

Interpregnancy Intervals in the United States: Data From the Birth Certificate and the National Survey of Family Growth

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Abstract

Objective—To describe data on interpregnancy intervals (IPI), defined as the timing between a live birth and conception of a subsequent live birth, from a subset of jurisdictions that adopted the 2003 revised birth certificate. Because this information is available among revised jurisdictions only, the national representativeness of IPI and related patterns to the entire United States were assessed using the 2006–2010 National Survey of Family Growth (NSFG).

Methods—Birth certificate data are based on 100% of births registered in 36 states and the District of Columbia that adopted the 2003 revised birth certificate in 2011 (83% of 2011 U.S. births). The “Date of last live birth” item on the birth certificate was used to calculate months between the birth occurring in 2011 and the previous birth. These data were compared with pregnancy data from a nationally representative sample of women from the 2006–2010 NSFG.

Results—Jurisdiction-specific median IPI ranged from 25 months (Idaho, Montana, North Dakota, South Dakota, Utah, and Wisconsin) to 32 months (California) using birth certificate data. Overall, the distribution of IPI from the birth certificate was similar to NSFG for IPI less than 18 months (30% and 29%), 18 to 59 months (50% and 52%), and 60 months or more (21% and 18%). Consistent patterns in IPI distribution by data source were seen by age at delivery, marital status, education, number of previous live births, and Hispanic origin and race, with the exception of differences in IPI of 60 months or more among non-Hispanic black women and women with a bachelor’s degree or higher.

Keywords: birth spacing • pregnancy interval • vital statistics

Introduction

The timing between a live birth and the next pregnancy, termed the interpregnancy interval (IPI), may affect the risk of pregnancy complications, such as preterm birth, low birthweight, and small gestational age (birthweight that is small for a given gestational age) (1–5). While there is no consensus on optimal IPI, research has shown that short intervals (less than 18 months) and long intervals (60 months or more) were associated with higher risks of adverse health outcomes (1–2). Factors such as maternal age and socioeconomic status may affect IPI patterns (6–8). Health care providers have emphasized the importance of providing information about and access to family planning services during the postpartum period to reduce adverse outcomes associated with short IPI (9). Moreover, evidence suggests a relationship between long IPI and perinatal complications, but these mechanisms are less well understood (1).

Information pertaining to IPI on the birth certificate is useful for tracking trends between successive births or pregnancies, particularly for detailed subpopulations and by geography. In addition, the birth certificate provides information on maternal and infant health outcomes that may be related to IPI. Prior to 1995, the “Date of last live birth” item was available on the birth certificate and was used for assessing IPI in the United States. However, collection of information on the date of last live birth was discontinued after 1995 because of budget constraints (10). Information on the date of last live birth is now available among a subset of jurisdictions adopting the 2003 revision of the U.S. Standard Certificate of Live Birth (referred to in this report as the revised reporting area). The quality of this information on the revised birth certificate was recently assessed in two states and found to have at least 85% or higher exact agreement between birth and

