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Increase in Open-Identity Sperm Donation in the United States since 1996

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1 **Running Title:** Open-Identity Sperm Donation in the U.S.

2 **Title:** Increase in Open-Identity Sperm Donation in the United States since 1996

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20 ASRM 2024 meeting. Data will be made available to the editors of the journal for review or
21 query upon request.

22 **Word Count:** 650 words, without headings

23 **Capsule:** Since 1996, the proportion of U.S. donors willing to be open-identity to donor-
24 conceived adults at sperm banks has changed from 11.9% to 65.0%; overall numbers of available
25 donors has not.

26 **Keywords:** open-identity donation, donor conception, sperm bank, gamete donor, identifiable

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34 **Objective**

35 Each year, tens of thousands of intended parents without a fertile male partner use sperm donor
36 conception to build their families.¹ In the U.S., a small number of private, FDA-regulated, mostly
37 for-profit, sperm banks serve these intended parents. These banks provide sperm from donors
38 who agree to release their identity to requesting donor-conceived adults (open-identity) and/or
39 donors who choose not to. Legislative interest in the field has increased recently. Since open-
40 identity donation first began, there have been concerns that requiring it would decrease the
41 number of donors, potentially limiting access to this important reproductive service.^{2,3} Building
42 on Scheib and Cushing (2007), the current study assessed the number of U.S. sperm banks, their
43 open-identity donation policies, and, where possible, the size and composition of the sperm
44 donor pool over time.⁴

46 **Study Design**

47 Publicly available data were collected about four time points over 18 years, resulting in a dataset
48 with four bank-level timepoints (1996, 2006, 2012, 2024; i.e., availability of open-identity
49 donation at a bank) and three donor-level timepoints (2006, 2012, 2024; i.e., a bank's number of
50 open-identity and non-open-identity donors). Limited donor-level data were available at the 2012
51 timepoint (see Supplemental Materials).

53 **Results**

54 The total number of U.S. sperm donors remained relatively stable across years: 2006 (n = 1693,
55 31 banks), 2012 (n = 1512, 15 banks) and 2024 (n = 1763, 14 banks; see Fig. 1). Across all
56 banks, the overall proportion of donors who were open-identity increased significantly over time
57 ($X^2(2) = 10025$, $p < .0001$): open-identity donors comprised 11.9% of all donors in 2006 (n =
58 202, 31 banks) versus 65% of donors in 2024 (n = 1146, 14 banks). Similarly, the median
59 proportion of donors who were open-identity at a bank also increased over the years, from 0%
60 (IQR 0 - 3%) in 2006 to 32% (IQR 0 - 89%) in 2024 (Kruskal-Wallis H (2) = 10.98, $p = .004$; see
61 Fig. 1). Bank size, defined as the total number of donors at a bank, increased from a median of
62 45 (IQR 17 - 71) in 2006 to 70 (IQR 36.5 - 204.25) in 2024 (Kruskal-Wallis H (2) = 6.37, $p =$
63 $.04$; see Fig. 2).

64
65 Using bank-level data, we found that the number of U.S. sperm banks decreased from 29 in 1996
66 to 16 in 2024. The number of banks that offered open-identity donation increased from 3 in 1996
67 (10.3%) to 9 in 2024 (60%) ($X^2(3) = 15.5$, $p = .001$; see Fig. 2). Finally, we examined whether
68 the proportion of open-identity donors at a bank was related to bank size. We found no relation
69 in 2012. However, a positive relation existed in 2006 ($\rho = 0.40$, $p = .02$) and in 2024 ($\rho =$
70 0.60 , $p = .02$), with larger banks having a greater proportion of open-identity donors.

72 **Conclusion**

73 Our data suggest a number of trends in U.S. sperm banks. First, we found a significant increase
74 in the proportion of sperm donors who are open-identity, with the majority of banks now offering
75 this option. We also found a decreasing number of banks and an increase in the median number
76 of donors at individual banks, supporting reports of industry consolidation.⁵ Importantly, we
77 found no association between the number of donors available and year. This indicates that
78 despite current trends, the overall donor pool has remained relatively stable and less affected than
79 anticipated by a move (albeit voluntary) toward open-identity donation.^{2,3} However, the

80 increasing correlation over time between bank size and proportion of open-identity donors
81 suggests that smaller banks might have a harder time establishing and maintaining open-identity
82 programs and could be differentially affected by legislation. These trends highlight the growing
83 importance of open-identity donation and need to assess (i) industry dynamics, such as the
84 resources needed to establish and maintain these programs, and (ii) open-identity donation's
85 impact on those involved – donor-conceived people, donors and their families. Further research
86 on this topic can help inform clinical practice as well as state and federal policies.

