Locations of ART Clinics in the United States and Puerto Rico, 2009

Number of ART clinics in the United States in 2009 ................................................................. 484
Number of ART clinics that submitted data in 2009 ................................................................. 441
Number of ART cycles reported in 2009 ................................................................................. 146,244*
Number of live-birth deliveries resulting from ART cycles started in 2009 ............................. 45,870
Number of infants born as a result of ART cycles performed in 2009 ................................. 60,190

*Note: This number does not include 12 cycles in which a new treatment procedure was being evaluated.
Types of ART Cycles—United States, * 2009

- Fresh nondonor: 70.1% (102,478 cycles)
- Frozen nondonor: 17.8% (26,069 cycles)
- Fresh donor: 7.5% (11,038 cycles)
- Frozen donor: 4.6% (6,659 cycles)
- New treatment procedures: <0.1% (12 cycles)

*Total does not equal 100% due to rounding.
ART Use by Age Group—United States,* 2009

- **Age: <35**
  - 38.9%
  - (56,843 cycles)

- **Age: 35–37**
  - 20.4%
  - (29,822 cycles)

- **Age: 38–40**
  - 20.5%
  - (29,907 cycles)

- **Age: 41–42**
  - 9.8%
  - (14,261 cycles)

- **Age: 43–44**
  - 6.0%
  - (8,745 cycles)

- **Age: >44**
  - 4.6%
  - (6,666 cycles)

*Total does not equal 100% due to rounding.*

National Center for Chronic Disease Prevention and Health Promotion
Division of Reproductive Health
Types of ART Cycles by Age Group—United States, 2009

*Total does not equal 100% due to rounding.
Percentages of ART Cycles That Resulted in Live Births, by Type of ART and Clinic Size—United States, 2009

- **Fresh nondonor**
  - <90: 29.3%
  - 90–169: 30.7%
  - 170–406: 31.5%
  - >406: 31.1%

- **Frozen nondonor**
  - <90: 25.1%
  - 90–169: 25.0%
  - 170–406: 26.3%
  - >406: 29.6%

- **Fresh donor**
  - <90: 46.6%
  - 90–169: 49.1%
  - 170–406: 49.6%
  - >406: 51.5%

- **Frozen donor**
  - <90: 27.5%
  - 90–169: 34.0%
  - 170–406: 29.5%
  - >406: 29.8%
Outcomes of ART Cycles Using Fresh Nondonor Eggs or Embryos, by Stage, 2009

- 102,478 cycles started
- 91,182 retrievals
- 84,039 transfers
- 37,780 pregnancies
- 30,787 live-birth deliveries

Number

National Center for Chronic Disease Prevention and Health Promotion
Division of Reproductive Health
Reasons ART Cycles Using Fresh Nondonor Eggs or Embryos Were Discontinued,* 2009

- No or inadequate egg production: 82.9%
- Patient withdrew for other reasons: 12.1%
- Too-high response to ovarian stimulation medication: 4.2%
- Concurrent illness: 0.8%
- Unknown: <0.1%

*Based on 11,296 ART cycles.
Measures of Success for ART Cycles Using Fresh Nondonor Eggs or Embryos, 2009

- Cycles resulting in pregnancies: 36.9%
- Cycles resulting in live births: 30.0%
- Retrievals resulting in live births: 33.8%
- Transfers resulting in live births: 36.6%
- Cycles resulting in singleton live births: 23.5%
- Transfers resulting in singleton live births: 25.5%
Results of ART Cycles Using Fresh Nondonor Eggs or Embryos, 2009

- No pregnancy: 62.5%
- Ectopic pregnancy: 0.6%
- Single-fetus pregnancy: 22.8%
- Multiple-fetus pregnancy: 11.6%
- Not able to determine number of fetuses: 2.5%
- Clinical pregnancy: 36.9%
Outcomes of Pregnancies Resulting from ART Cycles Using Fresh Nondonor Eggs or Embryos,*† 2009

