



State-Specific Assisted Reproductive Technology Surveillance, United States

2021 Data Brief

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State-Specific Assisted Reproductive Technology Surveillance, United States: 2021 Data Brief

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Introduction

Since the birth of the first US infant conceived with assisted reproductive technology (ART) in 1981, both the use of ART and the number of fertility clinics providing ART services have increased steadily.^{1,2} ART includes fertility treatments in which eggs or embryos are handled in the laboratory (in vitro fertilization [IVF] and related procedures).¹ Although the majority of infants conceived through ART are singletons, women who undergo ART procedures are more likely than women who conceive without fertility treatments to have multiple births because multiple embryos may be transferred.³ Multiple births can pose increased risks for both mothers and infants, including obstetric complications, preterm birth, and low birth weight.⁴⁻⁷

This data brief provides state-specific information on ART procedures performed in the United States in 2021. It compares ART birth outcomes with outcomes for all infants born in the United States in 2021. It includes data from the 50 states, the District of Columbia, and Puerto Rico.

Methods

Data for ART procedures and ART birth outcomes were obtained from the Centers for Disease Control and Prevention's (CDC) National ART Surveillance System (NASS) for reporting years 2020 and 2021. See the Technical Notes at the end of this data brief for more information about NASS and the data collected through that system. Data for all infants born in the United States were obtained from CDC's National Vital Statistics System for reporting year 2021.^{8,9} To compare ART-conceived births in 2021 to all US births in 2021, ART-conceived births were aggregated from procedures performed in 2020 and 2021. The data are presented nationally and for the 50 States, the District of Columbia, and Puerto Rico and classified by mother's reported state of residence at time of treatment.

This data brief presents data on all procedures initiated with the intent to transfer at least one embryo, including procedures that used thawed embryos for transfer. All cycles in which egg or embryo banking (freezing) was performed for future ART cycles were excluded.

The number and outcomes of ART procedures performed in 2021 were first calculated. ART procedures performed per million women 15-49 years of age are presented as a proxy measure of ART use. In previous years, ART procedures performed per million women aged 15-44 years were reported. This change was made given approximately 5% of ART users are older than 44 years; however, estimates from previous data briefs are not directly comparable. Data on the estimated size of the US female population were obtained from the US Census Bureau.¹⁰

The average number of embryos transferred and the proportion of embryo-transfer procedures performed with a single embryo in 2021 were calculated for women aged <35 years, 35-37 years, 38-40 years, and >40 years. The number of infants born in 2021 that were singletons, multiples (twins, triplets, and higher order),

with low birth weight (<2,500g), or preterm (<37 weeks gestation) was calculated for ART-conceived infants and for all infants. Percentages were also calculated for each group. The proportion of ART-conceived infants among all infants with these outcomes was also calculated. The proportion of ART-conceived infants among all US births that had low birth weight, were preterm, or were small for gestational age (born at <10th percentile of birth weight for gestational age) were calculated for singleton births.

Results

In 2021, a total of 501 fertility clinics in the United States performed ART procedures and 453 (90.4%) provided data to CDC. States with the largest numbers of fertility clinics that provided data were California (78), New York (45), and Texas (43) (Table 1 and Figure 1).

In 2021, there were 246,087 ART procedures (range: 192 in Wyoming to 30,835 in California) performed at the 453 reporting US fertility clinics (Table 1 and Figure 2). These procedures resulted in 91,906 live-birth deliveries (range: 78 in Alaska to 12,389 in California) and 97,128 infants born (range: 82 in Alaska to 13,026 in California). Nationally, 3,250 ART procedures were performed per 1 million women aged 15–49 years (range: 751 in Puerto Rico to 8,515 in the District of Columbia) (Table 1 and Figure 3). ART use rates exceeded the national rate in the District of Columbia and the following 15 states: California, Connecticut, Delaware, Hawaii, Illinois, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Utah, Vermont, and Virginia. ART use exceeded 1.5 times the national rate in the District of Columbia and the following 7 states: Connecticut, Delaware, Illinois, Maryland, Massachusetts, New Jersey, and New York.

Nationally, among all ART transfer procedures, the average number of embryos transferred was similar across age groups (1.1 among women aged <35 years, 1.2 among women aged 35–37 years, 1.2 among women aged 38–40 years, and 1.3 among women aged >40 years) (Table 2). Single-embryo transfer (SET) rates among all embryo-transfer procedures were 85.8% among women aged <35 years (range: 27.5% in Puerto Rico to 95.9% in the District of Columbia) (Table 2 and Figure 4), 85.1% among women aged 35–37 years (range: 43.0% in Puerto Rico to 94.0% in the District of Columbia), 80.3% among women aged 38–40 years (range: 46.2% in Puerto Rico to 95.0% in Montana), and 76.8% among women aged >40 years (range: 37.0% in Puerto Rico to 86.8% in Mississippi).

In 2021, ART contributed to 2.3% of all infants born in the United States (range: 0.4% in Puerto Rico to 5.8% in the District of Columbia) (Table 3 and Figure 5). Approximately 87.5% of ART-conceived infants were singleton infants. Approximately 12.5% of ART-conceived infants were multiples (range: 4.8% in the District of Columbia to 38.1% in Puerto Rico) (Table 4 and Figure 6). Approximately 12.1% of ART-conceived infants were twins, and approximately 0.4% were triplets and higher-order infants. Overall, ART contributed to 9.2% of all multiple births (range: 2.4% in Mississippi to 20.6% in Vermont) (Table 4 and Figure 7), 9.1% of all twin births, and 11.6% of all triplets and higher-order births (Table 4). Almost all (96.8%) of ART-conceived multiple births were twins. The percentage of multiple births was higher among infants conceived with ART (12.5%) (range: 4.8% in the District of Columbia to 38.1% in Puerto Rico) than among all infants born in the total US birth population (3.2%) (range: 2.3% in Puerto Rico to 3.8% in Connecticut).

Nationally, infants conceived with ART contributed to 3.8% of all low birth weight infants (range: 0.9% in Mississippi to 8.8% in Massachusetts) (Table 5). Among ART-conceived infants, 14.7% were low birth weight compared with 8.5% among all infants. ART-conceived infants contributed to 4.4% of all preterm infants (range: 1.3% in Alabama to 9.8% in Massachusetts) (Table 6 and Figure 8). The percentage of preterm births was higher among infants conceived with ART (19.7%) than among all infants born in the total US birth population (10.5%).

The percentage of low birth weight among singletons was 8.8% among ART-conceived infants and 6.9% among all infants born (Table 7). The percentage of preterm births among ART-conceived singleton infants was 13.2%

compared with 8.8% among all singleton infants. The percentages of small for gestational age infants were 8.1% among ART-conceived infants compared with 9.2% among all infants.

Summary

Although singleton infants accounted for the majority of ART-conceived infants, multiple births from ART varied substantially among states and nationally contributed to 9.2% of all twins, triplets, and higher-order infants born in the United States. Variations in SET rates among states (or territory) were noted, which might, in part, account for high multiple birth rates observed in some states (or territory).

Public Health Action

Reducing the number of embryos transferred and increasing the use of single embryo transfer procedures, when clinically appropriate, can help reduce multiple births and related adverse health consequences for both mothers and infants.³ Risks to mothers from multiple-birth pregnancy include higher rates of caesarean delivery, gestational hypertension, and gestational diabetes.⁵ Infants from multiple births are at increased risk for numerous adverse sequelae such as preterm births, birth defects, and developmental disabilities.⁴⁻⁷

Long-term follow-up of ART-conceived infants through integration of existing maternal and infant health surveillance systems and registries with data available from NASS might help researchers monitor adverse outcomes at the population level.¹¹

References

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Figure 1. Number of assisted reproductive technology clinics in 50 US states, the District of Columbia, and Puerto Rico, 2021

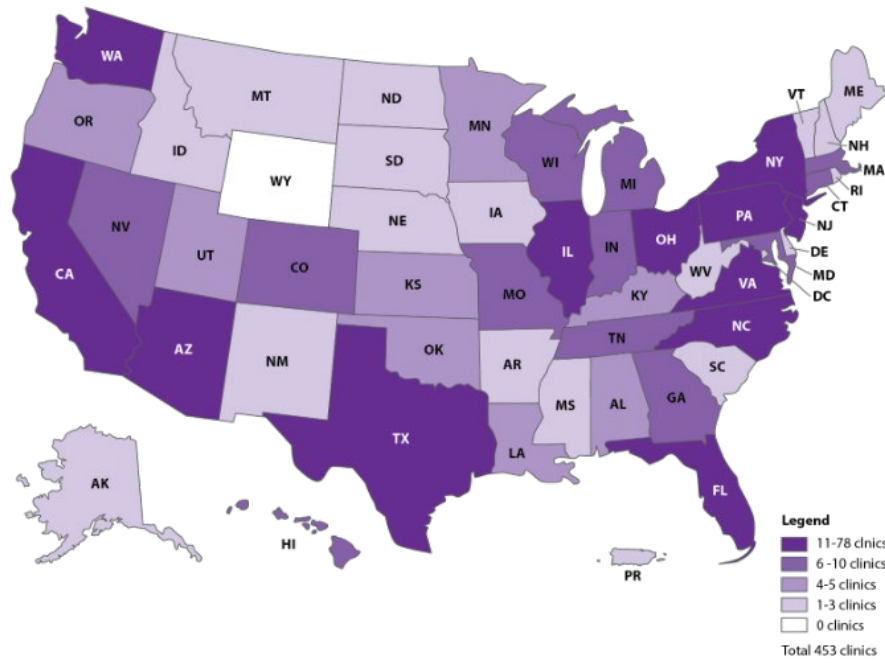
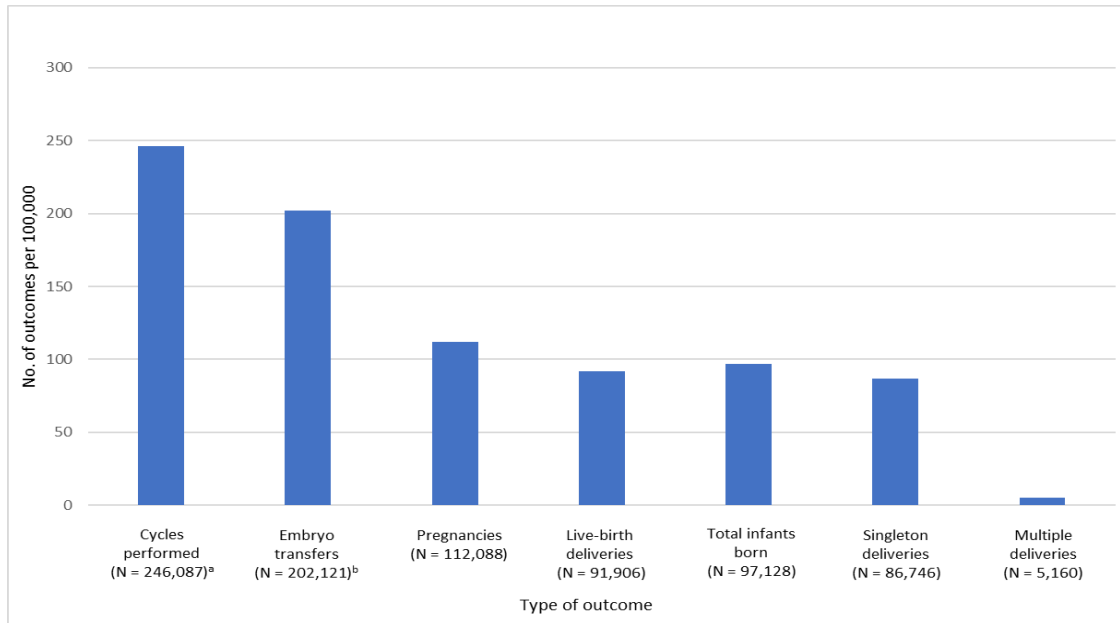


