Trends and Characteristics in Prepregnancy Diabetes: United States, 2016–2021

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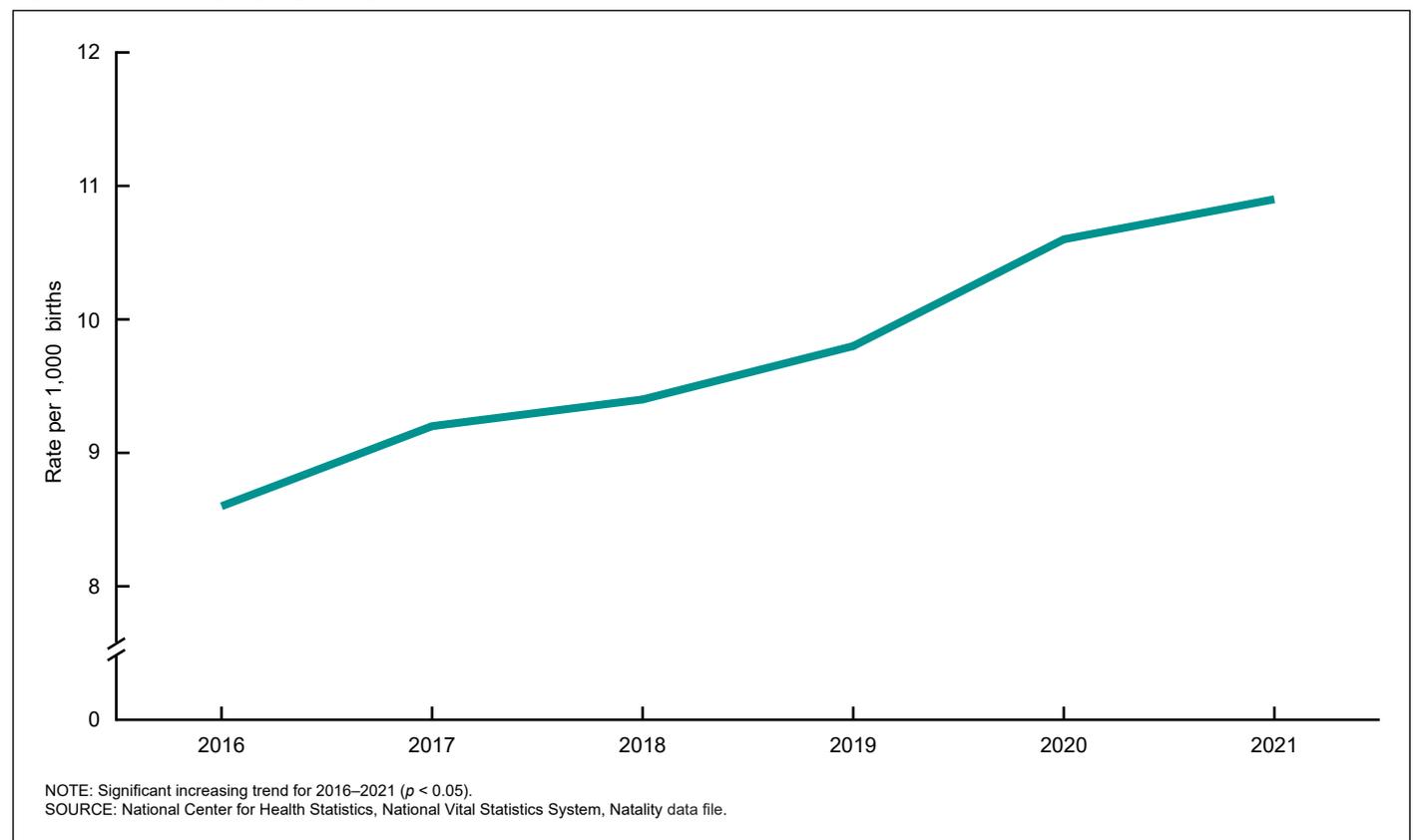
Abstract

Objectives—This report presents data on trends for prepregnancy diabetes mellitus (PDM), diabetes diagnosed before pregnancy, in mothers giving birth in the United States for 2016–2021, and rates by selected maternal characteristics for 2016 and 2021.

Methods—Data are from birth certificates and are based on 100% of births registered in the United States for 2016–2021. Descriptive tabulations on trends in PDM rates for 2016–2021 and rates by maternal race and Hispanic origin, age, body mass index, and state of residence for 2016 and 2021 are presented.

Results—Among mothers giving birth in 2021, the overall PDM rate was 10.9 per 1,000 births, an increase of 27% from 2016 (8.6). In 2021, the PDM rate varied by maternal race and

Figure 1. Rate of prepregnancy diabetes: United States, 2016–2021

NOTE: Significant increasing trend for 2016–2021 (*p* < 0.05).
SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.

Hispanic origin, ranging from a low of 8.7 for White non-Hispanic mothers to a high of 28.6 for American Indian or Alaska Native non-Hispanic mothers. The PDM rate rose with increasing maternal age and prepregnancy body mass index. By state in 2021, the PDM rate was lower than 9.0 in four states (Wyoming [6.3], Hawaii [7.7], Utah [8.0], and Colorado [8.9]) and was 15.0 or higher in three states (Tennessee [15.2], Vermont [15.6], and New Mexico [22.3]).

Keywords: PDM • race and Hispanic origin • births • National Vital Statistics System

Introduction

The 2003 revision of the U.S. Standard Certificate of Live Birth includes information on two types of diabetes (defined as glucose intolerance requiring treatment): prepregnancy (diagnosis of diabetes **before** pregnancy) and gestational (diagnosis of diabetes **during** pregnancy) (1–3). A previous report focused on gestational diabetes (4). Although gestational diabetes makes up most cases of diabetes in pregnant females (88% in 2021) (5), prepregnancy diabetes mellitus (PDM) has been found to be associated with a higher risk of adverse outcomes for both mothers and infants (6–12); this report focuses on PDM.