Singleton birth 56.6%
Multiple-infant birth 24.9%
Stillbirth 0.7%
Miscarriage 16.4%
Induced abortion 0.9%
Unknown 0.4%

Total live births 81.5%

* Maternal deaths prior to birth are not displayed due to small number (n = 7).
† Total does not equal 100% due to rounding.
Risks of Having Multiple-Fetus Pregnancies and Multiple-Infant Live Births from ART Cycles Using Fresh Nondonor Eggs or Embryos, 2009

A. 37,780 Pregnancies

- Singletons: 61.7%
- Twins: 28.5%
- Triplets or more: 3.1%
- Not able to determine number of fetuses: 6.7%

B. 30,787 Live births

- Singletons: 69.5%
- Twins: 28.9%
- Triplets or more: 1.6%
Percentages of Preterm Births from ART Cycles Using Fresh Nondonor Eggs or Embryos, by Number of Infants Born, 2009

- Singletons from single-fetus pregnancy: 11.6%
- Singletons from multiple-fetus pregnancy: 19.0%
- Twins: 60.0%
- Triplets or more: 97.5%
Percentages of Low-Birth-Weight Infants from ART Cycles Using Fresh Nondonor Eggs or Embryos, by Number of Infants Born, 2009

- Singletons from single-fetus pregnancy: 8.7%
- Singletons from multiple-fetus pregnancy: 16.7%
- Twins: 56.1%
- Triplets or more: 92.1%

Number of Infants Born

National Center for Chronic Disease Prevention and Health Promotion
Division of Reproductive Health
Age Distribution of Women Who Had ART Cycles Using Fresh Nondonor Eggs or Embryos, 2009

*For consistency, all percentages are based on cycles started.
Percentages of ART Cycles Using Fresh Nondonor Eggs or Embryos That Resulted in Pregnancies, Live Births, and Singleton Live Births Among Women Aged 40 or Older,* 2009

*For consistency, all percentages are based on cycles started.
Percentages of ART Cycles Using Fresh Nondonor Eggs or Embryos That Resulted in Miscarriage, by Age of Woman, 2009
Percentages of Pregnancies That Were Lost Through Week 24 Among ART Cycles Using Fresh Nondonor Eggs or Embryos, by Age of Woman, 2009
Outcomes of ART Cycles Using Fresh Nondonor Eggs or Embryos, by Stage and Age Group, 2009

![Bar chart showing percentages of retrieval, transfer, pregnancy, and live birth by age group for ART cycles using fresh nondonor eggs or embryos.](chart.png)
Diagnoses Among Couples Who Had ART Cycles Using Fresh Nondonor Eggs or Embryos, 2009

- Tubal factor: 7.7%
- Ovulatory dysfunction: 6.8%
- Diminished ovarian reserve: 11.5%
- Endometriosis: 4.2%
- Uterine factor: 1.4%
- Male factor: 18.8%
- Unexplained cause: 13.5%
- Other causes: 7.7%
- Multiple factors, female + male: 17.8%
- Multiple factors, female only: 10.6%
- Other causes: 7.7%
Numbers of Previous Births Among Women Who Had ART Cycles Using Fresh Nondonor Eggs or Embryos, 2009

- None: 70.6%
- One: 21.1%
- Two: 5.0%
- Three or more: 2.6%
- Unknown: 0.7%
Percentages of ART Cycles Using Fresh Nondonor Eggs or Embryos That Resulted in Live Births, by Age of Woman and Number of Previous Live Births, 2009

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>No previous live births</th>
<th>1 or more previous live births</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;35</td>
<td>40.5</td>
<td>43.7</td>
</tr>
<tr>
<td>35–37</td>
<td>30.6</td>
<td>33.8</td>
</tr>
<tr>
<td>38–40</td>
<td>21.1</td>
<td>24.4</td>
</tr>
<tr>
<td>41–42</td>
<td>11.6</td>
<td>13.9</td>
</tr>
<tr>
<td>43–44</td>
<td>4.4</td>
<td>5.9</td>
</tr>
<tr>
<td>&gt;44</td>
<td>1.5</td>
<td>1.5</td>
</tr>
</tbody>
</table>