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112 **Bibliography**

- 113 1. Arocho R, Lozano EB, Halpern CT. Estimates of donated sperm use in the United States:
114 National Survey of Family Growth 1995-2017. *Fertil Steril.* 2019;112(4):718-723.
115 doi:10.1016/j.fertnstert.2019.05.031
- 116 2. Cohen G, Coan T, Ottey M, Boyd C. Sperm donor anonymity and compensation: an
117 experiment with American sperm donors. *J Law Biosci.* 2016;3(3):468-488.
118 doi:10.1093/jlb/lsw052
- 119 3. Klipstein S, Chen A, Samplaski M. The Effect of Loss of Anonymity from Direct-to-
120 Consumer DNA Databases on Sperm Donation Attitudes and Practices of American Sperm
121 Donors. *J Urol.* 2020;204(6):1125-1126. doi:10.1097/JU.0000000000001141
- 122 4. Scheib JE, Cushing RA. Open-identity donor insemination in the United States: is it on the
123 rise? *Fertil Steril.* 2007;88(1):231-232. doi:10.1016/j.fertnstert.2007.04.001
- 124 5. Spar DL. *The Baby Business: How Money, Science, and Politics Drive the Commerce of*
125 *Conception.* Harvard Business School Press; 2006.

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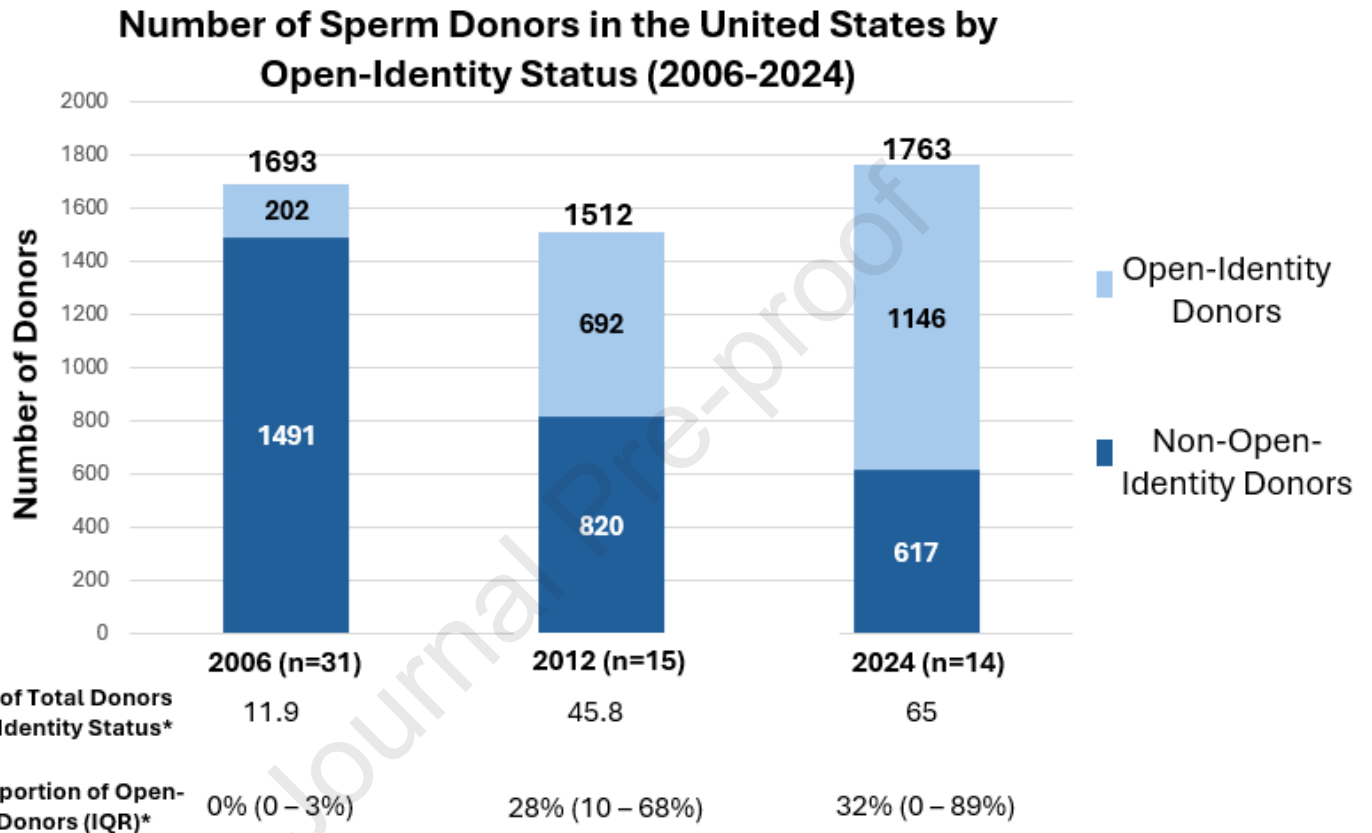
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143 **Figure 1.** Sperm donor availability in the United States by open-identity status across three time
 144 points. Non-open-identity includes all donors in categories other than those willing to provide
 145 requesting donor-conceived adults with identifying information (open-identity). The median
 146 proportion of open-identity donors among all donors at a bank by year is also presented. Limited
 147 donor-level data in 2012 overestimate the proportion of open-identity donors at that timepoint
 148 (see Supplemental Materials).
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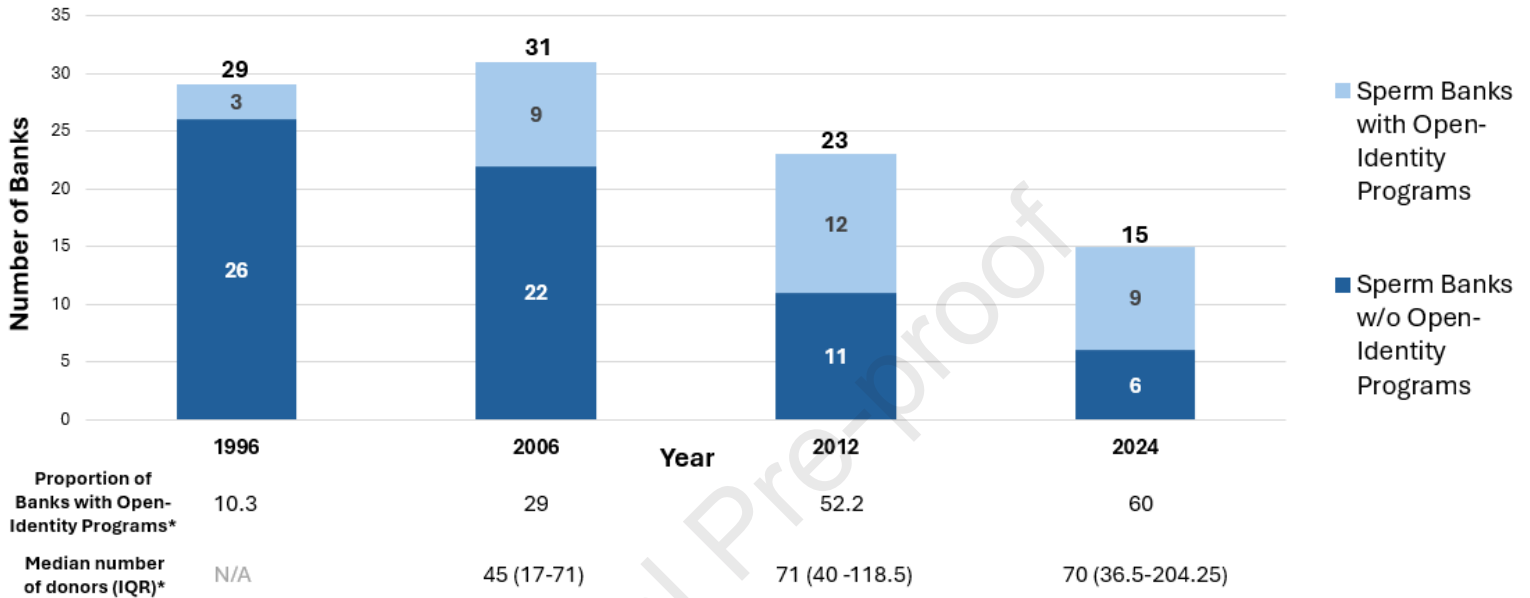
Fig. 1