PDM, which includes both type 1 and type 2 diabetes (2), affects 1%–2% of pregnancies in the United States annually (5,6,13,14). Adverse health outcomes for the mother include an increased risk of maternal hypertensive disorders, cesarean delivery, and the possible worsening of maternal health conditions associated with diabetes (6,7,11,15–19). Adverse outcomes for the infant include an increased risk of fetal death, birth defects, preterm birth, macrosomia (birthweight greater than 4000–4500 grams), hypoglycemia (low blood sugar), respiratory distress, and obesity and diabetes later in life (6,7,11,12,15–17). Additionally, studies have found an increasing rate of PDM in pregnant females over time (9,20–23).

National information on PDM became available from the birth certificate for the first time in 2016. This report presents overall trends in PDM among females giving birth in the United States from 2016–2021 and rates of PDM by maternal race and Hispanic origin, age, body mass index (BMI), and state of residence for 2016 and 2021.

Methods

This analysis uses data from the birth certificate and is based on 100% of births registered in the United States for 2016–2021. Trend analysis was performed using 2016–2021 data and a more detailed analysis was conducted on 2021 data for overall PDM rates and for PDM rates by maternal race and Hispanic origin, age, BMI, and state of residence.

The PDM item was added to the birth certificate with the 2003 revision and was reported by all states as of 2016. Birth certificate data on PDM is recommended to be collected from the mother's medical records, with the prenatal care record as the preferred source (1). Mothers are to be reported as having PDM if they are diagnosed with glucose intolerance requiring treatment before the current pregnancy as noted in her medical record (2). Of the 3,664,292 births registered in the United States for 2021, 5,205, or 0.1%, were missing PDM information. Data were also missing for 2.0% (73,368) of births for BMI and 1.0% (36,381) for maternal Hispanic origin. Births with missing values for race (255,181, or 7.0%) and age (318, or 0.01%) were imputed. Records with missing information were excluded from analyses.

Race and Hispanic origin are reported separately on the birth certificate and are self-reported by the mother. All race and Hispanic-origin data are based on single-race reporting and are consistent with the 1997 Office of Management and Budget standards (24). Maternal race and Hispanic-origin categories presented are non-Hispanic American Indian or Alaska Native (subsequently, American Indian or Alaska Native), non-Hispanic Asian (subsequently, Asian), non-Hispanic Black (subsequently, Black), non-Hispanic Native Hawaiian or Other Pacific Islander (subsequently, Native Hawaiian or Other Pacific Islander), non-Hispanic White (subsequently, White), and Hispanic.

Maternal prepregnancy BMI is calculated from prepregnancy weight and height according to the following formula (25):

$$\frac{\text{mother's prepregnancy weight (lb)}}{\text{mother's height (in)}^2} \cdot 703$$

The National Center for Health Statistics provides a calculated categorization of maternal prepregnancy BMI that aligns with those established by the National Heart, Lung, and Blood Institute (26) for all adults:

- Underweight is BMI less than 18.5
- Normal weight is BMI of 18.5 to less than 25.0
- Overweight is BMI of 25.0 to less than 30.0
- Obese is BMI of 30.0 and over.

PDM rates are expressed as the number of live births to females with prepregnancy diabetes per 1,000 live births. All statements about differences in rates in the text have been tested for statistical significance, and a statement that a given rate is higher or lower than another rate indicates that the rates are significantly different using a two-tailed z test at the alpha level of 0.05 (27).

References to decreasing or increasing trends in rates (such as trends in rates for 2016–2021) are statistically significant at the 0.05 level and were assessed using the Cochran–Armitage test for trends, a modified chi-squared test.

The reliability of percentages was evaluated based on the standards developed by the National Center for Health Statistics. For detailed information on the standards, see "National Center for Health Statistics Data Presentation Standards for Proportions" (28).

Results

Overall trends

- The number of PDM cases increased 17% from 2016 (33,829 cases) to 2021 (39,736 cases) (Table 1).
- The PDM rate increased 27% from 2016 (8.6 per 1,000 births) to 2021 (10.9) (Table 1 and Figure 1).

Trends and differences by maternal race and Hispanic origin

- The PDM rate increased among five of the six largest race and Hispanic-origin groups from 2016 to 2021: 24% for White (from 7.0 per 1,000 births to 8.7), 25% for Black (from 11.8 to 14.7), 28% for Hispanic (from 9.5 to 12.2), 34% for American Indian or Alaska Native (from 21.3 to 28.6), and 42% for Asian (from 8.8 to 12.5) mothers. The 13% increase for Native Hawaiian or Other Pacific Islander mothers (from 18.4 to 20.7) was not significant (Table 2).
- In 2021, the PDM rate was lowest for White mothers (8.7), followed by Hispanic and Asian (12.2 and 12.5, respectively, difference not statistically significant), Black (14.7), Native Hawaiian or Other Pacific Islander (20.7), and American Indian or Alaska Native (28.6) mothers. This pattern was generally consistent with 2016 (Table 2 and Figure 2).

Trends and differences by maternal age

- The PDM rate increased for each maternal age group from 2016 to 2021. The PDM rate increased 13% for mothers under age 20 (from 3.8 per 1,000 births to 4.3), 32% for mothers aged 20–24 (from 5.3 to 7.0), 31% for mothers aged 25–29 (from 7.0 to 9.2), 17% for mothers aged 30–34 (from 9.5 to 11.1), 16% for mothers aged 35–39 (from 14.1 to 16.3), and 10% for mothers aged 40 and over (from 21.1 to 23.2) (Table 2).

- In 2021, the PDM rate increased with increasing maternal age; mothers under age 20 (4.3) had the lowest rate and those aged 40 and over (23.2) had the highest rate. This pattern was also observed for 2016 (Table 2 and Figure 3).

