



**Statens vegvesen**

Norwegian Public Roads  
Administration

# Speed camera, the Nordic approach

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SATK utkast 4 AR.pptx

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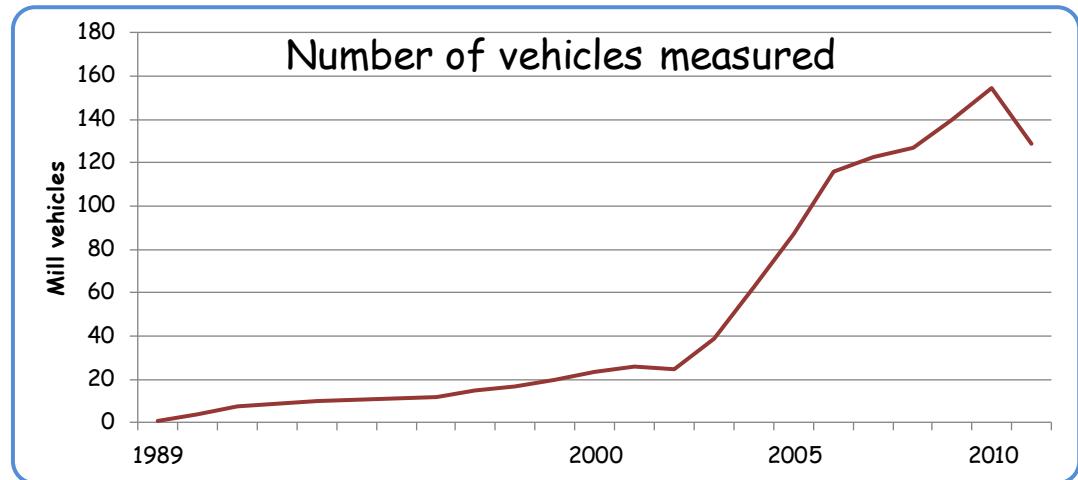
- ✓ Automatic Speed Control/enforcement (ASC)
- ✓ Why Automatic Section Speed Control (ASSC)
- ✓ Experiment on 3 sections in Norway 2009/2012
  
- ✓ Some results on speed
  - Average speed/section speed
  - Speed in the cameras
  
