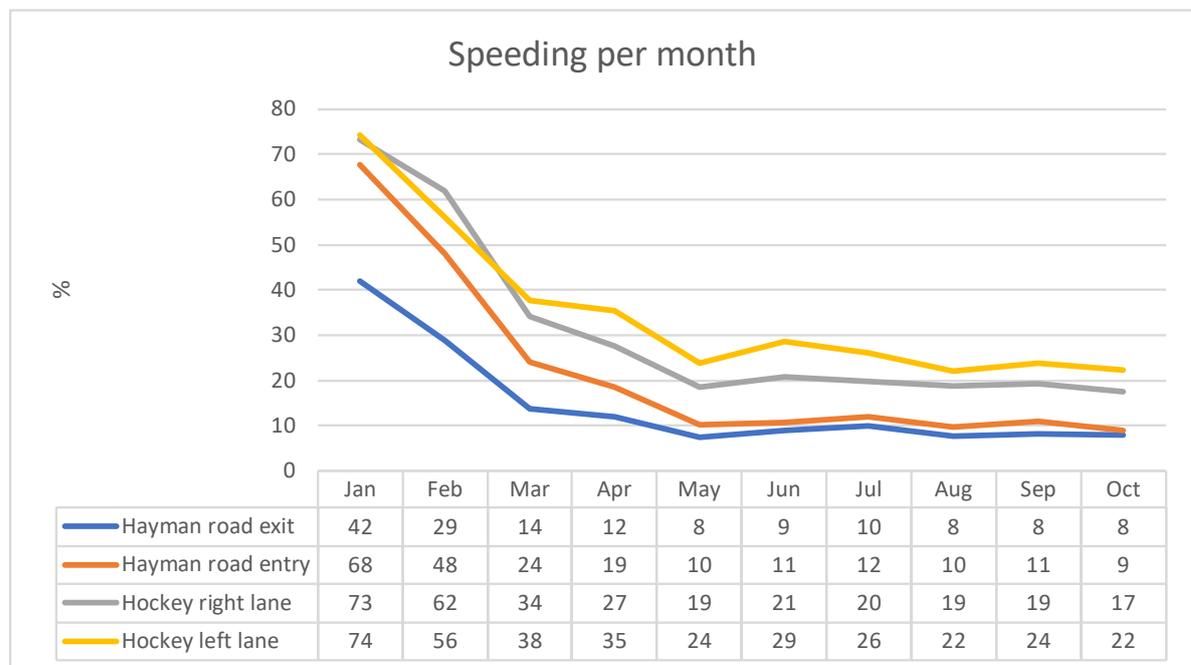


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EVALUATION CURTIN
UNIVERSITY



EVALUATION OF FOUR ACTIBUMPS AT CURTIN UNIVERSITY, PERTH, AUSTRALIA

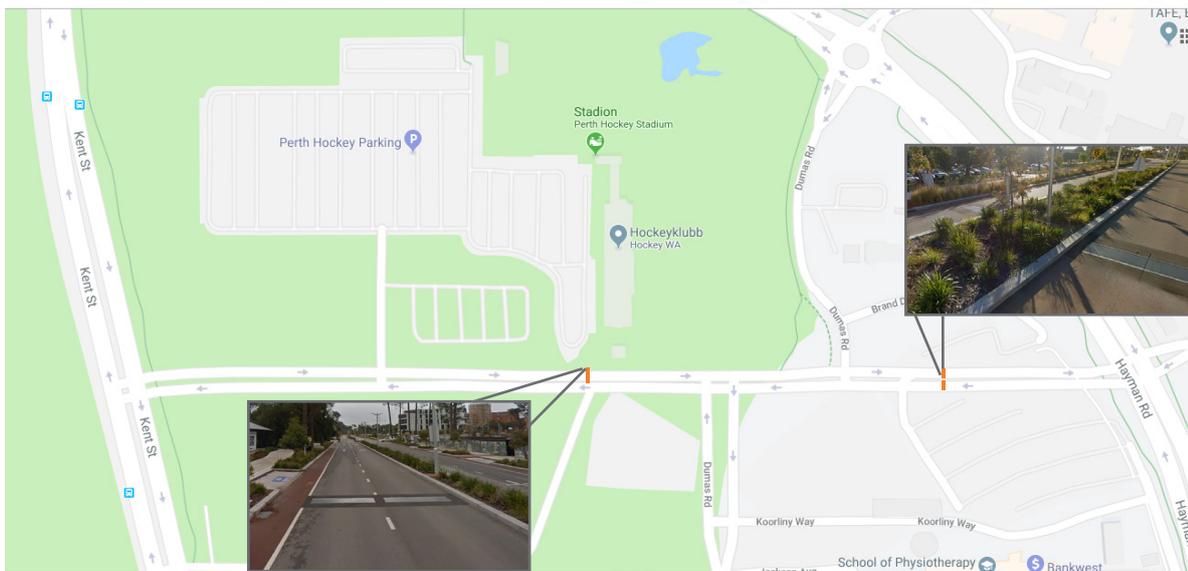


In 2017 four active speed bumps, called Actibump, were installed at the Bentley campus of Curtin University in Perth, Australia. These active speed bumps were activated in late February of 2018. This report will detail and discuss the results so far.

