

Traffic Load Models for Bridges in Central and Eastern European Countries

University College Dublin
Bernard Enright



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**Assessment and Rehabilitation
of Central European Highway Structures**



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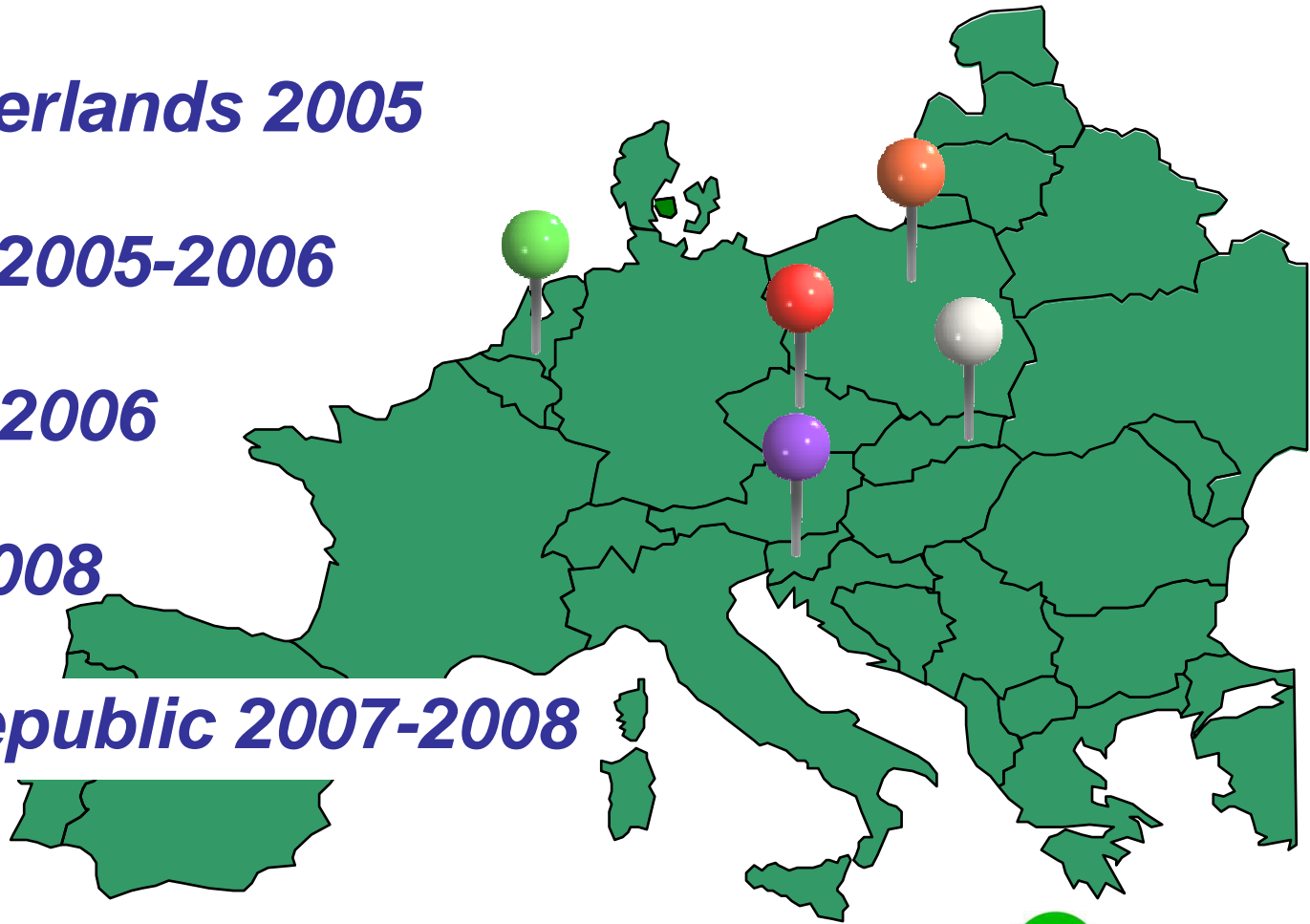
The Netherlands 2005