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164 **Figure 2.** The number of sperm banks in the U.S. by year by presence of open-identity donation
 165 program, policy-unidentifiable banks excluded from this analysis. The number of sperm banks
 166 that have an open-identity program has increased from 3 to 9, with 60% now offering this option.
 167 The median number of donors available across banks is also presented.

Fig. 2 Number of Sperm Banks in the United States by Presence of Open-Identity Program (1996 -2024)



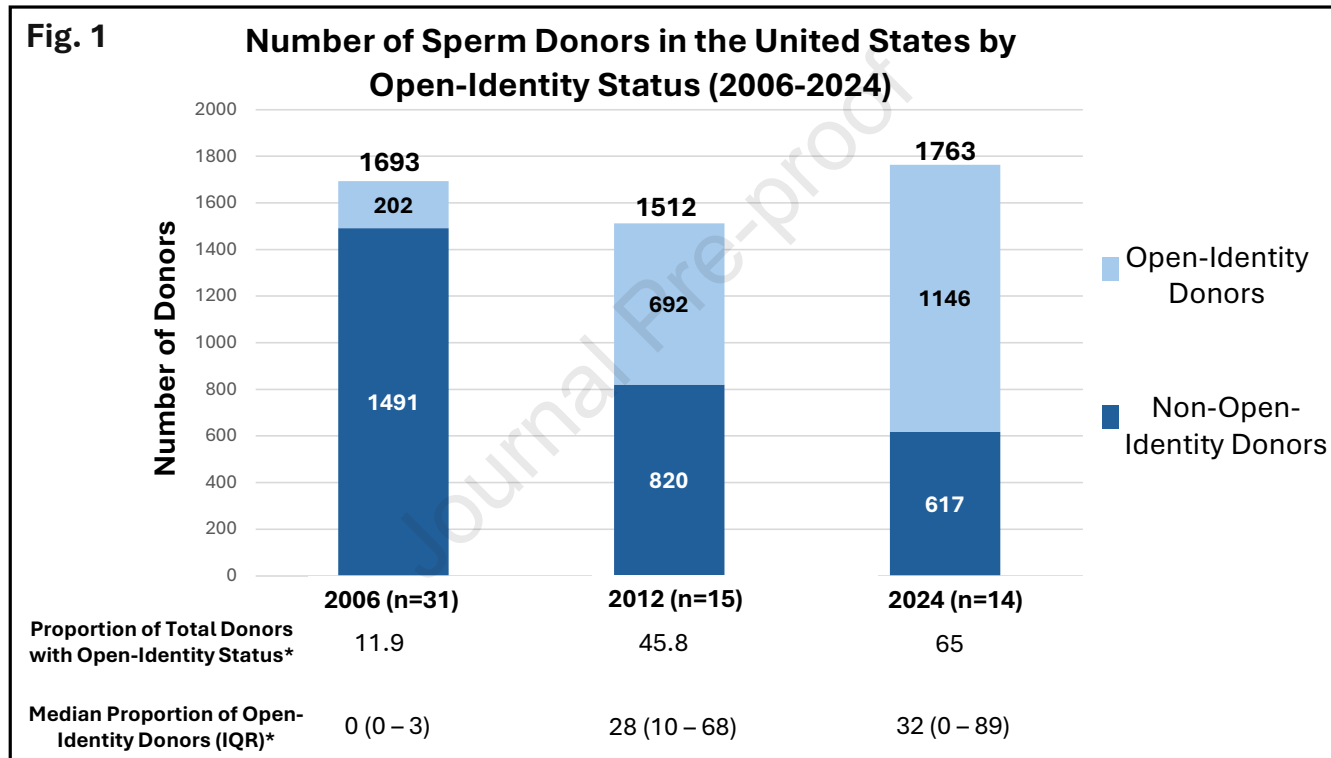


Fig. 2 Number of Sperm Donations in the United States by Presence of Open-Identity Program (1996 -2024)