National Center for Chronic Disease Prevention and Health Promotion
Division of Reproductive Health
Percentages of ART Cycles Using Fresh Nondonor Eggs or Embryos That Resulted in Live Births, by Age of Woman and History of Miscarriage, Among Women with No Previous Births,* 2009

No previous pregnancies  1 or more previous miscarriages

* Women reporting only previous ectopic pregnancies or pregnancies that ended in induced abortion are not included.
Numbers of Previous ART Cycles Among Women Undergoing ART with Fresh Nondonor Eggs or Embryos, * 2009

<table>
<thead>
<tr>
<th>Previous ART Cycles</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>55.1%</td>
</tr>
<tr>
<td>One</td>
<td>20.3%</td>
</tr>
<tr>
<td>Two</td>
<td>11.3%</td>
</tr>
<tr>
<td>Three</td>
<td>6.1%</td>
</tr>
<tr>
<td>Four or more</td>
<td>7.2%</td>
</tr>
<tr>
<td>Unknown</td>
<td>&lt;0.1%</td>
</tr>
</tbody>
</table>

*Total does not equal 100% due to rounding.
Percentages of ART Cycles Using Fresh Nondonor Eggs or Embryos That Resulted in Live Births, by Age of Woman and History of Previous ART Cycles, Among Women with No Previous Births, 2009

- Percentages:
  - <35: 42.9%
  - 35–37: 35.4%
  - 38–40: 33.4%
  - 41–42: 22.2%
  - 43–44: 11.1%
  - >44: 4.3%

- Ages:
  - <35
  - 35–37
  - 38–40
  - 41–42
  - 43–44
  - >44

- Histories:
  - No previous ART and no previous births
  - 1 or more previous ART cycles and no previous births

National Center for Chronic Disease Prevention and Health Promotion
Division of Reproductive Health
Percentages of ART Cycles Using Fresh Nondonor Eggs or Embryos That Resulted in Live Births, by Age of Woman and History of Previous ART Cycles, Among Women with One or More Previous Births, 2009
Types of ART Procedures Using Fresh Nondonor Eggs or Embryos,* 2009

- IVF without ICSI: 27.0%
- IVF with ICSI: 72.9%
- GIFT: <0.1%
- ZIFT: <0.1%
- Combination†: <0.1%

*Total does not equal 100% due to rounding.
†Combination of IVF with or without ICSI and either GIFT or ZIFT.
Percentages of Egg Retrievals That Resulted in Live Births, by Type of ART Procedure, 2009

<table>
<thead>
<tr>
<th>Types of ART Procedures</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVF without ICSI</td>
<td>33.6</td>
</tr>
<tr>
<td>IVF with ICSI</td>
<td>33.9</td>
</tr>
<tr>
<td>GIFT</td>
<td>3.6</td>
</tr>
<tr>
<td>ZIFT</td>
<td>10.8</td>
</tr>
<tr>
<td>Combination*</td>
<td>17.4</td>
</tr>
</tbody>
</table>

*Combination of IVF with or without ICSI and either GIFT or ZIFT.
Use of ICSI* in Fresh Nondonor Cycles Among Couples With and Without Diagnoses of Male Factor Infertility,† 2009

Male factor infertility 47.0%
No male factor infertility 53.0%

* Intracytoplasmic sperm injection.
† Based on 66,439 cycles that used IVF with ICSI.
Percentages of Retrievals That Resulted in Live Births Among Couples Diagnosed with Male Factor Infertility Who Used IVF with ICSI,* Compared with Couples Not Diagnosed with Male Factor Infertility Who Used IVF Without ICSI, by Age of Woman,† 2009

