

## Crash Report Sampling System (CRSS) Estimates and Standard Errors

As for any probability-based sample, the estimates generated from CRSS data are subject to sampling errors. The sampling error is a measure of the variability of an estimator from its mean under repeated sample selections. The magnitude of sampling error depends on the study variable, the estimator used, and the CRSS sample design. For various reasons, it is necessary to use design features such as stratification, clustering, and unequal selection probabilities to select the CRSS probability sample. As a result, the CRSS sample is not a simple random sample. Failing to consider the complex survey design features in CRSS estimation can bias both point estimates and their associated standard error estimates.

For a quick assessment of the magnitude of the standard errors of CRSS estimates, the generalized variance functions (GVFs) can be used to generate ballpark standard error estimates for a large quantity of estimates. For more information on the CRSS GVFs, including examples of how to use them, refer to NHTSA Technical Report DOT HS 813 041, [Crash Report Sampling System: Generalized Variance Functions](#).

CRSS estimates and GVF standard error estimates for 2016 to 2023 CRSS can be found on the following pages. The GVF standard error estimates use the final model for 2016 to 2023 CRSS estimates at crash, vehicle, and person levels. For more details on these standard errors refer to **Appendix F: Standard Errors** in the [Crash Report Sampling System Analytical User's Manual, 2016-2023](#).

| 2016 CRSS Estimates and GVF Standard Error Estimates |                 |                                           |                 |                                           |                 |
|------------------------------------------------------|-----------------|-------------------------------------------|-----------------|-------------------------------------------|-----------------|
| Crash                                                |                 | Vehicle                                   |                 | Person                                    |                 |
| Estimate (X)                                         | Standard Error* | Estimate (X)                              | Standard Error* | Estimate (X)                              | Standard Error* |
| 1,000                                                | 300             | 1,000                                     | 300             | 1,000                                     | 200             |
| 5,000                                                | 800             | 5,000                                     | 900             | 5,000                                     | 800             |
| 6,000                                                | 900             | 10,000                                    | 1,500           | 10,000                                    | 1,300           |
| 7,000                                                | 1,000           | 20,000                                    | 2,700           | 20,000                                    | 2,200           |
| 8,000                                                | 1,100           | 30,000                                    | 3,800           | 30,000                                    | 3,100           |
| 9,000                                                | 1,200           | 40,000                                    | 4,800           | 40,000                                    | 3,900           |
| 10,000                                               | 1,300           | 50,000                                    | 5,800           | 50,000                                    | 4,700           |
| 20,000                                               | 2,200           | 60,000                                    | 6,800           | 60,000                                    | 5,400           |
| 30,000                                               | 3,000           | 70,000                                    | 7,700           | 70,000                                    | 6,200           |
| 40,000                                               | 3,700           | 80,000                                    | 8,700           | 80,000                                    | 6,900           |
| 50,000                                               | 4,400           | 90,000                                    | 9,600           | 90,000                                    | 7,600           |
| 60,000                                               | 5,200           | 100,000                                   | 10,500          | 100,000                                   | 8,300           |
| 70,000                                               | 5,800           | 200,000                                   | 19,300          | 200,000                                   | 15,100          |
| 80,000                                               | 6,500           | 300,000                                   | 27,800          | 300,000                                   | 21,700          |
| 90,000                                               | 7,200           | 400,000                                   | 36,000          | 400,000                                   | 28,000          |
| 100,000                                              | 7,900           | 500,000                                   | 44,100          | 500,000                                   | 34,300          |
| 200,000                                              | 14,200          | 600,000                                   | 52,100          | 600,000                                   | 40,600          |
| 300,000                                              | 20,200          | 700,000                                   | 60,000          | 700,000                                   | 46,800          |
| 400,000                                              | 26,000          | 800,000                                   | 67,900          | 800,000                                   | 53,000          |
| 500,000                                              | 31,700          | 900,000                                   | 75,700          | 900,000                                   | 59,100          |
| 600,000                                              | 37,400          | 1,000,000                                 | 83,500          | 1,000,000                                 | 65,300          |
| 700,000                                              | 43,000          | 2,000,000                                 | 160,500         | 2,000,000                                 | 126,300         |
| 800,000                                              | 48,600          | 3,000,000                                 | 236,700         | 3,000,000                                 | 187,500         |
| 900,000                                              | 54,200          | 4,000,000                                 | 312,800         | 4,000,000                                 | 249,100         |
| 1,000,000                                            | 59,700          | 5,000,000                                 | 388,800         | 5,000,000                                 | 311,200         |
| 2,000,000                                            | 114,500         | 6,000,000                                 | 464,900         | 6,000,000                                 | 373,800         |
| 3,000,000                                            | 169,000         | 7,000,000                                 | 541,200         | 7,000,000                                 | 436,900         |