- ✓ Calculating the effects on accidents using the power model

# Automatic speed control (ASC in Norway)

Automatic speed control  
Speed camera  
Automatic Speed enforcement

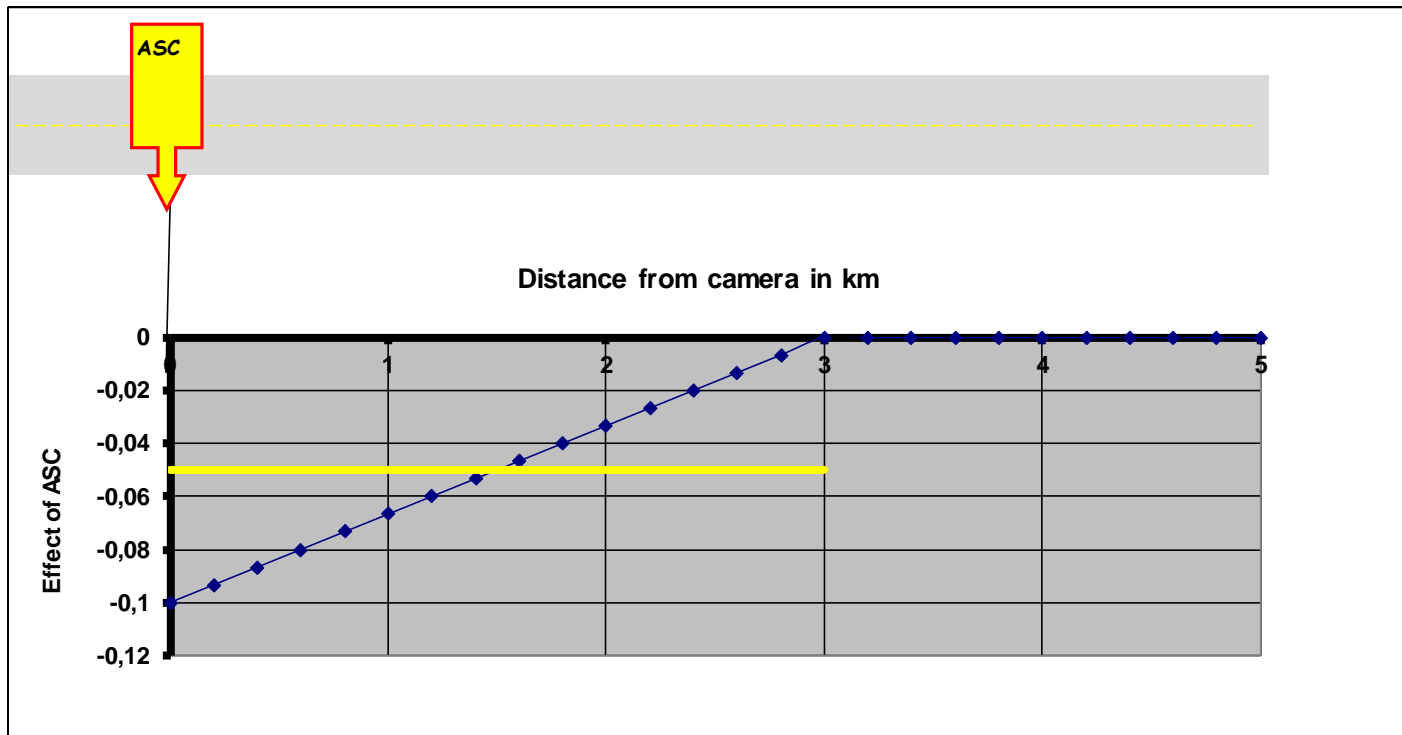


- Single photo-boxes
- Started in 1988
- 2012 more than 300 cameras
- 130 mill vehicles
- 190000 photos