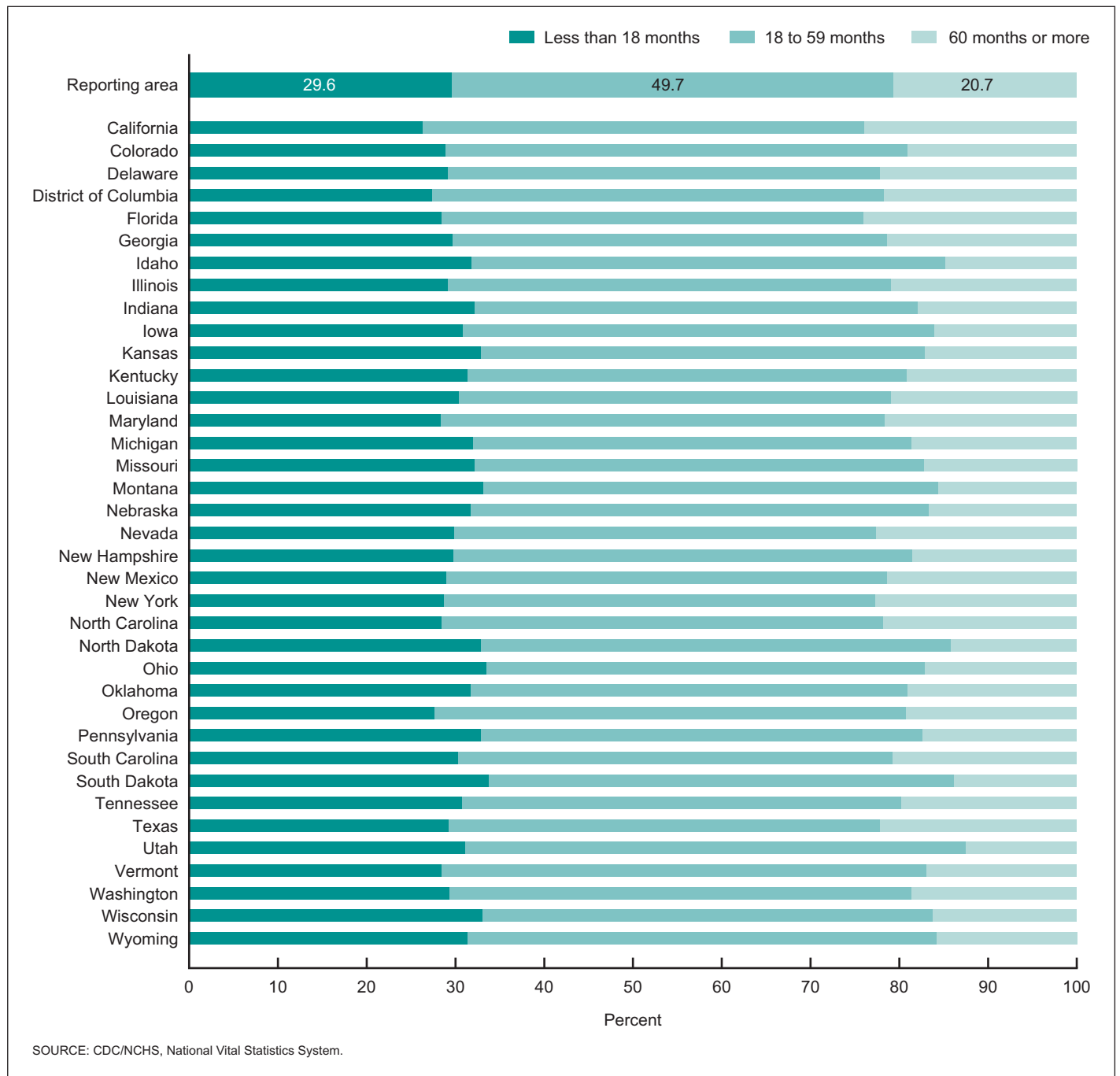


Figure 1. Interpregnancy intervals for all women with two births or more using 2011 birth certificate data, by reporting area: 36 states and the District of Columbia

medical records for the date of last live birth (11). However, the revised reporting area is not a random sample of all births; thus results may not be generalizable to the United States as a whole (12).

This report describes overall and jurisdiction-specific IPI patterns by age and race and Hispanic origin using data from the revised birth certificate as of January 1, 2011. For women aged 15–44, IPI data from the National Survey of Family Growth (NSFG) are used to assess the representativeness of the date of last live birth item from the birth certificate revised reporting area. To the extent that results for the revised reporting area are largely consistent with those from NSFG, information from the birth certificate may provide some insight into national IPI patterns.

Methods

Birth certificate data

Data are based on 100% of births to residents of the 36 states and the District of Columbia (DC) that implemented the 2003 revision of the birth certificate as of January 1, 2011. The data are provided to the Centers for Disease Control and Prevention’s National Center for Health Statistics through the Vital Statistics Cooperative Program. The 2011 revised reporting area is used because it was the largest available reporting area at a time comparable to the 2006–2010

NSFG. The 36 reporting states are: California, Colorado, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Michigan, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Washington, Wisconsin, and Wyoming. The 3,267,934 births in these states represent 83% of 2011 U.S. births.

For this report, IPI was constructed for women with second- or higher-order singleton births from the revised reporting area ($n = 1,887,161$). A live birth interval was computed for birth certificate data by subtracting the date of the previous live birth from the most recent birth (both computed in months). Using this computed value, IPI was calculated by subtracting the gestational age (primarily based on the date of last menstrual period and converted to months) of the recent birth from the live birth interval. Plural births were not analyzed because information on the date of last live birth included information on births within the same pregnancy, rather than a prior pregnancy. Unknown (8.4%) or implausible (0.2%) values (i.e., $IPI \leq 0$) of calculated IPI of second- or higher-order singleton births in the revised reporting area were excluded, for a total sample of 1,726,163 women of all ages (Table 1, Figure 1).

The National Survey of Family Growth

The 2006–2010 NSFG collected data from a national sample of 12,279 women (and 10,403 men) aged 15–44 on factors affecting birth and pregnancy rates, including contraceptive use; infertility; marriage, divorce, and cohabitation; pregnancy outcomes; and closely related health topics. The NSFG pregnancy file contains information on each reported pregnancy, including when it began (computed from the date of the end of the pregnancy and the reported pregnancy length) and how it ended, whether by live birth, miscarriage, stillbirth, ectopic pregnancy, or abortion. The estimated total number of births from the 2006–2010 NSFG by maternal characteristics (Hispanic origin, race, mother's age at delivery, and birth order) did not differ significantly from birth certificate records for the entire United States (13).

IPI was calculated as the months between the conception date of a second- or higher-order live birth and the date of the previous live birth. IPI data from NSFG are used as a source of comparison for the date of last live birth item on the birth certificate; hence, IPI are only computed from pregnancies ending in live birth. Similar to the birth certificate, plural births and implausible values of calculated IPI of second- or higher-order singleton births in the revised reporting area were excluded. To minimize bias related to retrospective reporting, NSFG analyses were limited to the most recent second- or higher-order live birth within 5 years preceding the interview, which includes births from 2001 through 2010.