| 4,000,000                                            | 223,600         | 8,000,000                                 | 617,700         | 8,000,000                                 | 500,500         |
| 5,000,000                                            | 278,600         | 9,000,000                                 | 694,300         | 9,000,000                                 | 564,500         |
| 6,000,000                                            | 333,800         | 10,000,000                                | 771,200         | 10,000,000                                | 629,000         |
| 6,500,000                                            | 361,500         | 11,000,000                                | 848,300         | 11,000,000                                | 693,800         |
| 7,000,000                                            | 389,300         | 12,000,000                                | 925,500         | 12,000,000                                | 759,200         |
| *: $ste(X) = e^{a+bln(X)+cln(X)^2}$                  |                 |                                           |                 |                                           |                 |
| a = 1.92772<br>b = 0.38750<br>c = 0.01947            |                 | a = 1.17146<br>b = 0.53866<br>c = 0.01425 |                 | a = 1.79032<br>b = 0.40622<br>c = 0.01930 |                 |

| 2017 CRSS Estimates and GVF Standard Error Estimates |                 |                                           |                 |                                           |                 |
|------------------------------------------------------|-----------------|-------------------------------------------|-----------------|-------------------------------------------|-----------------|
| Crash                                                |                 | Vehicle                                   |                 | Person                                    |                 |
| Estimate (X)                                         | Standard Error* | Estimate (X)                              | Standard Error* | Estimate (X)                              | Standard Error* |
| 1,000                                                | 300             | 1,000                                     | 300             | 1,000                                     | 200             |
| 5,000                                                | 800             | 5,000                                     | 900             | 5,000                                     | 700             |
| 6,000                                                | 900             | 10,000                                    | 1,500           | 10,000                                    | 1,200           |
| 7,000                                                | 1,000           | 20,000                                    | 2,600           | 20,000                                    | 2,100           |
| 8,000                                                | 1,100           | 30,000                                    | 3,600           | 30,000                                    | 2,800           |
| 9,000                                                | 1,200           | 40,000                                    | 4,600           | 40,000                                    | 3,500           |
| 10,000                                               | 1,300           | 50,000                                    | 5,500           | 50,000                                    | 4,200           |
| 20,000                                               | 2,200           | 60,000                                    | 6,500           | 60,000                                    | 4,900           |
| 30,000                                               | 3,000           | 70,000                                    | 7,400           | 70,000                                    | 5,600           |
| 40,000                                               | 3,800           | 80,000                                    | 8,300           | 80,000                                    | 6,200           |
| 50,000                                               | 4,500           | 90,000                                    | 9,100           | 90,000                                    | 6,900           |
| 60,000                                               | 5,200           | 100,000                                   | 10,000          | 100,000                                   | 7,500           |
| 70,000                                               | 5,900           | 200,000                                   | 18,400          | 200,000                                   | 13,600          |
| 80,000                                               | 6,600           | 300,000                                   | 26,400          | 300,000                                   | 19,400          |
| 90,000                                               | 7,300           | 400,000                                   | 34,200          | 400,000                                   | 25,100          |
| 100,000                                              | 8,000           | 500,000                                   | 41,900          | 500,000                                   | 30,700          |
| 200,000                                              | 14,600          | 600,000                                   | 49,600          | 600,000                                   | 36,300          |
| 300,000                                              | 20,900          | 700,000                                   | 57,200          | 700,000                                   | 41,800          |
| 400,000                                              | 27,100          | 800,000                                   | 64,700          | 800,000                                   | 47,300          |
| 500,000                                              | 33,300          | 900,000                                   | 72,200          | 900,000                                   | 52,800          |
| 600,000                                              | 39,400          | 1,000,000                                 | 79,700          | 1,000,000                                 | 58,300          |
| 700,000                                              | 45,500          | 2,000,000                                 | 153,900         | 2,000,000                                 | 112,900         |
| 800,000                                              | 51,700          | 3,000,000                                 | 227,900         | 3,000,000                                 | 167,700         |
| 900,000                                              | 57,800          | 4,000,000                                 | 302,000         | 4,000,000                                 | 223,000         |
| 1,000,000                                            | 63,900          | 5,000,000                                 | 376,400         | 5,000,000                                 | 278,900         |
| 2,000,000                                            | 125,300         | 6,000,000                                 | 451,200         | 6,000,000                                 | 335,300         |
| 3,000,000                                            | 187,800         | 7,000,000                                 | 526,300         | 7,000,000                                 | 392,300         |
| 4,000,000                                            | 251,400         | 8,000,000                                 | 601,800         | 8,000,000                                 | 449,700         |