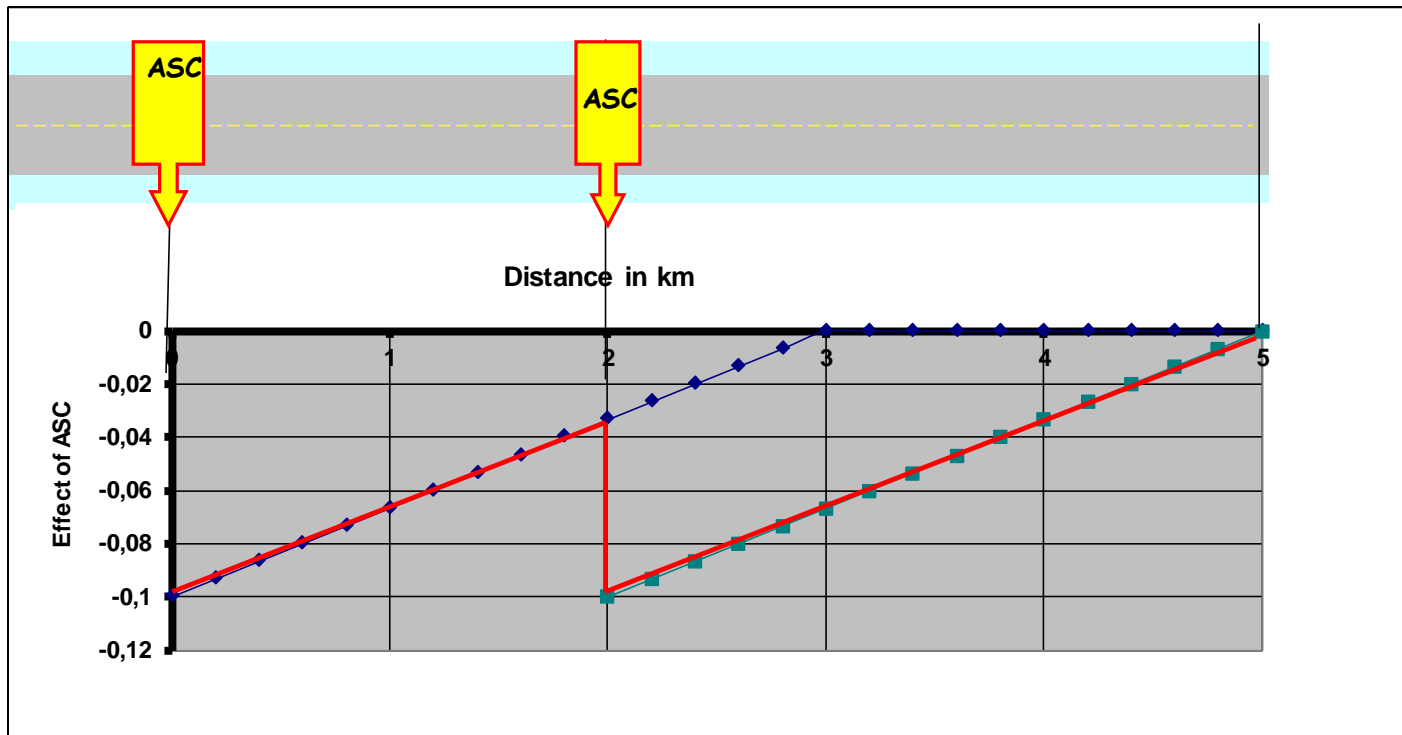


- Lowered speed

# Effect of a single camera (ASC)



# Effect of a number of cameras (ASC)



# Section control with speed cameras (ASSC)



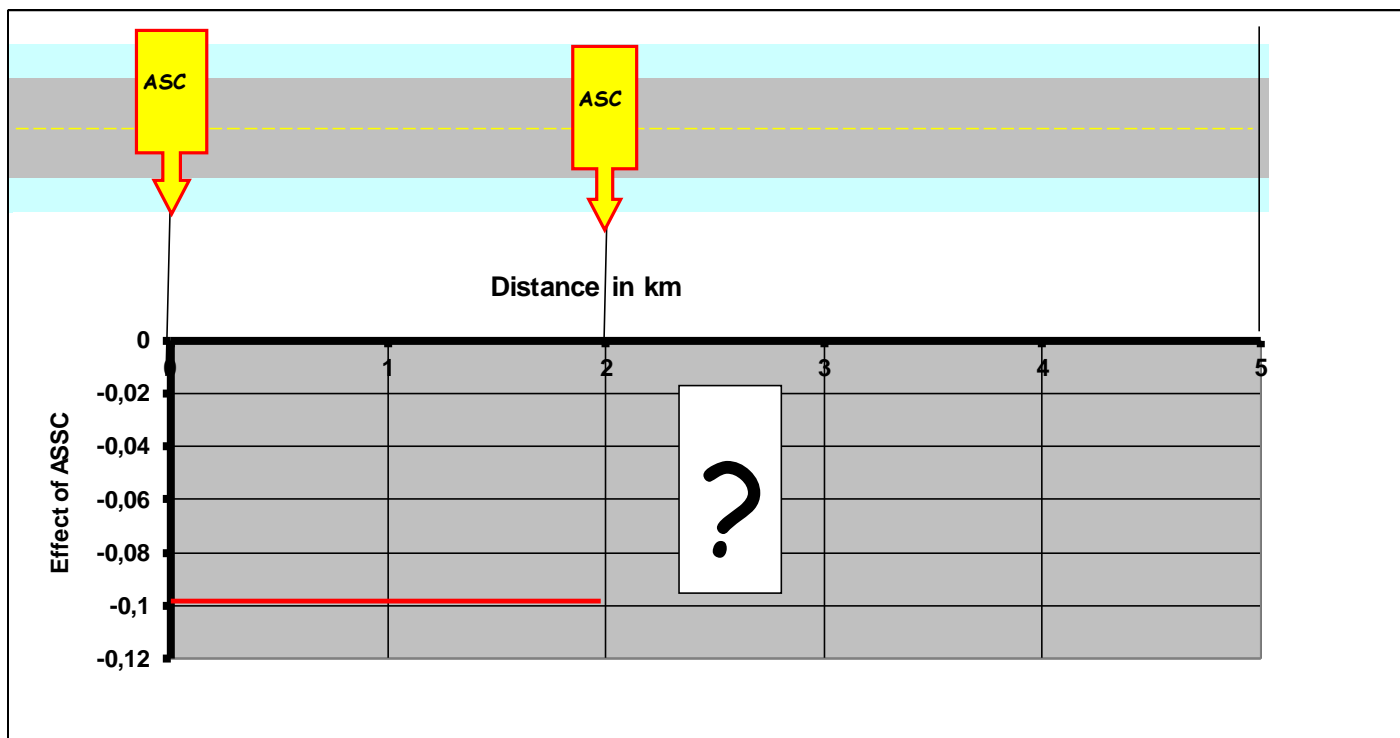
Usual speed cameras (A and B)  
Communication  
Shared clock  
Software for communication

