Supplementary Material

**Population-based assessment for major congenital malformations in the United States: smoking risk association**

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Supplementary Table 1 Features associated with mothers or newborns documented from 2000 to 2004.

|  | **2000 - N(%)a** | **2001 - N(%)a** | **2002 - N(%)a** | **2003 - N(%)b** | **2004 - N(%)c** |
| --- | --- | --- | --- | --- | --- |
| Mothers | 2,312,548 (100) | 2,292,311 (100) | 2,269,131 (100) | 2,122,442 (100) | 1,699,803 (100) |
| Birth weight |  |  |  |  |  |
| < 2500 g | 150,955 (6.53) | 153,653 (6.70) | 155,424 (6.85) | 149,206 (7.03) | 121,171 (7.13) |
| 2500-3499 g | 1,166,379 (50.44) | 1,175,549 (51.28) | 1,174,368 (51.75) | 1,114,746 (52.52) | 898,460 (52.86) |
| [≥](https://pt.wiktionary.org/wiki/≥) 3500 g | 993,597 (42.97) | 961,636 (41.95) | 938,031 (41.34) | 857,322 (40.39) | 679,330 (39.97) |
| Not declared | 1,617 (0.07) | 1,473 (0.06) | 1,308 (0.06) | 1,168 (0.06) | 842 (0.05) |
| CMd | 33,624 (1.45) | 33,334 (1.45) | 32,342 (1.43) | 28,571 (1.35) | 22,904 (1.35) |
| No\_CM | 2,278,924 (98.55) | 2,258,977 (98.55) | 2,236,789 (98.57) | 2,093,871 (98.65) | 1,676,899 (98.65) |
| Age in years (mother) |  |  |  |  |  |
| 21-35 | 1,745,412 (75.48) | 1,735,882 (75.73) | 1,726,642 (76.09) | 1,619,513 (76.30) | 1,236,863 (72.77) |
| < 21 | 297,183 (12.85) | 283,162 (12.35) | 269,518 (11.88) | 244,454 (11.52) | 190,008 (11.18) |
| > 35 | 269,953 (11.67) | 273,267 (11.92) | 272,971 (12.03) | 258,475 (12.18) | 272,932 (16.06) |
| Weight gain during pregnancy |  |  |  |  |  |
| 11 – 18 kg | 416,096 (17.99) | 416,384 (18.16) | 418,376 (18.44) | 397,327 (18.72) | 310,693 (18.28) |
| > 18 kg | 949,842 (41.07) | 931,784 (40.65) | 924,325 (40.73) | 865,824 (40.79) | 681,910 (40.12) |
| ≤ 11 kg | 669,359 (28.94) | 678,323 (29.59) | 668,964 (29.48) | 621,999 (29.31) | 495,240 (29.14) |
| Unknown | 277,251 (11.99) | 265,820 (11.60) | 257,466 (11.35) | 237,292 (11.18) | 211,960 (12.47) |
| Anemia (mother) |  |  |  |  |  |
| No | 2,256,284 (97.57) | 2,237,555 (97.61) | 2,214,582 (97.6) | 2,076,410 (97.83) | 1,666,387 (98.03) |
| Yes | 45,742 (1.98) | 46,518 (2.03) | 48,155 (2.12) | 41,755 (1.97) | 30,971 (1.82) |
| Unknown | 10,522 (0.45) | 8,238 (0.36) | 6,394 (0.28) | 4,277 (0.20) | 2,445 (0.14) |
| Diabetes mellitus (mother) |  |  |  |  |  |
| No | 2,237,225 (96.74) | 2,215,737 (96.66) | 2,192,210 (96.61) | 2,054,235 (96.79) | 1,646,241 (96.85) |
| Yes | 64,801 (2.80) | 68,336 (2.98) | 70,527 (3.11) | 63,930 (3.01) | 51,117 (3.01) |
| Unknown | 10,522 (0.45) | 8,238 (0.36) | 6,394 (0.28) | 4,277 (0.2) | 2,445 (0.14) |
| Eclampsia |  |  |  |  |  |
| No | 2,294,937 (99.24) | 2,276,766 (99.32) | 2,255,530 (99.4) | 2,111,631 (99.49) | 1,692,055 (99.54) |
| Yes | 7,089 (0.31) | 7,307 (0.32) | 7,207 (0.32) | 6,534 (0.31) | 5,303 (0.31) |
| Unknown | 10,522 (0.45) | 8,238 (0.36) | 6,394 (0.28) | 4,277 (0.2) | 2,445 (0.14) |
| Tobacco use during pregnancy |  |  |  |  |  |
| No | 1,796,194 (77.67) | 1,785,608 (77.9) | 1,782,671 (78.56) | 1,670,780 (78.72) | 1,315,521 (77.39) |
| Yes | 330,973 (14.31) | 329,392 (14.37) | 314,303 (13.85) | 279,625 (13.17) | 215,509 (12.68) |
| Unknown | 185,381 (8.02) | 177,311 (7.74) | 172,157 (7.59) | 172,037 (8.11) | 168,773 (9.93) |
| Alcohol use during pregnancy |  |  |  |  |  |
| No | 2,104,990 (91.02) | 2,094,531 (91.37) | 2,076,721 (91.52) | 1,933,133 (91.08) | 1,517,658 (89.28) |
| Yes | 20,738 (0.90) | 19,438 (0.85) | 19,271 (0.85) | 16,538 (0.78) | 13,107 (0.77) |
| Unknown | 186,820 (8.08) | 178,342 (7.78) | 173,139 (7.63) | 172,771 (8.14) | 169,038 (9.94) |

a - Absent state: CA, NM;

b - Absent states: CA, NM, DE, PA, and TN;

