**APPENDIX**

Table A1. Included diagnoses, sampling and weighting of sample.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Body region | ICD-10 SV codes | Strada 2013-may 2017 (at least 15 years old) | Randomized sample (except for traumatic brain injury) | Available information on address | n included | % from Strada included | Multiplication factor (inverse of % from Strada included) |
| hip, upper leg | S72.00, S72.10,, S72.30, S72.40, S72.80, S72.90, S72.91, S73.1 | 665 | 500 | 454 | 164 | 25% | 4 |
| lower leg, ankle | S82.10, S82.11, S82.20, S82.21, S82.3, S82.31, S82.4, S82.41, S82.6, S82.61, S82.90, S82.91 | 1100 | 500 | 476 | 161 | 15% | 7 |
| Traumatic brain injuries | S06.2, S06.3, S06.31, S06.4, S06.5, S06.6, S06.8, S06.9 | 325 | 325 | 307 | 113 | 35% | 3 |
| shoulder, upper arm | S42.00, S42.01, S42.10, S42.20, S42.21, S42.40, S42.41, S43.0, S43.1, S43.4, S43.5 | 3693 | 500 | 485 | 163 | 4% | 23 |
| spine and back | S12.8, S13.4, S14.0, S14.1, S14.2, S14.3, S14.6, S22.0, S32.0, S32.70, S32.80, S32.81, S34.0, S34.2, S34.3 | 1149 | 500 | 487 | 155 | 13% | 7 |
| Multiple | Any of above from at least two different body regions | 709 | 500 | 469 | 191 | 27% | 4 |
| Total |  | 7641 | 2825 | 2675 | 947 | 12% | 8 |



Figure A1. Illustrations of bicycle-passenger car crash-types including vehicles travelling directions.

Table A2*.* Risk of Permanent Medical Impairment of at least 1% impairment (left side) and at least 10% impairment (right side). Source: Malm et al. (2008).

|  |  |
| --- | --- |
| RPMI 1+ | RPMI 10+ |
| Body region | AIS 1 | AIS 2 | AIS 3 | AIS 4 | AIS 5 | Body region | AIS 1 | AIS 2 | AIS 3 | AIS 4 | AIS 5 |
| Head | 8.0% | 15% | 50% | 80% | 100% | Head | 2,5% | 8% | 35% | 75% | 100% |
| Cervical spine | 16.7% | 61% | 80% | 100% | 100% | Cervical spine | 2,5% | 10% | 30% | 100% | 100% |
| Face | 5.8% | 28% | 80% | 80% | n.a. | Face | 0,4% | 6% | 60% | 60% | n.a. |
| Upper extremity | 17.4% | 35% | 85% | 100% | n.a. | Upper extremity | 0,3% | 3% | 15% | 100% | n.a. |
| Lower extremity | 17.6% | 50% | 60% | 60% | 100% | Lower extremity | 0,0% | 3% | 10% | 40% | 100% |
| Thorax | 2.6% | 4.0% | 4% | 30% | 20% | Thorax | 0,0% | 0% | 0% | 15% | 15% |
| Thoracic spine | 4.9% | 45% | 90% | 100% | 100% | Thoracic spine | 0,0% | 7% | 20% | 100% | 100% |
| Abdomen | 0% | 2.4% | 10% | 20% | 20% | Abdomen | 0,0% | 0% | 5% | 5% | 5% |
| Lumbar spine | 5.7% | 55% | 70% | 100% | 100% | Lumbar spine | 0,1% | 6% | 6% | 100% | 100% |
| External (skin) | 1.7% | 20% | 50% | 50% | 100% | External (skin) | 0% | 0% | 50% | 50% | 100% |

Table A3. Crash-related factors displayed by health status after crash.