Trends and differences by maternal BMI

- From 2016 to 2021, the PDM rate increased 22% for mothers who were normal weight (from 3.7 per 1,000 births to 4.5) and 16% each for those who were overweight (from 7.6 to 8.8) and those with obesity (from 18.6 to 21.5). The 4% decrease for mothers who were underweight (from 2.5 to 2.4) was not significant (Table 2).
- In 2021, the PDM rate increased with increasing maternal BMI; mothers who were underweight (2.4) had the lowest rate and those with obesity (21.5) had the highest rate. This pattern was also observed for 2016 (Table 2 and Figure 4).

Trends and differences by state of residence

- From 2016 to 2021, the PDM rate increased in 37 states (ranging from 8% in Florida to 83% in New Mexico) and declined in 1 state (38% in Hawaii). Increases in 9 states and the District of Columbia and declines in 3 states were not significant (Table 3 and Figure 5).

Figure 2. Rate of prepregnancy diabetes, by race and Hispanic origin of mother: United States, 2021

[1]People of Hispanic origin may be of any race.
NOTE: Significant difference between all groups except Hispanic and Asian mothers ($p < 0.05$).
SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.
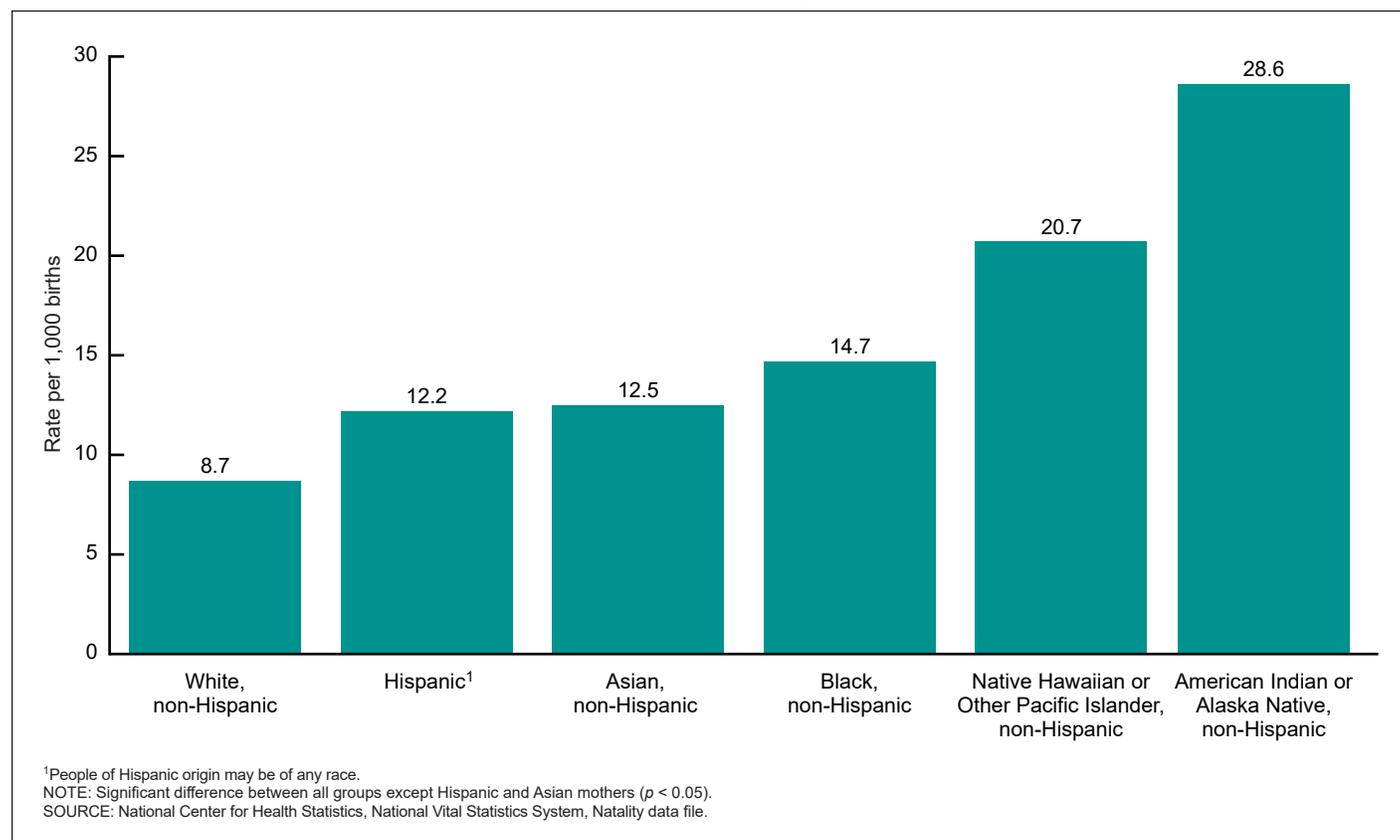
Figure 3. Rate of prepregnancy diabetes, by age of mother: United States, 2021