Photos in both poles (both car and driver -from front)

If the average speed on the distance is too high  
( $\text{speed} = \text{distance} / \text{time}$ ) the two photos are saved

All other photos are deleted at once (never saved)

# Effect of a section speed control (ASSC)



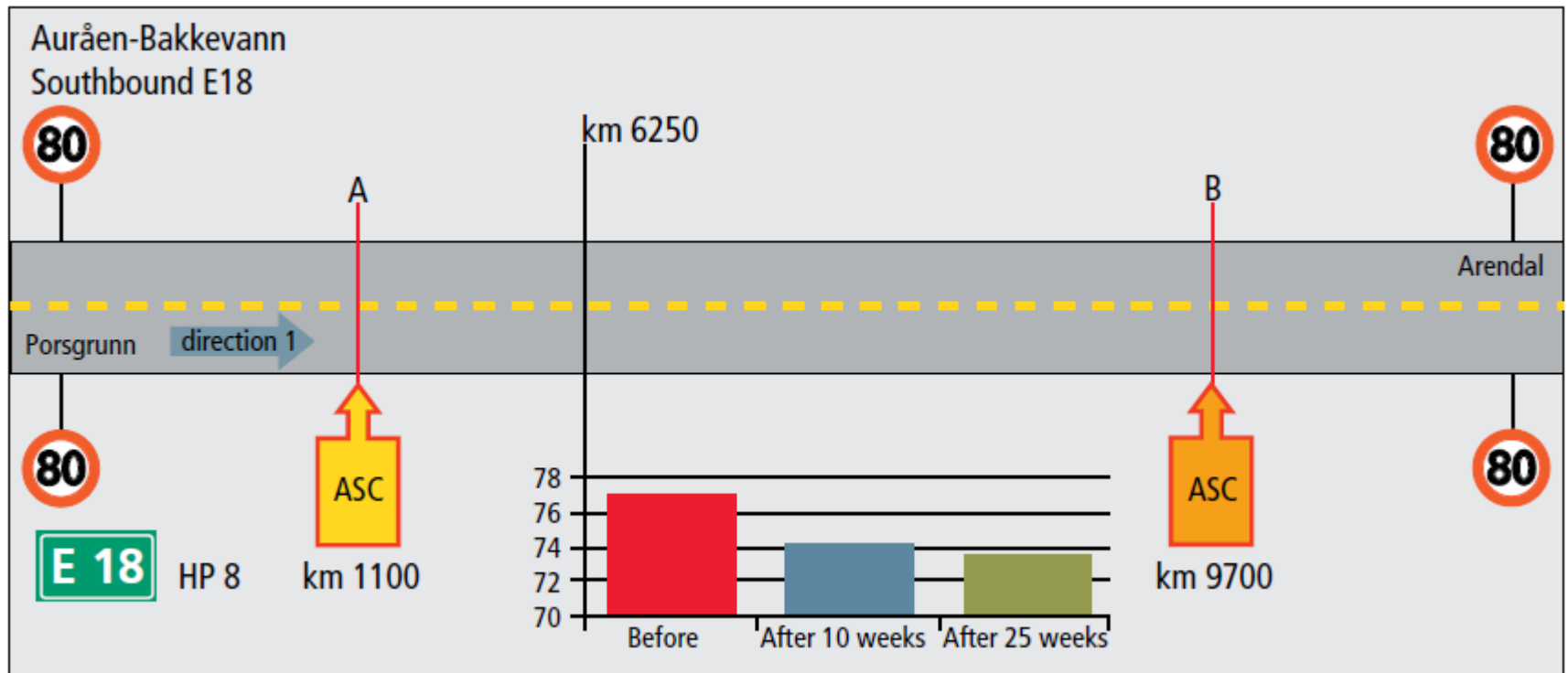
## 3 test sites from 2009/2012

### Before and After study

Location (name)	County	Road no.	From section	km	To section	km	Length (m)	ADT 2009 both directions (vehicles/day)	Speed limit (km/h)	Number of lanes	ATC direction	Start date
1 Bakkevann	Telemark	E18	8	1100	8	9700	8600	6500	80	2/3	southbound (1)	June 2009
2 Dovresko-gen	Oppland	E6	18	6037	18	11096	5059	3425	80	2	northbound (1)	July 2009
3 Langodden	Hedmark	RV3	14	1340	14	10870	9530	2125	80	2	northbound (1)	May 2010



