**Appendix A**

**Table A1** Description of variables obtained from the questionnaire and simulator.

|  |  |  |
| --- | --- | --- |
| **Variables** | **Frequency or Mean (SD)\*** | **Percent** |
| **Section (A) Driver demographics** **and** **driving history** |
| Age | Young (age<=30) | 51 | 57.95 |
| Mid-age (30<age<=55) | 37 | 42.05 |
| Gender | Female | 7 | 7.95 |
| Male | 81 | 92.05 |
| Driving experience | Reported in years | 9.89 (7.29) | - |
| Driving frequency | Frequent driving (driving on daily basis) | 38 | 43.18 |
| Infrequent driving (driving once/twice a week or less than that) | 50 | 56.82 |
| **Section (B)** **Driving attributes obtained from the simulator output** |
| Reaction distance a | Measured in m | 63.42 (19.91) | - |
| Approach speed b | Measured in m/s | 16.90 (4.74) | - |
| Average deceleration in reaction distance  | Measured in m/s2 | 1.25 (1.21) | - |
| Average speed in the completion zone | Measured in m/s | 7.11 (5.08) | - |

Note: a: Reaction distance was measured as the distance between the stop line and the point where a driver first reacted to the major road traffic by initiating the speed reduction.

b: Approach speed was the driving speed at the point when the driver started reducing the speed.

\*: Frequency for the categorical variables and Mean (SD) for the continuous variables

**Table A2** Statistical details of parameters with respect to turn type.

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Unit** | **Mean (SD)** |
| Right turn intersection |
| Reaction distance  | m | 63.98 (22.75) |
| Approach speed | m/s | 15.56 (5.61) |
| Average deceleration in reaction distance  | m/s2 | 1.21 (1.02) |
| Average speed in the completion zone | m/s | 5.18 (1.7) |
| Go-through intersection |
| Reaction distance  | m | 62.90 (16.87) |
| Approach speed | m/s | 17.22 (3.75) |
| Average deceleration in reaction distance  | m/s2 | 1.28 (1.11) |
| Average speed in the completion zone | m/s | 9.22 (6.51) |

Figure A1 Percentage of acceptance for each gap size in different driving conditions.

Figure A2 Mean accepted lag for different gap sizes. Error bars denote the standard error.

Figure A3 Manoeuvre completion time for different gap sizes. Error bars denote the standard error.

**Appendix B**

## Statistical modelling approach: The Generalised Estimating Equation (GEE) method was used to model each of the dependent variables, as it can account for unknown correlations among the repeated measures (Saifuzzaman et al., 2015). Additionally, GEE can be used for both the binary and continuous variables (Beanland et al., 2013). The GEE method assumes an exponential family distribution for the response variable (for subject (=total subjects) measured at occasion (=total occasions for each subject)) with mean . Further, the GEE method allows various forms of link function to establish a relationship between and the explanatory variables. The general form of the link function is as follows (Wang et al., 2016):

|  |  |  |
| --- | --- | --- |
|  |  | (1) |

Where, is the \*1 matrix of explanatory variables and is the coefficients matrix. There exists a number of forms of the link function such as identity, log, logit, etc.; based on the response variable’s distribution. A normally distributed dependent variable can be modelled with an identity link function i.e., . Whereas, for a response variable with a binomial distribution (i.e., a binary variable), a logit link function is used, which is expressed as below:

|  |  |  |
| --- | --- | --- |
|  |  | (2) |

The probability of is estimated as below:

|  |  |  |
| --- | --- | --- |
|  |  | (3) |

In the present study, the logit link function was used for modelling the gap acceptance behaviour because it was a binary variable (*1* if a gap was accepted *0* otherwise). Identity link functions were used for modelling the accepted lag and manoeuvre completion time parameters.

The GEE is based on qausi-likelihood theory. For estimating , it is solved as below (Wang et al., 2016):

|  |  |  |
| --- | --- | --- |
|  |  | (4) |

Where, is the variance-covariance matrix for and is expressed as follows (Wang et al., 2016):

|  |  |  |
| --- | --- | --- |
|  |  | (5) |

Where, with as the variance function of ; is a scale parameter; and describes the correlation repeated measures of subject with as a vector of association of parameters depending on the correlation structure (Wang et al., 2016). The current study used the exchangeable correlation among the various available correlation structures, as it assumes a fixed correlation among the repeated measures of an individual (Saifuzzaman et al., 2015; Wang et al., 2016). The exchangeable correlation structure is specified as below:

|  |  |  |
| --- | --- | --- |
|  |  | (6) |

References for Appendix B

Saifuzzaman, M., Haque, M., Zheng, Z. and Washington, S. ‘Impact of mobile phone use on car-following behaviour of young drivers’, *Accid. Anal. Prev.* 2015;82;10–19.

Wang, M., Kong, L., Li, Z. and Zhang, L. ‘Covariance estimators for generalized estimating equations (GEE) in longitudinal analysis with small samples’, *Stat. Med.* 2016;35;1706–1721.