NOTE: Significant increasing trend ($p < 0.05$).
SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.
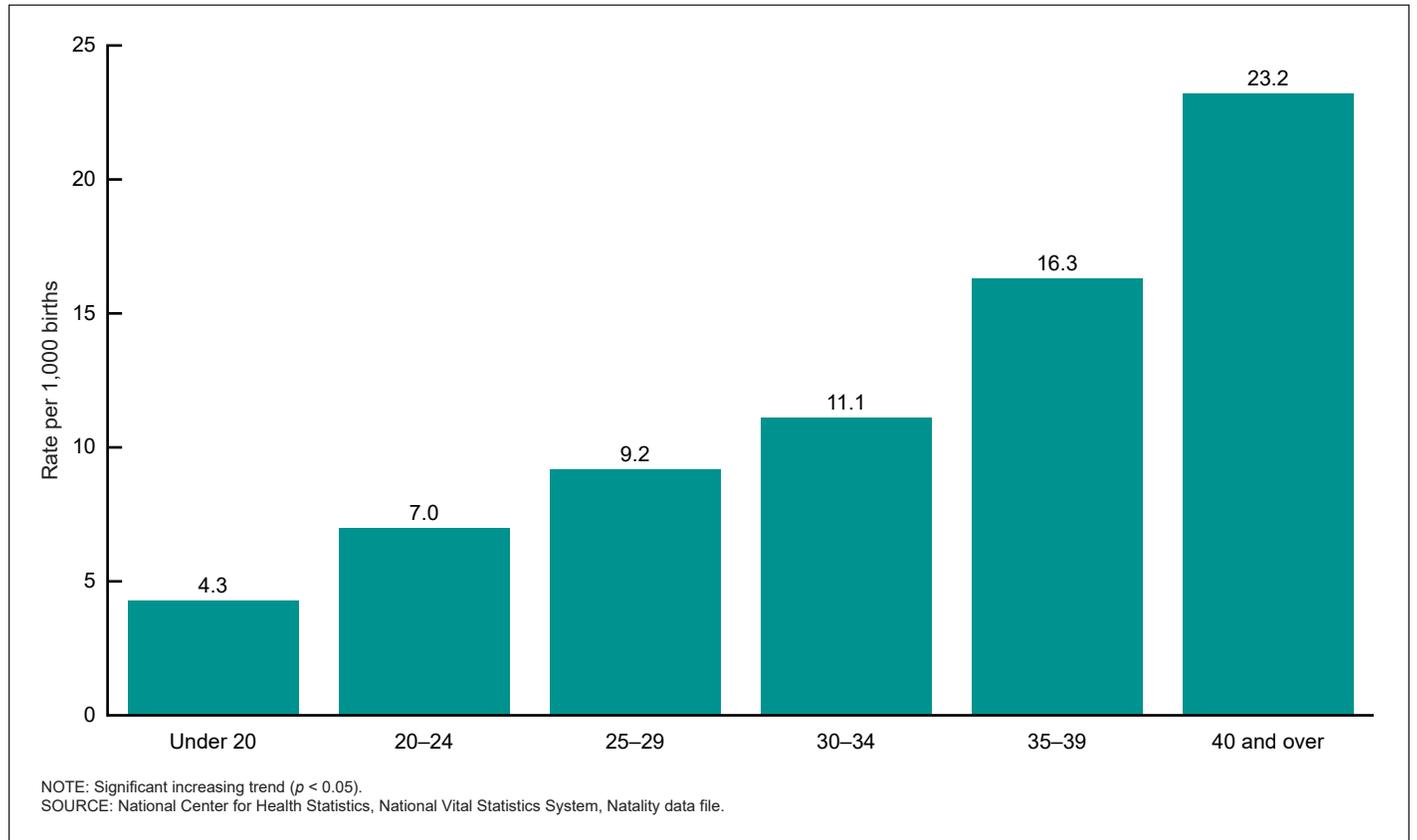
Figure 4. Rate of prepregnancy diabetes, by body mass index: United States, 2021