Figure 2. Number and outcomes of assisted reproductive technology procedures performed in 2021 in 50 US states, the District of Columbia, and Puerto Rico



^a Excludes 167,689 cycles in which egg or embryo banking was performed.

^b Includes all procedures in which at least one embryo was transferred.

Figure 3. Assisted reproductive technology procedures performed per 1 million women aged 15-49 years in 50 US states, the District of Columbia, and Puerto Rico, 2021

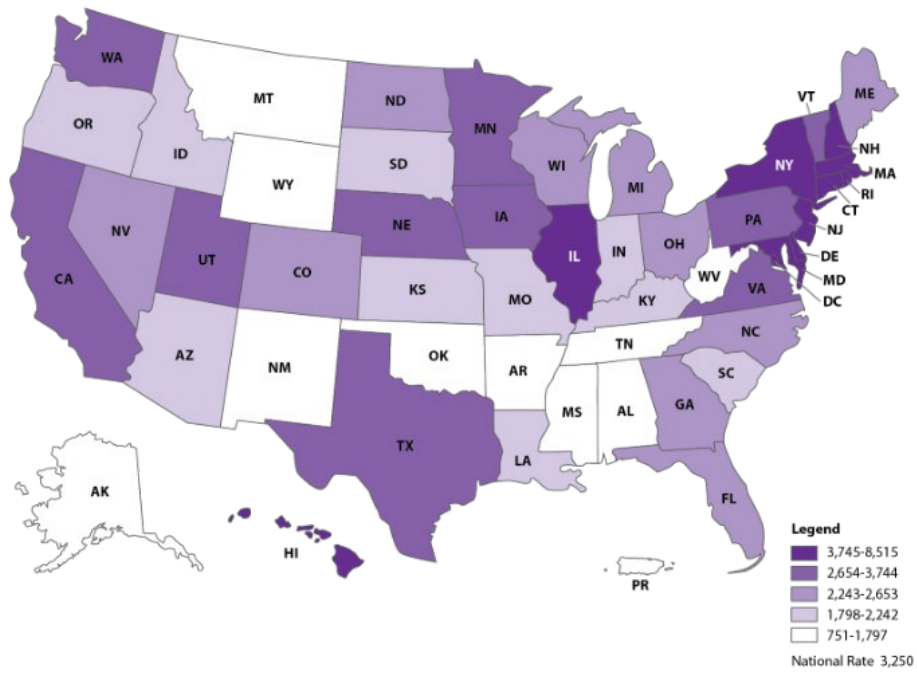


Figure 4. Percentage of single embryo transfer procedures performed among women aged <35 years in 50 US states, the District of Columbia, and Puerto Rico, 2021

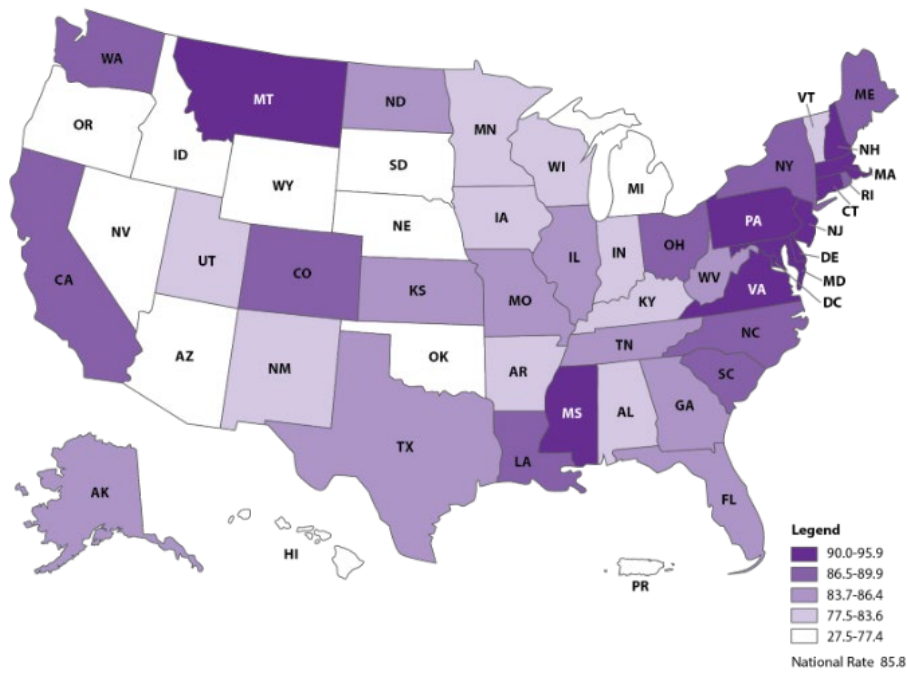


Figure 5. Proportion of infants conceived through assisted reproductive technology among all infants born in 50 US states, the District of Columbia, and Puerto Rico, 2021

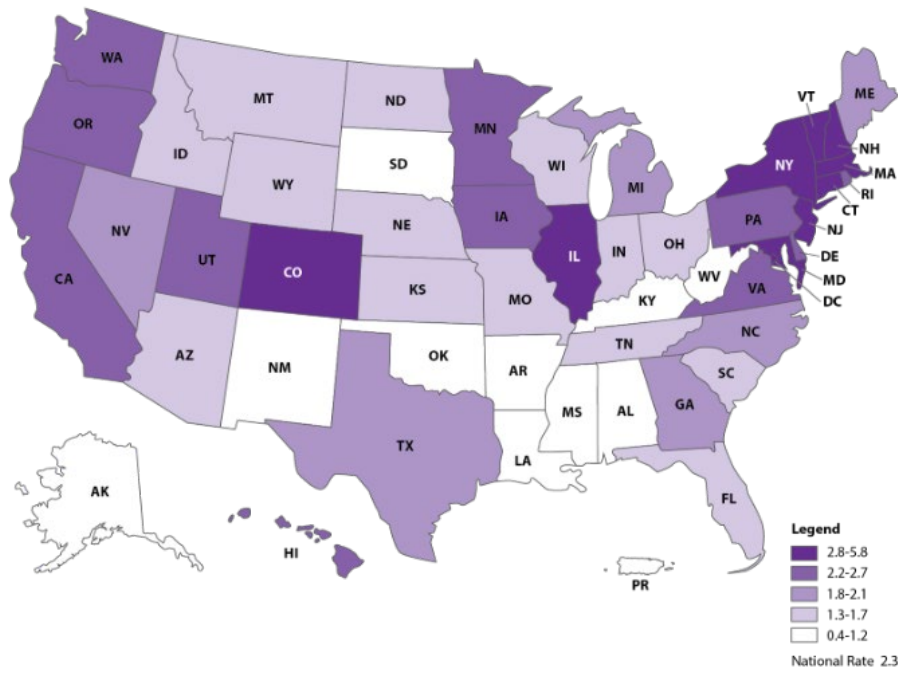


Figure 6. Percentage of multiples (twins, triplets, and higher order) among infants conceived through assisted reproductive technology in 50 US states, the District of Columbia, and Puerto Rico, 2021

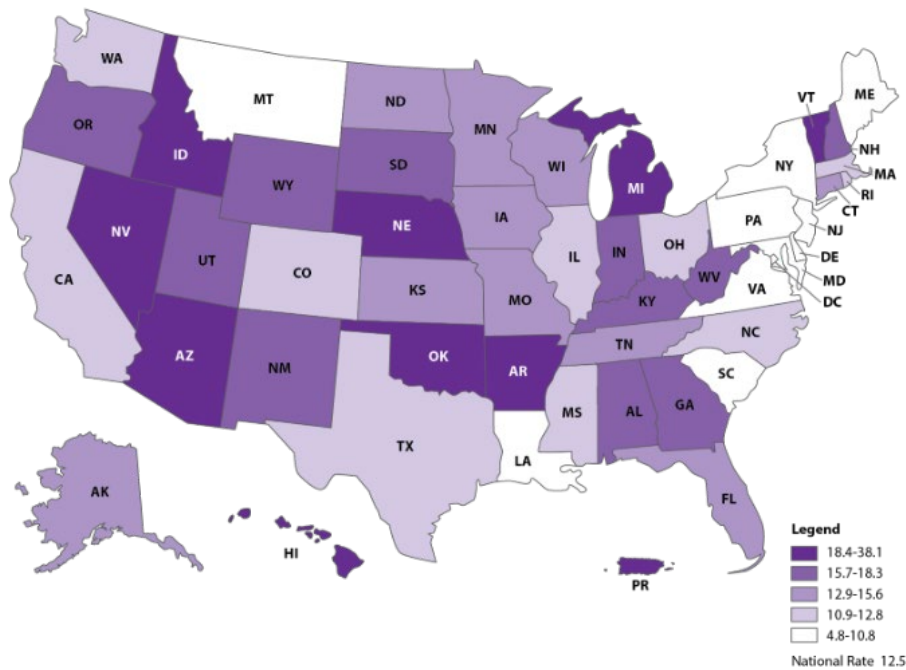


Figure 7. Proportion of multiples (twins, triplets, and higher order) conceived through assisted reproductive technology among all multiples in 50 US states, the District of Columbia, and Puerto Rico, 2021