# Before and After study, E18, Bakkevann



# Before and After study, E18, Bakkevann

Direction 1	BEFORE	AFTER 10 weeks	AFTER 25 weeks	Change measured 10 weeks after	Change measured 25 weeks after
Average speed km/h	76,7	74,0	73,6	-2,8	-3,1
Percentage over 80	36,8	22,3	23,0		
Percentage over 90	4,1	1,4	1,4		
Volume of vehicles	11947	8025	6895		

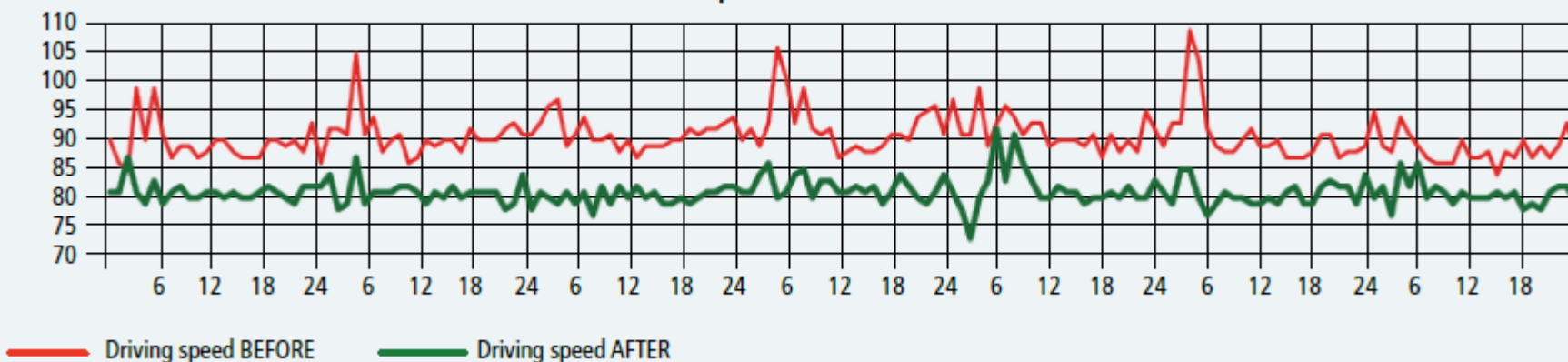
# Before and after study, E6, Dovreskogen



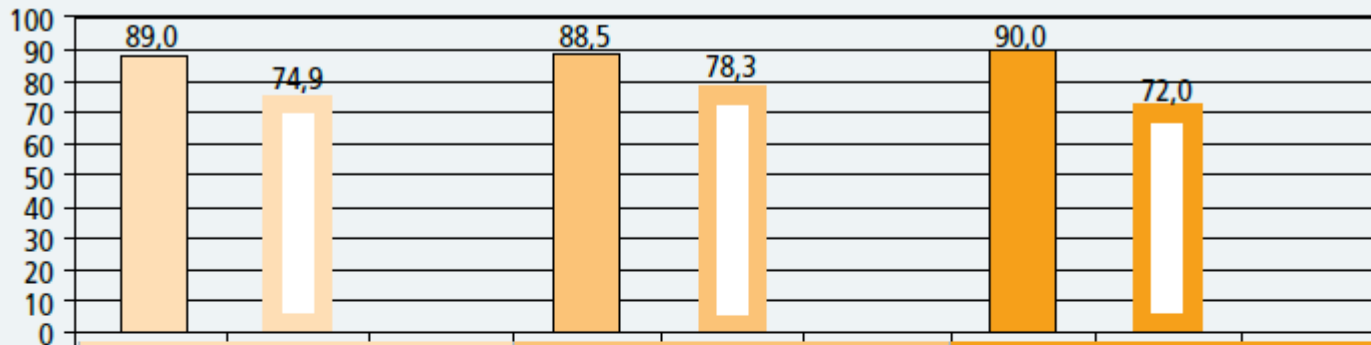
DOVRE Direction 1	BEFORE measured	AFTER measured	Change measured
Average speed km/h	89,4	80,6	-8,8
Percentage over 80	90,5	52,7	
Percentage over 90	42,3	9,4	
Volume of vehicles	8192	12320	