NOTE: Significant increasing trend ($p < 0.05$).
SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.
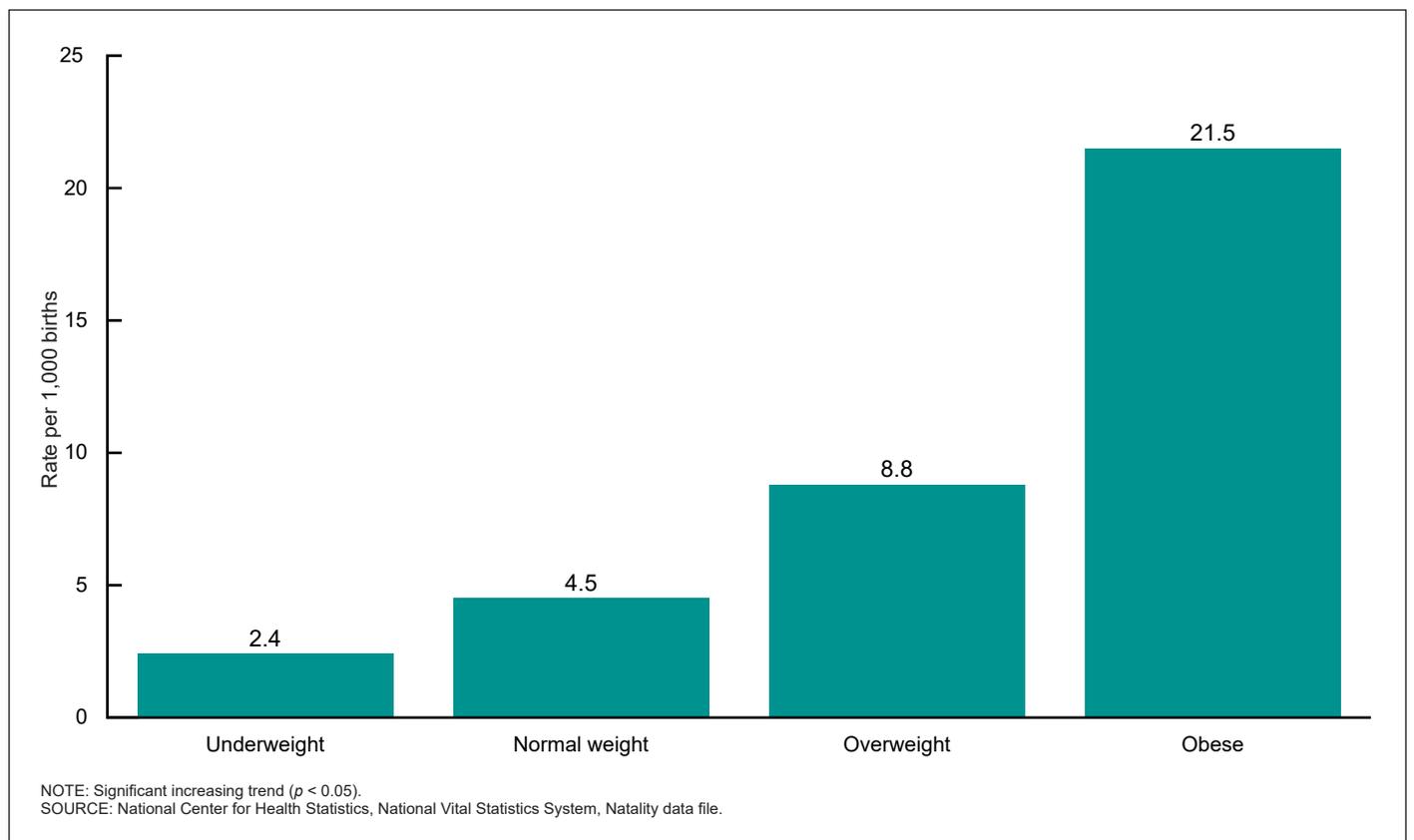
Figure 5. Percent change in the rate of prepregnancy diabetes, by state of residence: United States, 2016 to 2021
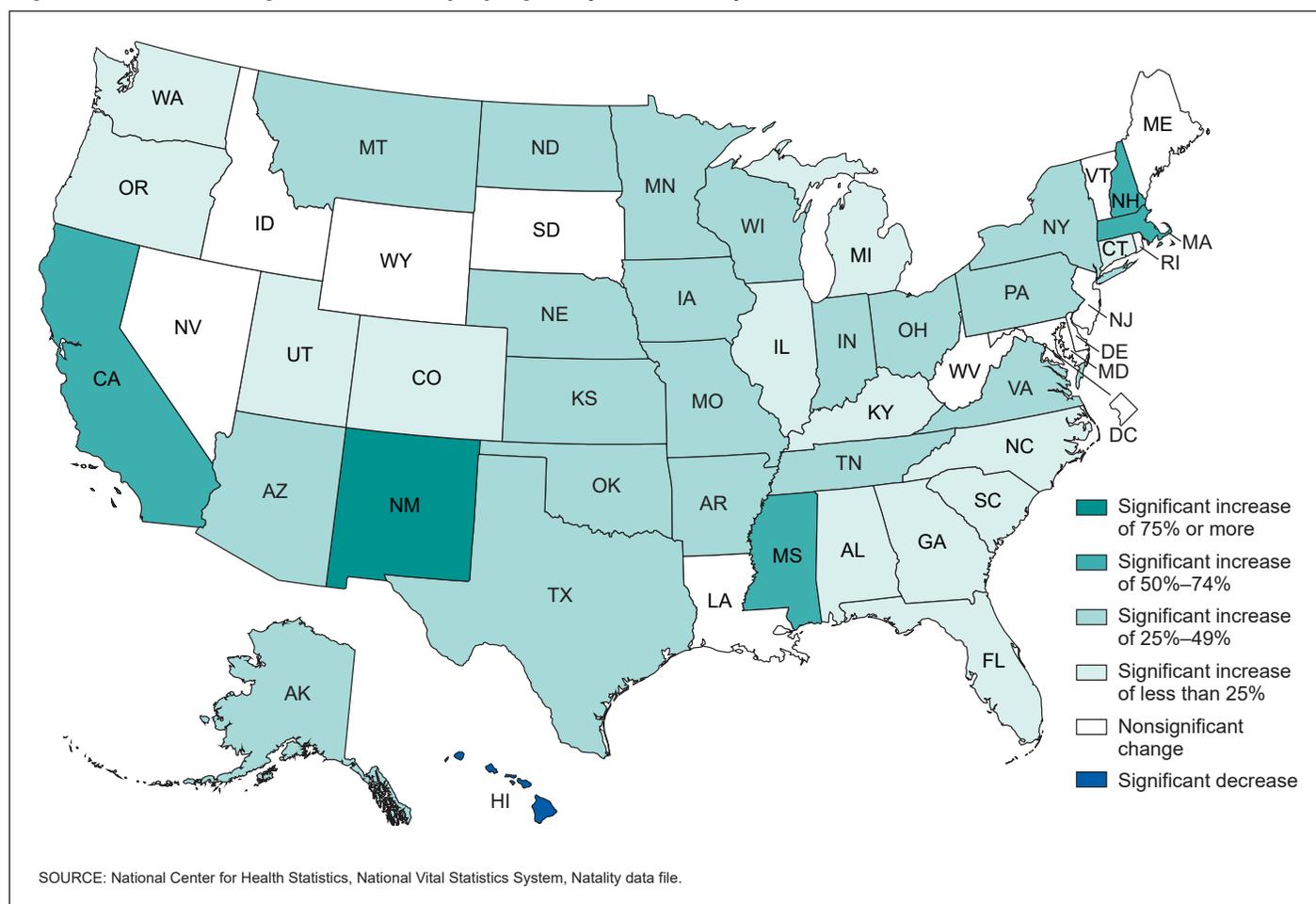
SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.

- In 2021, the PDM rate was lower than 9.0 per 1,000 births in four states (Wyoming [6.3], Hawaii [7.7], Utah [8.0], and Colorado [8.9]) and was 15.0 or higher in three states (Tennessee [15.2], Vermont [15.6], and New Mexico [22.3]) (Table 3 and Figure 6).

Discussion

This report found that the overall PDM rate was 10.9 per 1,000 births in 2021. The rate has increased steadily since 2016 (8.6 per 1,000 births), for an overall increase of 27%. From 2016 to 2021, PDM rates increased for nearly every category of all characteristics analyzed (increases for Native Hawaiian or Other Pacific Islander mothers and nine states and the District of Columbia were not significant). The rate declined for Hawaii (declines for underweight mothers and three states were not significant).

In 2021, variation in the rate of PDM was observed across race and Hispanic-origin groups. The rate for American Indian or Alaska Native mothers, the group with the highest PDM rate, was just over three times that of White mothers, the group with the lowest PDM rate. The PDM rate rose with increasing maternal age and BMI. By state of residence, the rate was lower than 9.0 per 1,000 births in four states (Wyoming, Hawaii, Utah, and

Colorado) and was 15.0 per 1,000 births or higher in three states (Tennessee, Vermont, and New Mexico).