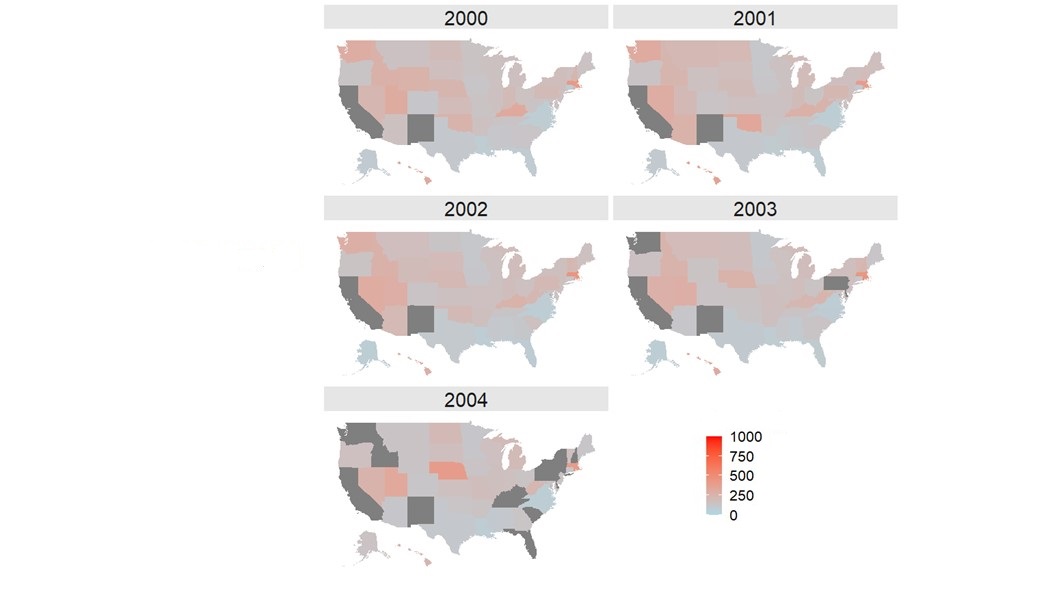
c - Absent states: CA, NM, DE, FL, ID, KY, NH, PA, SC, TN, and WA

d – CM: Children born with congenital malformation.

**Supplementary Table 2** Incidence of cleft lip, club foot, omphalocele, and polydactyly per year in the states of Georgia, Ohio, Texas, and Virginia.