Analytic sample for data source comparison

Birth certificate data from the revised reporting area in 2011 were compared with the recent birth data reported in the 2006–2010 NSFG. Each sample consisted of women aged 15–44 with two live births or more in which the most recent pregnancy ended in a live singleton birth. The final analytic sample of women aged 15–44 included 1,723,084 women for the birth certificate data and 2,156

women for the 2006–2010 NSFG (Tables 2,3; Figure 2). All NSFG analyses were weighted to reflect approximately 10 million women aged 15–44 with two live births or more in the 5 years preceding the interview. Additionally, the complex sampling design of NSFG was taken into account in the calculation of standard errors.

Explanatory variables were chosen based on comparability between the two data sources and included age at delivery, marital status, education, number of previous live births, and Hispanic origin and race (see Technical Notes). Nativity, or whether the respondent was born in the United States, was shown for Hispanic persons only. For NSFG, some variables were measured at the time of the most recent birth (age, marital status, and number of previous live births), and other variables were measured at the time of interview [education, Hispanic origin, and race and nativity (for Hispanic persons)]. The variable definitions across data sources were similar, with the exception of nativity. Non-U.S. born status on the birth certificate was determined by the country where the mother was born, whereas in NSFG, it was determined by whether the mother reported she was born outside of the United States.

Length of IPI ranged from 1 to 293 months for the birth certificate and 1 to 247 months for NSFG. IPI were divided into three categories: 17 months or less, 18 to 59 months, and 60 months or more. Births conceived within 18 months of a previous live birth were defined as short IPI for this report to follow the convention of Healthy People 2020 objectives (14). Long IPI were defined as 60 months or longer for consistency with previous studies (1–2).

Data analysis

The median (M) rather than the mean IPI length was shown in this report because the IPI distribution is skewed toward larger values. Differences in medians were assessed using a K -sample equality of medians test. A two-sample unpaired z test was used to test differences in the percentage of births within given categories of IPI across data sources.

Results

Interpregnancy intervals for all women by jurisdiction—birth certificate data

Figure 1 shows the percent distribution of IPI for all women with two births or more for the 2011 revised reporting area: 29.6% of women had short IPI (range: 26.3% in California to 33.8% in South Dakota), and 20.7% had long IPI (range: 12.5% in Utah to 24.0% in Florida). Overall, the median IPI (M) of all second- or higher-order singleton births in the revised reporting area was 29 months (Table 1). Jurisdiction-specific IPI levels ranged from 25 months (Idaho, Montana, North Dakota, South Dakota, Utah, and Wisconsin) to 32 months (California).

- Median IPI increased with increasing age of the mother ($p < 0.001$ with each age group increase) across the total revised reporting area. This pattern was consistent across jurisdictions with medians ranging from 11 months to 14 months for women under age 20, and 39 months to 76 months for women aged 40 and over. The jurisdiction-specific median IPI was at least 18 months or higher across all age groups, with the exception of women under age 20.