An earlier study based on birth certificate data found results consistent with those in this report (20). That is, the PDM rate was highest for American Indian or Alaska Native and Native Hawaiian or Other Pacific Islander females, and patterns by maternal age and BMI were similar.

Additional studies using other data sources on pregnant females also had findings similar to those in this report. This includes an increase in PDM over time, both overall and within each age and race and Hispanic-origin category examined (9,21–23). Even when studies analyzed age-adjusted rates for race and Hispanic-origin groups over time, which this report did not do, similar patterns were observed (21–23). One study also found an increasing PDM rate with advancing maternal age and the highest rate among American Indian or Alaska Native females (9). However, few studies analyzed American Indian or Alaska Native, Asian, and Native Hawaiian or Other Pacific Islander females as separate groups.

The finding in this report of an increase in the PDM rate with increasing BMI is also consistent with the increased risk of type 2 diabetes for people who are overweight or have obesity (29). Additionally, the finding of an increase in the PDM rate over time in mothers is in line with other studies that have found increases

Figure 6. Rate of prepregnancy diabetes, by state of residence: United States, 2021

WA 10.4
MT 10.2
ND 12.8
MN 12.0
WI 12.3
MI 9.9
NH 12.0
VT 15.6
ME 11.0
OR 10.7
ID 9.6
WY 6.3
SD 9.2
IA 13.7
NY 10.6
MA 12.2
RI 11.2
CT 10.6
PA 10.3
NJ 10.3
DE
NV 11.3
UT 8.0
CO 8.9
NE 12.7
IL 11.1
IN 12.8
OH 13.2
WV 14.0
VA 9.7
MD 10.5
DC 12.6
CA 9.0
KS 10.5
MO 12.3
KY 12.2
NC 12.1
AZ 12.6
NM 22.3
OK 11.5
AR 10.6
TN 15.2
SC 12.9
MS 11.2
AL 13.3
GA 11.3
TX 9.4
LA 11.9
FL 9.2
AK 13.6
HI 7.7

U.S. rate was 10.9 per 1,000

Legend:
- 15.0 or more
- 12.0–14.9
- 10.5–11.9
- 9.0–10.4
- Less than 9.0

SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.

in the rate of diabetes among the general population of female adolescents and women of childbearing age (30,31).

Limitations

Underreporting of health conditions is considered a primary limitation of birth certificate data (32,33). Two studies examining data from the 2003 revision of the birth certificate for three vital statistics reporting areas found wide variation in data quality among the medical and health checkbox items (34,35). While some medical and health items, such as the method of delivery items, had moderate to high levels of sensitivity (a measure of underreporting), many of the pregnancy risk factors examined had low or extremely low sensitivity (34,35). This includes gestational diabetes, for which low levels of sensitivity were found across all three reporting areas, ranging from 57.7% to 59.6% (34,35). PDM data were also collected, but could not be assessed due to small numbers. Therefore, limited information is available on the quality of this particular item on the birth certificate.

Further, routine quality review of birth certificate data by the National Center for Health Statistics suggests underreporting of PDM in some jurisdictions. For example, review of PDM data at the facility level revealed instances of large hospitals (that is, those with over 1,000 births per year) that would be expected to report some incidence of PDM reporting fewer than expected or no

cases. This reporting of lower-than-expected case numbers, based on comparisons with facilities of similar size in the region over the course of a year or more, may suggest systemic underreporting of PDM by these facilities. PDM studies using birth certificate data should consider the possibility of underreporting and its effects on analysis.

Conclusion

Although most cases of diabetes during pregnancy are gestational diabetes (5), prepregnancy diabetes has been found to be associated with a higher risk of adverse outcomes for both mothers and infants (6–12). This report shows increases in PDM across most maternal age, race and Hispanic origin, and BMI categories, and across U.S. states, from 2016 to 2021. A primary advantage of using birth certificate data is that information is collected on all females giving birth in the United States each year, allowing for analysis of both national trends and trends for smaller population groups, such as Native Hawaiian and Other Pacific Islander subgroups. Despite concerns with potential reporting issues, trends and patterns in the PDM rate shown in this report are consistent with those of other studies, and these data provide opportunities to examine PDM in all females giving birth in the United States.

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List of Detailed Tables

Table 1. Number of cases and rate of prepregnancy diabetes: United States, 2016–2021

[Rates are number of births to mothers with prepregnancy diabetes per 1,000 births]

Year[1]	Total births	Number of prepregnancy diabetes cases	Rate (95% confidence interval)	Not stated[2]
2021.	3,664,292	39,736	10.9 (10.8–11.0)	5,205
2020.	3,613,647	38,093	10.6 (10.5–10.7)	4,063
2019.	3,747,540	36,566	9.8 (9.7–9.9)	3,284
2018.	3,791,712	35,735	9.4 (9.3–9.5)	2,882
2017.	3,855,500	35,336	9.2 (9.1–9.3)	3,711
2016.	3,945,875	33,829	8.6 (8.5–8.7)	3,781

[1]Significant increasing trend for 2016–2021 ($p < 0.05$).
[2]No response reported for the "risk factors in this pregnancy" item on the birth certificate.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.