| 5,000,000                                            | 316,100         | 9,000,000                                 | 677,700         | 9,000,000                                 | 507,700         |
| 6,000,000                                            | 381,700         | 10,000,000                                | 753,900         | 10,000,000                                | 566,100         |
| 6,500,000                                            | 414,900         | 11,000,000                                | 830,500         | 11,000,000                                | 625,000         |
| 7,000,000                                            | 448,400         | 12,000,000                                | 907,400         | 12,000,000                                | 684,300         |
| *: $ste(X) = e^{a+b\ln(X)+c\ln(X)^2}$                |                 |                                           |                 |                                           |                 |
| a = 2.33171<br>b = 0.30826<br>c = 0.02344            |                 | a = 1.43152<br>b = 0.48824<br>c = 0.01629 |                 | a = 2.05394<br>b = 0.35287<br>c = 0.02119 |                 |

| 2018 CRSS Estimates and GVF Standard Error Estimates |                 |                                           |                 |                                           |                 |
|------------------------------------------------------|-----------------|-------------------------------------------|-----------------|-------------------------------------------|-----------------|
| Crash                                                |                 | Vehicle                                   |                 | Person                                    |                 |
| Estimate (X)                                         | Standard Error* | Estimate (X)                              | Standard Error* | Estimate (X)                              | Standard Error* |
| 1,000                                                | 300             | 1,000                                     | 300             | 1,000                                     | 200             |
| 5,000                                                | 800             | 5,000                                     | 900             | 5,000                                     | 700             |
| 6,000                                                | 900             | 10,000                                    | 1,500           | 10,000                                    | 1,200           |
| 7,000                                                | 1,000           | 20,000                                    | 2,500           | 20,000                                    | 2,000           |
| 8,000                                                | 1,100           | 30,000                                    | 3,500           | 30,000                                    | 2,800           |
| 9,000                                                | 1,200           | 40,000                                    | 4,400           | 40,000                                    | 3,500           |
| 10,000                                               | 1,300           | 50,000                                    | 5,300           | 50,000                                    | 4,100           |
| 20,000                                               | 2,100           | 60,000                                    | 6,200           | 60,000                                    | 4,800           |
| 30,000                                               | 2,900           | 70,000                                    | 7,000           | 70,000                                    | 5,400           |
| 40,000                                               | 3,700           | 80,000                                    | 7,800           | 80,000                                    | 6,100           |
| 50,000                                               | 4,400           | 90,000                                    | 8,700           | 90,000                                    | 6,700           |
| 60,000                                               | 5,100           | 100,000                                   | 9,500           | 100,000                                   | 7,300           |
| 70,000                                               | 5,800           | 200,000                                   | 17,300          | 200,000                                   | 13,200          |
| 80,000                                               | 6,400           | 300,000                                   | 24,800          | 300,000                                   | 18,800          |
| 90,000                                               | 7,100           | 400,000                                   | 32,100          | 400,000                                   | 24,200          |
| 100,000                                              | 7,700           | 500,000                                   | 39,300          | 500,000                                   | 29,600          |
| 200,000                                              | 14,000          | 600,000                                   | 46,400          | 600,000                                   | 34,900          |
| 300,000                                              | 19,900          | 700,000                                   | 53,500          | 700,000                                   | 40,200          |
| 400,000                                              | 25,700          | 800,000                                   | 60,500          | 800,000                                   | 45,400          |
| 500,000                                              | 31,500          | 900,000                                   | 67,500          | 900,000                                   | 50,700          |
| 600,000                                              | 37,200          | 1,000,000                                 | 74,500          | 1,000,000                                 | 55,900          |
| 700,000                                              | 42,800          | 2,000,000                                 | 143,800         | 2,000,000                                 | 107,600         |
| 800,000                                              | 48,500          | 3,000,000                                 | 213,000         | 3,000,000                                 | 159,400         |
| 900,000                                              | 54,100          | 4,000,000                                 | 282,500         | 4,000,000                                 | 211,400         |
| 1,000,000                                            | 59,700          | 5,000,000                                 | 352,300         | 5,000,000                                 | 263,900         |
| 2,000,000                                            | 115,700         | 6,000,000                                 | 422,500         | 6,000,000                                 | 316,800         |
| 3,000,000                                            | 172,100         | 7,000,000                                 | 493,200         | 7,000,000                                 | 370,100         |
| 4,000,000                                            | 229,200         | 8,000,000                                 | 564,300         | 8,000,000                                 | 423,800         |
| 5,000,000                                            | 286,900         | 9,000,000                                 | 635,700         | 9,000,000                                 | 477,900         |