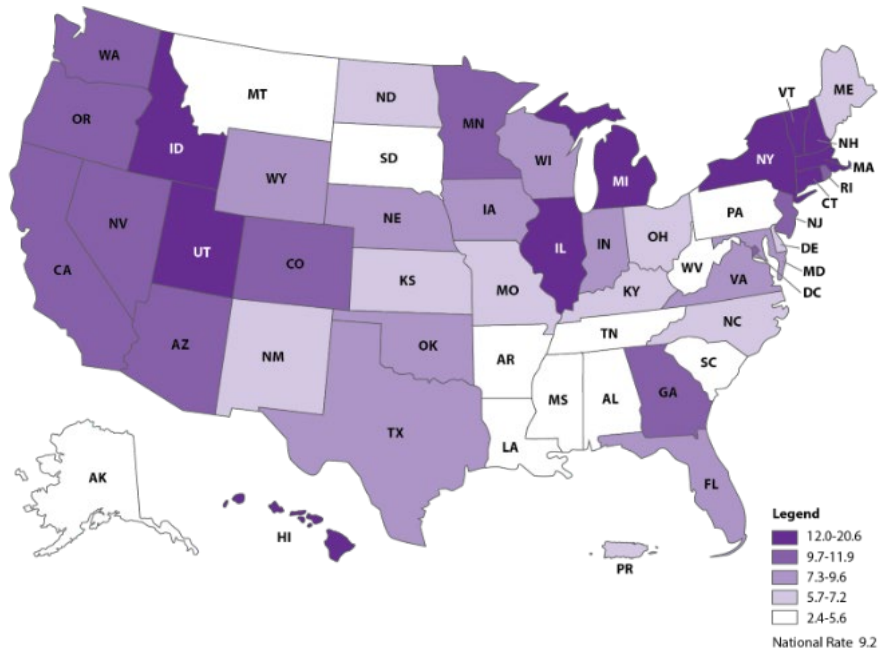


Figure 8. Proportion of infants conceived through assisted reproductive technology that were born preterm among all preterm births in 50 US states, the District of Columbia, and Puerto Rico, 2021

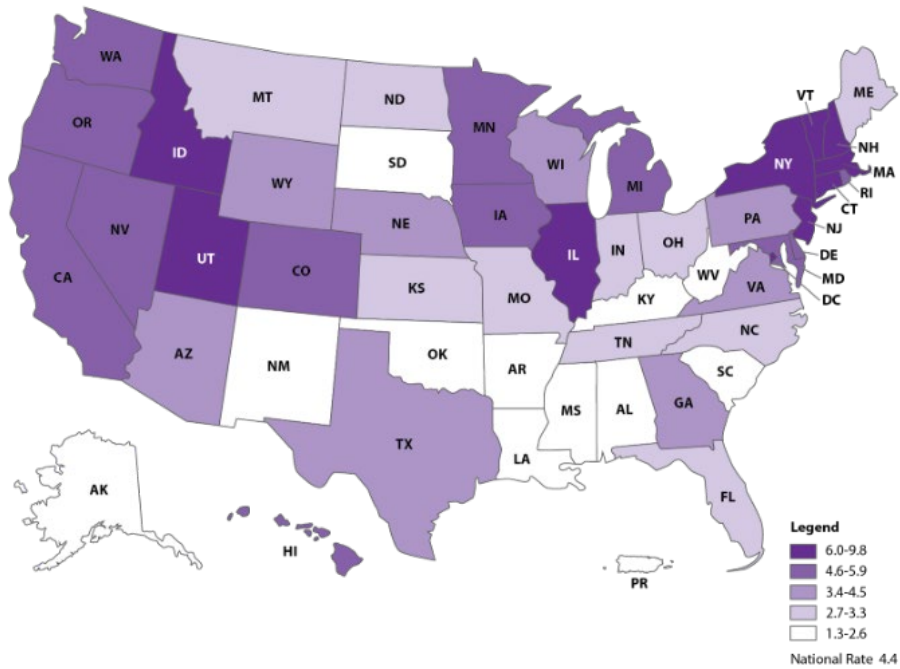


Table 1. Number and outcomes of assisted reproductive technology procedures performed in 2021, by female patient’s reporting area of residence at time of treatment in 50 US states, the District of Columbia, and Puerto Rico

Patient’s reporting area of residence ^a	No. of ART clinics ^b	No. of ART procedures performed ^c	No. of ART embryo-transfer procedures ^d	No. of ART pregnancies	No. of ART live-birth deliveries	No. of ART singleton live-birth deliveries	No. of ART multiple live-birth deliveries	No. of ART live-born infants	ART procedures per 1 million women aged 15–49 years ^e
Alabama	5	1,219	966	527	407	377	30	437	1,077
Alaska	1	238	186	94	78	f	f	82	1,457
Arizona	13	3,585	3,030	1,716	1,408	1,278	130	1,541	2,222
Arkansas	1	788	651	339	281	261	20	301	1,173
California	78	30,835	24,533	14,797	12,389	11,755	634	13,026	3,359
Colorado	7	3,398	3,185	2,050	1,719	1,622	97	1,816	2,478
Connecticut	6	4,109	3,293	1,926	1,605	1,522	83	1,692	5,179
Delaware	2	1,202	832	445	355	343	12	367	5,630
District of Columbia	2	1,668	1,280	700	573	560	13	586	8,515
Florida	26	11,204	9,205	4,947	3,929	3,695	234	4,164	2,439
Georgia	10	6,241	5,167	2,914	2,389	2,228	161	2,559	2,425
Hawaii	6	1,147	937	496	390	356	34	424	3,761
Idaho	1	845	705	456	381	332	49	432	2,003
Illinois	24	14,564	11,229	6,067	4,945	4,655	290	5,236	5,062
Indiana	7	3,010	2,581	1,333	1,045	949	96	1,141	1,971
Iowa	2	1,967	1,665	960	782	725	57	839	2,843
Kansas	5	1,259	1,130	634	510	474	36	546	1,943
Kentucky	4	1,993	1,595	771	611	568	43	654	2,006
Louisiana	4	2,045	1,505	783	660	621	39	698	1,952
Maine	1	712	563	306	266	251	15	282	2,537
Maryland	6	7,381	5,739	3,046	2,415	2,343	72	2,487	5,265
Massachusetts	8	11,650	9,517	4,782	4,011	3,813	198	4,213	7,188
Michigan	9	5,320	4,424	2,442	1,943	1,713	230	2,175	2,434
Minnesota	5	3,969	3,367	1,909	1,593	1,456	137	1,735	3,160
Mississippi	3	779	677	380	316	301	15	331	1,165
Missouri	7	2,793	2,355	1,273	1,047	983	64	1,111	2,048
Montana	1	412	360	215	176	f	f	179	1,761
Nebraska	2	1,200	941	475	390	361	29	420	2,758
Nevada	6	1,763	1,432	868	703	642	61	765	2,479
New Hampshire	1	1,248	1,018	522	443	413	30	474	4,257
New Jersey	15	12,921	11,043	6,554	5,450	5,285	165	5,619	6,330
New Mexico	2	495	469	280	226	207	19	246	1,070
New York	45	28,072	23,082	11,215	9,049	8,645	404	9,456	6,252
North Carolina	11	5,989	5,068	2,983	2,502	2,363	139	2,646	2,490
North Dakota	1	425	356	232	191	182	9	200	2,498
Ohio	11	6,768	5,526	2,955	2,413	2,286	127	2,540	2,624
Oklahoma	4	1,322	1,153	609	496	448	48	543	1,470
Oregon	4	1,917	1,773	1,075	908	836	72	979	1,992
Pennsylvania	12	9,454	7,657	4,056	3,313	3,188	125	3,442	3,385

Puerto Rico	3	551	452	146	91	72	19	111	751
Rhode Island	1	1,161	915	393	324	310	14	337	4,687
South Carolina	3	2,335	2,075	1,177	971	936	35	1,006	2,031
South Dakota	1	413	337	146	120	106	14	136	2,198
Tennessee	8	2,532	2,055	1,191	1,012	955	57	1,071	1,602
Texas	43	18,906	15,774	8,994	7,403	7,011	392	7,798	2,672
Utah	4	2,904	2,426	1,425	1,182	1,073	109	1,289	3,514
Vermont	2	499	392	185	149	143	6	155	3,619
Virginia	11	7,252	5,949	3,423	2,699	2,599	100	2,798	3,675
Washington	11	5,554	4,629	2,809	2,338	2,207	131	2,471	3,132
West Virginia	2	477	398	220	180	163	17	197	1,296
Wisconsin	6	2,887	2,409	1,295	1,081	1,001	80	1,163	2,271
Wyoming	0	192	180	100	86	77	9	95	1,551
Non-US residents	—	4,517	3,935	2,452	1,962	1,809	153	2,117	^g
Total	453	246,087	202,121	112,088	91,906	86,746	5,160	97,128	3,250

ART = assisted reproductive technology.

^a In cases of missing patient's residence data (1.8%), it was assigned as the location where the ART procedure was performed.