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>IVF with ICSI among couples with male factor infertility</th>
<th>IVF without ICSI among couples with no male factor infertility</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;35</td>
<td>45.7</td>
<td>44.9</td>
</tr>
<tr>
<td>35–37</td>
<td>37.1</td>
<td>37.5</td>
</tr>
<tr>
<td>38–40</td>
<td>26.7</td>
<td>27.2</td>
</tr>
<tr>
<td>41–42</td>
<td>15.3</td>
<td>16.4</td>
</tr>
<tr>
<td>43–44</td>
<td>6.5</td>
<td>4.8</td>
</tr>
<tr>
<td>&gt;44</td>
<td>4.9</td>
<td>1.1</td>
</tr>
</tbody>
</table>

* Intracytoplasmic sperm injection.
† Cycles using donor sperm and cycles using GIFT or ZIFT are excluded.
Percentages of Retrievals That Resulted in Live Births Among Couples Not Diagnosed with Male Factor Infertility, by Use of ICSI* and Age of Woman,† 2009

- IVF with ICSI among couples with no male factor infertility
- IVF without ICSI among couples with no male factor infertility

* Intracytoplasmic sperm injection.
† Cycles using donor sperm and cycles using GIFT or ZIFT are excluded.
Numbers of Embryos Transferred During ART Cycles Using Fresh Nondonor Eggs or Embryos,* 2009

- One: 13.5%
- Two: 51.5%
- Three: 23.4%
- Four: 7.8%
- Five: 2.5%
- Six: 0.8%
- Seven or more: 0.4%
- Unknown: <0.1%

*Total does not equal 100% due to rounding.
Percentages of Embryos Transferred That Resulted in Implantation Among Women Using Fresh Nondonor Eggs or Embryos, by Age Group, 2009

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;35</td>
<td>35.3</td>
</tr>
<tr>
<td>35–37</td>
<td>25.9</td>
</tr>
<tr>
<td>38–40</td>
<td>17.2</td>
</tr>
<tr>
<td>41–42</td>
<td>9.1</td>
</tr>
<tr>
<td>43–44</td>
<td>4.2</td>
</tr>
<tr>
<td>&gt;44</td>
<td>2.0</td>
</tr>
</tbody>
</table>
Percentages of Transfers That Resulted in Live Births and Percentages of Multiple-Infant Live Births for ART Cycles Using Fresh Nondonor Eggs or Embryos, by Number of Embryos Transferred, 2009

*Percentages of live births that were singletons, twins, and triplets or more are in parentheses.

Note: In rare cases a single embryo may divide and thus produce twins. For this reason, a small percentage of twins resulted from a single embryo transfer, and a small percentage of triplets resulted when two embryos were transferred.

†Totals do not equal 100% due to rounding.
Percentages of Transfers That Resulted in Live Births and Percentages of Multiple-Infant Live Births for ART Cycles Among Women Who Were Younger Than 35, Used Fresh Nondonor Eggs or Embryos, and Set Aside Extra Embryos for Future Use, by Number of Embryos Transferred, 2009

*Percentages of live births that were singletons, twins, and triplets or more are in parentheses.

Note: In rare cases a single embryo may divide and thus produce twins. For this reason, a small percentage of twins resulted from a single embryo transfer, and a small percentage of triplets resulted when two embryos were transferred.
Day of Embryo Transfer* Among ART Cycles Using Fresh Nondonor Eggs or Embryos,†‡ 2009

Day 1: 0.1%
Day 2: 4.9%
Day 3: 54.6%
Day 4: 2.5%
Day 5: 35.9%
Day 6: 2.1%

*Number of days following egg retrieval.
†Cycles using GIFT or ZIFT are excluded. Missing or implausible values for day of embryo transfer (i.e., 0 or >6) are not included.
‡Total does not equal 100% due to rounding.
Percentages of Day 3 and Day 5 Embryo Transfers Using Fresh Nondonor Eggs or Embryos That Resulted in Live Births, by Age of Woman,* 2009

* Cycles using GIFT or ZIFT are excluded. This comparison is limited to transfers on day 3 and day 5. Embryo transfers performed on days 1, 2, 4, and 6 are not included because each of these accounted for a small proportion of procedures.
Numbers of Embryos Transferred During ART Cycles Using Fresh Nondonor Eggs or Embryos for Day 3 and Day 5 Embryo Transfers, * 2009