| 6,000,000                                            | 345,300         | 10,000,000                                | 707,600         | 10,000,000                                | 532,300         |
| 6,500,000                                            | 374,700         | 11,000,000                                | 779,900         | 11,000,000                                | 587,200         |
| 7,000,000                                            | 404,300         | 12,000,000                                | 852,600         | 12,000,000                                | 642,400         |
| *: $ste(X) = e^{a+b\ln(X)+c\ln(X)^2}$                |                 |                                           |                 |                                           |                 |
| a = 2.33242<br>b = 0.31521<br>c = 0.02258            |                 | a = 1.69299<br>b = 0.44262<br>c = 0.01787 |                 | a = 2.02774<br>b = 0.35777<br>c = 0.02075 |                 |

| 2019 CRSS Estimates and GVF Standard Error Estimates |                 |                                           |                 |                                           |                 |
|------------------------------------------------------|-----------------|-------------------------------------------|-----------------|-------------------------------------------|-----------------|
| Crash                                                |                 | Vehicle                                   |                 | Person                                    |                 |
| Estimate (X)                                         | Standard Error* | Estimate (X)                              | Standard Error* | Estimate (X)                              | Standard Error* |
| 1,000                                                | 300             | 1,000                                     | 300             | 1,000                                     | 200             |
| 5,000                                                | 800             | 5,000                                     | 900             | 5,000                                     | 700             |
| 6,000                                                | 900             | 10,000                                    | 1,400           | 10,000                                    | 1,100           |
| 7,000                                                | 1,000           | 20,000                                    | 2,500           | 20,000                                    | 1,900           |
| 8,000                                                | 1,100           | 30,000                                    | 3,500           | 30,000                                    | 2,700           |
| 9,000                                                | 1,200           | 40,000                                    | 4,400           | 40,000                                    | 3,300           |
| 10,000                                               | 1,200           | 50,000                                    | 5,300           | 50,000                                    | 4,000           |
| 20,000                                               | 2,100           | 60,000                                    | 6,100           | 60,000                                    | 4,600           |
| 30,000                                               | 2,900           | 70,000                                    | 7,000           | 70,000                                    | 5,300           |
| 40,000                                               | 3,600           | 80,000                                    | 7,800           | 80,000                                    | 5,900           |
| 50,000                                               | 4,300           | 90,000                                    | 8,600           | 90,000                                    | 6,500           |
| 60,000                                               | 5,000           | 100,000                                   | 9,500           | 100,000                                   | 7,100           |
| 70,000                                               | 5,700           | 200,000                                   | 17,300          | 200,000                                   | 12,800          |
| 80,000                                               | 6,400           | 300,000                                   | 24,800          | 300,000                                   | 18,400          |
| 90,000                                               | 7,000           | 400,000                                   | 32,200          | 400,000                                   | 23,800          |
| 100,000                                              | 7,700           | 500,000                                   | 39,400          | 500,000                                   | 29,100          |
| 200,000                                              | 13,800          | 600,000                                   | 46,600          | 600,000                                   | 34,400          |
| 300,000                                              | 19,700          | 700,000                                   | 53,800          | 700,000                                   | 39,700          |
| 400,000                                              | 25,500          | 800,000                                   | 60,900          | 800,000                                   | 44,900          |
| 500,000                                              | 31,200          | 900,000                                   | 68,000          | 900,000                                   | 50,200          |
| 600,000                                              | 36,900          | 1,000,000                                 | 75,100          | 1,000,000                                 | 55,400          |
| 700,000                                              | 42,500          | 2,000,000                                 | 145,500         | 2,000,000                                 | 107,800         |
| 800,000                                              | 48,100          | 3,000,000                                 | 215,900         | 3,000,000                                 | 160,700         |
| 900,000                                              | 53,600          | 4,000,000                                 | 286,900         | 4,000,000                                 | 214,200         |
| 1,000,000                                            | 59,200          | 5,000,000                                 | 358,300         | 5,000,000                                 | 268,500         |
| 2,000,000                                            | 114,700         | 6,000,000                                 | 430,200         | 6,000,000                                 | 323,400         |
| 3,000,000                                            | 170,400         | 7,000,000                                 | 502,700         | 7,000,000                                 | 378,900         |
| 4,000,000                                            | 226,800         | 8,000,000                                 | 575,700         | 8,000,000                                 | 435,100         |
| 5,000,000                                            | 283,700         | 9,000,000                                 | 649,100         | 9,000,000                                 | 491,800         |
| 6,000,000                                            | 341,200         | 10,000,000                                | 723,100         | 10,000,000                                | 549,000         |