|  |  |  |
| --- | --- | --- |
|  |  | Health status after crash |
|  |  | Non-affected (n=526) | Declined (n=421) | Total |
|  |  | n (%) | n (%) | n |
| Experience of cycling | At least once a week | 497 (94%) | 391 (93%) | 888 (94%) |
|  | Seldom or never | 29 (6%) | 30 (7%) | 59 (6%) |
| Experience of driving  | At least once a week | 335 (64%) | 277 (66%) | 612 (65%) |
|  | Seldom or never | 191 (36%) | 144 (34%) | 335 (35%) |
| Experience of walking1 | At least once a week | 458 (87%) | 369 (88%) | 827 (87%) |
|  | Seldom or never | 68 (13%) | 52 (12%) | 120 (13%) |
| Year of crash | 2013 | 113 (21%) | 71 (17%) | 184 (19%) |
|  | 2014 | 117 (22%) | 100 (25%) | 217 (23%) |
|  | 2015 | 132 (25%) | 102 (24%) | 234 (25%) |
|  | 2016 | 136 (26%) | 125 (30%) | 261 (28%) |
|  | 2017 | 28 (5%) | 23 (5%) | 51 (5%) |
| Age group | ≤25 | 21 (4%) | 19 (5%) | 40 (4%) |
|  | 26-35 | 44 (8%) | 33 (8%) | 77 (8%) |
|  | 36-45 | 58 (11%) | 42 (10%) | 100 (11%) |
|  | 46-55 | 111 (21%) | 74 (18%) | 185 (20%) |
|  | 56-64 | 116 (22%) | 116 (28%) | 232 (24%) |
|  | 65-74 | 113 (21%) | 85 (20%) | 198 (21%) |
|  | 75≤ | 63 (12%) | 52 (12%) | 115 (12%) |
| Sex | Men | 277 (53%) | 208 (49%) | 485 (51%) |
|  | Women | 249 (47%) | 213 (51%) | 462 (49%) |
| Crash type | Collision with a MV | 103 (20%) | 88 (21%) | 191 (20%) |
|  | Collision with other VRU | 64 (12%) | 45 (11%) | 109 (12%) |
|  | Single bicycle crash | 340 (65%) | 276 (66%) | 616 (65%) |
|  | Other/unknown | 19 (4%) | 12 (3%) | 31 (3%) |
| Helmet | Yes | 286 (54%) | 211 (50%) | 497 (52%) |
|  | No | 240 (46%) | 210 (50%) | 450 (48%) |
| Purpose of trip | Transportation to place of work or education | 193 (37%) | 145 (34%) | 338 (36%) |
|  | Exercise/race | 88 (17%) | 54 (13%) | 142 (15%) |
|  | Recreational/Leisure | 236 (45%) | 217 (52%) | 453 (48%) |
|  | Unknown | 9 (2%) | 5 (1%) | 14 (1%) |
| Type of road/infrastructure | Shared bicycle path | 194 (37%) | 139 (33%) | 333 (35%) |
|  | Cycle track | 27 (5%) | 23 (5%) | 50 (5%) |
|  | Bicycle lane | 11 (2%) | 6 (1%) | 17 (2%) |
|  | Crosswalk | 31 (6%) | 30 (7%) | 61 (6%) |
|  | Sidewalk | 15 (3%) | 15 (4%) | 30 (3%) |
|  | Street | 122 (23%) | 108 (26%) | 230 (24%) |
|  | Rural road | 84 (16%) | 56 (13%) | 140 (15%) |
|  | Other/unknown | 42 (8%) | 44 (10%) | 86 (9%) |
| Time of day | Morning 06-08 | 76 (14%) | 63 (15%) | 139 (15%) |
|  | Daytime 09-16 | 294 (56%) | 207 (49%) | 501 (53%) |
|  | Late afternoon/evening 17-23 | 140 (27%) | 128 (30%) | 268 (28%) |
|  | Nighttime 24-05 | 16 (3%) | 23 (5%) | 39 (4%) |
| Topography | Downhill slope | 128 (24%) | 76 (18%) | 204 (22%) |
|  | Uphill slope | 27 (5%) | 28 (7%) | 55 (6%) |
|  | No slope/unknown | 371 (71%) | 317 (75%) | 688 (73%) |
| Traffic environment at time of crash | High density of cars and heavy traffic | 26 (5%) | 19 (5%) | 45 (5%) |
|  | High density of other cyclists and pedestrians | 18 (3%) | 21 (5%) | 39 (4%) |
|  | High density of other cyclists, pedestrians, cars, and heavy traffic | 22 (4%) | 24 (6%) | 46 (5%) |
|  | High density of other cyclists | 22 (4%) | 10 (2%) | 32 (3%) |
|  | Calm, no or few others | 425 (81%) | 330 (78%) | 755 (80%) |
|  | Other/unknown | 13 (2%) | 17 (4%) | 30 (3%) |
| Environment perceived as complex | Yes | 59 (11%) | 56 (13%) | 115 (12%) |
|  | No | 414 (79%) | 303 (72%) | 717 (76%) |
|  | Do not know | 38 (7%) | 44 (10%) | 82 (9%) |
|  | Unknown | 15 (3%) | 18 (4%) | 33 (3%) |
| Total |  | 526 (100%) | 421 (100%) | 947 (100%) |