Day 3
- One: 11.1%
- Two: 42.7%
- Three: 29.5%
- Four or more: 16.7%

Day 5
- Four or more: 3.9%
- Two: 66.8%
- Three: 14.5%
- One: 14.8%

* Cycles using GIFT or ZIFT are excluded. This comparison is limited to transfers on day 3 and day 5. Embryo transfers performed on days 1, 2, 4, and 6 are not included because each of these accounted for a small proportion of procedures.
Risks of Having Multiple-Infant Live Births for ART Cycles Using Fresh Nondonor Eggs or Embryos for Day 3 and Day 5 Embryo Transfers,* 2009

Day 3
- **Singletons**: 73.4%
- **Twins**: 25.1%
- **Triplets or more**: 1.5%

Total multiple-infant live births: 26.6%

Day 5
- **Singletons**: 64.8%
- **Twins**: 33.6%
- **Triplets or more**: 1.6%

Total multiple-infant live births: 35.2%

A. 14,201 Live births
B. 14,396 Live births

* Cycles using GIFT or ZIFT are excluded. This comparison is limited to transfers on day 3 and day 5. Embryo transfers performed on days 1, 2, 4, and 6 are not included because each of these accounted for a small proportion of procedures.
Percentages of Transfers That Resulted in Live Births and Percentages of Multiple-Infant Live Births for Day 5 Embryo Transfers Among Women Who Were Younger Than 35, Used Fresh Nondonor Eggs or Embryos, and Set Aside Extra Embryos for Future Use, by Number of Embryos Transferred, 2009

Percentages of live births that were singletons, twins, and triplets or more are in parentheses.

Note: In rare cases a single embryo may divide and thus produce twins. For this reason, a small percentage of twins resulted from a single embryo transfer, and a small percentage of triplets resulted when two embryos were transferred.

†Total does not equal 100% due to rounding.
Comparison of Percentages of Transfers Using Fresh Nondonor Eggs or Embryos That Resulted in Live Births Between ART Cycles That Used Gestational Carriers and Those That Did Not, by Age of ART Patient,* 2009

* Age categories reflect the age of the ART patient, not the age of the gestational carrier.
†There were no transfers resulting in live births among ART patients older than 44 who used gestational carriers.
Percentages of Embryos Transferred That Resulted in Implantation Among Women Using Frozen Nondonor Embryos, by Age Group, 2009

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;35</td>
<td>25.2</td>
</tr>
<tr>
<td>35–37</td>
<td>21.4</td>
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<td>38–40</td>
<td>18.0</td>
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<tr>
<td>41–42</td>
<td>14.7</td>
</tr>
<tr>
<td>43–44</td>
<td>10.9</td>
</tr>
<tr>
<td>&gt;44</td>
<td>10.6</td>
</tr>
</tbody>
</table>

- **Frozen embryos**
  - Thawed embryos resulting in live births: 30.3%
  - Transfers resulting in live births: 30.8%
  - Transfers resulting in singleton live births: 23.6%
  - Transfers resulting in live births: 36.6%

- **Fresh embryos**
  - Transfers resulting in singleton live births: 25.5%
Risks of Having Multiple-Fetus Pregnancies and Multiple-Infant Live Births from ART Cycles Using Frozen Nondonor Embryos, 2009

A. 9,487 Pregnancies*

- Singletons: 67.3%
- Twins: 20.9%
- Triplets or more: 1.9%
- Not able to determine number of fetuses: 9.8%