^b ART procedures and outcomes by patient's residence do not necessarily reflect the procedures and outcomes of the ART clinics within the reporting area because some patients seek treatment at a clinic in a location other than their area of residence.

^c Excludes 167,689 cycles in which egg or embryo banking was performed.

^d Embryo-transfer procedures include all procedures performed in which at least one embryo was transferred.

^e US Census Bureau estimates. Source: US Census Bureau. <https://data.census.gov/cedsci/>.

^f To protect confidentiality, cells with values of 1–4 for ART infants are suppressed. Also suppressed are data that can be used to derive suppressed cell values. These values are included in the totals.

^g Non-US residents were excluded from rate because the appropriate denominators were not available.

Table 2. Number of assisted reproductive technology embryo-transfer procedures, average number of embryos transferred, and percentage of single embryo transfer procedures performed in 2021, by female patient’s age group and reporting area of residence at time of treatment in 50 US states, the District of Columbia, and Puerto Rico

Patient’s reporting area of residence ^a	<35 years			35–37 years			38–40 years			>40 years		
	No. of embryo-transfer procedures ^b	Average no. of embryos transferred	SET %	No. of embryo-transfer procedures	Average no. of embryos transferred	SET %	No. of embryo-transfer procedures	Average no. of embryos transferred	SET %	No. of embryo-transfer procedures	Average no. of embryos transferred	SET %
Alabama	545	1.2	82.2	197	1.2	81.7	114	1.3	71.9	110	1.4	69.1
Alaska	72	1.2	84.7	47	1.2	76.6	38	1.2	84.2	29	1.1	86.2
Arizona	1,283	1.3	73.4	672	1.3	76.6	592	1.3	73.1	483	1.3	74.1
Arkansas	380	1.2	78.4	146	1.3	76.0	74	1.3	71.6	51	1.5	68.6
California	6,792	1.1	86.5	6,096	1.1	87.9	5,601	1.2	83.5	6,044	1.4	77.2
Colorado	1,185	1.1	87.0	883	1.1	88.0	632	1.1	88.4	485	1.2	85.4
Connecticut	1,265	1.1	91.0	779	1.2	83.7	631	1.2	78.6	618	1.4	73.3
Delaware	380	1.1	94.2	184	1.1	89.7	143	1.1	93.7	125	1.2	83.2
District of Columbia	291	1.0	95.9	332	1.1	94.0	346	1.1	89.9	311	1.3	83.9
Florida	3,481	1.2	84.0	2,164	1.2	80.7	1,755	1.2	76.4	1,805	1.3	76.7
Georgia	1,971	1.2	84.4	1,249	1.2	82.6	977	1.2	79.4	970	1.3	77.3
Hawaii	237	1.3	72.6	215	1.4	65.6	209	1.5	61.2	276	1.5	60.5
Idaho	360	1.3	72.8	153	1.3	72.5	101	1.2	78.2	91	1.3	72.5
Illinois	4,463	1.1	86.1	2,759	1.2	84.3	2,147	1.2	77.7	1,860	1.4	73.1
Indiana	1,373	1.2	78.2	564	1.2	77.3	360	1.3	71.9	284	1.3	69.0
Iowa	921	1.2	83.1	347	1.2	82.4	234	1.2	79.9	163	1.3	73.0
Kansas	617	1.1	86.1	248	1.1	88.3	169	1.2	84.0	96	1.2	81.3
Kentucky	871	1.2	78.2	344	1.3	73.0	235	1.4	66.0	145	1.3	70.3
Louisiana	736	1.1	87.9	373	1.2	84.7	224	1.3	78.1	172	1.4	70.9
Maine	241	1.1	87.1	148	1.1	89.2	107	1.2	83.2	67	1.2	85.1
Maryland	2,044	1.1	93.1	1,347	1.1	93.2	1,166	1.2	83.3	1,182	1.2	82.1
Massachusetts	3,329	1.1	90.8	2,539	1.1	87.6	2,104	1.3	72.2	1,545	1.5	68.5
Michigan	2,095	1.3	65.9	982	1.4	65.6	697	1.4	65.9	650	1.4	70.2
Minnesota	1,544	1.2	80.4	859	1.2	80.7	547	1.2	78.1	417	1.2	80.6
Mississippi	365	1.1	91.5	151	1.1	90.1	85	1.2	75.3	76	1.1	86.8
Missouri	1,213	1.1	86.2	559	1.1	85.9	356	1.2	79.5	227	1.4	70.5
Montana	200	1.1	90.0	59	1.2	86.4	60	1.1	95.0	41	1.2	78.0
Nebraska	563	1.3	71.8	199	1.2	75.4	104	1.2	79.8	75	1.2	82.7

Nevada	562	1.2	77.2	337	1.2	84.9	306	1.2	82.7	227	1.3	78.0
New Hampshire	426	1.1	92.5	286	1.1	86.0	167	1.4	67.1	139	1.4	74.8
New Jersey	4,333	1.1	93.3	2,762	1.1	91.2	2,073	1.1	88.2	1,875	1.3	81.9
New Mexico	245	1.2	83.3	91	1.1	86.8	70	1.2	87.1	63	1.2	85.7
New York	7,477	1.1	87.0	5,088	1.2	84.5	4,955	1.2	79.4	5,562	1.4	72.6
North Carolina	2,208	1.1	89.4	1,250	1.1	85.6	859	1.2	85.7	751	1.2	81.4
North Dakota	212	1.2	84.0	78	1.3	75.6	43	1.3	74.4	23	1.3	73.9
Ohio	2,792	1.1	88.9	1,242	1.1	85.7	850	1.2	78.5	642	1.3	74.1
Oklahoma	635	1.2	75.9	274	1.3	74.8	149	1.5	61.7	95	1.4	72.6
Oregon	590	1.3	74.9	464	1.2	79.7	372	1.2	78.8	347	1.2	80.4
Pennsylvania	3,365	1.1	92.5	1,948	1.1	91.0	1,321	1.2	83.9	1,023	1.2	81.5
Puerto Rico	131	1.8	27.5	107	1.7	43.0	106	1.6	46.2	108	1.7	37.0
Rhode Island	356	1.1	89.0	225	1.1	86.7	184	1.4	63.6	150	1.5	68.0
South Carolina	980	1.1	89.7	473	1.1	89.2	360	1.2	83.3	262	1.2	82.1
South Dakota	204	1.4	62.3	76	1.4	55.3	33	1.3	69.7	24	1.5	62.5
Tennessee	932	1.1	85.8	502	1.2	84.1	339	1.2	78.8	282	1.3	72.7
Texas	6,727	1.1	85.9	3,743	1.1	85.9	2,938	1.2	84.0	2,366	1.2	80.5
Utah	1,356	1.2	78.5	472	1.2	80.7	303	1.2	76.6	295	1.3	74.2
Vermont	133	1.2	78.9	107	1.5	65.4	91	1.5	57.1	61	1.7	62.3
Virginia	2,134	1.1	91.1	1,423	1.1	89.6	1,225	1.1	86.8	1,167	1.2	84.7
Washington	1,703	1.1	88.0	1,175	1.1	87.8	891	1.2	83.6	860	1.2	85.6
West Virginia	225	1.2	84.0	81	1.1	87.7	48	1.3	68.8	44	1.3	72.7
Wisconsin	1,163	1.2	83.1	576	1.2	81.6	394	1.3	76.6	276	1.4	66.3
Wyoming	84	1.2	76.2	41	1.1	90.2	30	1.2	83.3	25	1.4	68.0
Non-US residents	900	1.2	83.0	680	1.2	81.9	731	1.2	83.4	1,624	1.2	84.4
Total	78,690	1.1	85.8	48,096	1.2	85.1	38,646	1.2	80.3	36,689	1.3	76.8

SET = single-embryo transfer. In SET, only one embryo is placed in the uterus per transfer regardless of how many embryos were available.

^a In cases of missing patient's residence data (1.8%), it was assigned as the location where the ART procedure was performed.

^b Includes all procedures in which at least one embryo was transferred.

Table 3. Number, proportion, and percentage of all infants and singleton infants born with use of assisted reproductive technology in 2021, by female patient’s reporting area of residence at time of treatment in 50 US states, the District of Columbia, and Puerto Rico

Patient’s reporting area of residence ^a	Total no. of infants born ^b	No. of ART infants born ^c	Prop. of ART infants among all infants, %	Singleton infants among ART infants		Singleton infants among all infants		Prop. of ART singletons among all singletons, %
				No.	%	No.	%	
Alabama	58,054	340	0.6	281	82.6	55,905	96.3	0.5
Alaska	9,367	92	1.0	79	85.9	9,052	96.6	0.9
Arizona	77,916	1,319	1.7	1,064	80.7	75,601	97.0	1.4
Arkansas	35,965	258	0.7	203	78.7	34,835	96.9	0.6
California	420,608	11,392	2.7	10,045	88.2	408,419	97.1	2.5
Colorado	62,949	1,781	2.8	1,564	87.8	61,070	97.0	2.6
Connecticut	35,670	1,584	4.4	1,380	87.1	34,300	96.2	4.0
Delaware	10,482	274	2.6	255	93.1	10,156	96.9	2.5
District of Columbia	8,660	504	5.8	480	95.2	8,414	97.2	5.7
Florida	216,260	3,692	1.7	3,177	86.1	209,728	97.0	1.5
Georgia	124,073	2,321	1.9	1,918	82.6	119,909	96.6	1.6
Hawaii	15,620	375	2.4	297	79.2	15,177	97.2	2.0
Idaho	22,427	384	1.7	294	76.6	21,763	97.0	1.4
Illinois	132,189	4,791	3.6	4,194	87.5	127,692	96.6	3.3
Indiana	79,946	1,115	1.4	919	82.4	77,251	96.6	1.2
Iowa	36,835	823	2.2	698	84.8	35,509	96.4	2.0
Kansas	34,705	518	1.5	451	87.1	33,607	96.8	1.3
Kentucky	52,214	629	1.2	515	81.9	50,463	96.6	1.0
Louisiana	57,437	712	1.2	643	90.3	55,440	96.5	1.2
Maine	12,006	242	2.0	216	89.3	11,633	96.9	1.9
Maryland	68,285	2,311	3.4	2,108	91.2	66,041	96.7	3.2
Massachusetts	69,137	3,717	5.4	3,301	88.8	66,813	96.6	4.9
Michigan	104,980	2,015	1.9	1,505	74.7	101,086	96.3	1.5
Minnesota	64,425	1,670	2.6	1,413	84.6	62,261	96.6	2.3
Mississippi	35,156	274	0.8	242	88.3	33,844	96.3	0.7
Missouri	69,453	1,132	1.6	973	86.0	67,133	96.7	1.4
Montana	11,231	166	1.5	154	92.8	10,915	97.2	1.4
Nebraska	24,609	409	1.7	332	81.2	23,773	96.6	1.4
Nevada	33,686	689	2.0	560	81.3	32,592	96.8	1.7
New Hampshire	12,625	447	3.5	377	84.3	12,189	96.5	3.1

