Exploring the age discrepancy in death rates from motorcycle injury in the United States of America: the decomposition method

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to the best of our knowledge, there is little or no published information on the relationship between DBQ scores and driving performance variables under actual driving conditions that may bear some relationship to accident risk.

The present study focuses on the relationship between DBQ subscales and highway driving behaviors. A sample of 108 drivers in self-reported good health and having a safe recent driving history (no accidents in the previous year) was balanced by gender and across three age groups (2029, 4049, 6069). Prior to driving, participants completed a 24item U.S. version of the DBQ. After approximately 30 minutes of driving an instrumented Volvo XC90, driving behaviors were assessed over an 18 minute period. During this time, participants were engaged in both periods of single task driving and driving while engaged in a structured working memory task requiring a division of attention. A dichotomous breakdown of subscales of the DBQ (above or below the median) were independently examined as predictors of driving behavior (average velocity, standard deviation of velocity, standard deviation of steering wheel position, hard braking, rapid throttle acceleration, and sudden unidirectional acceleration (the vector sum of longitudinal and lateral acceleration)).

Significant relationships were found to exist between subscales of the DBQ and actual driving behaviors. Drivers with high violations scores drove faster, had poorer lateral control (higher standard deviation of wheel position) and more sudden unidirectional accelerations. Among these factors, higher driving speed is known to influence the probability of accidents. The relationship between lateral control and sudden acceleration to accidents is less established but appears reasonable. High lapses scores were related to less consistent gas pedal control (larger standard deviation of velocity and more frequent periods of rapid throttle acceleration). It is interesting to speculate as to whether there is an attitudinal factor that links the lapses score and these consistency of control measures. There were no main effects observed between errors scores and any of the driving behavior measures. Significant interactions in errorsxgender on rapid
throttle acceleration and violations×age on hard braking appeared. Male drivers with high errors scores speed up more abruptly than those with low scores while female drivers did not. High violations drivers in their 60s more frequently engaged in periods of hard braking than those with low violations scores. The relationships observed here are likely conservative since drivers having had accidents in the past year were excluded.

How to consider the protection of the abdominal area of children: the CASPER's project contribution

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The European research project CASPER is dedicated to the improvement of the safety of restrained children in cars through improving the quality of use of the restraint systems and the development of new tools allowing the birth of a new generation of restraint systems. This paper shows the point of advancement of the work conducted in European research projects to improve the knowledge of injuries in the abdominal area sustained by restrained children in cars.

Field studies are conducted to have a good picture of the situation of traveling conditions of children in cars. In depth accident studies show that for children using the seatbelt of the car, with or without a booster system, severe or fatal abdominal injuries can be observed when they are involved in a severe frontal or side impact. An overview of the main abdominal injury mechanisms is propold through a careful analysis of the detailed CASPER accident database. A comparison with the abdominal injuries and corresponding mechanisms sustained by adults under similar type of loadings has been performed and is reported in the paper. These real world results were used to make steps in the area of the protection of the abdomen of children.

In dynamic tests, it is important that to approve child restraint systems or to evaluate their level of performance the child dummies used are able to reproduce abdominal injury mechanisms, to measure physical parameters linked to a corresponding injury criteria. In the current regulation tests, this risk is only covered by the use of pieces of clay that are deformed if the seatbelt intrudes the area.

For many years, research projects have been looking for solutions based on a more scientific basis. During previous European research projects, CREST and CHILD, a new set of dummies representing children of different ages were developed: called the Q family dummies. They are more biofidelic than the ones of the previous generation still used in the European regulation. At the beginning of the CASPER project, three prototype systems of abdominal sensors existed, all at the stage of being usable for research purposes. One main output of the project is to select the one that is best adapted to be widely used in crash test laboratories running intensive test campaigns, to modify it in order to make it easy to use in the Q dummies and that it can be industrialized. In addition to work on the sensor it has been necessary to improve the global kinematics of the child dummies to allow a better submarining behaviour. In the CASPER project, different proposals were made and tested. This paper describes the technical choices and the works carried out both on the dummies and on the selected sensor to improve the protection of the abdomen. The approaches taken to ensure that the abdominal protection is also considered on the child dummy models and child human models developed in the CASPER project are also explained.

Multinomial logit model of bicycle injury risk in Hong Kong

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Background More and more countries have been promoting bicycle transport mode, as one of the key strategies in sustainable transport development. In many European and American countries (e.g. Netherlands, Denmark and Canada), bicycle has been a popular commuter transport mode. In contrast, bicycle is mainly used for recreational purpose in Hong Kong. Well planned bicycle transport infrastructure was absence, except smallscale and isolated bicycle path network in suburban area. Unfavorably, proportion of bicycle crash to total road crash has been increasing, from 5.3% in 1997 to 12.7% in 2004. Therefore, factors contributing to bicycle injury risk are worth exploring.

Study Design An integrated database, Road Casualty Information System (RoCIS), was jointly developed by the Police, Transport Department and hospital, linking up the trauma records of casualties admitted to the accident and emergency department of hospital and the crash records maintained by the Police and Transport Department the advantage of RoCIS, information on bicyclist demographics, injury severity, injured body part, collision type, road design and vehicle attributes, of 682 bicycle casualties during the period 20042006 have been collected.

Results In this study, multinomial logit regression is applied to identify the significant factors contributing to the risk of severe and lifethreatening injury of bicycle casualties. Results indicate that middle age and elderly bicycle casualties are more likely to have severe injury. Besides, bicycle casualties with severe head injury and with motor vehicles involved are remarkably more likely to have lifethreatening injuries. Unfortunately, the helmet wearing rate is extremely low and at 2% only. Therefore, safety education, campaign and enforcement could be targeted to the middle age and elderly bicyclists. In particular, use of protective device and compliance to traffic rules should be promoted. Also, access of bicycle on the motorway should be scrutinized.

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