**Table A1.** Associations between alcohol involvement and other risky driver behaviors

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Seatbelt use  OR [95% CI} | Distraction  OR [95% CI} | Travel Speed  B [95% CI} |
| Alcohol involvement  (Reference = no alcohol) | 9.074 [6.611 ,12.456]\*\* | 1.658 [1.314 , 2.092]\*\* | 27.404 [22.142 , 32.667]\*\* |
| Gender  (Reference = female) | 1.865 [1.387 , 2.507]\*\* | 1.082 [0.952 , 1.230] | 4.574 [3.453 , 5.695]\*\* |
| Per year age | 0.989 [0.982 , 0.995]\*\* | 0.999 [0.993 ,1.004] | -0.136 [-0.186 , -0.086]\*\* |
|  | N=15601 | N= 15932 | N=11736 |

Note: Results for seatbelt use and distraction are from survey logistic models.

Results for travel speed are from the survey regression model. Travel speed in units of kilometers per hour.

OR = odds ratio, CI=confidence interval, B= un-standardized regression coefficient, \*\* P < 0.001. N = number of observations in dataset

**Table A2.** Associations between driver behaviors and crash initiation

|  |  |  |
| --- | --- | --- |
| Parameter | Coefficient a (95% CI) | OR (95% CI) |
| Intercept | -1.48 (-1.54, -1.41)\*\* |  |
| Alcohol involvement  (Reference = no) | 3.31(3.23 , 3.39)\*\* | 27.38 (25.22, 29.73) |
| Distracted  (Reference = no) | 3.15 (3.13 , 3.16)\*\* | 23.31 (22.98, 23.65) |
| Speed  Per 10 km/hr increase | 0.10 (0.09 , 0.10)\*\* | 1.10 (1.10, 1.10) |

Abbreviation: CI, confidence interval.

a Coefficients are directly from the regression and were converted to odds ratios by the software. Data modeled came from 11736 drivers and vehicles.

\*\* P < 0.001

**Table A3.** Associations between driver behaviors and injury severity from one vehicle crashes

|  |  |
| --- | --- |
| Parameter |  |
|  | Fixed Effects |
|  | Coefficient (SE) |
| Intercept | -0.002 (0.041) |
| Speed a | 0.037 (0.005) \*\* |
| Alcohol involved b | 0.380 (0.052) \*\* |
| Distracted b | 0.163 (0.033) \*\* |
| Not belted b | 0.348 (0.146) \* |
| Speed X not belted | 0.072 (0.019) \*\* |
|  |  |
|  | Random Effects |
|  | Coefficient (SE) |
| Intercept - Level 2 | 0.011 (0.004) |
| Residual | 52.194 (1.446) |
|  |  |
| -2 Log Likelihood | 6904.3 |

Abbreviation: SE, standard error.

a Speed in units of 10 kilometers per hour.

b Reference levels for dichotomous variables are not alcohol involved, not distracted, and belted.

N = 2654 crash records used to estimate fixed effects.

\* P < 0.050 \*\* P < 0.001

**Table A4.** Association between driver behaviors and vehicle damage severity from one vehicle crashes

|  |  |
| --- | --- |
| Parameter |  |
|  | Fixed Effects |
|  | Coefficient (SE) |
| Intercept | 3.147 (0.170) \*\* |
| Speed a | 0.201 (0.014)\*\* |
| Alcohol involved b | 0.672 (0.131) \*\* |
| Distracted b | 0.835 (0.089) \*\* |
|  |  |
|  | Random Effects |
| Intercept - Level 3 | 0.352 (0.134) |
| Intercept - Level 2 | 0.112 (0.049) |
| Residual | 316.120 (9.021) |
|  |  |
| -2 Log Likelihood | 11119.2 |

Abbreviation: SE, standard error.

a Speed in units of 10 kilometers per hour.

b Reference levels for dichotomous variables are alcohol involved and distracted.

N= 2516 crash records used to estimate fixed effects.

\* P < 0.050 \*\* P < 0.001

**Table A5** Associations between both drivers’ behaviors and injury severity from two vehicle crashes

|  |  |
| --- | --- |
| Parameter |  |
|  | Coefficient (SE) |
| Intercept | 0.077 (0.015) \*\* |
| Speed-1 a | 0.021 (0.003) \*\* |
| Alcohol involved-1 b | 0.246 (0.053) \*\* |
| Distracted-1 b | 0.057 (0.014) \*\* |
| Speed-2 a | 0.030 (0.003) \*\* |
| Alcohol involved-2 b | 0.285 (0.119) \* |
| Distracted-2 b | 0.042 (0.023) |
|  |  |
| Not belted c | 0.266 (0.080) \*\* |
| Speed-1 X not belted | 0.063 (0.019) \*\* |
| Driver d | -0.058 (0.011) \*\* |
|  |  |
|  | Random Effects |
| Intercept - Level 1 | 0.043 (0.006) |
| Residual | 36.375 (0.954) |
|  |  |
| -2 Log Likelihood | 14633.1 |

Abbreviations: SE, standard error. -1, Driver 1 or Vehicle 1; -2, Driver 2 or Vehicle 2.

a Vehicle speeds are in units of 10 kilometers per hour.

b Reference levels for dichotomous behaviors are not alcohol involved, not distracted, and belted.

c Each driver’s seat belt use was modeled as if effected only that driver, On the other hand, speeds of both vehicles, alcohol involvement by both drivers, and distraction by both drivers were modeled as if they effected both drivers’ injury severities.

d Injury severity can be computed for each driver. Reference for the driver is Driver 2.

Fixed effects were computed from N= 7417 crash records.

\* P < 0.050 \*\* P < 0.001

**Table A6.** Association between driver behaviors and vehicle damage severity from two vehicle crashes

|  |  |
| --- | --- |
| Parameter |  |
|  | Fixed Effects |
|  | Coefficient (SE) |
| Intercept | 2.955 (0.059) \*\* |
| Speed-1 a | 0.133 (0.011) \*\* |
| Alcohol involved-1 b | 0.650(0.180) \*\* |
| Distracted-1 b | -0.078 (0.056) |
| Speed-2 a | 0.177 (0.010) \*\* |
| Alcohol involved-2 b | -0.141(0.409) |
| Distracted-2 b | -0.141(0.091) |
| Vehicle c | 0.104(0.025) \*\* |
|  |  |
|  | Random Effects |
| Intercept - Level 1 | 1.742 (0.059) |
| Residual | 165.500 (3.693) |
|  |  |
| -2 Log Likelihood | 27726.6 |

Abbreviations: SE, standard error. -1, Driver 1 or Vehicle 1; -2, Driver 2 or Vehicle 2.

a Vehicle speeds are in units of 10 kilometers per hour.

b Reference levels for dichotomous behaviors are not alcohol involved and not distracted.

b Damage severity can be computed for either vehicle, Reference for the vehicle is Vehicle 2.

Fixed effects were computed from N= 6954 crash records.

\*\* P < 0.001