Driving speed km/h

Speed and volume

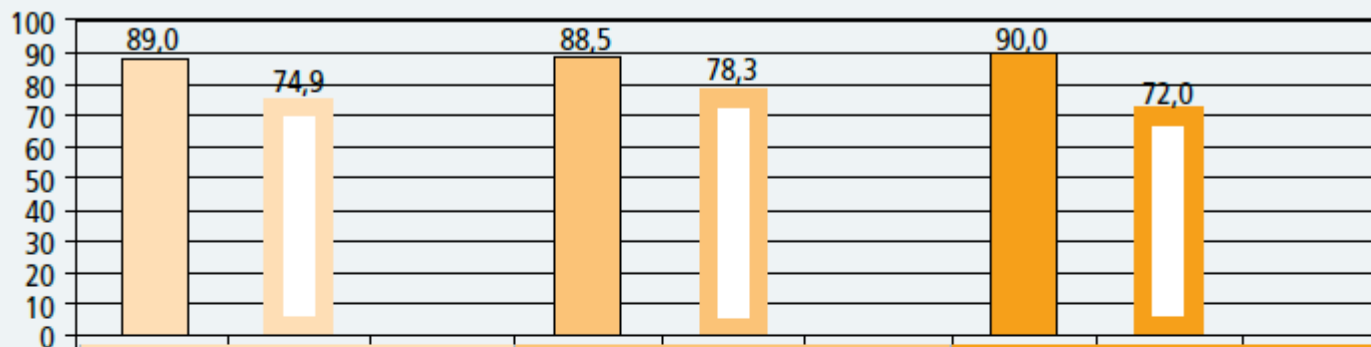


# Before and After study, RV3, Alvdal



	A Barkald (point)			A to B (stretch)			B Langodden (point)		
	Before	After	Difference	Before	After	Difference	Before	After	Difference
Number	2293	21873		2293	21873		2293	21873	
Average km/h	89,0	74,9	-14,1	88,5	78,3	-10,2	90,0	72,0	-18,0
Spread km/h	7,7	6,0	-1,7	7,9	6,1	-1,8	5,7	7,6	1,8
Max. km/h	126,0	112,2	-13,8	127,6	124,1	-3,5	109,4	122,8	13,4
Min. km/h	62,5	22,6	-39,9	50,0	30,4	-19,6	69,5	0,0	-69,5