New Jersey	101,497	5,106	5.0	4,759	93.2	98,385	96.9	4.8
New Mexico	21,391	195	0.9	163	83.6	20,845	97.4	0.8
New York	210,742	8,707	4.1	7,841	90.1	203,837	96.7	3.8
North Carolina	120,466	2,294	1.9	2,017	87.9	116,533	96.7	1.7
North Dakota	10,112	138	1.4	120	87.0	9,842	97.3	1.2
Ohio	129,791	2,226	1.7	1,974	88.7	125,613	96.8	1.6
Oklahoma	48,410	471	1.0	351	74.5	46,858	96.8	0.7
Oregon	40,914	908	2.2	747	82.3	39,505	96.6	1.9
Pennsylvania	132,622	3,167	2.4	2,951	93.2	128,359	96.8	2.3
Puerto Rico	19,304	84	0.4	52	61.9	18,861	97.7	0.3
Rhode Island	10,464	256	2.4	226	88.3	10,168	97.2	2.2
South Carolina	57,185	949	1.7	878	92.5	55,294	96.7	1.6
South Dakota	11,369	115	1.0	96	83.5	10,962	96.4	0.9
Tennessee	81,717	1,025	1.3	886	86.4	79,109	96.8	1.1
Texas	373,594	7,315	2.0	6,378	87.2	362,314	97.0	1.8
Utah	46,712	1,173	2.5	987	84.1	45,170	96.7	2.2
Vermont	5,384	159	3.0	125	78.6	5,219	96.9	2.4
Virginia	95,825	2,383	2.5	2,136	89.6	92,765	96.8	2.3
Washington	83,911	2,181	2.6	1,925	88.3	81,473	97.1	2.4
West Virginia	17,198	175	1.0	143	81.7	16,621	96.6	0.9
Wisconsin	61,781	1,050	1.7	889	84.7	59,721	96.7	1.5
Wyoming	6,237	93	1.5	77	82.8	6,034	96.7	1.3
Total	3,683,596	86,146	2.3	75,359	87.5	3,566,059	96.8	2.1

ART = assisted reproductive technology; Prop. = proportion.

^a In cases of missing patient's residence data (1.8%), it was assigned as the location where the ART procedure was performed.

^b US births exclude births to non-US residents. Source: CDC, Natality public use file and CD-ROM. Hyattsville, MD, National Center for Health Statistics.

^c Includes infants conceived from ART procedures performed in 2020 and born in 2021 and infants conceived from ART procedures performed in 2021 and born in 2021. ART births exclude births to non-US residents.

Table 4. Number, percentage, and proportion of multiple births, twins, triplets, and higher-order infants born with use of assisted reproductive technology procedures in 2021, by female patient’s reporting area of residence at time of treatment in 50 US states, the District of Columbia, and Puerto Rico

Patient’s reporting area of residence ^a	Multiple-birth infants among ART infants ^{b,c}		Multiple births among all infants ^d		Prop. of ART multiples among all multiples, %	Twin infants among ART infants ^{b,c}		Twin infants among all infants ^d		Prop. of ART twins among all twins, %	Triplets or higher-order among ART infants ^{b,c}		Triplets or higher-order among all infants ^d		Prop. of ART triplets or higher-order among all triplets+, %
	No.	%	No.	%		No.	%	No.	%		No.	%	No.	%	
Alabama	59	17.4	2,149	3.7	2.7	59	17.4	2,079	3.6	2.8	0	0.0	70	0.1	0.0
Alaska	13	14.1	315	3.4	4.1	e	e	306	3.3	e	e	e	e	e	33.3
Arizona	255	19.3	2,315	3.0	11.0	236	17.9	2,251	2.9	10.5	19	1.4	64	0.1	29.7
Arkansas	55	21.3	1,130	3.1	4.9	e	e	1,106	3.1	e	e	e	24	0.1	e
California	1,347	11.8	12,189	2.9	11.1	1,302	11.4	11,925	2.8	10.9	45	0.4	264	0.1	17.0
Colorado	217	12.2	1,879	3.0	11.5	211	11.8	1,839	2.9	11.5	6	0.3	40	0.1	15.0
Connecticut	204	12.9	1,370	3.8	14.9	192	12.1	1,333	3.7	14.4	12	0.8	37	0.1	32.4
Delaware	19	6.9	326	3.1	5.8	e	e	314	3.0	e	e	e	12	0.1	e,f
District of Columbia	24	4.8	246	2.8	9.8	24	4.8	e	e	e	0	0.0	e	e	f
Florida	515	13.9	6,532	3.0	7.9	509	13.8	6,410	3.0	7.9	6	0.2	122	0.1	4.9
Georgia	403	17.4	4,164	3.4	9.7	370	15.9	4,048	3.3	9.1	33	1.4	116	0.1	28.4
Hawaii	78	20.8	443	2.8	17.6	78	20.8	e	e	e	0	0.0	e	e	f
Idaho	90	23.4	664	3.0	13.6	84	21.9	639	2.8	13.1	6	1.6	25	0.1	24.0
Illinois	597	12.5	4,497	3.4	13.3	585	12.2	4,415	3.3	13.3	12	0.3	82	0.1	14.6
Indiana	196	17.6	2,695	3.4	7.3	190	17.0	2,634	3.3	7.2	6	0.5	61	0.1	9.8
Iowa	125	15.2	1,326	3.6	9.4	e	e	1,294	3.5	e	e	e	32	0.1	e
Kansas	67	12.9	1,098	3.2	6.1	e	e	1,058	3.0	e	e	e	40	0.1	e
Kentucky	114	18.1	1,751	3.4	6.5	114	18.1	1,699	3.3	6.7	0	0.0	52	0.1	0.0
Louisiana	69	9.7	1,997	3.5	3.5	69	9.7	1,949	3.4	3.5	0	0.0	48	0.1	0.0
Maine	26	10.7	373	3.1	7.0	26	10.7	e	e	e	0	0.0	e	e	f
Maryland	203	8.8	2,244	3.3	9.0	203	8.8	2,198	3.2	9.2	0	0.0	46	0.1	0.0
Massachusetts	416	11.2	2,324	3.4	17.9	407	10.9	2,271	3.3	17.9	9	0.2	53	0.1	17.0
Michigan	510	25.3	3,894	3.7	13.1	497	24.7	3,808	3.6	13.1	13	0.6	86	0.1	15.1
Minnesota	257	15.4	2,164	3.4	11.9	245	14.7	2,096	3.3	11.7	12	0.7	68	0.1	17.6
Mississippi	32	11.7	1,312	3.7	2.4	32	11.7	1,272	3.6	2.5	0	0.0	40	0.1	0.0
Missouri	159	14.0	2,320	3.3	6.9	e	e	2,246	3.2	e	e	e	74	0.1	e

Montana	12	7.2	316	2.8	3.8	12	7.2	306	2.7	3.9	0	0.0	10	0.1	0.0
Nebraska	77	18.8	836	3.4	9.2	e	e	790	3.2	e	e	e	46	0.2	e
Nevada	129	18.7	1,094	3.2	11.8	e	e	1,068	3.2	e	e	e	26	0.1	e
New Hampshire	70	15.7	436	3.5	16.1	70	15.7	425	3.4	16.5	0	0.0	11	0.1	0.0
New Jersey	347	6.8	3,112	3.1	11.2	335	6.6	3,024	3.0	11.1	12	0.2	88	0.1	13.6
New Mexico	32	16.4	546	2.6	5.9	32	16.4	e	e	e	0	0.0	e	e	f
New York	866	9.9	6,905	3.3	12.5	836	9.6	6,686	3.2	12.5	30	0.3	219	0.1	13.7
North Carolina	277	12.1	3,933	3.3	7.0	277	12.1	3,867	3.2	7.2	0	0.0	66	0.1	0.0
North Dakota	18	13.0	270	2.7	6.7	18	13.0	e	e	e	0	0.0	e	e	f
Ohio	252	11.3	4,178	3.2	6.0	246	11.1	4,081	3.1	6.0	6	0.3	97	0.1	6.2
Oklahoma	120	25.5	1,552	3.2	7.7	120	25.5	1,515	3.1	7.9	0	0.0	37	0.1	0.0
Oregon	161	17.7	1,409	3.4	11.4	149	16.4	1,379	3.4	10.8	12	1.3	30	0.1	40.0
Pennsylvania	216	6.8	4,263	3.2	5.1	210	6.6	4,156	3.1	5.1	6	0.2	107	0.1	5.6
Puerto Rico	32	38.1	443	2.3	7.2	32	38.1	e	e	e	0	0.0	e	e	f
Rhode Island	30	11.7	296	2.8	10.1	e	e	284	2.7	e	e	e	12	0.1	e,f
South Carolina	71	7.5	1,891	3.3	3.8	e	e	1,840	3.2	e	e	e	51	0.1	e
South Dakota	19	16.5	407	3.6	4.7	e	e	395	3.5	e	e	e	12	0.1	e,f
Tennessee	139	13.6	2,608	3.2	5.3	130	12.7	2,522	3.1	5.2	9	0.9	86	0.1	10.5
Texas	937	12.8	11,280	3.0	8.3	912	12.5	10,974	2.9	8.3	25	0.3	306	0.1	8.2
Utah	186	15.9	1,542	3.3	12.1	180	15.3	1,485	3.2	12.1	6	0.5	57	0.1	10.5
Vermont	34	21.4	165	3.1	20.6	34	21.4	e	e	e	0	0.0	e	e	f
Virginia	247	10.4	3,060	3.2	8.1	238	10.0	3,005	3.1	7.9	9	0.4	55	0.1	16.4
Washington	256	11.7	2,438	2.9	10.5	250	11.5	2,384	2.8	10.5	6	0.3	54	0.1	11.1
West Virginia	32	18.3	577	3.4	5.5	32	18.3	e	e	e	0	0.0	e	e	f
Wisconsin	161	15.3	2,060	3.3	7.8	152	14.5	1,997	3.2	7.6	9	0.9	63	0.1	14.3
Wyoming	16	17.2	203	3.3	7.9	16	17.2	e	e	e	0	0.0	e	e	f
Total	10,787	12.5	117,537	3.2	9.2	10,445	12.1	114,600	3.1	9.1	342	0.4	2,937	0.1	11.6

ART = assisted reproductive technology; Prop = proportion.