Table A4. Comparison between all bicycle crashes reported in Strada and the crashes included in the present study as well as those experiencing declined health reported in the present study (January 2013-April 2017).

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Strada 2013-2017** | **Present study** | **Present study, with declined health** |
| n | % | n | % | n | % |
| Age | <15 | 8816 | 20% | - | - | - | - |
| 15-25 | 6814 | 16% | 40 | 4% | 19 | 5% |
| 26-35 | 5022 | 12% | 77 | 8% | 33 | 8% |
| 36-45 | 5393 | 12% | 100 | 11% | 42 | 10% |
| 46-55 | 6734 | 15% | 185 | 20% | 74 | 18% |
| 56-64 | 5044 | 12% | 232 | 24% | 116 | 28% |
| 65-74 | 3577 | 8% | 198 | 21% | 85 | 20% |
| 75≤ | 2194 | 5% | 115 | 12% | 52 | 12% |
| Sex\* | Men | 23976 | 55% | 485 | 51% | 208 | 49% |
| Women | 19618 | 45% | 462 | 49% | 213 | 51% |
| Crash-type\* | Bicycle-MV | 4921 | 11% | 180 | 19% | 85 | 20% |
| Single bicycle crash | 34461 | 79% | 658 | 69% | 287 | 68% |
| Bicycle-pedestrian | 356 | 1% | 20 | 2% | 37 | 2% |
| Bicycle-Bicycle | 3357 | 8% | 79 | 8% | 8 | 9% |
| Other/unknown | 499 | 1% | 10 | 1% | 4 | 1% |
| Helmet\* | Yes | 17630 | 40% | 443 | 47% | 184 | 44% |
| No | 19433 | 45% | 421 | 44% | 201 | 48% |
| n/a | 6531 | 15% | 83 | 9% | 36 | 9% |
| Mean overall RPMI 1+ |  | 19% | 46% | 48% |
| Total |  | 43594 | 100% | 947 | 100% | 421 | 100% |

\*Difference statistically significant at alpha level 0.05.
MV = motor vehicle

Table A5. Health status after crash displayed by injured body region, sickness absence due to crash, need for rehabilitation and continued cycling o the same extent.