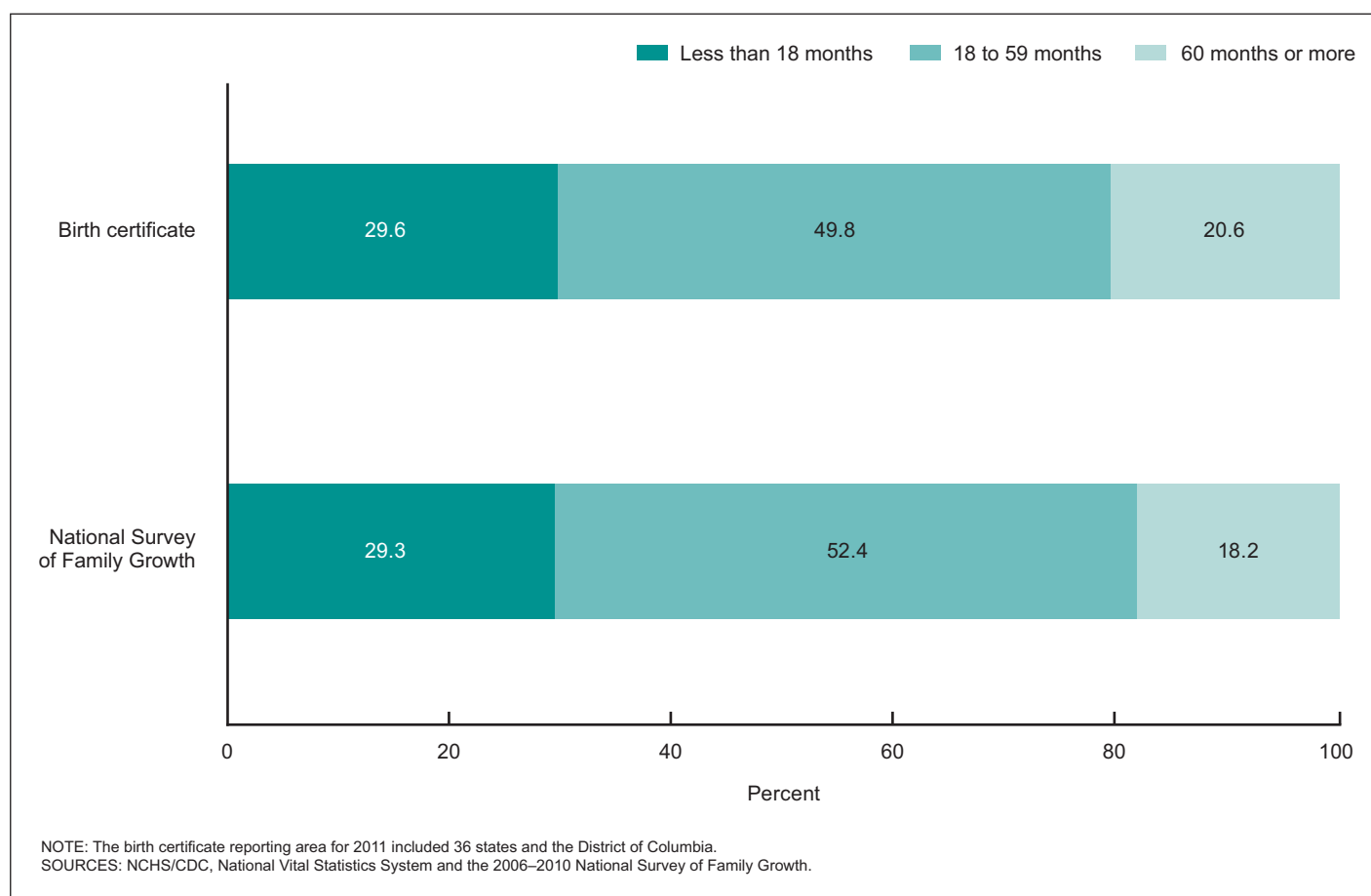


Figure 2. Percent distribution of interpregnancy intervals for women aged 15–44 with two births or more: 2011 birth certificate data and 2006–2010 National Survey of Family Growth

- Overall, non-Hispanic white women had the shortest median IPI ($M = 26$ months, $p < 0.001$) compared with non-Hispanic black women ($M = 30$ months, $p < 0.001$) and Hispanic women ($M = 34$ months, $p < 0.001$), but it varied within some jurisdictions. This pattern of IPI by race was consistent across the majority of age groups, with the exception of births to mothers under age 20 (data not shown).
- By jurisdiction, medians ranged from 22 months to 29 months for non-Hispanic white women, from 17 months to 38 months for non-Hispanic black women, and 23 months to 45 months for Hispanic women.
- Within Hispanic origin subgroups, non-U.S. born Hispanic women had longer median IPI ($M = 38$ months) compared with U.S.-born Hispanic women ($M = 29$ months, $p < 0.001$) for the total revised reporting area. This pattern was consistent across jurisdictions with the exception of four states (Delaware, Montana, South Dakota, and Wyoming), for which differences by nativity were not significant.
- The majority of women from these two data sources were aged 25–34 at last birth, and less than 4% were teenagers aged 15–19. Birth certificate data showed a lower percentage of women aged 35–39 (15%) compared with NSFG (18%). In contrast, a higher percentage of women from the birth certificate were aged 40–44 compared with NSFG (3.4% and 2.2%, respectively).
- For both data sources, percent distributions by marital status at most recent birth were similar: 64% of women from the birth certificate and 66% of women from NSFG were married, while 36% compared with 34% were unmarried.
- Percent distributions by education were similar for both data sources, except a higher percentage of women from the birth certificate reported having some college (29%) compared with NSFG (24%).
- For both data sources, more than one-half of women aged 15–44 had only one previous live birth, and less than one-fifth had three or more previous births.
- Percent distributions by race and Hispanic origin were similar for both data sources: 28% of women from the birth certificate and 23% from NSFG were Hispanic, 51% and 54% were non-Hispanic white, and 14% in both data sources were non-Hispanic black. The percentage of U.S.-born Hispanic women from the birth certificate was higher (11.4%) compared with NSFG (8.3%).

Birth certificate and NSFG data: Women aged 15–44

Maternal characteristics

- The median IPI for women from birth certificate data was two months longer ($M = 29$ months) compared with women from NSFG data ($M = 27$ months, $p < 0.001$) (Table 2).

Interpregnancy intervals, total, and by subgroup

Figure 2 shows the percent distribution of IPI for women aged 15–44 for both the birth certificate and NSFG. IPI length for both data

sources was similar: 30% of women from the birth certificate and 29% from NSFG had IPI less than 18 months; 50% and 52%, respectively, had IPI of 18 to 59 months; and 21% and 18% had IPI of 60 months or more. There was also overall similarity in IPI by subgroup across data sources (Table 3).