Total multiple-fetus pregnancies: 22.8%

B. 7,424 Live births

- Singletons: 76.6%
- Twins: 22.3%
- Triplets or more: 1.1%

Total multiple-infant live births: 23.4%

*Total does not equal 100% due to rounding.
Percentages of ART Cycles Using Donor Eggs, by Age of Woman, 2009
Percentages of Transfers That Resulted in Live Births for ART Cycles Using Fresh Embryos from Own Eggs and ART Cycles Using Fresh Embryos from Donor Eggs, by Age of Woman, 2009
Percentages of Transfers That Resulted in Live Births and Singleton Live Births for ART Cycles Using Fresh Embryos from Donor Eggs, by Age of Woman, 2009
Risks of Having Multiple-Fetus Pregnancies and Multiple-Infant Live Births from ART Cycles Using Fresh Embryos from Donor Eggs, 2009

A. 6,553 Pregnancies*

- Singletons: 54.9%
- Twins: 37.1%
- Triplets or more: 2.8%
- Not able to determine number of fetuses: 5.3%

B. 5,595 Live births*

- Singletons: 61.9%
- Twins: 37.0%
- Triplets or more: 1.2%

*Total does not equal 100% due to rounding.

- **Frozen embryos**
  - Transfers resulting in live births: 34.0%
  - Transfers resulting in singleton live births: 25.7%

- **Fresh embryos**
  - Transfers resulting in singleton live births: 55.1%
  - Transfers resulting in live births: 34.1%

Number of ART cycles, live-birth deliveries, and infants born over the years 2000 to 2009, showing a steady increase over time.
Numbers of ICSI* Procedures Performed, by Type of ART Cycle, 2000–2009

* Intracytoplasmic sperm injection.
Percentages of Transfers That Resulted in Live Births, by Type of ART Cycle and ICSI,* 2000–2009

* Intracytoplasmic sperm injection.

* Intracytoplasmic sperm injection.
Percentages of Transfers That Resulted in Live Births for ART Cycles Using Fresh Nondonor Eggs or Embryos, by Age of Woman, 2000–2009

* 2006 was the last year in which data were reported together for women older than 42.
† 2007 was the first year in which data for women older than 42 were subdivided into ages 43–44 and >44.
Percentages of Transfers That Resulted in Singleton Live Births for ART Cycles Using Fresh Nondonor Eggs or Embryos, by Age of Woman, 2000–2009

* 2006 was the last year in which data were reported together for women older than 42.
† 2007 was the first year in which data for women older than 42 were subdivided into ages 43–44 and >44.
Percentages of Fresh Nondonor Cycles That Involved the Transfer of One, Two, Three, or Four or More Embryos, 2000–2009

*Totals do not equal 100% due to rounding.
Percentages of Fresh Nondonor Cycles That Involved the Transfer of One, Two, Three, or Four or More Embryos Among Women Who Were Younger Than 35 and Set Aside Extra Embryos for Future Use, 2000–2009

<table>
<thead>
<tr>
<th>Year</th>
<th>One</th>
<th>Two</th>
<th>Three</th>
<th>Four or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000*</td>
<td>45</td>
<td>40</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>2001†</td>
<td>55</td>
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<td>2003</td>
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<td>2006†</td>
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<tr>
<td>2007</td>
<td>76</td>
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<td>2008</td>
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<td>11</td>
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</tr>
<tr>
<td>2009</td>
<td>77</td>
<td>77</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

* Cycles involving the transfer of one embryo are not included because of the small number of cycles where one embryo was transferred and extra embryos were set aside for future use.
† Totals do not equal 100% due to rounding.
Percentages of Transfers That Resulted in Live Births Using Fresh Nondonor Eggs or Embryos, by Number of Embryos Transferred, 2000–2009

* Cycles involving the transfer of one embryo are not included because of the small number of cycles where one embryo was transferred and extra embryos were set aside for future use.
Percentages of Multiple-Infant Live Births for ART Cycles Using Fresh Nondonor Eggs or Embryos, by Age of Woman, 2000–2009

* 2006 was the last year in which data were reported together for women older than 42.
† 2007 was the first year in which data for women older than 42 were subdivided into ages 43–44 and >44.

* Percentages of live births that were singletons, twins, and triplets or more are in parentheses.
† Total does not equal 100% due to rounding.