| 6,500,000                                            | 370,200         | 11,000,000                                | 797,500         | 11,000,000                                | 606,800         |
| 7,000,000                                            | 399,300         | 12,000,000                                | 872,300         | 12,000,000                                | 665,100         |
| *: $ste(X) = e^{a+b\ln(X)+c\ln(X)^2}$                |                 |                                           |                 |                                           |                 |
| a = 2.19494<br>b = 0.33465<br>c = 0.02185            |                 | a = 1.70176<br>b = 0.43713<br>c = 0.01826 |                 | a = 2.14416<br>b = 0.32619<br>c = 0.02238 |                 |

| 2020 CRSS Estimates and GVF Standard Error Estimates |                 |                                           |                 |                                           |                 |
|------------------------------------------------------|-----------------|-------------------------------------------|-----------------|-------------------------------------------|-----------------|
| Crash                                                |                 | Vehicle                                   |                 | Person                                    |                 |
| Estimate (X)                                         | Standard Error* | Estimate (X)                              | Standard Error* | Estimate (X)                              | Standard Error* |
| 1,000                                                | 200             | 1,000                                     | 300             | 1,000                                     | 200             |
| 5,000                                                | 700             | 5,000                                     | 800             | 5,000                                     | 700             |
| 6,000                                                | 800             | 10,000                                    | 1,300           | 10,000                                    | 1,100           |
| 7,000                                                | 900             | 20,000                                    | 2,300           | 20,000                                    | 1,900           |
| 8,000                                                | 1,000           | 30,000                                    | 3,200           | 30,000                                    | 2,600           |
| 9,000                                                | 1,100           | 40,000                                    | 4,100           | 40,000                                    | 3,200           |
| 10,000                                               | 1,200           | 50,000                                    | 4,900           | 50,000                                    | 3,900           |
| 20,000                                               | 2,000           | 60,000                                    | 5,700           | 60,000                                    | 4,500           |
| 30,000                                               | 2,700           | 70,000                                    | 6,500           | 70,000                                    | 5,100           |
| 40,000                                               | 3,400           | 80,000                                    | 7,200           | 80,000                                    | 5,700           |
| 50,000                                               | 4,100           | 90,000                                    | 8,000           | 90,000                                    | 6,300           |
| 60,000                                               | 4,700           | 100,000                                   | 8,800           | 100,000                                   | 6,800           |
| 70,000                                               | 5,400           | 200,000                                   | 16,000          | 200,000                                   | 12,400          |
| 80,000                                               | 6,000           | 300,000                                   | 23,000          | 300,000                                   | 17,700          |
| 90,000                                               | 6,600           | 400,000                                   | 29,800          | 400,000                                   | 22,900          |
| 100,000                                              | 7,200           | 500,000                                   | 36,500          | 500,000                                   | 28,000          |
| 200,000                                              | 13,100          | 600,000                                   | 43,200          | 600,000                                   | 33,000          |
| 300,000                                              | 18,600          | 700,000                                   | 49,900          | 700,000                                   | 38,100          |
| 400,000                                              | 24,000          | 800,000                                   | 56,500          | 800,000                                   | 43,100          |
| 500,000                                              | 29,400          | 900,000                                   | 63,100          | 900,000                                   | 48,100          |
| 600,000                                              | 34,700          | 1,000,000                                 | 69,700          | 1,000,000                                 | 53,100          |
| 700,000                                              | 39,900          | 2,000,000                                 | 135,200         | 2,000,000                                 | 102,600         |
| 800,000                                              | 45,100          | 3,000,000                                 | 201,000         | 3,000,000                                 | 152,400         |
| 900,000                                              | 50,300          | 4,000,000                                 | 267,200         | 4,000,000                                 | 202,500         |
| 1,000,000                                            | 55,500          | 5,000,000                                 | 334,000         | 5,000,000                                 | 253,100         |
| 2,000,000                                            | 106,700         | 6,000,000                                 | 401,400         | 6,000,000                                 | 304,200         |
| 3,000,000                                            | 157,800         | 7,000,000                                 | 469,300         | 7,000,000                                 | 355,700         |
| 4,000,000                                            | 209,100         | 8,000,000                                 | 537,700         | 8,000,000                                 | 407,700         |
| 5,000,000                                            | 260,700         | 9,000,000                                 | 606,600         | 9,000,000                                 | 460,000         |
| 6,000,000                                            | 312,600         | 10,000,000                                | 676,000         | 10,000,000                                | 512,800         |
| 6,500,000                                            | 338,700         | 11,000,000                                | 745,900         | 11,000,000                                | 566,000         |