^a In cases of missing patient's residence data (1.8%), it was assigned as the location where the ART procedure was performed.

^b Includes infants conceived from ART procedures performed in 2020 and born in 2021 and infants conceived from ART procedures performed in 2021 and born in 2021. ART births exclude births to non-US residents.

^c Includes only the number of infants live born in a multiple-birth delivery. For example, if three infants were born in a live-birth delivery, and one of the three infants was stillborn, the total number of live-born infants would be two. However, the two infants still would be counted as triplets.

^d US births excludes births to non-US residents. Source: National Center for Health Statistics, Vital statistics data available. Natality public use file and CD-ROM. Hyattsville, MD, National Center for Health Statistics.

^e To protect confidentiality, cells with values of 1–4 for ART infants and cells with values of 0–9 for all infants are suppressed. Also suppressed are data that can be used to derive suppressed cell values. These values are included in the totals.

^f Estimates based on $N < 20$ in the denominator are suppressed because such rates are considered unstable.

Table 5. Number, percentage, and proportion of infants born with use of assisted reproductive technology in 2021, by low birth weight category and female patient’s reporting area of residence at time of treatment in 50 US states, the District of Columbia, and Puerto Rico

Patient’s reporting area of residence ^a	Very low birth weight (<1,500g)					Moderately low birth weight (1,500–2,499g)					Low birth weight (<2,500g)				
	ART infants ^b		All infants ^c		Prop. of ART infants among all infants, %	ART infants ^b		All infants ^c		Prop. of ART infants among all infants, %	ART infants ^b		All infants ^c		Prop. of ART infants among all infants, %
	No.	%	No.	%		No.	%	No.	%		No.	%	No.	%	
Alabama	8	2.5	1,061	1.8	0.8	55	17.1	4,992	8.6	1.1	63	19.6	6,053	10.4	1.0
Alaska	^d	^d	120	1.3	^d	^d	^d	527	5.6	^d	15	16.7	647	6.9	2.3
Arizona	55	4.4	962	1.2	5.7	186	14.8	5,170	6.6	3.6	241	19.2	6,132	7.9	3.9
Arkansas	11	4.3	618	1.7	1.8	36	14.2	2,804	7.8	1.3	47	18.5	3,422	9.5	1.4
California	240	2.2	4,761	1.1	5.0	1,266	11.8	25,844	6.1	4.9	1,506	14.0	30,605	7.3	4.9
Colorado	44	2.7	654	1.0	6.7	245	14.9	5,285	8.4	4.6	289	17.6	5,939	9.4	4.9
Connecticut	32	2.1	488	1.4	6.6	196	12.7	2,418	6.8	8.1	228	14.8	2,906	8.1	7.8
Delaware	5	2.1	163	1.6	3.1	28	11.6	789	7.5	3.5	33	13.7	952	9.1	3.5
District of Columbia	6	1.2	145	1.7	4.1	57	11.7	684	7.9	8.3	63	13.0	829	9.6	7.6
Florida	103	2.9	3,399	1.6	3.0	420	11.7	16,061	7.4	2.6	523	14.6	19,460	9.0	2.7
Georgia	82	4.1	2,282	1.8	3.6	323	16.0	10,858	8.8	3.0	405	20.1	13,140	10.6	3.1
Hawaii	13	3.9	201	1.3	6.5	66	19.8	1,180	7.6	5.6	79	23.7	1,381	8.8	5.7
Idaho	15	3.9	230	1.0	6.5	76	19.9	1,264	5.6	6.0	91	23.9	1,494	6.7	6.1
Illinois	102	2.2	1,756	1.3	5.8	518	11.3	9,479	7.2	5.5	620	13.5	11,235	8.5	5.5
Indiana	36	3.4	1,039	1.3	3.5	156	14.8	5,665	7.1	2.8	192	18.2	6,704	8.4	2.9
Iowa	19	2.4	425	1.2	4.5	101	12.6	2,094	5.7	4.8	120	15.0	2,519	6.8	4.8
Kansas	14	2.9	414	1.2	3.4	60	12.2	2,153	6.2	2.8	74	15.1	2,567	7.4	2.9
Kentucky	16	2.7	798	1.5	2.0	81	13.7	3,963	7.6	2.0	97	16.4	4,761	9.1	2.0
Louisiana	13	1.9	1,133	2.0	1.1	76	10.9	5,374	9.4	1.4	89	12.8	6,507	11.3	1.4
Maine	^d	^d	129	1.1	^d	^d	^d	746	6.2	^d	27	11.5	875	7.3	3.1
Maryland	59	2.6	1,074	1.6	5.5	243	10.7	5,006	7.3	4.9	302	13.3	6,080	8.9	5.0
Massachusetts	76	2.1	759	1.1	10.0	375	10.4	4,389	6.3	8.5	451	12.5	5,148	7.4	8.8
Michigan	66	3.5	1,549	1.5	4.3	342	18.3	8,119	7.7	4.2	408	21.8	9,668	9.2	4.2
Minnesota	59	3.6	754	1.2	7.8	192	11.8	3,911	6.1	4.9	251	15.4	4,665	7.2	5.4
Mississippi	6	2.3	723	2.1	0.8	35	13.5	3,616	10.3	1.0	41	15.8	4,339	12.3	0.9
Missouri	30	2.8	964	1.4	3.1	152	14.4	5,204	7.5	2.9	182	17.3	6,168	8.9	3.0
Montana	^d	^d	108	1.0	^d	^d	^d	745	6.6	^d	18	11.0	853	7.6	2.1
Nebraska	13	3.4	310	1.3	4.2	57	15.1	1,570	6.4	3.6	70	18.5	1,880	7.6	3.7
Nevada	35	5.2	486	1.4	7.2	105	15.7	2,769	8.2	3.8	140	21.0	3,255	9.7	4.3

New Hampshire	8	1.8	123	1.0	6.5	51	11.8	755	6.0	6.8	59	13.6	878	7.0	6.7
New Jersey	93	1.9	1,208	1.2	7.7	438	8.8	6,636	6.5	6.6	531	10.6	7,844	7.7	6.8
New Mexico	^d	^d	286	1.3	^d	^d	^d	1,723	8.1	^d	26	14.7	2,009	9.4	1.3
New York	172	2.1	2,832	1.3	6.1	925	11.2	14,846	7.0	6.2	1,097	13.3	17,678	8.4	6.2
North Carolina	56	2.7	1,935	1.6	2.9	223	10.7	9,430	7.8	2.4	279	13.4	11,365	9.4	2.5
North Dakota	^d	^d	102	1.0	^d	^d	^d	570	5.6	^d	16	12.2	672	6.6	2.4
Ohio	51	2.4	1,901	1.5	2.7	243	11.4	9,390	7.2	2.6	294	13.8	11,291	8.7	2.6
Oklahoma	16	3.6	724	1.5	2.2	60	13.3	3,529	7.3	1.7	76	16.9	4,253	8.8	1.8
Oregon	20	2.2	384	0.9	5.2	122	13.7	2,443	6.0	5.0	142	15.9	2,827	6.9	5.0
Pennsylvania	74	2.4	1,810	1.4	4.1	277	9.0	9,197	6.9	3.0	351	11.4	11,007	8.3	3.2
Puerto Rico	^d	^d	283	1.5	^d	^d	^d	1,747	9.0	^d	34	40.5	2,030	10.5	1.7
Rhode Island	^d	^d	127	1.2	^d	^d	^d	701	6.7	^d	39	15.6	828	7.9	4.7
South Carolina	26	3.0	1,032	1.8	2.5	80	9.1	4,691	8.2	1.7	106	12.0	5,723	10.0	1.9
South Dakota	^d	^d	109	1.0	^d	^d	^d	701	6.2	^d	15	13.4	810	7.1	1.9
Tennessee	33	3.4	1,216	1.5	2.7	111	11.4	6,379	7.8	1.7	144	14.8	7,595	9.3	1.9
Texas	186	2.7	5,373	1.4	3.5	914	13.1	26,924	7.2	3.4	1,100	15.7	32,297	8.6	3.4
Utah	41	3.6	526	1.1	7.8	196	17.0	2,939	6.3	6.7	237	20.6	3,465	7.4	6.8
Vermont	7	4.5	49	0.9	14.3	22	14.2	328	6.1	6.7	29	18.7	377	7.0	7.7
Virginia	57	2.4	1,402	1.5	4.1	232	9.9	6,577	6.9	3.5	289	12.4	7,979	8.3	3.6
Washington	55	2.6	852	1.0	6.5	249	11.7	4,978	5.9	5.0	304	14.3	5,830	6.9	5.2
West Virginia	0	0.0	238	1.4	0.0	30	19.1	1,440	8.4	2.1	30	19.1	1,678	9.8	1.8
Wisconsin	29	2.9	768	1.2	3.8	131	12.9	3,988	6.5	3.3	160	15.8	4,756	7.7	3.4
Wyoming	^d	^d	49	0.8	^d	^d	^d	537	8.6	^d	20	21.7	586	9.4	3.4
Total	2,106	2.6	50,834	1.4	4.1	9,937	12.1	263,128	7.1	3.8	12,043	14.7	313,962	8.5	3.8

ART= assisted reproductive technology; Prop = proportion.

