Optimum mean speeds (5) Lcse/RSL 12

Table 2: Economic impacts of speed reductions, and estimated optimum speeds. Straight, unimpeded road environment. "Human capital" costs of road trauma.

	Effect of 5 km/h mean speed reductions on total economic cost		Optimum Speed (km/h) (speed which minimises total economic cost)		
Road category and current speed limit	Change p.a. ($ million)	Percentage change	All vehicles combined	Cars & LCVs	Heavy vehicles
Rural roads with 110 km/h speed limits					
Divided Category 1 Trunk Roads	-1.083	-0.8%	100	102	94
Undivided Cat. 1 Trunk Roads	-1.870	-0.4%	98	100	92
Undivided rural roads with 100 km/h speed limits					
Category 2 Regional Freight Roads	+3.291	+1.7%	90	92	88
Category 3 Regional Access Roads	+2.593	+0.9%	88	90	86
Category 4 Feeder Roads	+2.261	+0.8%	90	92	86
Category 5 "Other" Roads[1]	+2.722	+1.4%	88	88	84
Unsealed rural roads (100 km/h speed limit)					
Category 5 "Other" Roads[2]	+0.027	+0.3%	82	82	82

[1] Includes unsealed gravel roads on State Road Network. Crash data 2004-2008 not provided separately.
[2] Casualty crash rate per 100 million vehicle-kilometres from AGPE04/08 Table 4.1, not real crash data.

Willingness to pay valuation of road trauma

"Willingness to pay" valuations of road trauma are more consistent with the Safe System approach embodied in the federal government's *National Road Safety Strategy 2001-2010*, and the *Tasmanian Road Safety Strategy 2007-2016*. Fatal crashes are valued more than 2.5 times their "human capital" costs and injury crashes are also valued higher. On this basis, the economic benefits of reducing speed limits on Category 1 roads from 110 km/h to 100km/h would be even greater, especially on the undivided Category 1 roads (Table 3).

Using "willingness to pay" valuations of road trauma, the reduction in mean free speeds on Category 3-5 roads would result in overall economic benefits and the apparent economic loss on the Category 2 roads would be substantially reduced. The optimum speeds would be substantially lower than the envisaged lower limits for each of the Category 2-5 roads, including the unsealed Category 5 roads. The optimum speed on the undivided Category 1 roads is no more than 90 km/h for each class of vehicle, suggesting that the 90 km/h limit envisaged for the sealed Category 2-5 roads could be considered for these roads as well.

Existing mean speeds at 100 limit
Compare to optimum mean speeds Table 2

Table 1: State Road Network roads designated for speed limit reductions. Traffic parameters and mean speeds for each road category.

Road category and current speed limit	Traffic parameters		Mean free speed 2009 (km/h)		
	Length (km)	AADT 2007	Cars & LCVs	Rigid heavy vehicles	Artic. heavy vehicles
Rural roads with 110 km/h speed limits					
Divided Category 1 Trunk Roads	67.3	9,058	110	109	100
Undivided Cat. 1 Trunk Roads	238	7,030	105	100	99
Undivided rural roads with 100 km/h speed limits					
Category 2 Regional Freight Roads	263	2,714	85	81	78
Category 3 Regional Access Roads	572	2,012	87	82	82
Category 4 Feeder Roads	825	1,349	91	85	75
Category 5 "Other" Roads[1]	1,037	712	84	76	82
Unsealed rural roads (100 km/h speed limit)					
Category 5 "Other" Roads	206	140	85	80	80

[1] Includes unsealed gravel roads on SRN. Estimated 18% of length and 3% of travel on Category 5 roads

Using the "human capital" approach to value road trauma costs, there would be overall economic benefits from reducing speed limits on divided and undivided Category 1 roads from 110 km/h to 100km/h (Table 2). The optimum speed for all vehicle types combined on these roads is no more than 100 km/h, so this would support a reduction in the limit to 100 km/h in each case.

Refers to loss not a saving

If it is assumed that the majority of the Tasmanian State Road Network consists of straight, unimpeded road sections, then for the undivided roads in each of Categories 2-5, the hypothesised 5 km/h reduction in mean free speeds due to a reduction in their current 100 km/h limits would appear to result in an overall economic loss. The optimum speeds on these roads are generally about the same as the envisaged lower limit proposed for each class of road (90 km/h for sealed Category 2-5 roads and 80 km/h for the unsealed Category 5 roads), but the hypothesised reduced mean speeds are substantially less. However these economic analysis results assume that road trauma (crashes and serious injuries) should be valued by conservative "human capital" costs; and that vehicles travel on Category 2-5 roads at their mean free speeds throughout their length without slowing for sharp curves and stopping occasionally.

limit than the 100 km/h limit envisaged, at least on the undivided Category 1 roads through curvy road environments where a 90 km/h limit could be considered.

Table 4: Economic impacts of speed reductions, and estimated optimum speeds. Curvy road environment with frequent slowing and occasional stops along full length of the road category (except divided Category 1 roads). "Human capital" costs of road trauma.

	Effect of 5 km/h mean speed reductions on total economic cost		Optimum Speed (km/h) (speed which minimises total economic cost)		
Road category and current speed limit	Change p.a. ($ million)	Percentage change	All vehicles combined	Cars & LCVs	Heavy vehicles
Rural roads with 110 km/h speed limits					
Divided Category 1 Trunk Roads[1]	-1.083	-0.8%	100	102	94
Undivided Cat. 1 Trunk Roads	-32.853	-5.9%	86	86	86
Undivided rural roads with 100 km/h speed limits					
Category 2 Regional Freight Roads	+1.566	+0.8%	86	86	86
Category 3 Regional Access Roads	-0.929	-0.3%	82	82	82
Category 4 Feeder Roads	-3.021	-1.0%	86	86	82
Category 5 "Other" Roads	+1.000	+0.5%	82	82	82
Unsealed rural roads (100 km/h speed limit)					
Category 5 "Other" Roads	-0.049	-0.6%	80	80	80

[1] Assumed to be primarily freeway standard roads with high design speeds and controlled access, not requiring frequent slowing due to sharp curves and stops for towns and intersections, and hence not analysed for a curvy road environment. Results assumed to be same as in Table 2 for straight unimpeded road environment.

Overall benefits and costs of reduced speed limits

Includes Cat 1 roads

Assumes curvy roads as representative (see prev. page)

The seven road environments summarised in Table 4 were considered in aggregate to be representative of rural State Roads in Tasmania. Ignoring the double-counting of the economic benefit on unsealed Category 5 roads, the combined results suggest that there would be a total economic benefit to Tasmania of $35.37 million per annum if the envisaged reduced speed limits were introduced and a 5 km/h reduction in current free speeds on the targeted roads were to result. Even if the full 5 km/h reduction in current speeds was not achieved, the optimum speeds for each road class and vehicle type suggest that limiting vehicle free speeds to the envisaged speed limits would result in a net economic benefit.

Table 5 shows the estimated crash savings if the 5 km/h reductions in mean free speeds were to result from the speed limit reductions in each road environment. Again ignoring the double-counting on unsealed Category 5 roads, it is estimated that there would be 25% reduction in fatal crashes, 15% reduction is serious injury crashes, and nearly 12% reduction in minor injury crashes associated with the speed limit reductions. Nearly one-third of the fatal crashes savings would come from the reduction in the limit on existing 110 km/h undivided Category 1 roads.