Age at most recent birth

- There were no significant differences by age at most recent birth between data sources in the percentages of short or long IPI.
- Short IPI in both data sources was inversely associated with maternal age. More than two-thirds (67%) of teenagers aged 15–19 from the birth certificate had short IPI, and more than one-half (57%) of teenagers from NSFG had short IPI. The next highest percentage of short IPI was among women aged 20–29 (35% from the birth certificate and 33% from NSFG), followed by 22% of women aged 30–44 from the birth certificate and 24% from NSFG.
- Long IPI in both data sources was most common for older women. Among women aged 30–44, 30% from the birth certificate had long IPI compared with 26% from NSFG.

Marital status at most recent birth

- There were no significant differences by marital status between data sources in the percentages of short or long IPI.
- Unmarried women had a higher percentage of long IPI from the birth certificate (24%) and NSFG (23%) compared with married women (19% from the birth certificate and 16% from NSFG).

Education

- There were no significant differences by education between data sources in the percentages of short IPI.
- There were similar patterns between data sources in the percentages of long IPI across education groups. A higher percentage of women with less than a bachelor's degree had long IPI (23% from the birth certificate and 22% from NSFG) compared with women with a bachelor's degree or higher (13.3% from the birth certificate and 8.5% from NSFG). The percentages of long IPI for women with a bachelor's degree or higher were significantly different between data sources.

Number of previous live births

- There were no significant differences by number of previous live births between data sources in the percentages of short or long IPI.

Hispanic origin and race

With the exception of long IPI among non-Hispanic black women (24% from the birth certificate and 18% from NSFG), the IPI distribution by Hispanic origin and race and nativity (among Hispanic persons) did not differ significantly between data sources. Differences in the percentages of short and long IPI by Hispanic origin and race were significant for women from the birth certificate, but not NSFG.

- Birth certificate data showed Hispanic women had the lowest percentage of short IPI (26%) compared with non-Hispanic

white (32%) and non-Hispanic black (31%) women. In addition, U.S.-born Hispanic women had a higher percentage of short IPI (31%) compared with non-U.S. born Hispanic women (22%).

- Non-U.S. born Hispanic women from the birth certificate had the highest percentage of long IPI of all race and ethnicity groups (30%), followed by non-Hispanic black women (24%), U.S.-born Hispanic women (22%), and non-Hispanic white women (16%).

Discussion

This report is the first presentation of data from the 2003 revised birth certificate on interpregnancy intervals representing all singleton or second- or higher-order births in the revised reporting area for 2011. The date of last live birth item on the birth certificate provides newly available information for comparisons of IPI distributions across jurisdictions and by maternal characteristics. Overall, at least 50% of the distribution of IPI based on the 2011 birth certificate revised reporting area occurred after 2 years across all jurisdictions (jurisdiction-specific median IPI ranged from 25 to 32 months); however, this varied by age and Hispanic origin and race of the mother. In addition, non-U.S. born Hispanic women had longer median IPI compared with U.S.-born Hispanic women both overall and across most jurisdictions. Data pertaining to IPI length showed overall consistency between birth certificate data and the 2006–2010 NSFG—about one-third of births in the United States were below an 18-month threshold in both data sources. Consistent IPI distributions between NSFG and the birth certificate for most maternal characteristics suggest IPI patterns for the revised reporting area may be generally comparable with those for the United States as a whole.

The findings from this report represent women with two live births or more in order to compute IPI. As such, the majority of second- or higher-order births occurred among mothers aged 25–34, and teenagers represented only a small percentage (less than 4%) of the overall sample. Restricting birth certificate data to women aged 15–44 had minimal impact on the overall distribution of IPI. Maternal characteristics and information on pregnancies and births were ascertained differently for each data source, potentially affecting the distributions of these characteristics; however, there were few significant differences. The medians and percentages in this report may be influenced by age-specific patterns of IPI that were not controlled for in this report; however, cross tabulations of race by age showed overall consistent IPI patterns across the majority of age groups, with the exception of births to mothers under age 20 (data not shown).

In NSFG, births were limited to those within 5 years of the interview date, which includes births from 2001 through 2010. In turn, the small differences observed between birth certificate and NSFG data may represent changes in IPI over this time period. Finally, the precision of median IPI estimates by Hispanic origin and race on the birth certificate may be limited for some jurisdictions due to small sample sizes.

Conclusion

Both short and long IPI have been associated with adverse perinatal outcomes (1–5). However, further studies are needed to assess whether IPI is independently associated with adverse maternal and infant health outcomes or whether these relationships are due to other confounding factors (e.g., maternal age, socioeco-

omic status, or pregnancy health behaviors). The date of last live birth item, newly available on the revised birth certificate, provides further information to better understand trends and consequences of birth and pregnancy spacing in the United States. Findings from this analysis provide useful information on IPI and appear to be consistent with other nationally representative data. By 2015, it is expected that data for all reporting areas will be based on the 2003 U.S. standard certificate, providing national data for IPI and other items related to maternal and infant health.

