



Federal Ministry  
of Transport and  
Digital Infrastructure

# NCAP Results 2017/2018 and Consequences for IWG AEBS



## Structure

1. AEBS Performance: AEB Car-Car 2017
2. Offset in AEBS: AEB Car-Car 2018 with Grid Approach
3. AEB Cyclist 2018
4. Explanation why AEB Pedestrian is not transferable from NCAP
5. Summary

This presentation is based on data available under the following link:

**<https://euroncap.sharepoint.com/:f:/s/public/EgEEVOHsVcJBqNoD0e14btABBm-p-yhTMk1-URVJne0jaQ>**



Tested	43	
Failed	18	41,86%
Slight Fail	4	
Passed	25	58,14%
Almost passed	29	67,44%

## AEBS Car-Car Performance 2017 (tested up to 50 km/h!)

Car	Result
Car 1	
Car 2	
Car 3	
Car 4	Not tested in AEB Inter-Urban (moving target). Stationary: OK.
Car 5	Not OK.
Car 6	Not tested in AEB City (stationary target). Moving: OK.
Car 7	Not tested in AEB Inter-Urban (moving target). Stationary not Ok. Vehicle came to market approximately 2015.
Car 8	
Car 9	
Car 10	Not Ok.
Car 11	Slight Fail.
Car 12	Not Ok.
Car 13	Not Ok.
Car 14	
Car 15	
Car 16	
Car 17	
Car 18	Slight Fail.
Car 19	
Car 20	
Car 21	Slight Fail.
Car 22	Not OK.

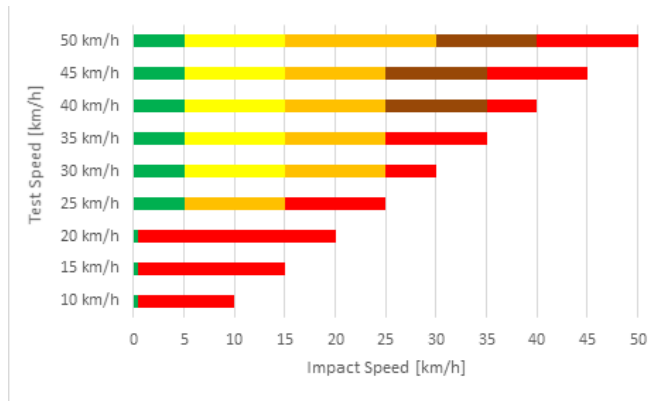
Car	Result
Car 23	
Car 24	Not OK.
Car 25	
Car 26	Not OK.
Car 27	
Car 28	
Car 29	Not OK.
Car 30	
Car 31	
Car 32	Slight Fail.
Car 33	Not OK.
Car 34	
Car 35	
Car 36	Not OK.
Car 37	
Car 38	
Car 39	
Car 40	
Car 41	
Car 42	
Car 43	

- **Conclusion: Requirements seem to be achievable by 2022 as foreseen by EU-COM**



## Offset influence to performance

- 12 Cars tested in Euro NCAP AEB City (stationary) in 2018
- Test results are given in color codes
- Color codes corresponding to current requirements given below
- 12 result sets available, see next slide
- 11 vehicles fulfil requirements at least up to 25% offset
- Only 1 vehicle (van) would fail, but even so consistently for all offsets
- **Conclusion: Offset tolerance could be more than  $\pm 0.1\text{m}$  (current draft)**



Requirements AEB:	Van
10	
15	
20	
25	
30	
35	
40	
45	15
50	25
55	30
60	35

Offset	Van
$-0.5 \pm 0.1\text{m}$	
$\pm 0.1\text{m}$	
$0.5 \pm 0.1\text{m}$	



## 2017 AEB City Results with offsets (overview)

Requirements AEB:	
10	
15	
20	
25	
30	
35	
40	
45	15
50	25
55	30
60	35

Upper Middeclass	Compact Car	Van	Small SUV											
$-0.5 \pm 0.1m$														
				$\pm 0.1m$										
								$0.5 \pm 0.1m$						

