248	775	556	184
1st live birth	1,865	1,717	55	11	8	74
2nd live birth	1,424	259	1,064	53	6	42
3rd live birth	907	102	91	633	41	40
4th or higher live birth	732	107	30	72	497	26
Missing	28	8	8	6	4	2

Table 12. Number of responses by race and prior fetal deaths on birth certificate and prior fetal deaths on mother's questionnaire: United States, 1988

Race and prior fetal deaths on birth certificate	Prior fetal deaths on mother's questionnaire					
	Total	None	1 prior fetal death	2 prior fetal deaths	3 or more prior fetal deaths	Missing
White						
Total	4,695	3,180	953	301	127	134
None	3,555	2,957	364	79	38	117
1 prior fetal death	771	155	529	61	12	14
2 prior fetal deaths	244	40	43	139	19	3
3 or more prior fetal deaths	112	17	17	20	58	–
Missing	13	11	–	2	–	–
Black						
Total	4,956	3,632	756	267	117	184
None	3,666	3,138	274	99	28	127
1 prior fetal death	823	318	399	51	18	37
2 prior fetal deaths	280	106	51	94	16	13
3 or more prior fetal deaths	156	47	30	21	53	5
Missing	31	23	2	2	2	2

Table 13. Number of responses by race and plurality on birth certificate and plurality on mother's questionnaire: United States, 1988

Race and plurality on birth certificate	Plurality on mother's questionnaire			
	Total	Singleton	Twin or higher	Missing
White				
Total	4,695	4,307	144	244
Singleton	4,402	4,302	10	90
Twin or higher	293	5	134	154
Black				
Total	4,956	4,560	178	218
Singleton	4,711	4,541	24	146
Twin or higher	245	19	154	72

Table 14. Number of responses by race and month of first prenatal care on birth certificate and week of first prenatal care on mother's questionnaire: United States, 1988

Race and month of first prenatal care on birth certificate	Week of first prenatal care on mother's questionnaire					
	Total	1–13 weeks	14–26 weeks	27–47 weeks	No prenatal care	Missing
White						
Total	4,695	4,012	454	38	75	116
1–3 months	3,733	3,485	145	3	21	79
4–6 months	649	357	247	11	8	26
7–9 months	141	62	43	21	8	7
No prenatal care	64	22	5	2	33	2
Missing	108	86	14	1	5	2
Black						
Total	4,956	3,584	867	105	231	169
1–3 months	2,953	2,495	302	20	45	91
4–6 months	1,313	776	421	33	37	46
7–9 months	282	130	86	40	12	14
No prenatal care	250	74	33	6	125	12
Missing	158	109	25	6	12	6

Table 15. Number of responses by race and number of prenatal care visits on birth certificate and number of visits on mother's questionnaire: United States, 1988

Race and number of prenatal care visits on birth certificate	Number of prenatal care visits on mother's questionnaire					
	Total	No visits	1–6 visits	7–10 visits	11–16 visits	17 or more visits
White						
Total	4,695	75	475	1,211	2,167	767
No visits	64	33	13	10	6	2
1–6 visits	507	14	181	178	101	33
7–10 visits	1,177	6	108	387	520	156
11–16 visits	2,027	7	59	415	1,161	385
17 or more visits	232	–	10	26	94	102
Missing	688	15	104	195	285	89
Black						
Total	4,956	232	840	1,426	1,746	712
No visits	250	126	61	29	22	12
1–6 visits	1,115	49	405	326	253	82
7–10 visits	1,376	20	176	476	516	188
11–16 visits	1,549	16	110	417	700	306
17 or more visits	193	1	8	30	88	66
Missing	473	20	80	148	167	58

Table 16. Number of responses by race and gestational age on birth certificate and gestational age on mother's questionnaire: United States, 1988

Race and gestational age on birth certificate	Gestational age on mother's questionnaire							
	Total	Fewer than 24 weeks	24–28 weeks	29–32 weeks	33–37 weeks	38–42 weeks	43 weeks or more	Missing
White								
Total	4,695	93	316	318	629	3,152	89	98
Fewer than 24 weeks	56	41	11	2	1	1	–	–
24–28 weeks	245	23	174	30	7	2	0	9
29–32 weeks	301	5	60	181	30	17	1	7
33–37 weeks	691	8	25	58	392	191	3	14
38–42 weeks	2,953	9	10	21	158	2,649	49	57
43 weeks or more	255	–	2	3	15	199	33	3
Missing	194	7	34	23	26	93	3	8
Black								
Total	4,956	133	419	357	549	3,222	58	218
Fewer than 24 weeks	135	54	41	9	9	16	–	6
24–28 weeks	302	27	188	42	14	19	–	12
29–32 weeks	337	15	76	138	36	46	–	26
33–37 weeks	999	10	45	98	276	519	2	49
38–42 weeks	2,636	11	17	32	166	2,276	35	99
43 weeks or more	261	–	2	6	9	217	17	10
Missing	286	16	50	32	39	129	4	16

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