Table 2. Number of cases and rate of prepregnancy diabetes, by selected maternal characteristics: United States, 2016 and 2021

[Rates are number of births to mothers with prepregnancy diabetes per 1,000 births in specified group]

Characteristic	Rate (95% confidence interval)		Percent change from 2016 to 2021
	2016	2021	
Total.	8.6 (8.5–8.7)	10.9 (10.8–11.0)	†27
Race and Hispanic origin[1]			
American Indian or Alaska Native, non-Hispanic	21.3 (19.7–22.9)	28.6 (26.6–30.6)	†34
Asian, non-Hispanic.	8.8 (8.4–9.2)	12.5 (12.0–13.0)	†42
Black, non-Hispanic	11.8 (11.5–12.1)	14.7 (14.4–15.0)	†25
Native Hawaiian or Other Pacific Islander, non-Hispanic	18.4 (15.7–21.1)	20.7 (17.8–23.6)	13
White, non-Hispanic.	7.0 (6.9–7.1)	8.7 (8.6–8.8)	†24
Hispanic[2]	9.5 (9.3–9.7)	12.2 (12.0–12.4)	†28
Age group (years)[3]			
Under 20	3.8 (3.5–4.1)	4.3 (4.0–4.6)	†13
20–24.	5.3 (5.1–5.5)	7.0 (6.8–7.2)	†32
25–29.	7.0 (6.8–7.2)	9.2 (9.0–9.4)	†31
30–34.	9.5 (9.3–9.7)	11.1 (10.9–11.3)	†17
35–39.	14.1 (13.8–14.4)	16.3 (16.0–16.6)	†16
40 or over	21.1 (20.3–21.9)	23.2 (22.4–24.0)	†10
BMI[3,4]			
Underweight (BMI less than 18.5)	2.5 (2.2–2.8)	2.4 (2.1–2.7)	-4
Normal weight (BMI of 18.5–24.9)	3.7 (3.6–3.8)	4.5 (4.4–4.6)	†22
Overweight (BMI of 25.0–29.9)	7.6 (7.4–7.8)	8.8 (8.6–9.0)	†16
Obese (BMI over 29.9).	18.6 (18.3–18.9)	21.5 (21.2–21.8)	†16

Characteristic	Number of prepregnancy diabetes cases		Number of births		Not stated[5]	
	2016	2021	2016	2021	2016	2021
Total.	33,829	39,736	3,945,875	3,664,292	3,781	5,205
Race and Hispanic origin[1]						
American Indian or Alaska Native, non-Hispanic	668	745	31,452	26,124	77	52
Asian, non-Hispanic.	2,241	2,679	254,471	213,813	145	193
Black, non-Hispanic	6,607	7,595	558,622	517,889	578	689
Native Hawaiian or Other Pacific Islander, non-Hispanic	172	197	9,342	9,531	5	16
White, non-Hispanic.	14,442	16,487	2,056,332	1,887,656	1,895	2,451
Hispanic[2]	8,735	10,841	918,447	885,916	625	913
Age group (years)[3]						
Under 20	800	633	212,062	148,850	235	223
20–24.	4,243	4,528	803,978	648,484	825	948
25–29.	8,001	9,425	1,149,122	1,023,989	1,065	1,467
30–34.	10,507	12,391	1,111,042	1,115,055	1,032	1,473
35–39.	7,699	9,619	547,488	592,179	493	877
40 or over	2,579	3,140	122,183	135,735	131	217
BMI[3,4]						
Underweight (BMI less than 18.5)	337	233	134,512	96,092	120	172
Normal weight (BMI of 18.5–24.9)	6,259	6,272	1,701,087	1,402,498	1,336	1,555
Overweight (BMI of 25.0–29.9)	7,557	8,687	998,761	986,513	784	950
Obese (BMI over 29.9).	18,646	23,760	1,002,622	1,105,821	736	922

† Significant change ($p < 0.05$).

[1]Race and Hispanic origin are reported separately on birth certificates. Race categories are consistent with the 1997 Office of Management and Budget standards. Single race is defined as only one race reported on the birth certificate.

[2]People of Hispanic origin may be of any race.

[3]Significant increasing trend ($p < 0.05$).

[4]BMI is body mass index.

[5]No response reported for the "risk factors in this pregnancy" item on the birth certificate.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.

Table 3. Number of cases and rate of prepregnancy diabetes, by state of residence of mother: United States, 2016 and 2021

[Rates are number of births to mothers with prepregnancy diabetes per 1,000 births in specified group]