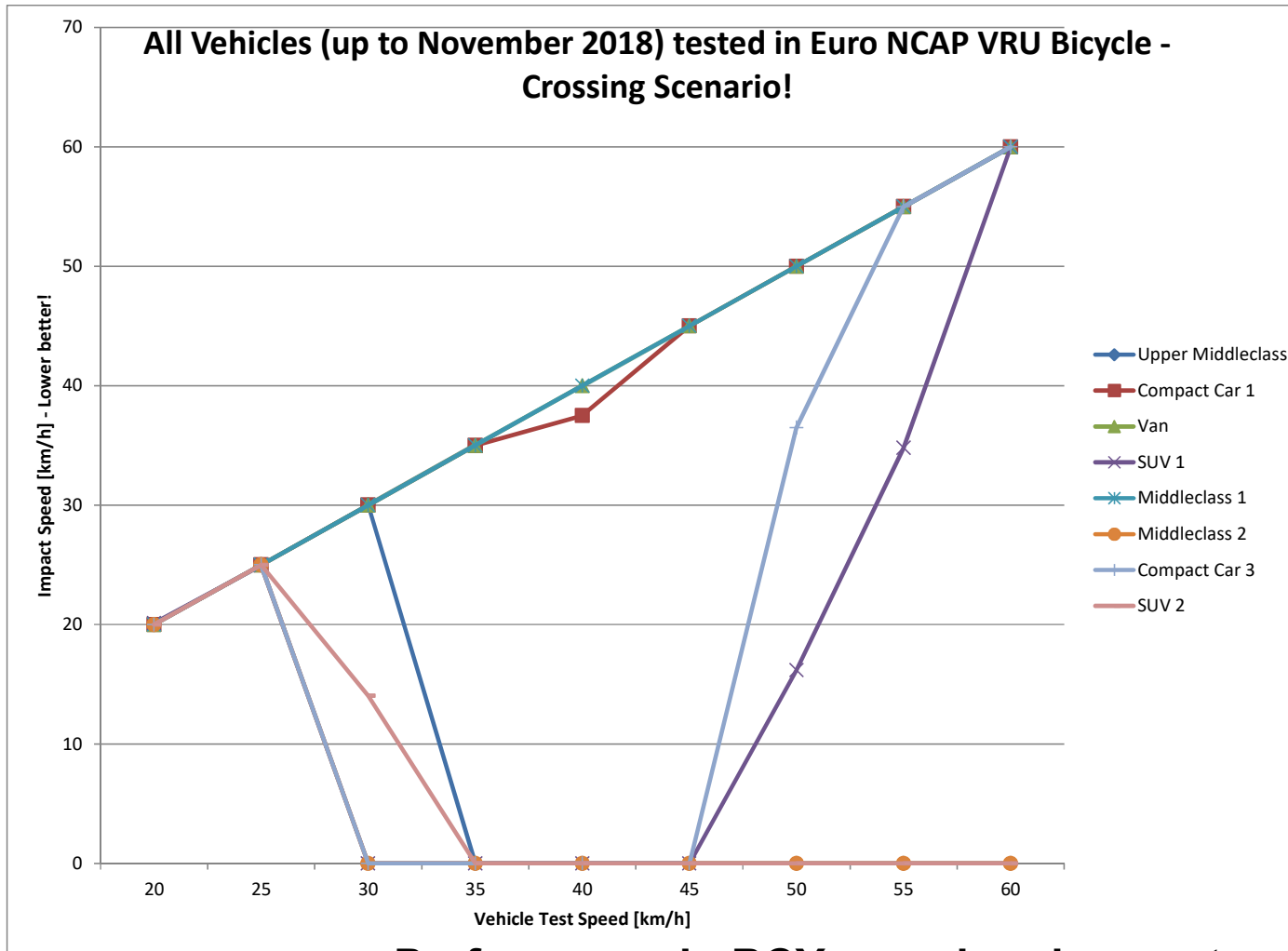
Middleclass	Middleclass	Compact Car	Compact Car			

Van	Offroad	SUV	SUV			



## 2018 Results – Bicycle Crossing



- **Performance in BCY crossing does not yet allow prediction of performance requirements.**



## 2018 Bicycle Longitudinal Results

Test Speed	Upper Middleclass	Compact Car 1	Van	SUV 1	Middleclass 1	Middleclass 2	Compact Car 2	Compact Car 3	SUV 2
50 % Impact - AEB Intervention, Impact Speed given in km/h:									
25	22,3	24,8	16,4	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0
40	21,4	0	0	0	0	0	0	0	0
45	0	11,6	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	17,24	0	0
60	0	0	0	0	0	0	27,04	0	0
25 % Impact - FCW must be before 1,7 s. TTC at FCW given in s:									
50	2	1,56	0,48	1,955	1,54	2,36	2,3	1,64	1,95
55	2,24	1,61	1,11	1,194	1,67	2,77	2,41	1,63	2,13
60	2,13	1,91	1,86	0	1,4	2,85	2,01	1,63	2,14
65	2,33	1,49	1,69	0	0	2,77	2,49	1,51	2,44
70	2,55	1,22	2,02	0	0	2,88	2,5	0	2,45
75	2,52	1,54	1,94	0	0	2,6	2,74	0	2,72
80	2,31	1,91	2,24	0	0	2,29	2,77	0	2,91

- **Performance in BCY longitudinal better (several vehicles would pass the test with warning at TTC=1.7).**