# Before and After study, RV3, Alvdal



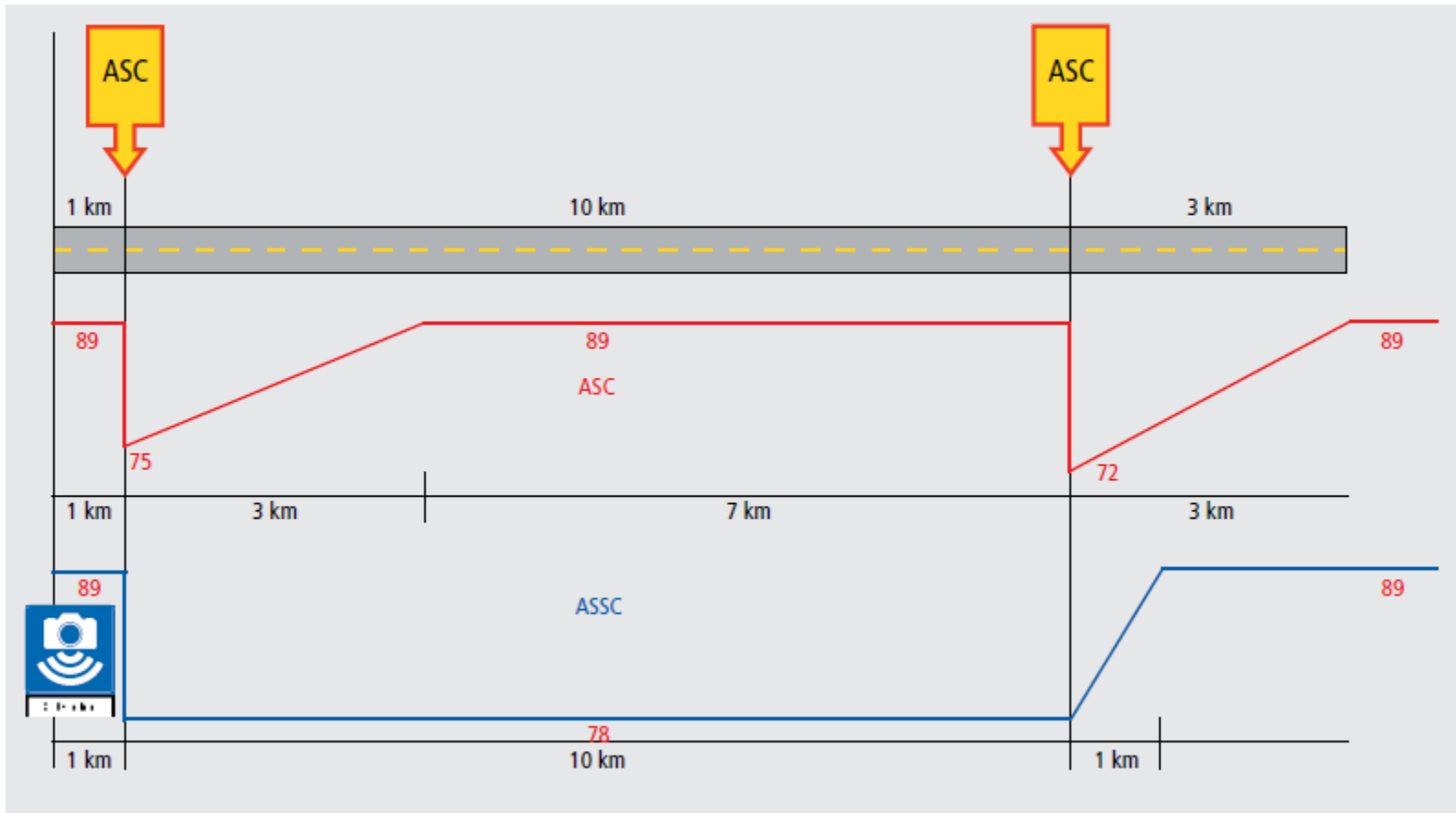
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## Statistics from the after period

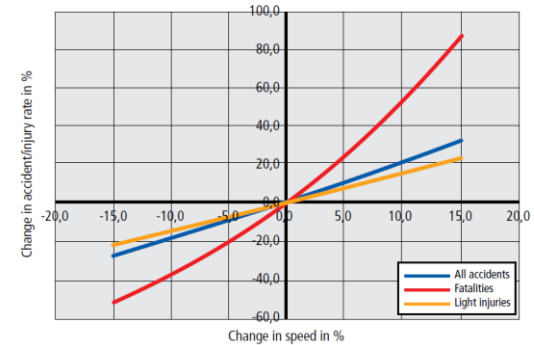
- Showing the same effect in all tree test sites

Location and period	A km/h	A-B km/h	B km/h	$A-B - (A+B)/2$ km/h	Number of vehicles N=
Bakkevann E18	73,7	76,3	70,8	4,0	18435
Dovreskogen E6 short	73,7	76,6	71,6	3,9	8733
Dovreskogen E6 long	73,9	77,2	71,4	4,5	24942
Langodden RV3 short	74,9	78,3	72,0	4,8	21873
Langodden RV 3 long	75,0	78,1	72,3	4,4	16368

# Calculation of expected safety effect ASSC vs ordinary ASC using the power model



# Calculated effect using the power model



		Without ATC	ASC	ASSC
Average speed	km/h	89	85,7	80,8
Reduction	km/h		3,3	8,3
	%		3,7	9,2
Percentage	FA		-15,6	-35,3
Change in	VSI		-10,7	-25,2
Number	SI		-10,7	-25,2
	LI		-5,5	-13,5
	Accidents		-9,7	-23,0
	Injury costs		-14,3	-32,5



# Conclusions

- Very strong and highly respected traffic safety measure
- One of the most effective measures in the battle for vision zero in Norway
- +/- 40 ASSC to come in the next 2- 3 years
- We are now evaluating ASSC in tunnels
  - both subsea and others

# Conclusions

Thank you very much !

There will be an English report available on the web  
[www.vegvesen.no](http://www.vegvesen.no)

Questions and comments are welcome

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