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Table 1. Median interpregnancy interval, by age of mother, race, and Hispanic origin and nativity: 36 states and the District of Columbia, 2011

Area	Age of mother at most recent birth							Race and Hispanic origin				
	Total	Under 20	20–24	25–29	30–34	35–39	40–54	Non-Hispanic white, single race	Non-Hispanic black, single race	Hispanic		
										Total	U.S. born	Not U.S. born
	Median											
Reporting area	29	12	21	29	32	40	55	26	30	34	29	38
California	32	13	23	31	34	41	57	26	33	36	30	40
Colorado	28	13	22	28	29	34	43	25	29	35	31	41
Delaware	29	14	22	30	32	40	57	27	31	33	28	35
District of Columbia	29	14	24	35	32	29	39	22	30	45	33	48
Florida	31	12	20	31	36	46	67	28	31	36	31	39
Georgia	29	12	20	31	34	43	57	28	30	33	27	35
Idaho	25	13	18	24	29	35	53	24	24	31	26	35
Illinois	29	12	21	29	30	37	52	26	32	37	31	40
Indiana	27	12	19	27	31	40	54	26	28	32	28	34
Iowa	26	13	19	25	29	37	52	26	27	32	26	36
Kansas	26	12	19	26	30	37	59	25	25	30	25	34
Kentucky	28	12	19	29	34	44	59	27	27	33	28	36
Louisiana	29	12	20	32	38	49	76	29	29	35	28	38
Maryland	29	14	22	29	30	36	48	26	33	38	28	41
Michigan	27	12	19	26	29	38	53	25	30	31	27	35
Missouri	26	11	20	27	30	37	54	26	29	30	26	33
Montana	25	12	19	25	28	35	42	25	34	25	25	25
Nebraska	26	12	19	25	29	38	56	25	26	34	27	37
Nevada	29	12	21	29	34	46	61	26	27	34	28	38
New Hampshire	28	13	21	28	28	34	51	27	31	38	29	46
New Mexico	30	13	22	32	37	46	64	25	26	33	31	40
New York	29	13	20	28	31	38	50	24	38	40	34	43
North Carolina	30	13	21	31	34	42	59	28	31	36	26	39
North Dakota	25	13	18	24	29	39	51	25	18	26	24	29
Ohio	26	12	19	26	28	37	49	25	28	29	27	33
Oklahoma	27	12	19	29	36	50	66	27	26	32	25	36
Oregon	28	14	22	28	31	36	50	27	31	35	28	38
Pennsylvania	26	12	20	26	27	34	47	25	31	29	27	32
South Carolina	29	13	20	30	35	45	63	27	31	32	25	34
South Dakota	25	11	18	24	28	37	39	25	20	27	27	28
Tennessee	28	12	20	30	35	44	58	27	28	34	27	35
Texas	30	12	21	31	36	45	64	27	28	32	29	36
Utah	25	12	18	23	28	34	45	24	17	30	25	33
Vermont	27	12	23	27	27	32	39	27	30	23	*	*
Washington	27	14	21	27	30	36	46	25	28	34	27	38
Wisconsin	25	12	20	24	27	32	43	24	28	32	27	35
Wyoming	26	12	20	26	31	37	46	26	*	31	31	32

* Figure does not meet standards of reliability or precision; based on fewer than 20 births.

SOURCE: CDC/NCHS, National Vital Statistics System.

Table 2. Maternal characteristics for women aged 15–44 with two births or more: 2011 birth certificate reporting area and 2006–2010 National Survey of Family Growth

Characteristic	2011 birth certificate		2006–2010 NSFG	
	Median (IQR ¹) interpregnancy interval 29 (15 to 52)		Median (IQR ¹) interpregnancy interval 27 (16 to 48)	
	Number in thousands	Percent (confidence interval)	Number in thousands	Percent (confidence interval)
Age at most recent birth				
Total	1,723,084	100.0	10,297	100.0
15–19	43,930	2.6 (2.5, 2.7)	326	3.2 (2.1, 4.3)
20–24	343,479	19.9 (19.9, 20.0)	2,092	20.3 (17.5, 23.1)
25–29	520,587	30.2 (30.1, 30.3)	2,966	28.8 (26.0, 31.6)
30–34	503,488	29.2 (29.2, 29.3)	2,857	27.7 (24.8, 30.7)
35–39	253,008	14.7 (14.6, 14.7)	1,834	17.8 (15.2, 20.4)
40–44	58,592	3.4 (3.4, 3.4)	222	2.2 (1.3, 3.0)
Marital status at most recent birth				
Total	1,723,084	100.0	10,297	100.0
Married	1,097,515	63.7 (63.6, 63.8)	6,840	66.4 (63.0, 69.9)
Unmarried	625,569	36.3 (36.2, 36.4)	3,456	33.6 (30.1, 37.0)
Education				
Total	1,705,059	100.0	10,297	100.0
No high school diploma or GED	352,391	20.7 (20.6, 20.7)	2,285	22.1 (18.8, 25.6)
High school diploma or GED	443,733	26.0 (26.0, 26.1)	2,826	27.4 (24.5, 30.1)
Some college	488,295	28.6 (28.6, 28.7)	2,480	24.1 (21.2, 27.0)
Bachelor's degree or higher	420,640	24.7 (24.6, 24.7)	2,706	26.3 (22.6, 29.9)
Number of previous live births				
Total	1,715,532	100.0	10,297	100.0
One	908,469	53.0 (52.9, 53.0)	5,408	52.5 (48.8, 56.3)
Two	473,929	27.6 (27.6, 27.7)	3,082	29.9 (27.0, 32.9)
Three or more	333,134	19.4 (19.4, 19.5)	1,807	17.6 (15.3, 19.8)
Hispanic origin and race ²				
Total	1,712,325	100.0	10,297	100.0
Hispanic ³	476,293	27.8 (27.8, 27.9)	2,351	22.8 (16.8, 28.9)
U.S. born	195,548	11.4 (11.4, 11.5)	858	8.3 (5.9, 10.8)
Not U.S. born	279,861	16.4 (16.3, 16.4)	1,493	14.5 (10.3, 18.7)
Non-Hispanic white, single race	875,260	51.1 (51.0, 51.2)	5,600	54.4 (48.7, 60.1)
Non-Hispanic black, single race	235,202	13.7 (13.7, 13.8)	1,480	14.4 (11.1, 17.7)

