Priorities for improving the safety of the Victorian taxi fleet

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Abstract

This study aimed to assess the relative merits of age based limits as a tool for governing taxi safety in comparison to other potential policy options including mandating minimum vehicle secondary safety performance, mandating various crash avoidance technologies and behavioural measures to reduce crash risk such as driver training and monitoring. Results showed that age limit restrictions were a weak mechanism by which to govern taxi safety with other options such as improved secondary safety standards, mandating vehicle crash avoidance technologies and introducing effective driver focused measures such as training, licensing and behavioural monitoring, predicted to have much greater safety benefits.

Background

The Victorian taxi fleet is currently involved in over 300 casualty crashes per year representing a total cost to the community of over $33M. The safety of the taxi fleet in Victoria was governed through setting operational age limits on vehicles in terms of the maximum age they can both enter and remain in service as a taxi (TSC, 2012). This study aimed to assess the relative merits of age based limits as a tool for governing taxi safety in comparison to other potential policy options including mandating minimum secondary safety performance of vehicles, mandating the fitment of various crash avoidance technologies and non-vehicle based measures to reduce crash risk such as driver training and monitoring.

Methods and Data

Crash savings for each scenario was assessed through the application of an analysis model describing the exposure, primary (crash risk) and secondary (injury mitigation) safety performance of the current taxi fleet to which each of the different policy options was applied using methodology described in Budd et al (2013). Crash risk was derived from Victorian police reported crash and vehicle registration records over the years 2000-2012. Vehicle secondary safety estimates were taken from Newstead et al (2013) and applied using methods described in Newstead and Scully (2009). Estimates of vehicle crash avoidance technologies were taken from Anderson et al (2011). Taxis were categorised acording to license type being Metropolitan (M), Suburban and Peak Service (ST & PS), Country (C), Urban (U) and Hire Cars.

Results

Annual casualty crash savings estimated through application of the analysis model broken down by taxi type and scenario considered are presented in Table 1. Taxi age limits of between 1 and 6.5 years were considered (Scenarios A1-A4) along with mandating best possible secondary safety based on the best rated vehicles in Newstead et al (2013) (S), mandating Autonomous Emergency Braking alone or with active lane keep assistance (T1 & T2) and behavioural measures to reduce Taxi crash risk to that of Hire Cars (Taxi crash risk being 2.3 times that of hire cars per km travelled).

Table 1: Expected annual casualty crashes saved through implementing each scenario on the taxi and hire car fleets

	Taxi and Hire Car Type					
Scenario	**M taxis**	**ST and PS taxis**	**C Taxis**	**U taxis**	**Hire Cars**	**Total**
A1- Max Age 6.5 Years	2.01	0.35	0.60	0.13	0.48	3.58
A2 – Max Age 5 Years	3.93	0.74	0.87	0.28	0.42	6.23
A3 - Max Age 3 Years	8.21	1.27	1.32	0.45	0.70	11.96
A4 – Max Age 1 Years	13.83	2.06	2.00	0.71	1.06	19.67
S - Best Possible Secondary Safety	50.26	7.13	5.98	2.42	4.35	70.13
T1 – Mandate AEB	21.85	3.1	2.6	1.05	1.50	30.10
T2 – Mandate AEB and Lane Departure Assist	32.78	4.65	3.9	1.58	2.25	45.15
D – Reduce crash risk of Taxis to = Hire car Risk	122.85	14.141	11.11	4.64	0	152.75

Conclusions

Age limit restrictions are a weak mechanism by which to govern taxi safety. All other scenarios produced much higher crash reductions. Mandating vehicles with best possible secondary safety performance offered the potential to reduce taxi related road trauma by up to 25%. Measures to reduce taxi crash risk, potentially including mandating crash avoidance technologies and introducing effective driver focused measures such as training, licensing and behavioural monitoring, offered by far the greatest potential to reduce trauma.

References

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