Slovakia 2005-2006

Slovenia 2006

Poland 2008

Czech Republic 2007-2008



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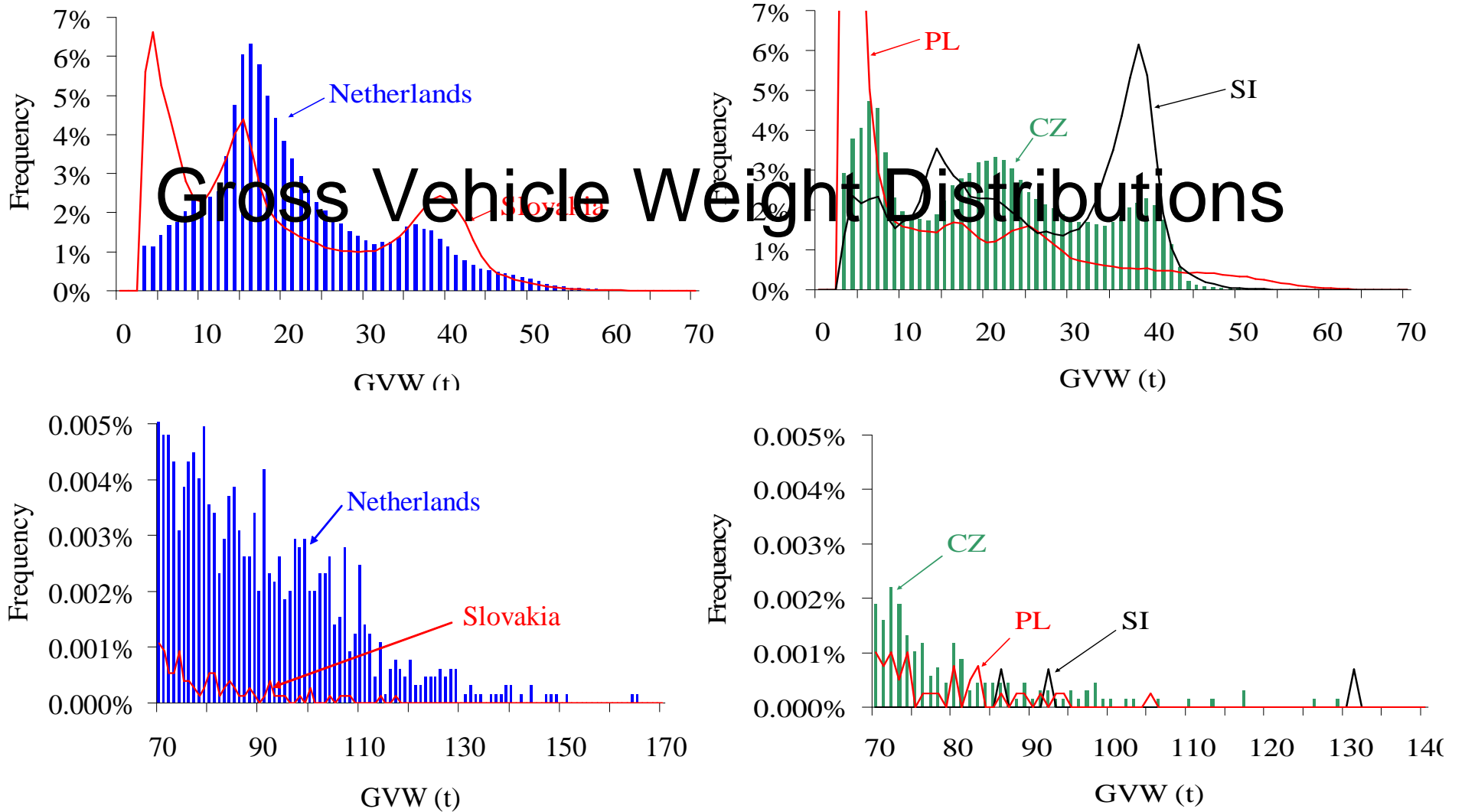