¹IQR is interquartile range.²Includes women of other or multiple-race and origin groups not shown separately.³Includes births to Hispanic women with missing information on country of origin (birth certificate) and missing information on whether she was born outside of the United States (NSFG).

NOTES: The birth certificate reporting area for 2011 included 36 states and the District of Columbia. Interpregnancy interval is calculated from all births in the birth certificate reporting area in 2011 and from the most recent birth in the 5 years prior to the interview for the 2006–2010 NSFG. Numbers for the subgroup in each column may not add to totals due to rounding. Birth certificate data for each subgroup contain missing values. All NSFG variables used are recoded variables where missing values are imputed. Percentages may not add to 100 due to rounding. GED is General Educational Development high school equivalency diploma; NSFG is National Survey of Family Growth.

SOURCES: NCHS/CDC, National Vital Statistics System and 2006–2010 National Survey of Family Growth.

Table 3. Percent distribution of interpregnancy intervals for women aged 15–44 with two births or more: 2011 birth certificate reporting area and 2006–2010 National Survey of Family Growth

Characteristic	Total	Length of interpregnancy interval (in number of months)		
		Less than 18 (confidence interval)	18 to 59 (confidence interval)	60 or more (confidence interval)
Total				
Birth certificate	100.0	29.6 (29.6, 29.7)	49.8 (49.7, 49.9)	20.6 (20.5, 20.7)
NSFG	100.0	29.3 (26.7, 31.9)	52.4 (49.4, 55.5)	18.2 (15.4, 21.0)
Age at most recent birth				
15–19				
Birth certificate	100.0	66.9 (66.4, 67.3)	32.8 (32.4, 33.3)	0.3 (0.2, 0.4)
NSFG	100.0	57.0 (40.0, 73.9)	43.0 (26.1, 60.0)	–
20–29				
Birth certificate	100.0	34.6 (34.5, 34.7)	52.5 (52.4, 52.6)	12.9 (12.9, 13.0)
NSFG	100.0	32.8 (30.0, 35.9)	55.1 (51.5, 58.7)	12.1 (9.6, 14.7)
30–44				
Birth certificate	100.0	22.4 (22.3, 22.5)	47.8 (47.7, 47.9)	29.8 (29.7, 29.9)
NSFG	100.0	24.0 (19.8, 28.2)	50.3 (45.6, 55.0)	25.7 (21.0, 30.4)
Marital status at most recent birth				
Married				
Birth certificate	100.0	29.3 (29.2, 29.4)	52.2 (52.1, 52.3)	18.5 (18.4, 18.5)
NSFG	100.0	30.5 (27.1, 33.9)	53.6 (49.7, 57.5)	16.0 (12.6, 19.2)
Unmarried				
Birth certificate	100.0	30.2 (30.1, 30.3)	45.5 (45.3, 45.6)	24.4 (24.2, 24.5)
NSFG	100.0	27.1 (23.1, 31.0)	50.1 (45.8, 54.5)	22.8 (18.7, 26.9)
Education				
Less than a bachelor's degree				
Birth certificate	100.0	29.2 (29.1, 29.3)	47.8 (47.7, 47.9)	22.9 (22.8, 23.0)
NSFG	100.0	28.7 (25.6, 31.8)	49.6 (46.6, 52.7)	21.7 (18.6, 24.8)
Bachelor's degree or higher				
Birth certificate	100.0	30.8 (30.7, 31.0)	55.8 (55.7, 56.0)	13.3 (13.2, 13.4)
NSFG	100.0	31.1 (25.2, 37.0)	60.4 (54.0, 66.7)	8.5 (5.2, 11.9)
Number of previous live births				
One				
Birth certificate	100.0	28.9 (28.9, 29.0)	51.6 (51.5, 51.7)	19.5 (19.4, 19.5)
NSFG	100.0	28.0 (24.6, 31.5)	55.0 (51.2, 58.9)	16.9 (13.4, 20.4)
Two or more				
Birth certificate	100.0	30.4 (30.2, 30.5)	47.8 (47.7, 47.9)	21.9 (21.8, 21.9)
NSFG	100.0	30.8 (26.8, 34.8)	49.6 (45.0, 54.2)	19.6 (15.1, 24.2)
Hispanic origin and race¹				
Hispanic				
Birth certificate	100.0	25.6 (25.4, 25.7)	47.8 (47.7, 47.9)	26.7 (26.5, 26.8)
NSFG	100.0	24.9 (20.5, 29.3)	47.9 (42.1, 53.5)	27.3 (20.4, 34.1)
U.S.-born Hispanic				
Birth certificate	100.0	30.6 (30.4, 30.8)	47.9 (47.7, 48.1)	21.5 (21.3, 21.7)
NSFG	100.0	26.4 (18.8, 34.1)	46.7 (38.8, 54.6)	26.8 (19.2, 34.5)
Not U.S.-born Hispanic				
Birth certificate	100.0	22.0 (21.9, 22.2)	47.7 (47.5, 47.9)	30.3 (30.1, 30.4)
NSFG	100.0	24.0 (16.8, 31.3)	48.5 (41.2, 55.8)	27.5 (18.6, 36.4)
Non-Hispanic white, single race				
Birth certificate	100.0	31.6 (31.5, 31.7)	52.0 (51.9, 52.1)	16.3 (16.3, 16.4)
NSFG	100.0	30.7 (26.9, 34.5)	54.3 (49.9, 58.8)	15.0 (11.5, 18.5)
Non-Hispanic black, single race				
Birth certificate	100.0	31.1 (30.9, 31.2)	44.8 (44.6, 45.0)	24.1 (24.0, 24.3)
NSFG	100.0	33.3 (26.2, 40.4)	48.9 (42.6, 55.3)	17.8 (12.6, 22.9)