| 7,000,000                                            | 364,900         | 12,000,000                                | 816,200         | 12,000,000                                | 619,500         |
| *: $ste(X) = e^{a+b\ln(X)+c\ln(X)^2}$                |                 |                                           |                 |                                           |                 |
| a = 1.81266<br>b = 0.38881<br>c = 0.01959            |                 | a = 1.69637<br>b = 0.42507<br>c = 0.01877 |                 | a = 1.88630<br>b = 0.36439<br>c = 0.02074 |                 |

| 2021 CRSS Estimates and GVF Standard Error Estimates |                 |                                           |                 |                                           |                 |
|------------------------------------------------------|-----------------|-------------------------------------------|-----------------|-------------------------------------------|-----------------|
| Crash                                                |                 | Vehicle                                   |                 | Person                                    |                 |
| Estimate (X)                                         | Standard Error* | Estimate (X)                              | Standard Error* | Estimate (X)                              | Standard Error* |
| 1,000                                                | 200             | 1,000                                     | 300             | 1,000                                     | 200             |
| 5,000                                                | 700             | 5,000                                     | 800             | 5,000                                     | 700             |
| 6,000                                                | 800             | 10,000                                    | 1,400           | 10,000                                    | 1,200           |
| 7,000                                                | 900             | 20,000                                    | 2,400           | 20,000                                    | 2,000           |
| 8,000                                                | 1,000           | 30,000                                    | 3,400           | 30,000                                    | 2,700           |
| 9,000                                                | 1,100           | 40,000                                    | 4,300           | 40,000                                    | 3,400           |
| 10,000                                               | 1,200           | 50,000                                    | 5,200           | 50,000                                    | 4,100           |
| 20,000                                               | 2,000           | 60,000                                    | 6,000           | 60,000                                    | 4,700           |
| 30,000                                               | 2,800           | 70,000                                    | 6,900           | 70,000                                    | 5,400           |
| 40,000                                               | 3,500           | 80,000                                    | 7,700           | 80,000                                    | 6,000           |
| 50,000                                               | 4,200           | 90,000                                    | 8,500           | 90,000                                    | 6,600           |
| 60,000                                               | 4,900           | 100,000                                   | 9,300           | 100,000                                   | 7,300           |
| 70,000                                               | 5,500           | 200,000                                   | 17,000          | 200,000                                   | 13,200          |
| 80,000                                               | 6,200           | 300,000                                   | 24,500          | 300,000                                   | 18,900          |
| 90,000                                               | 6,800           | 400,000                                   | 31,700          | 400,000                                   | 24,500          |
| 100,000                                              | 7,400           | 500,000                                   | 38,900          | 500,000                                   | 30,000          |
| 200,000                                              | 13,400          | 600,000                                   | 46,100          | 600,000                                   | 35,500          |
| 300,000                                              | 19,200          | 700,000                                   | 53,100          | 700,000                                   | 41,000          |
| 400,000                                              | 24,900          | 800,000                                   | 60,200          | 800,000                                   | 46,400          |
| 500,000                                              | 30,500          | 900,000                                   | 67,200          | 900,000                                   | 51,800          |
| 600,000                                              | 36,000          | 1,000,000                                 | 74,200          | 1,000,000                                 | 57,200          |
| 700,000                                              | 41,500          | 2,000,000                                 | 143,800         | 2,000,000                                 | 111,300         |
| 800,000                                              | 47,000          | 3,000,000                                 | 213,500         | 3,000,000                                 | 165,900         |
| 900,000                                              | 52,500          | 4,000,000                                 | 283,500         | 4,000,000                                 | 221,000         |
| 1,000,000                                            | 58,000          | 5,000,000                                 | 354,000         | 5,000,000                                 | 276,900         |
| 2,000,000                                            | 112,700         | 6,000,000                                 | 425,100         | 6,000,000                                 | 333,300         |
| 3,000,000                                            | 168,000         | 7,000,000                                 | 496,600         | 7,000,000                                 | 390,400         |
| 4,000,000                                            | 223,900         | 8,000,000                                 | 568,600         | 8,000,000                                 | 448,000         |
| 5,000,000                                            | 280,600         | 9,000,000                                 | 641,100         | 9,000,000                                 | 506,100         |
| 6,000,000                                            | 337,900         | 10,000,000                                | 714,000         | 10,000,000                                | 564,800         |
| 6,500,000                                            | 366,800         | 11,000,000                                | 787,300         | 11,000,000                                | 624,000         |
| 7,000,000                                            | 395,900         | 12,000,000                                | 861,100         | 12,000,000                                | 683,600         |