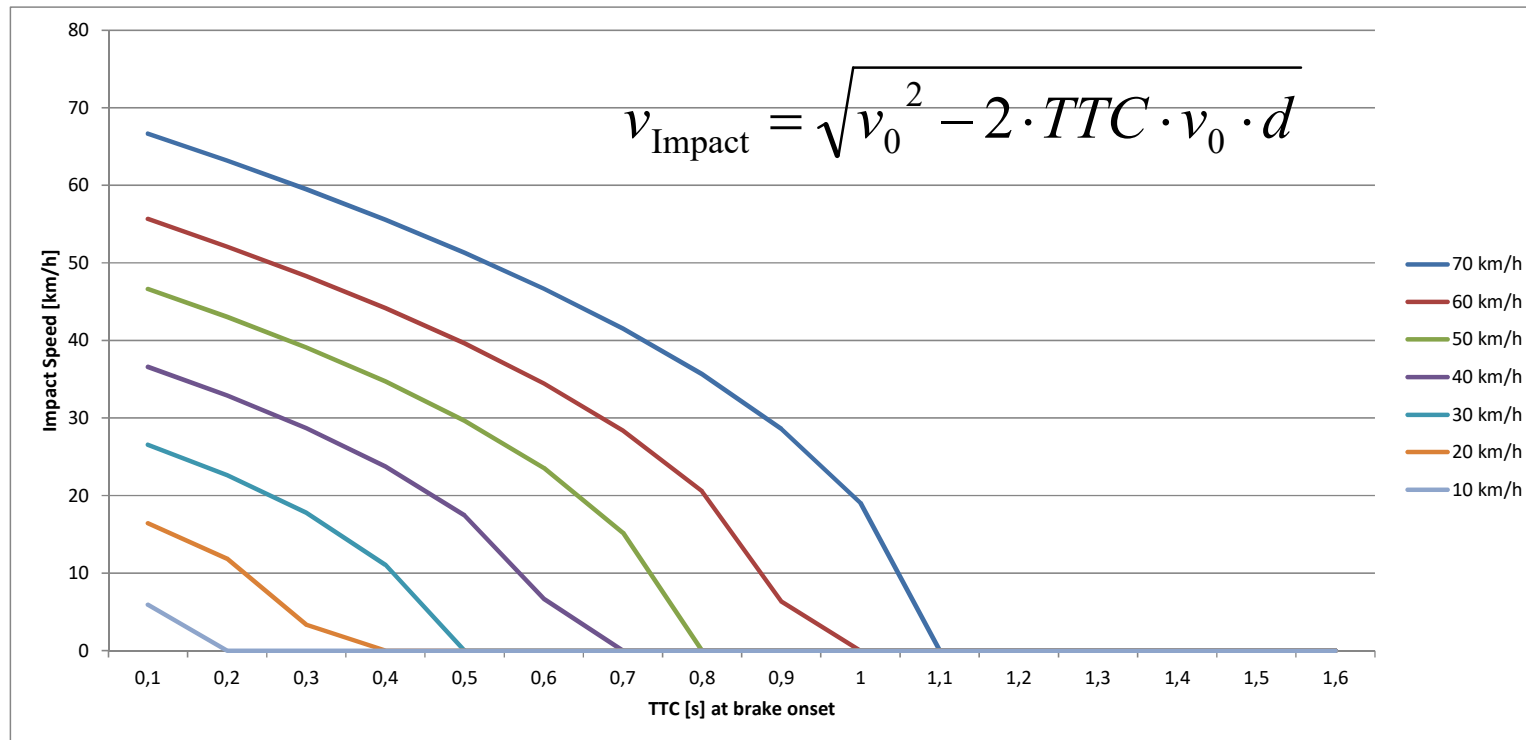
## Euro NCAP AEB Ped. vs. Regulation AEB Ped.

- Euro NCAP tests 5 km/h crossing pedestrian at 25% and 75% offset
- The pedestrian enters the safety zone at:
  - Regulation, 50% offset: 0.9 s
  - NCAP, 75% offset: 1.25 s
  - NCAP, 25% offset: 0.65 s
- Impact speed depends non-linear (!) on TTC at brake onset, see next slide
- Mean value between 25% and 75% cannot be used to guess 50% result
- **Conclusion: Results NCAP Pedestrian and Regulation Pedestrian cannot be compared**





## Impact Speed as Function of TTC and Initial Speed for Deceleration $d = 9 \text{ m/s}^2$





## Summary

1. About 60% of AEB-Car Car-tested vehicles from 2017 already fulfil the regulation requirements
2. Conclusion: Requirements are achievable.
3. Almost all 2018 AEB City-tested vehicles fulfil the regulation requirements even for  $\pm 25\%$  offset
4. Conclusion: **Higher offset tolerance than  $\pm 0.1\text{m}$  could be possible!**
5. AEB Cyclist results show that crossing scenarios are demanding
6. Conclusion: Requirements cannot be set at this point.
7. Euro NCAP AEB Pedestrian results cannot be transferred

Thank you for your attention!

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