^a In cases of missing patient's residence data (1.8%), it was assigned as the location where the ART procedure was performed.

^b Includes infants conceived from ART procedures performed in 2020 and born in 2021 and infants conceived from ART procedures performed in 2021 and born in 2021. ART infants exclude births to non-US residents and include only infants with birth weight data available.

^c US births excludes births to non-US residents. Source: National Center for Health Statistics, Vital statistics data available. Natality public use file and CD-ROM. Hyattsville, MD, National Center for Health Statistics.

^d To protect confidentiality, cells with values of 1-4 for ART infants and cells with values of 0-9 for all infants are suppressed. Also suppressed are data that can be used to derive suppressed cell values. These values are included in the totals.

Table 6. Number, percentage, and proportion of infants born with use of assisted reproductive technology in 2021, by preterm gestational age and female patient's reporting area of residence at time of treatment in 50 US states, the District of Columbia, and Puerto Rico

Patient's reporting area of residence ^a	Very preterm birth (<32 weeks)					Early preterm birth (<34 weeks)					Late preterm birth (34–36 weeks)					Preterm birth (<37 weeks)				
	ART infants ^b		All infants ^c		Prop. of ART infants among all infants, %	ART infants ^b		All infants ^c		Prop. of ART infants among all infants, %	ART infants ^b		All infants ^c		Prop. of ART infants among all infants, %	ART infants ^b		All infants ^c		Prop. of ART infants among all infants, %
	No.	%	No.	%		No.	%	No.	%		No.	%	No.	%		No.	%	No.	%	
Alabama	11	3.3	1,193	2.1	0.9	27	8.0	2,071	3.6	1.3	69	20.4	5,538	9.5	1.2	96	28.4	7,609	13.1	1.3
Alaska	d	d	d	d	d	5	5.5	246	2.6	2.0	17	18.7	703	7.5	2.4	22	24.2	949	10.1	2.3
Arizona	62	4.7	1,120	1.4	5.5	117	8.9	2,041	2.6	5.7	199	15.2	5,754	7.4	3.5	316	24.1	7,795	10.0	4.1
Arkansas	9	3.5	704	2.0	1.3	24	9.4	1,206	3.4	2.0	40	15.6	3,122	8.7	1.3	64	25.0	4,328	12.0	1.5
California	318	2.8	6,125	1.5	5.2	568	5.0	10,009	2.4	5.7	1,416	12.5	28,434	6.8	5.0	1,984	17.5	38,443	9.1	5.2
Colorado	44	2.5	840	1.3	5.2	95	5.4	1,576	2.5	6.0	266	15.0	4,557	7.2	5.8	361	20.4	6,133	9.7	5.9
Connecticut	52	3.3	540	1.5	9.6	101	6.4	965	2.7	10.5	191	12.1	2,459	6.9	7.8	292	18.5	3,424	9.6	8.5
Delaware	7	2.6	173	1.7	4.0	14	5.1	329	3.1	4.3	45	16.4	822	7.8	5.5	59	21.5	1,151	11.0	5.1
District of Columbia	d	d	d	d	d	19	3.8	273	3.2	7.0	47	9.3	600	6.9	7.8	66	13.1	873	10.1	7.6
Florida	135	3.7	3,785	1.8	3.6	217	5.9	6,596	3.1	3.3	556	15.2	16,918	7.8	3.3	773	21.2	23,514	10.9	3.3
Georgia	117	5.1	2,493	2.0	4.7	230	9.9	4,223	3.4	5.4	384	16.6	10,517	8.5	3.7	614	26.5	14,740	11.9	4.2
Hawaii	14	3.7	234	1.5	6.0	30	8.0	434	2.8	6.9	60	16.0	1,162	7.4	5.2	90	24.0	1,596	10.2	5.6
Idaho	15	3.9	272	1.2	5.5	32	8.4	508	2.3	6.3	92	24.0	1,508	6.7	6.1	124	32.4	2,016	9.0	6.2
Illinois	132	2.8	2,039	1.5	6.5	243	5.1	3,704	2.8	6.6	646	13.6	10,486	7.9	6.2	889	18.7	14,190	10.7	6.3
Indiana	35	3.2	1,206	1.5	2.9	69	6.2	2,217	2.8	3.1	206	18.6	6,462	8.1	3.2	275	24.9	8,679	10.9	3.2
Iowa	22	2.7	491	1.3	4.5	54	6.6	898	2.4	6.0	125	15.2	2,794	7.6	4.5	179	21.8	3,692	10.0	4.8
Kansas	14	2.7	474	1.4	3.0	34	6.6	859	2.5	4.0	69	13.5	2,549	7.3	2.7	103	20.1	3,408	9.8	3.0
Kentucky	23	3.7	937	1.8	2.5	36	5.7	1,730	3.3	2.1	125	19.9	4,517	8.7	2.8	161	25.7	6,247	12.0	2.6
Louisiana	21	3.0	1,244	2.2	1.7	31	4.4	2,108	3.7	1.5	121	17.1	5,654	9.8	2.1	152	21.5	7,762	13.5	2.0
Maine	d	d	d	d	d	7	2.9	297	2.5	2.4	27	11.2	827	6.9	3.3	34	14.1	1,124	9.4	3.0
Maryland	70	3.0	1,158	1.7	6.0	116	5.0	2,051	3.0	5.7	303	13.2	5,245	7.7	5.8	419	18.2	7,296	10.7	5.7
Massachusetts	93	2.5	836	1.2	11.1	186	5.0	1,584	2.3	11.7	418	11.3	4,592	6.6	9.1	604	16.3	6,176	8.9	9.8
Michigan	93	4.6	1,761	1.7	5.3	158	7.9	3,031	2.9	5.2	397	19.8	8,089	7.7	4.9	555	27.7	11,120	10.6	5.0
Minnesota	66	4.0	913	1.4	7.2	99	6.0	1,606	2.5	6.2	256	15.4	4,589	7.1	5.6	355	21.4	6,195	9.6	5.7
Mississippi	d	d	d	d	d	19	7.0	1,447	4.1	1.3	53	19.4	3,810	10.8	1.4	72	26.4	5,257	15.0	1.4
Missouri	45	4.0	1,070	1.5	4.2	87	7.7	1,953	2.8	4.5	174	15.4	5,868	8.4	3.0	261	23.1	7,821	11.3	3.3

Montana	5	3.0	143	1.3	3.5	7	4.2	271	2.4	2.6	23	13.9	819	7.3	2.8	30	18.1	1,090	9.7	2.8
Nebraska	28	6.8	390	1.6	7.2	45	11.0	696	2.8	6.5	69	16.9	1,957	8.0	3.5	114	27.9	2,653	10.8	4.3
Nevada	39	5.7	556	1.7	7.0	57	8.3	1,012	3.0	5.6	116	17.0	2,767	8.2	4.2	173	25.3	3,779	11.2	4.6
New Hampshire	14	3.2	138	1.1	10.1	23	5.2	269	2.1	8.6	56	12.7	808	6.4	6.9	79	17.9	1,077	8.5	7.3
New Jersey	105	2.1	1,351	1.3	7.8	202	4.0	2,451	2.4	8.2	522	10.2	6,862	6.8	7.6	724	14.2	9,313	9.2	7.8
New Mexico	d	d	d	d	d	9	4.6	570	2.7	1.6	31	15.9	1,572	7.3	2.0	40	20.5	2,142	10.0	1.9
New York	219	2.5	3,072	1.5	7.1	429	4.9	5,547	2.6	7.7	1,046	12.1	14,843	7.0	7.0	1,475	17.0	20,390	9.7	7.2
North Carolina	74	3.3	2,182	1.8	3.4	121	5.3	3,656	3.0	3.3	315	13.8	9,376	7.8	3.4	436	19.2	13,032	10.8	3.3
North Dakota	0	0.0	130	1.3	0.0	5	3.6	252	2.5	2.0	25	18.1	714	7.1	3.5	30	21.7	966	9.6	3.1
Ohio	69	3.1	2,248	1.7	3.1	127	5.7	3,856	3.0	3.3	318	14.3	9,881	7.6	3.2	445	20.0	13,737	10.6	3.2
Oklahoma	18	3.8	853	1.8	2.1	23	4.9	1,513	3.1	1.5	118	25.1	4,259	8.8	2.8	141	29.9	5,772	11.9	2.4
Oregon	24	2.7	464	1.1	5.2	44	4.9	871	2.1	5.1	140	15.5	2,762	6.8	5.1	184	20.4	3,633	8.9	5.1
Pennsylvania	94	3.0	1,963	1.5	4.8	153	4.8	3,555	2.7	4.3	394	12.5	9,451	7.1	4.2	547	17.3	13,006	9.8	4.2
Puerto Rico	d	d	d	d	d	9	10.7	603	3.1	1.5	30	35.7	1,719	8.9	1.7	39	46.4	2,322	12.0	1.7
Rhode Island	10	3.9	145	1.4	6.9	12	4.7	263	2.5	4.6	28	10.9	746	7.1	3.8	40	15.6	1,009	9.6	4.0
South Carolina	33	3.5	1,131	2.0	2.9	58	6.2	1,979	3.5	2.9	123	13.0	4,924	8.6	2.5	181	19.2	6,903	12.1	2.6
South Dakota	d	d	d	d	d	6	5.2	262	2.3	2.3	19	16.5	935	8.2	2.0	25	21.7	1,197	10.5	2.1
Tennessee	42	4.1	1,365	1.7	3.1	74	7.2	2,496	3.1	3.0	177	17.3	6,722	8.2	2.6	251	24.5	9,218	11.3	2.7
Texas	257	3.5	6,327	1.7	4.1	458	6.3	11,376	3.0	4.0	1,139	15.6	31,142	8.3	3.7	1,597	21.9	42,518	11.4	3.8
Utah	49	4.2	613	1.3	8.0	95	8.1	1,142	2.4	8.3	204	17.4	3,479	7.4	5.9	299	25.5	4,621	9.9	6.5
Vermont	5	3.1	50	0.9	10.0	9	5.7	112	2.1	8.0	17	10.7	320	5.9	5.3	26	16.4	432	8.0	6.0
Virginia	59	2.5	1,485	1.5	4.0	112	4.7	2,608	2.7	4.3	288	12.2	6,872	7.2	4.2	400	16.9	9,480	9.9	4.2
Washington	75	3.5	1,063	1.3	7.1	131	6.0	1,910	2.3	6.9	278	12.8	5,512	6.6	5.0	409	18.8	7,422	8.8	5.5
West Virginia	d	d	d	d	d	10	5.8	578	3.4	1.7	33	19.1	1,624	9.4	2.0	43	24.9	2,202	12.8	2.0
Wisconsin	45	4.3	902	1.5	5.0	86	8.2	1,638	2.7	5.3	155	14.8	4,535	7.3	3.4	241	23.0	6,173	10.0	3.9
Wyoming	d	d	d	d	d	8	8.6	159	2.5	5.0	21	22.6	517	8.3	4.1	29	31.2	676	10.8	4.3
Total	2,692	3.1	58,580	1.6	4.6	4,931	5.8	103,607	2.8	4.8	11,987	14.0	282,694	7.7	4.2	16,918	19.7	386,301	10.5	4.4