| *: $ste(X) = e^{a+b\ln(X)+c\ln(X)^2}$                |                 |                                           |                 |                                           |                 |
| a = 2.16680<br>b = 0.33005<br>c = 0.02222            |                 | a = 1.58125<br>b = 0.45204<br>c = 0.01775 |                 | a = 1.95844<br>b = 0.35704<br>c = 0.02129 |                 |

| 2022 CRSS Estimates and GVF Standard Error Estimates |                 |                                           |                 |                                           |                 |
|------------------------------------------------------|-----------------|-------------------------------------------|-----------------|-------------------------------------------|-----------------|
| Crash                                                |                 | Vehicle                                   |                 | Person                                    |                 |
| Estimate (X)                                         | Standard Error* | Estimate (X)                              | Standard Error* | Estimate (X)                              | Standard Error* |
| 1,000                                                | 200             | 1,000                                     | 200             | 1,000                                     | 200             |
| 5,000                                                | 800             | 5,000                                     | 800             | 5,000                                     | 700             |
| 6,000                                                | 900             | 10,000                                    | 1,400           | 10,000                                    | 1,200           |
| 7,000                                                | 1,000           | 20,000                                    | 2,500           | 20,000                                    | 2,100           |
| 8,000                                                | 1,100           | 30,000                                    | 3,500           | 30,000                                    | 2,900           |
| 9,000                                                | 1,200           | 40,000                                    | 4,400           | 40,000                                    | 3,700           |
| 10,000                                               | 1,300           | 50,000                                    | 5,400           | 50,000                                    | 4,400           |
| 20,000                                               | 2,200           | 60,000                                    | 6,300           | 60,000                                    | 5,200           |
| 30,000                                               | 3,000           | 70,000                                    | 7,200           | 70,000                                    | 5,900           |
| 40,000                                               | 3,800           | 80,000                                    | 8,200           | 80,000                                    | 6,600           |
| 50,000                                               | 4,600           | 90,000                                    | 9,100           | 90,000                                    | 7,300           |
| 60,000                                               | 5,400           | 100,000                                   | 9,900           | 100,000                                   | 8,000           |
| 70,000                                               | 6,100           | 200,000                                   | 18,600          | 200,000                                   | 14,800          |
| 80,000                                               | 6,900           | 300,000                                   | 27,100          | 300,000                                   | 21,400          |
| 90,000                                               | 7,600           | 400,000                                   | 35,400          | 400,000                                   | 28,000          |
| 100,000                                              | 8,300           | 500,000                                   | 43,700          | 500,000                                   | 34,400          |
| 200,000                                              | 15,300          | 600,000                                   | 52,000          | 600,000                                   | 40,900          |
| 300,000                                              | 22,000          | 700,000                                   | 60,200          | 700,000                                   | 47,300          |
| 400,000                                              | 28,600          | 800,000                                   | 68,400          | 800,000                                   | 53,700          |
| 500,000                                              | 35,100          | 900,000                                   | 76,700          | 900,000                                   | 60,100          |
| 600,000                                              | 41,600          | 1,000,000                                 | 84,900          | 1,000,000                                 | 66,500          |
| 700,000                                              | 48,100          | 2,000,000                                 | 167,400         | 2,000,000                                 | 131,100         |
| 800,000                                              | 54,600          | 3,000,000                                 | 250,900         | 3,000,000                                 | 196,800         |
| 900,000                                              | 61,000          | 4,000,000                                 | 335,300         | 4,000,000                                 | 263,700         |
| 1,000,000                                            | 67,500          | 5,000,000                                 | 420,700         | 5,000,000                                 | 331,500         |
| 2,000,000                                            | 132,300         | 6,000,000                                 | 507,100         | 6,000,000                                 | 400,400         |
| 3,000,000                                            | 198,000         | 7,000,000                                 | 594,200         | 7,000,000                                 | 470,200         |
| 4,000,000                                            | 264,000         | 8,000,000                                 | 682,200         | 8,000,000                                 | 540,800         |
| 5,000,000                                            | 332,100         | 9,000,000                                 | 770,900         | 9,000,000                                 | 612,200         |
| 6,000,000                                            | 400,500         | 10,000,000                                | 860,300         | 10,000,000                                | 684,400         |
| 6,500,000                                            | 435,000         | 11,000,000                                | 950,300         | 11,000,000                                | 757,200         |
| 7,000,000                                            | 469,700         | 12,000,000                                | 1,041,000       | 12,000,000                                | 830,800         |
| *: $ste(X) = e^{a+b\ln(X)+c\ln(X)^2}$                |                 |                                           |                 |                                           |                 |