|  |  |  |
| --- | --- | --- |
|  |  | Health status after crash |
|  |  | Non-affected (n=526) | Declined (n=421) | Total |
|  |  | n (%) | n (%) | n (%) |
| Injured body region\* | Hip & upper leg | 79 (15%) | 85 (20%) | 164 (17%) |
|  | Lower leg & ankle | 82 (16%) | 79 (19%) | 161 (17%) |
|  | Shoulder & upper arm | 101 (19%) | 62 (15%) | 163 (17%) |
|  | Spine & back | 111 (21%) | 44 (10%) | 155 (16%) |
|  | Traumatic brain injury | 61 (12%) | 52 (12%) | 113 (12%) |
|  | Multiple | 92 (17%) | 99 (24%) | 191 (20%) |
| Sickness absence due to crash\* | Yes | 240 (46%) | 247 (59%) | 487 (51%) |
|  | No | 107 (20%) | 39 (9%) | 146 (15%) |
|  | Already ongoing | 9 (2%) | 8 (2%) | 17 (2%) |
|  | Retired | 165 (31%) | 126 (30%) | 291 (31%) |
|  | Unknown | 5 (1%) | 1 (0%) | 6 (1%) |
| Need for rehabilitation\* | Yes | 265 (50%) | 341 (81%) | 606 (64%) |
|  | No | 248 (47%) | 64 (15%) | 312 (33%) |
|  | Unknown | 13 (2%) | 16 (4%) | 29 (3%) |
| Continued cycling to the same extent\* | Yes | 388 (74%) | 180 (43%) | 568 (60%) |
|  | No | 131 (25%) | 235 (56%) | 366 (39%) |
|  | Unknown | 7 (1%) | 6 (1%) | 13 (1%) |
| Total |  | 526 (100%) | 421 (100%) | 947 (100%) |

\*Difference statistically significant at alpha level 0.05.

Table A6. Response rates.

|  |  |
| --- | --- |
|  | **Response rate** |
| **Age group** | ≤25 | 18% |
|  | 26-35 | 27% |
|  | 36-45 | 31% |
|  | 46-55 | 36% |
|  | 56-64 | 47% |
|  | 65-74 | 44% |
|  | 75≤ | 34% |
| **Sex** | Men | 35% |
|  | Women | 37% |
| **Year of injury** | 2013 | 28% |
|  | 2014 | 31% |
|  | 2015 | 42% |
|  | 2016 | 43% |
|  | 2017 | 50% |
| **Total** |  | 36% |

Table A7. Comparison of characteristics between respondents (R) and Non-respondents (NR).

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | R(N=964) | NR(N=1714) |
| Age | ≤25 | 4% | 11% |
|  | 26-35 | 8% | 12% |
|  | 36-45 | 11% | 13% |
|  | 46-55 | 20% | 20% |
|  | 56-64 | 24% | 15% |
|  | 65-74 | 21% | 15% |
|  | 75≤ | 12% | 13% |
| Sex | men | 51% | 53% |
|  | women | 49% | 47% |
| Year of crash | 2013 | 20% | 29% |
|  | 2014 | 23% | 28% |
|  | 2015 | 24% | 19% |
|  | 2016 | 27% | 21% |
|  | 2017 | 5% | 3% |
| MAIS | 1 | 12% | 15% |
|  | 2 | 57% | 58% |
|  | 3 | 29% | 25% |
|  | 4 | 2% | 2% |
|  | 5 | 1% | 1% |
| mRPMI | mRPMI 1+ | 48% | 46% |
|  | mRPMI 10+ | 10% | 10% |

Table A8. Cross tabulation of distribution of crash type and injured body region for respondents (R) and Non-respondents (NR).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Bicycle - MV** | **Bicycle - Other VRU** | **Single bicycle** | **Other** | **Total** |
| **Body region** | R | NR | R | NR | R | NR | R | NR | R | NR |
| hip, upper leg | 1% | 2% | 1% | 0% | 15% | 15% | 0% | 0% | 17% | 17% |
| Lower leg, ankle | 2% | 2% | 1% | 1% | 13% | 15% | 0% | 0% | 17% | 18% |
| Multiple | 6% | 4% | 3% | 2% | 12% | 11% | 0% | 0% | 20% | 16% |
| Traumatic brain injury | 2% | 1% | 2% | 1% | 7% | 9% | 0% | 0% | 12% | 11% |
| Shoulder & upper arm | 2% | 1% | 2% | 1% | 14% | 16% | 0% | 0% | 17% | 19% |
| Spine & back | 6% | 6% | 2% | 2% | 8% | 11% | 0% | 0% | 16% | 19% |
| **Total** | 19% | 16% | 11% | 7% | 70% | 76% | 1% | 1% | 100% | 100% |