| **CM** | **State** | **Year** | **Births (N)** | **Incidence (NSM)** | **Birth of SM (N)** | **Incidence (SM)** |
| --- | --- | --- | --- | --- | --- | --- |
| Cleft Lip | Georgia | 2000 | 61,685 | 7.46 | 8,836 | 18.11 |
| 2001 | 60,402 | 9.77 | 8,904 | 13.48 |
| 2002 | 59,834 | 6.18 | 8,435 | 10.67 |
| 2003 | 60,717 | 5.43 | 8,172 | 13.46 |
| 2004 | 58,756 | 9.19 | 8,529 | 16.41 |
| Ohio | 2000 | 99,141 | 8.88 | 25,237 | 13.87 |
| 2001 | 96,264 | 10.91 | 24,605 | 13.41 |
| 2002 | 95,365 | 10.49 | 22,625 | 12.38 |
| 2003 | 95,978 | 9.89 | 21,956 | 12.75 |
| 2004 | 93,746 | 10.35 | 21,821 | 12.83 |
| Texas | 2000 | 124,856 | 7.29 | 17,286 | 13.88 |
| 2001 | 121,662 | 6.99 | 17,442 | 14.33 |
| 2002 | 120,591 | 6.72 | 17,027 | 18.79 |
| 2003 | 121,628 | 7.15 | 16,561 | 10.87 |
| 2004 | 120,760 | 6.38 | 15,508 | 13.54 |
| Virginia | 2000 | 56,940 | 7.55 | 6,588 | 13.66 |
| 2001 | 55,635 | 5.57 | 6,236 | 8.02 |
| 2002 | 55,755 | 6.99 | 5,939 | 13.47 |
| 2003 | 56,445 | 7.62 | 5,858 | 8.53 |
| 2004 | 56,274 | 5.51 | 5,658 | 21.21 |
| Club Foot | Georgia | 2000 | 61,685 | 4.54 | 8,836 | 9.05 |
| 2001 | 60,402 | 3.15 | 8,904 | 11.23 |
| 2002 | 59,834 | 5.18 | 8,435 | 10.67 |
| 2003 | 60,717 | 5.76 | 8,172 | 13.46 |
| 2004 | 58,756 | 5.12 | 8,529 | 9.38 |
| Ohio | 2000 | 99,141 | 5.75 | 25,237 | 10.7 |
| 2001 | 96,264 | 5.09 | 24,605 | 13.01 |
| 2002 | 95,365 | 8.07 | 22,625 | 8.84 |
| 2003 | 95,978 | 4.79 | 21,956 | 10.93 |
| 2004 | 93,746 | 6.08 | 21,821 | 11.46 |
| Texas | 2000 | 124,856 | 7.769 | 17,286 | 12.15 |
| 2001 | 121,662 | 7.973 | 17,442 | 10.32 |
| 2002 | 120,591 | 7.38 | 17,027 | 18.79 |
| 2003 | 121,628 | 5.509 | 16,561 | 9.66 |
| 2004 | 120,760 | 7.039 | 15,508 | 11.61 |
| Virginia | 2000 | 56,940 | 3.86 | 6,588 | 12.14 |
| 2001 | 55,635 | 5.21 | 6,236 | 3.21 |
| 2002 | 55,755 | 3.95 | 5,939 | 11.79 |
| 2003 | 56,445 | 5.49 | 5,858 | 8.53 |
| 2004 | 56,274 | 3.55 | 5,658 | 14.14 |
| Omphalocele | Georgia | 2000 | 61,685 | 2.27 | 8,836 | 5.66 |
| 2001 | 60,402 | 1.66 | 8,904 | 5.61 |
| 2002 | 59,834 | 2.34 | 8,435 | 4.74 |
| 2003 | 60,717 | 3.79 | 8,172 | 7.34 |
| 2004 | 58,756 | 2.04 | 8,529 | 8.21 |
| Ohio | 2000 | 99,141 | 1.51 | 25,237 | 3.57 |
| 2001 | 96,264 | 2.91 | 24,605 | 6.50 |
| 2002 | 95,365 | 2.41 | 22,625 | 6.19 |
| 2003 | 95,978 | 3.75 | 21,956 | 7.74 |
| 2004 | 93,746 | 2.77 | 21,821 | 7.33 |
| Texas | 2000 | 124,856 | 3.12 | 17,286 | 5.21 |
| 2001 | 121,662 | 3.29 | 17,442 | 7.45 |
| 2002 | 120,591 | 1.99 | 17,027 | 5.87 |
| 2003 | 121,628 | 2.79 | 16,561 | 3.62 |
| 2004 | 120,760 | 3.06 | 15,508 | 5.80 |
| Virginia | 2000 | 56,940 | 1.76 | 6,588 | 6.07 |
|  |  | 2001 | 55,635 | 1.26 | 6,236 | 4.81 |
| 2002 | 55,755 | 1.97 | 5,939 | 3.37 |
| 2003 | 56,445 | 2.13 | 5,858 | 6.83 |
| 2004 | 56,274 | 2.67 | 5,658 | 1.77 |
| Polydactyly | Georgia | 2000 | 61,685 | 2.27 | 8,836 | 3.39 |
| 2001 | 60,402 | 3.31 | 8,904 | 6.74 |
| 2002 | 59,834 | 2.67 | 8,435 | 7.11 |
| 2003 | 60,717 | 2.47 | 8,172 | 2.45 |
| 2004 | 58,756 | 2.89 | 8,529 | 7.04 |
| Ohio | 2000 | 99,141 | 4.34 | 25,237 | 5.55 |
| 2001 | 96,264 | 3.53 | 24,605 | 6.50 |
| 2002 | 95,365 | 4.51 | 22,625 | 7.51 |
| 2003 | 95,978 | 3.54 | 21,956 | 9.56 |
| 2004 | 93,746 | 3.63 | 21,821 | 4.12 |
| Texas | 2000 | 124,856 | 5.85 | 17,286 | 12.15 |
| 2001 | 121,662 | 6.66 | 17,442 | 8.6 |
| 2002 | 120,591 | 6.88 | 17,027 | 10.57 |
| 2003 | 121,628 | 6.33 | 16,561 | 7.25 |
| 2004 | 120,760 | 4.72 | 15,508 | 5.80 |
| Virginia | 2000 | 56,940 | 4.74 | 6,588 | 7.59 |
| 2001 | 55,635 | 4.31 | 6,236 | 9.62 |
| 2002 | 55,755 | 4.31 | 5,939 | 6.73 |
| 2003 | 56,445 | 4.96 | 5,858 | 8.53 |
| 2004 | 56,274 | 5.15 | 5,658 | 8.84 |

CM: Congenital malformation; Birth (N): Total births of non-Hispanic white Americans; Incidence (NSM): Incidence of each CM per 10,000 births from non-smoking mothers (NSM); birth of SM (N): Total births from smoking mothers (SM); Incidence (SM): Incidence of each CM per 10,000 births from smoking mothers (SM)



Supplementary Fig. 1. CM incidence per year (CM/10,000 births). Incidence rates are shown in spectra of colors varying from light blue to the highest rates in red. States without available data were excluded (dark gray).