All four Actibumps were installed on Dumas Road. Two side by side on a two-lane part of Dumas Road, near Perth Hockey parking. The oth-

er two were installed near Hayman road, one by the entry to Hayman road and one by the exit to Hayman road.

The speed limit is 40 km/h on all four Actibumps. On Dumas Road measurements showed as many as 74% of drivers were speeding. These numbers were decreased quickly after the activation of the four active speed bumps as can be seen in the diagram above.

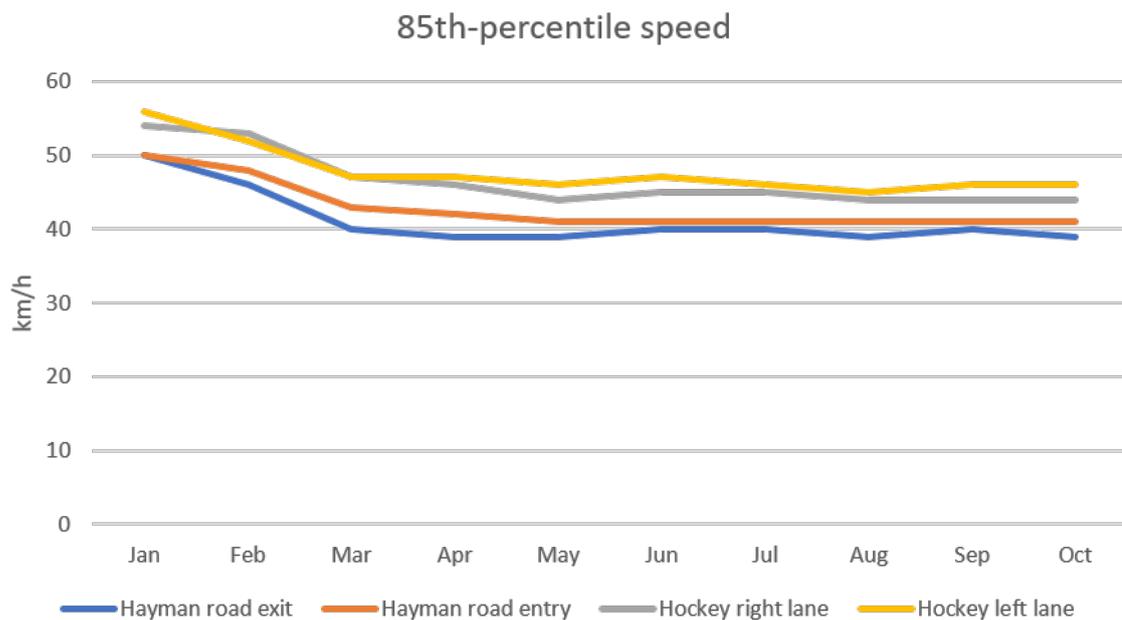


Left: Hockey left and right lane. Right: Hayman road exit and entry. Source: Google maps

The following table details how many percent of the drivers on the different Actibumps were speeding the first month after activation and the seventh month after activation.

Actibump	Speeding, 1st month	Speeding October
Hayman road exit	29 %	8 %
Hayman road entry	48 %	9 %
Hockey right lane	62 %	17 %
Hockey left lane	56 %	22 %

The effect of an Actibump tends to improve over time. After six months the large decrease after start has slowed down a bit but the results usually improve significantly over the first year of installation. After a year the results normally only improve a little. This is based on experience from Swedish installations where there is a lot of daily traffic. An interesting question is whether this is different since this is on a campus road where there will be an increase in new students every year.



