

Crashes and safety critical events

all ping data

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1 Data

- 31,881 drivers
 - 18,759,300 trips,
 - 2,323,007,042 miles,
 - 65,706,497 hours travelled,
- 35008 crashes, 480331 SCEs,
 - 184,773 headways,
 - 231,101 hard brakes,
 - 55,345 collision mitigation,
 - 9,112 rolling stability,
- gender:
 - 29296 (91.89%) male,
 - 1585 (4.97%) female,
 - 1000 (3.14%) unspecified
- mean age: 44.48 (sd: 11.72), range: 20-82.

2 Quasi-Poisson models

Table 1: Quasi-Poisson regressions with the number of safety critical events per 10,000 miles predicting crashes

	<i>Dependent variable:</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
sce_N	0.0003*** (0.00003)					
sce_HW		-0.003*** (0.001)	0.0005*** (0.0001)			
sce_HB		0.006*** (0.001)		0.001*** (0.0001)		
sce_RS		0.011*** (0.003)			0.030*** (0.0002)	
sce_CM		0.044*** (0.002)				0.046*** (0.002)
age	-0.013*** (0.001)	-0.013*** (0.001)	-0.013*** (0.001)	-0.013*** (0.001)	-0.013*** (0.001)	-0.013*** (0.001)
ping_speed	-0.020*** (0.002)	-0.018*** (0.002)	-0.020*** (0.002)	-0.020*** (0.002)	-0.020*** (0.002)	-0.019*** (0.002)
genderM	-0.173*** (0.065)	-0.178*** (0.058)	-0.173*** (0.065)	-0.173*** (0.066)	-0.172*** (0.074)	-0.177*** (0.069)
genderU	0.255 (0.205)	0.253 (0.182)	0.255 (0.205)	0.255 (0.209)	0.254 (0.234)	0.253 (0.219)
Constant	-0.502*** (0.100)	-0.582*** (0.089)	-0.500*** (0.100)	-0.504*** (0.102)	-0.489*** (0.114)	-0.553*** (0.107)
Observations	31,881	31,881	31,881	31,881	31,881	31,881

Note: *p<0.1; **p<0.05; ***p<0.01

3 Bayesian negative binomial regression

The algorithm of non-Bayesian negative binomial model cannot converge.

Table 2: Bayesian negative binomial regression

	(1)	(2)	(3)	(4)	(5)	(6)
sce_N	0.005 (0.001)					
sce_HW		-0.013 (0.001)	0.002 (0.000)			
sce_HB		0.026 (0.002)		0.016 (0.001)		
sce_RS		0.069 (0.018)			0.233 (0.020)	
sce_CM		0.211 (0.008)				0.208 (0.009)
age	-0.012 (0.001)	-0.010 (0.001)	-0.012 (0.001)	-0.012 (0.001)	-0.012 (0.001)	-0.011 (0.001)
ping_speed	-0.020 (0.001)	-0.014 (0.001)	-0.021 (0.001)	-0.019 (0.001)	-0.020 (0.001)	-0.017 (0.001)
genderM	-0.128 (0.038)	-0.156 (0.039)	-0.122 (0.042)	-0.129 (0.040)	-0.129 (0.043)	-0.151 (0.039)
genderU	0.254 (0.096)	0.169 (0.100)	0.255 (0.101)	0.259 (0.107)	0.214 (0.098)	0.191 (0.098)
(Intercept)	-0.474 (0.059)	-0.794 (0.070)	-0.441 (0.061)	-0.517 (0.059)	-0.488 (0.064)	-0.653 (0.066)
nobs	31881	31881	31881	31881	31881	31881
algorithm	sampling	sampling	sampling	sampling	sampling	sampling
pss	500.000	500.000	500.000	500.000	500.000	500.000
nobs.1	31881.000	31881.000	31881.000	31881.000	31881.000	31881.000
sigma	1.000	1.000	1.000	1.000	1.000	1.000