| a = 1.82248<br>b = 0.38876<br>c = 0.02057            |                 | a = 1.06573<br>b = 0.52025<br>c = 0.01622 |                 | a = 1.71055<br>b = 0.39513<br>c = 0.02062 |                 |

| 2023 CRSS Estimates and GVF Standard Error Estimates |                 |                                           |                 |                                           |                 |
|------------------------------------------------------|-----------------|-------------------------------------------|-----------------|-------------------------------------------|-----------------|
| Crash                                                |                 | Vehicle                                   |                 | Person                                    |                 |
| Estimate (X)                                         | Standard Error* | Estimate (X)                              | Standard Error* | Estimate (X)                              | Standard Error* |
| 1,000                                                | 200             | 1,000                                     | 200             | 1,000                                     | 200             |
| 5,000                                                | 800             | 5,000                                     | 800             | 5,000                                     | 700             |
| 6,000                                                | 900             | 10,000                                    | 1,400           | 10,000                                    | 1,200           |
| 7,000                                                | 1,000           | 20,000                                    | 2,500           | 20,000                                    | 2,200           |
| 8,000                                                | 1,100           | 30,000                                    | 3,600           | 30,000                                    | 3,000           |
| 9,000                                                | 1,200           | 40,000                                    | 4,600           | 40,000                                    | 3,800           |
| 10,000                                               | 1,300           | 50,000                                    | 5,600           | 50,000                                    | 4,600           |
| 20,000                                               | 2,200           | 60,000                                    | 6,500           | 60,000                                    | 5,400           |
| 30,000                                               | 3,000           | 70,000                                    | 7,500           | 70,000                                    | 6,200           |
| 40,000                                               | 3,800           | 80,000                                    | 8,400           | 80,000                                    | 6,900           |
| 50,000                                               | 4,600           | 90,000                                    | 9,300           | 90,000                                    | 7,600           |
| 60,000                                               | 5,400           | 100,000                                   | 10,200          | 100,000                                   | 8,400           |
| 70,000                                               | 6,100           | 200,000                                   | 19,000          | 200,000                                   | 15,400          |
| 80,000                                               | 6,800           | 300,000                                   | 27,500          | 300,000                                   | 22,200          |
| 90,000                                               | 7,600           | 400,000                                   | 35,700          | 400,000                                   | 28,800          |
| 100,000                                              | 8,300           | 500,000                                   | 43,900          | 500,000                                   | 35,300          |
| 200,000                                              | 15,100          | 600,000                                   | 52,000          | 600,000                                   | 41,800          |
| 300,000                                              | 21,600          | 700,000                                   | 60,000          | 700,000                                   | 48,300          |
| 400,000                                              | 28,000          | 800,000                                   | 68,000          | 800,000                                   | 54,700          |
| 500,000                                              | 34,300          | 900,000                                   | 75,900          | 900,000                                   | 61,100          |
| 600,000                                              | 40,600          | 1,000,000                                 | 83,900          | 1,000,000                                 | 67,500          |
| 700,000                                              | 46,800          | 2,000,000                                 | 162,100         | 2,000,000                                 | 131,000         |
| 800,000                                              | 52,900          | 3,000,000                                 | 239,600         | 3,000,000                                 | 194,600         |
| 900,000                                              | 59,100          | 4,000,000                                 | 317,000         | 4,000,000                                 | 258,600         |
| 1,000,000                                            | 65,200          | 5,000,000                                 | 394,400         | 5,000,000                                 | 323,000         |
| 2,000,000                                            | 126,300         | 6,000,000                                 | 471,900         | 6,000,000                                 | 387,800         |
| 3,000,000                                            | 187,400         | 7,000,000                                 | 549,600         | 7,000,000                                 | 453,100         |
| 4,000,000                                            | 248,800         | 8,000,000                                 | 627,400         | 8,000,000                                 | 518,800         |
| 5,000,000                                            | 310,700         | 9,000,000                                 | 705,400         | 9,000,000                                 | 584,900         |
| 6,000,000                                            | 373,100         | 10,000,000                                | 783,500         | 10,000,000                                | 651,400         |
| 6,500,000                                            | 404,500         | 11,000,000                                | 861,900         | 11,000,000                                | 718,200         |
| 7,000,000                                            | 435,900         | 12,000,000                                | 940,400         | 12,000,000                                | 785,500         |
| *: $ste(X) = e^{a+b\ln(X)+c\ln(X)^2}$                |                 |                                           |                 |                                           |                 |
| a = 1.66293<br>b = 0.42425<br>c = 0.01866            |                 | a = 0.67458<br>b = 0.60142<br>c = 0.01233 |                 | a = 1.30776<br>b = 0.47508<br>c = 0.01702 |                 |