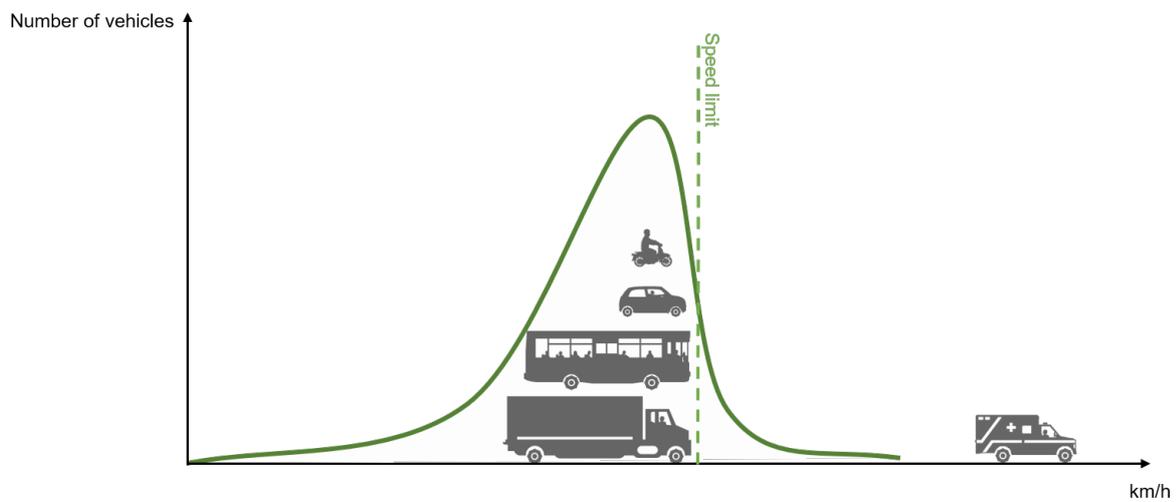
Other than the level of speeding it is also interesting to look at 85th-percentile speed and speed distribution.

85th-percentile speed means that 85 % of all passing vehicles are driving at or below that speed. A traffic safety measure is generally considered a success when the 85th-percentile is the same as the speed limit ± 3 km/h. All previous evaluations of the Actibump systems have shown that this is reached within six months.

This has proven valid for the two Actibumps near Hayman road but not for the two Actibumps near Hockey. In October, eight months after activation, the 85th-percentile varied between 37 and 41 on Hayman road exit and 40-43 on Hayman road entry, whereas Hock-

ey right lane varied between 41 and 48 km/h. However, on weekdays the 85th-percentile of Hockey right lane also varies within the desired span of 40-43 km/h.

Unfortunately Hockey left lane still varies between 42 and 47 km/h on weekdays and up to 50 km/h on weekends. There are very few vehicles passing the Actibumps on Hockey. The daily average is ca. 600 vehicles per lane and this is the least amount of traffic on any Actibump installed to date. Normally, when there are at least 3000 vehicles per day the different drivers' behaviours affect each other. If the vehicle in front of you isn't speeding then neither can you. This doesn't seem to happen on Hockey since the vehicles are few and far between.



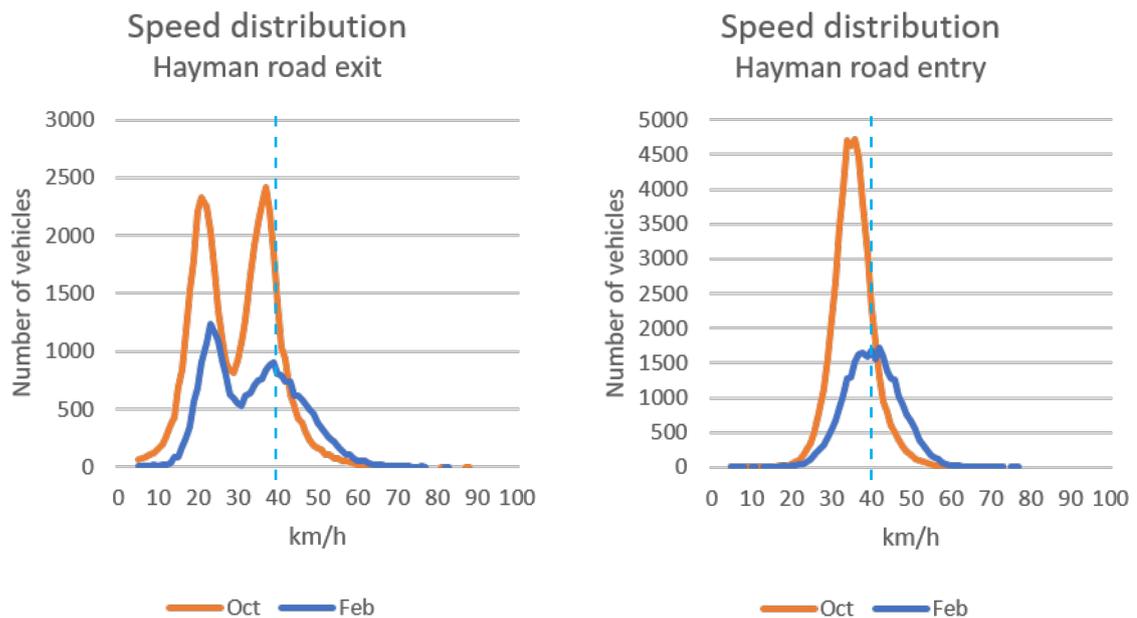
	85th-percentile week-days		85th-percentile week-ends	
	1st month	October	1st month	October
Actibump				
Hayman road exit	40 km/h	39 km/h	43 km/h	41 km/h
Hayman road entry	42 km/h	40 km/h	45 km/h	42 km/h
Hockey right lane	47 km/h	43 km/h	49 km/h	45 km/h
Hockey left lane	47 km/h	45 km/h	50 km/h	48 km/h