ART = assisted reproductive technology; Prop. = proportion.

^a In cases of missing patient's residence data (1.8%), it was assigned as the location where the ART procedure was performed.

^b Includes infants conceived from ART procedures performed in 2020 and born in 2021 and infants conceived from ART procedures performed in 2021 and born in 2021. ART births exclude births to non-US residents and include only infants with gestational age data available.

^c US births exclude births to non-US residents. Source: National Center for Health Statistics. National Center for Health Statistics, Vital statistics data available. Natality public use file and CD-ROM. Hyattsville, MD, National Center for Health Statistics.

^d To protect confidentiality, cells with values of 1–4 for ART infants and cells with values of 0–9 for all infants are suppressed. Also suppressed are data that can be used to derive suppressed cell values. These values are included in the totals.

Table 7. Percentage of low birth weight (<2,500g), preterm (<37 weeks), and small for gestational age infants among singleton infants born with use of assisted reproductive technology in 2021 and all US infants, by female patient’s reporting area of residence at time of treatment in 50 US states, the District of Columbia, and Puerto Rico

Patient’s reporting area of residence ^a	Low birth weight (<2,500g)	Low birth weight (<2,500g)	Preterm (<37 weeks)	Preterm (<37 weeks)	SGA	SGA
	ART infants ^b , %	All infants ^c , %	ART infants ^b , %	All infants ^c , %	ART infants ^b , %	All infants ^c , %
Alabama	10.5	8.4	17.6	10.9	6.8	10.3
Alaska	9.1	5.5	14.1	8.6	^d	5.8
Arizona	10.9	6.4	14.8	8.4	7.8	8.7
Arkansas	7.0	7.9	12.4	10.2	8.1	9.7
California	8.4	5.9	11.7	7.6	9.5	8.8
Colorado	10.4	7.9	12.5	8.1	13.2	12.8
Connecticut	8.8	6.3	12.5	7.7	9.0	8.6
Delaware	10.7	7.6	15.7	9.2	8.0	9.6
District of Columbia	9.5	8.1	10.9	8.8	9.1	11.8
Florida	9.3	7.5	14.9	9.2	7.9	9.7
Georgia	10.9	8.8	16.3	9.9	8.7	11.3
Hawaii	14.8	7.4	15.5	8.8	8.9	10.7
Idaho	10.7	5.2	17.7	7.4	6.6	7.9
Illinois	8.4	6.9	13.3	9.0	7.6	8.8
Indiana	10.6	6.8	16.2	9.1	6.7	8.4
Iowa	7.2	5.2	14.4	8.1	4.4	6.8
Kansas	8.9	5.9	13.0	8.2	7.2	7.5
Kentucky	7.2	7.3	16.6	10.0	8.3	8.3
Louisiana	7.8	9.3	15.2	11.4	7.2	11.2
Maine	10.0	6.1	10.2	7.8	7.6	7.7
Maryland	9.5	7.3	13.6	9.0	8.1	9.3
Massachusetts	7.5	5.9	10.2	7.2	8.2	8.7
Michigan	11.7	7.4	15.7	8.6	7.8	9.6
Minnesota	7.6	5.7	13.2	7.8	7.1	7.3
Mississippi	9.5	10.2	19.1	12.7	5.2	12.0
Missouri	10.5	7.2	16.1	9.4	5.5	8.7
Montana	3.9	6.2	14.3	8.3	4.6	8.8
Nebraska	8.3	5.8	17.2	8.7	4.3	7.1
Nevada	11.8	8.0	16.2	9.4	9.5	10.7

New Hampshire	5.4	5.3	9.4	6.8	5.7	8.0
New Jersey	7.5	6.2	10.7	7.6	8.3	9.0
New Mexico	9.0	8.1	13.5	8.8	14.6	12.5
New York	8.0	6.7	11.4	7.9	9.1	10.0
North Carolina	8.6	7.8	13.2	9.0	8.0	10.1
North Dakota	7.1	5.4	13.3	8.0	8.0	6.6
Ohio	8.4	7.1	13.1	8.9	6.8	9.1
Oklahoma	7.2	7.2	15.1	10.1	6.3	8.7
Oregon	8.3	5.4	11.7	7.1	8.9	7.7
Pennsylvania	8.1	6.7	13.5	8.1	7.0	9.3
Puerto Rico	19.2	9.2	17.3	10.6	13.5	13.1
Rhode Island	7.7	6.5	8.8	8.0	5.5	8.7
South Carolina	8.8	8.3	14.3	10.1	6.1	9.8
South Dakota	7.5	5.5	14.6	8.5	^d	7.5
Tennessee	7.4	7.7	16.3	9.6	6.8	9.8
Texas	9.8	7.1	15.2	9.7	7.5	8.9
Utah	12.0	5.8	16.4	8.0	9.6	8.1
Vermont	7.4	5.6	8.0	6.5	9.8	8.2
Virginia	8.5	6.8	12.4	8.2	8.1	9.2
Washington	8.8	5.6	13.0	7.4	7.5	7.7
West Virginia	8.7	7.9	14.9	10.8	4.0	9.2
Wisconsin	9.3	6.2	15.6	8.3	5.4	7.8
Wyoming	11.8	7.9	19.5	9.2	^d	12.0
Total	8.8	6.9	13.2	8.8	8.1	9.2

ART = assisted reproductive technology; SGA = small for gestational age (22–44 weeks), defined as <10th percentile of birth weight for gestational age week.

^a In cases of missing patient’s residence data (1.8%), it was assigned as the location where the ART procedure was performed.

^b Includes infants conceived from ART procedures performed in 2020 and born in 2021 and infants conceived from ART procedures performed in 2021 and born in 2021. ART births exclude births to non-US residents and include only infants with gestational age data available.

^c US births exclude births to non-US residents. Source: National Center for Health Statistics, Vital statistics data available. Natality public use file and CD-ROM. Hyattsville, MD, National Center for Health Statistics.

^d To protect confidentiality, cells with values of 1–4 for ART infants and cells with values of 0–9 for all infants are suppressed. Also suppressed are data that can be used to derive suppressed cell values. These values are included in the totals.

Technical Notes

In 1995, CDC began collecting data on assisted reproductive technology (ART) procedures performed in fertility clinics in the United States as mandated by the Fertility Clinic Success Rate and Certification Act of 1992 (Public Law 102–493 [October 24, 1992]). For more details about the law, see www.cdc.gov/art/nass/policy.html.

ART includes all fertility treatments in which either eggs or embryos are handled outside a woman's body. In general, ART procedures involve surgically removing eggs from a woman's ovaries, combining them with sperm in the laboratory, and returning them to a female patient or gestational carrier, or donating them to another patient. They do not include treatments in which only sperm are handled (such as intrauterine insemination) or procedures in which a woman takes drugs only to stimulate egg production without the intention of having eggs surgically retrieved. ART includes but is not limited to in vitro fertilization (IVF), gamete intrafallopian transfer (GIFT), zygote intrafallopian transfer (ZIFT), tubal embryo transfer, egg and embryo cryopreservation, egg and embryo donation, and gestational surrogacy.

CDC collects ART data through the National ART Surveillance System (NASS), a web-based data collection system developed by CDC (www.cdc.gov/art/nass/index.html). Data collected include patient demographics, medical history, and infertility diagnoses; clinical information about ART procedure type; and information regarding resultant pregnancies and births. The data file contains one record per ART procedure (cycle of treatment performed).

Data from 453 fertility clinics that provided and verified information about the outcomes of the ART cycles are reported here. During 2021, data from 48 clinics are not included here because they did not report their data as required. Given the estimated number of ART cycles performed in these nonreporting clinics, we estimate that NASS covered approximately 98% of ART cycles performed in the United States in 2021. For more information about nonreporting clinics, see www.cdc.gov/art/nass/index.html.

Beginning with 2020 data, ART procedures performed per million women 15-49 years of age are presented as a proxy measure of ART use. This change was made given approximately 5% of ART users are older than 44 years. In previous data briefs, ART use was measured as ART procedures performed per million women aged 15-44 years. Therefore, estimates from previous year data briefs are not directly comparable.

The Data Brief reports on the numbers and outcomes of ART procedures performed in 2021 (Tables 1 and 2 and Figures 2, 3, and 4). To compare ART-conceived births in 2021 to all US births in 2021, ART-conceived births were aggregated from procedures performed in 2020 and born in 2021 and from procedures performed in 2021 and born in 2021 (Tables 3, 4, 5, 6, and 7 and Figures 5, 6, 7, and 8).

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