¹Includes women of other or multiple-race and origin groups not shown separately.
– Quantity zero.

NOTES: The birth certificate reporting area for 2011 included 36 states and the District of Columbia. Interpregnancy interval is calculated from all births in the birth certificate reporting area in 2011 and from the most recent birth in the 5 years prior to the interview for the 2006–2010 NSFG. Percentages may not add to 100 due to rounding. NSFG is National Survey of Family Growth.

SOURCES: CDC/NCHS, National Vital Statistics System and 2006–2010 National Survey of Family Growth.

Technical Notes

Birth certificate

Further detail on birth certificate variables can be found in “User Guide to the 2011 Natality Public Use File” (12).

Age of mother at most recent birth

Age of mother at most recent birth was computed in most cases from the mother’s and infant’s dates of birth as reported on the birth certificate. Unknown mother’s age was imputed based on the age of the mother from the previous birth record of the same race and total birth order (total of fetal deaths and live births).

Education

Education of mother was based on the highest degree or level of school completed at the time of birth.

Gestational age

Gestational age was used to calculate the interpregnancy interval by subtracting the gestational age from the computed live birth interval. The primary measure used to determine the gestational age of the infant was the date that the last normal menses began (referred to as the last menstrual period or LMP). The day of LMP when month and year are known was imputed. The date of birth of the infant was subtracted from the LMP date to obtain the gestational age of the newborn.

Hispanic origin and race

Race categories in this report are consistent with the 1997 Office of Management and Budget standards (15). Hispanic women, regardless of their racial identification, are categorized by their nativity status in this report. Detailed jurisdiction-specific results are presented for the largest single-race and Hispanic origin groups (non-Hispanic white, single race and non-Hispanic black, single race).

Marital status at most recent birth

Marital status at most recent birth was based on whether the mother was married at the time of conception, birth, or any time in between. All states ask a direct question about marital status, but the marital status for some of the births in New York State is inferred.

Number of previous live births

The number of previous live births was based on the number of live births prior to the present birth (even if one or both are not now living). Thus, a woman who had her third live birth in 2011 would have had two previous live births.

National Survey of Family Growth

Further detail on recoded variables from the 2006–2010 National Survey of Family Growth (NSFG) can be found in Appendix 3a of the “2006–2010 NSFG User’s Guide” (16).

Age of mother at most recent birth

The age of the mother when the pregnancy ended; the recode variable was AGEpreg.

Date of last live birth

The date the pregnancy ended; the recode variable was DATEND.

Education

Education of mother was measured by the highest degree she had finished at the date of interview. The recode variable was HIEDUC.

Gestational age

Gestational age of the infant was determined by the female respondent’s report of how many days or weeks she had been pregnant when the baby was born. The recode variable was DATECON.

Hispanic origin and race

Race categories in this report are consistent with the 1997 Office of Management and Budget standards (15). Hispanic respondents, regardless of their racial identification, are categorized by their nativity status in this report. The recode variable was HISPRACE2.

Marital status at most recent birth

Marital status was defined as the mother’s formal (legal) marital status at the time of the most recent birth. The recode variable was FMAROUT5.

Number of previous live births

The number of previous births was defined as the number of live births (recode DATEND) that occurred before the conception date (recode DATECON) of any second- or higher-order pregnancy. A woman with two previous births would have had three live births in total.

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