## Abstract only available at time of printing

## The Psychology of Punishment: The Category Shift Problem in Road Safety and how to address it

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Punishment is used to reduce or remove an unwanted behaviour. However, psychological responses to punishment may include shifting to a socially desired behaviour, negative emotional responses to the punishing agent, refinement of the undesirable behaviour to make punishment less likely and shifting to another undesirable behaviour. The application of punishment (fines, demerit points) in road safety exhibits all these outcomes. The nature, and thus category, of the problem behaviour addressed by punishment may change- we have named this the category shift problem. For example, it has been suggested that in response to random breath testing, driver may use more back streets or use drugs other than alcohol.

Alternative means of changing behaviour include education (without enforcement) and rewarding desired behaviour. However, they are effective in only a limited range of circumstances and expensive, respectively, and thus likely to yield low benefit cost ratios. With awareness of its existence, the category shift problem can be addressed in three areas: First, naïve presumptions of it which harm effective programs should be attacked. For example, the claim that slower speeds cause boredom and thus more crashes is not supported by the evaluations of overall benefit and should be dismissed on this basis. Second, in the research setting, consideration of the shifted behaviour or the total safety outcome protects the evaluation from this risk. For example, we know that random breath testing worked despite any claimed category shifts (from alcohol to drugs or from driving to walking) because the total road toll as well as the alcohol related toll decreased substantially. Third, in road safety programs the alternative undesirable behaviours can also be identified and addressed, and safer behaviours promoted.