The average 85-th percentile for weekdays and weekends the first month and October are compared in the table above. As it shows there has been an improvement on all four Actibumps.

When it comes to traffic flow the image above shows the desired traffic flow: as many vehicles as possible driving at the same speed, on the

correct side of the speed limit. No vehicle type driving too slowly and only emergency vehicles driving above the speed limit.

On a road without any type of traffic calming measure the curve is normally spread out as a bell curve with a larger portion of the vehicles driving above the speed limit.



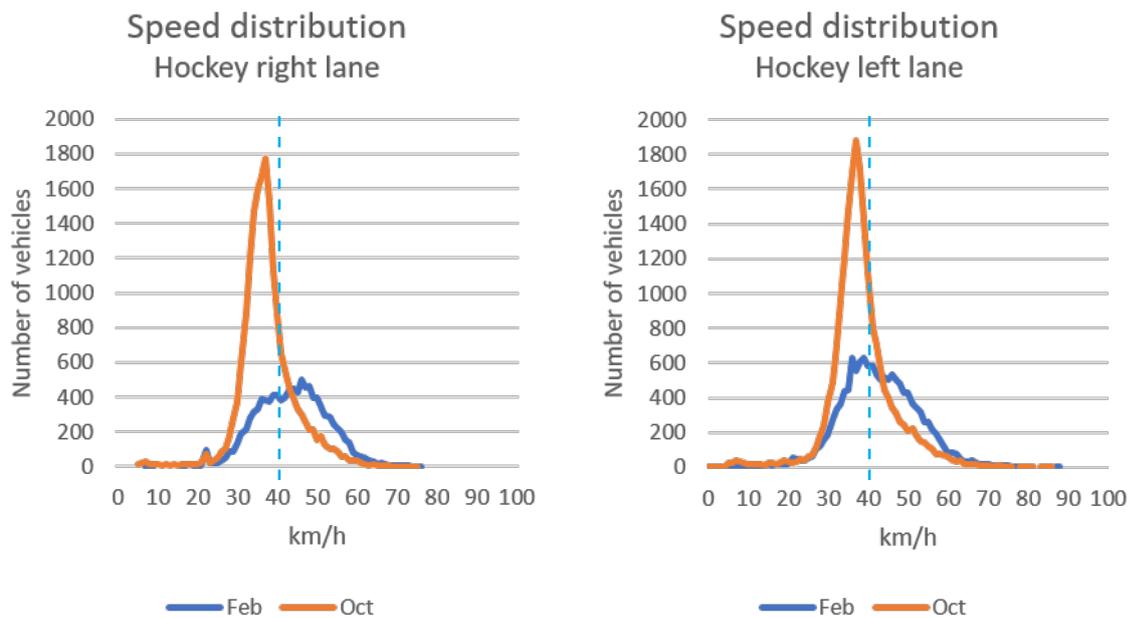
Above we have compared the month before the systems were activated with the month of October.

There are a few things to note about the speed distribution curves. The left one, Hayman road exit, is near a traffic light. The left tip of the curves is most likely caused by vehicles approaching a red light and therefore slowing down ahead of time.

On both left and right curves it can be noted that the orange line, October, is much high-

er than the blue line from February. This is of course because there were very few vehicles on campus during the summer break.

We can also see that the orange curve is more correctly placed next to the speed limit line. This is caused by the decrease of speeding. Notably nobody needs to slow down more than before on Hayman road entry and we can see the same driver behaviour on the left peak in February as well as in October.



As can be expected, based on speeding and 85th-percentile there are more vehicles on the wrong side of the speed limit on the Hockey Actibumps than on the Hayman Actibumps but the blue curve is still closer to the speed limit than the orange curve so there has been an improvement.

Top speeds have also decreased. Out of the 11 vehicles whose drivers decided it was a good idea to drive more than 80 km/h on a 40 km/h road, on Hockey left lane, in October nobody drove more than 88 km/h. In the first month after start there were 12 people who made the same decision but the top speed was 122 km/h. The same tendency is visible on the other Actibumps as well.

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