Reporting area	Rate (95% confidence interval)		Percent change from 2016 to 2021
	2016	2021	
Total	8.6 (8.5–8.7)	10.9 (10.8–11.0)	†27
Alabama	10.9 (10.1–11.7)	13.3 (12.4–14.2)	†22
Alaska	9.7 (7.9–11.5)	13.6 (11.2–16.0)	†40
Arizona	9.1 (8.5–9.7)	12.6 (11.8–13.4)	†38
Arkansas	8.5 (7.6–9.4)	10.6 (9.5–11.7)	†25
California	6.0 (5.8–6.2)	9.0 (8.7–9.3)	†50
Colorado	7.3 (6.7–7.9)	8.9 (8.2–9.6)	†22
Connecticut	8.9 (7.9–9.9)	10.6 (9.5–11.7)	†19
Delaware	8.9 (7.1–10.7)	9.9 (8.0–11.8)	11
District of Columbia	10.4 (8.4–12.4)	12.6 (10.2–15.0)	21
Florida	8.5 (8.1–8.9)	9.2 (8.8–9.6)	†8
Georgia	10.0 (9.5–10.5)	11.3 (10.7–11.9)	†13
Hawaii	12.5 (10.9–14.1)	7.7 (6.3–9.1)	†-38
Idaho	9.0 (7.8–10.2)	9.6 (8.3–10.9)	7
Illinois	9.1 (8.6–9.6)	11.1 (10.5–11.7)	†22
Indiana	8.8 (8.2–9.4)	12.8 (12.0–13.6)	†45
Iowa	10.3 (9.3–11.3)	13.7 (12.5–14.9)	†33
Kansas	7.5 (6.6–8.4)	10.5 (9.4–11.6)	†40
Kentucky	10.1 (9.3–10.9)	12.2 (11.3–13.1)	†21
Louisiana	11.3 (10.5–12.1)	11.9 (11.0–12.8)	5
Maine	8.7 (7.1–10.3)	11.0 (9.1–12.9)	26
Maryland	9.8 (9.1–10.5)	10.5 (9.7–11.3)	7
Massachusetts	8.1 (7.4–8.8)	12.2 (11.4–13.0)	†51
Michigan	8.6 (8.1–9.1)	9.9 (9.3–10.5)	†15
Minnesota	8.8 (8.1–9.5)	12.0 (11.2–12.8)	†36
Mississippi	7.3 (6.4–8.2)	11.2 (10.1–12.3)	†53
Missouri	8.4 (7.7–9.1)	12.3 (11.5–13.1)	†46
Montana	7.7 (6.2–9.2)	10.2 (8.3–12.1)	†32
Nebraska	9.3 (8.1–10.5)	12.7 (11.3–14.1)	†37
Nevada	10.9 (9.8–12.0)	11.3 (10.2–12.4)	4
New Hampshire	7.6 (6.1–9.1)	12.0 (10.1–13.9)	†58
New Jersey	9.8 (9.2–10.4)	10.3 (9.7–10.9)	5
New Mexico	12.2 (10.8–13.6)	22.3 (20.3–24.3)	†83
New York	8.0 (7.6–8.4)	10.6 (10.2–11.0)	†33
North Carolina	10.6 (10.0–11.2)	12.1 (11.5–12.7)	†14
North Dakota	9.4 (7.6–11.2)	12.8 (10.6–15.0)	†36
Ohio	10.2 (9.7–10.7)	13.2 (12.6–13.8)	†29
Oklahoma	8.5 (7.7–9.3)	11.5 (10.6–12.4)	†35
Oregon	9.4 (8.5–10.3)	10.7 (9.7–11.7)	†14
Pennsylvania	7.0 (6.6–7.4)	10.3 (9.8–10.8)	†47
Rhode Island	9.1 (7.3–10.9)	11.2 (9.2–13.2)	23
South Carolina	10.6 (9.8–11.4)	12.9 (12.0–13.8)	†22
South Dakota	9.7 (8.0–11.4)	9.2 (7.4–11.0)	-5
Tennessee	11.9 (11.2–12.6)	15.2 (14.4–16.0)	†28
Texas	7.4 (7.1–7.7)	9.4 (9.1–9.7)	†27
Utah	6.5 (5.8–7.2)	8.0 (7.2–8.8)	†23
Vermont	12.0 (9.2–14.8)	15.6 (12.3–18.9)	30
Virginia	7.3 (6.8–7.8)	9.7 (9.1–10.3)	†33
Washington	9.4 (8.8–10.0)	10.4 (9.7–11.1)	†11
West Virginia	15.6 (13.8–17.4)	14.0 (12.2–15.8)	-10
Wisconsin	9.6 (8.9–10.3)	12.3 (11.4–13.2)	†28
Wyoming	6.5 (4.7–8.3)	6.3 (4.3–8.3)	-3

See footnotes at end of table.

Table 3. Number of cases and rate of prepregnancy diabetes, by state of residence of mother: United States, 2016 and 2021—Con.

[Rates are number of births to mothers with prepregnancy diabetes per 1,000 births in specified group]

Reporting area	Number of prepregnancy diabetes cases		Number of births		Not stated[1]	
	2016	2021	2016	2021	2016	2021
Total.	33,829	39,736	3,945,875	3,664,292	3,781	5,205
Alabama	646	772	59,151	58,054	3	–
Alaska.	108	127	11,209	9,367	75	57
Arizona.	765	983	84,520	77,916	–	–
Arkansas.	324	381	38,274	35,965	–	1
California	2,944	3,797	488,827	420,608	3	241
Colorado.	484	559	66,613	62,949	12	9
Connecticut	313	377	36,015	35,670	694	25
Delaware.	98	104	10,992	10,482	1	26
District of Columbia	102	109	9,858	8,660	15	6
Florida	1,916	1,992	225,022	216,260	416	679
Georgia.	1,300	1,402	130,042	124,073	348	169
Hawaii.	225	121	18,059	15,620	–	–
Idaho	203	215	22,482	22,427	24	19
Illinois.	1,411	1,467	154,445	132,189	226	123
Indiana	728	1,015	83,091	79,946	4	461
Iowa	407	505	39,403	36,835	1	8
Kansas	287	366	38,053	34,705	–	2
Kentucky.	556	632	55,449	52,214	281	239
Louisiana	712	682	63,178	57,437	–	2
Maine	111	132	12,705	12,006	15	–
Maryland	719	718	73,136	68,285	11	42
Massachusetts	576	844	71,317	69,137	96	212
Michigan.	974	1,043	113,315	104,980	268	145
Minnesota.	611	771	69,749	64,425	64	45
Mississippi	277	393	37,928	35,156	11	9
Missouri	628	857	74,705	69,453	1	2
Montana	95	115	12,282	11,231	12	–
Nebraska	248	311	26,589	24,609	37	37
Nevada	394	381	36,260	33,686	–	–
New Hampshire	92	151	12,267	12,625	107	37
New Jersey.	1,010	1,049	102,647	101,497	7	9
New Mexico	301	477	24,692	21,391	–	2
New York	1,882	2,239	234,283	210,742	218	451
North Carolina	1,283	1,462	120,779	120,466	16	23
North Dakota	107	129	11,383	10,112	–	–
Ohio	1,407	1,714	138,085	129,791	27	19
Oklahoma.	449	556	52,592	48,410	1	6
Oregon.	428	439	45,535	40,914	2	–
Pennsylvania	978	1,363	139,409	132,622	21	273
Rhode Island	98	117	10,798	10,464	7	14
South Carolina	610	737	57,342	57,185	2	67
South Dakota	119	104	12,275	11,369	1	5
Tennessee.	964	1,245	80,807	81,717	4	5
Texas	2,962	3,490	398,047	373,594	2	558
Utah	326	373	50,464	46,712	–	–
Vermont	69	84	5,756	5,384	–	–
Virginia.	749	932	102,460	95,825	4	4
Washington	851	864	90,505	83,911	433	981
West Virginia	296	240	19,079	17,198	98	95
Wisconsin.	638	761	66,615	61,781	213	95
Wyoming	48	39	7,386	6,237	–	2

† Significant change ($p < 0.05$).
– Quantity zero.
[1]No response reported for the "risk factors in this pregnancy" item on the birth certificate.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.

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