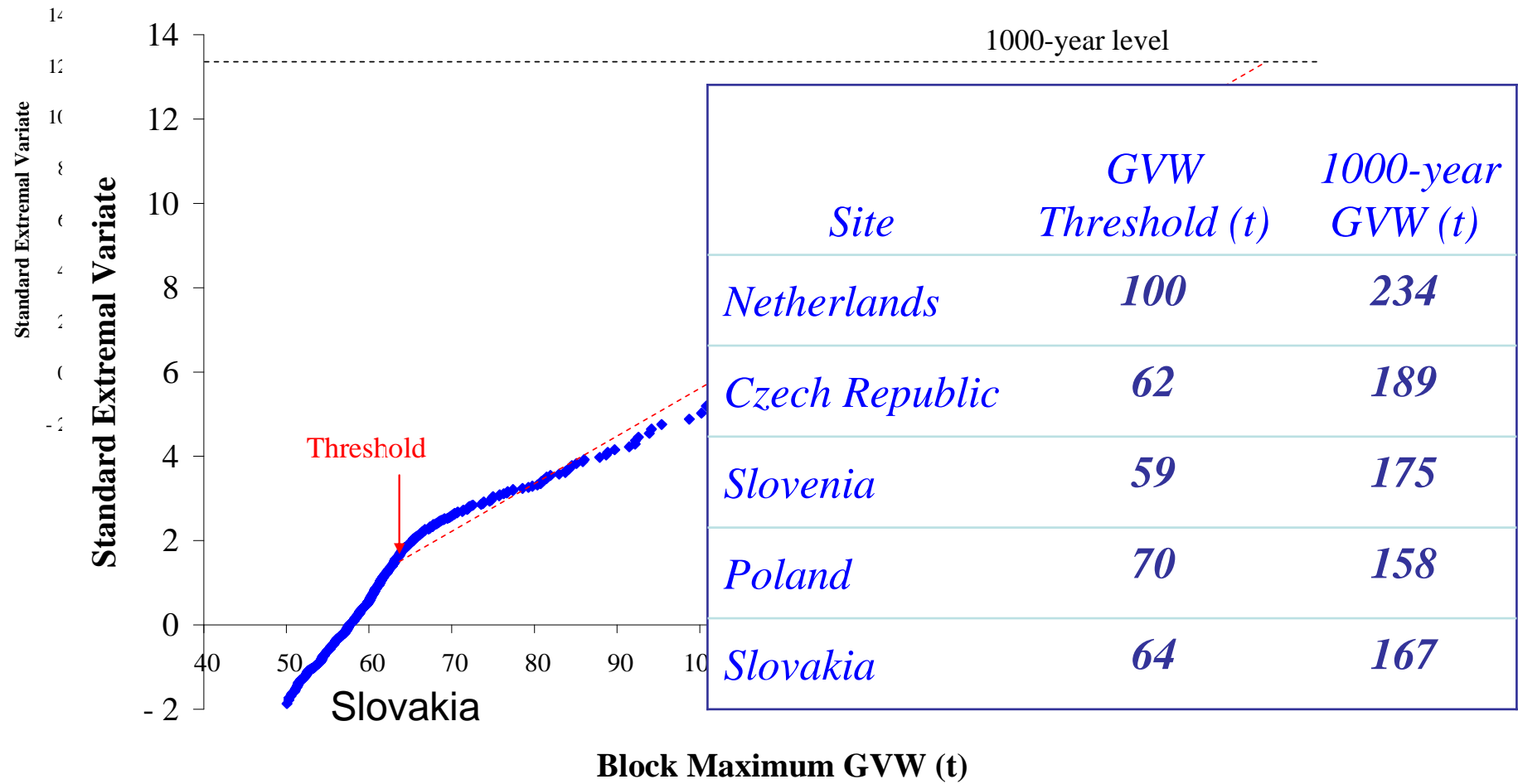
	Netherlands	Slovakia	Czech Republic	Slovenia	Poland
	Woerden	Branisko	Sedlice	Vransko	Wroclaw
Directions	1	2	1	1	1
Total trucks (cleaned)	646 548	748 338	729 929	147 752	429 680
Time span in weeks	20	83	51	8	22
Maximum number of axles	13	11	12	12	9
Time stamp resolution (sec)	0.01	0.1	0.1	0.001	1.0
Trucks per day Lane 1	6 545	1 031	4 490	3 158	3 708
Trucks per day Lane 2	557	1 168	261	135	314
Maximum GVW (t)	165.6	117.1	129.0	131.3	105.9
No. over 60 t	1 716	556	376	15	587



Extreme vehicles

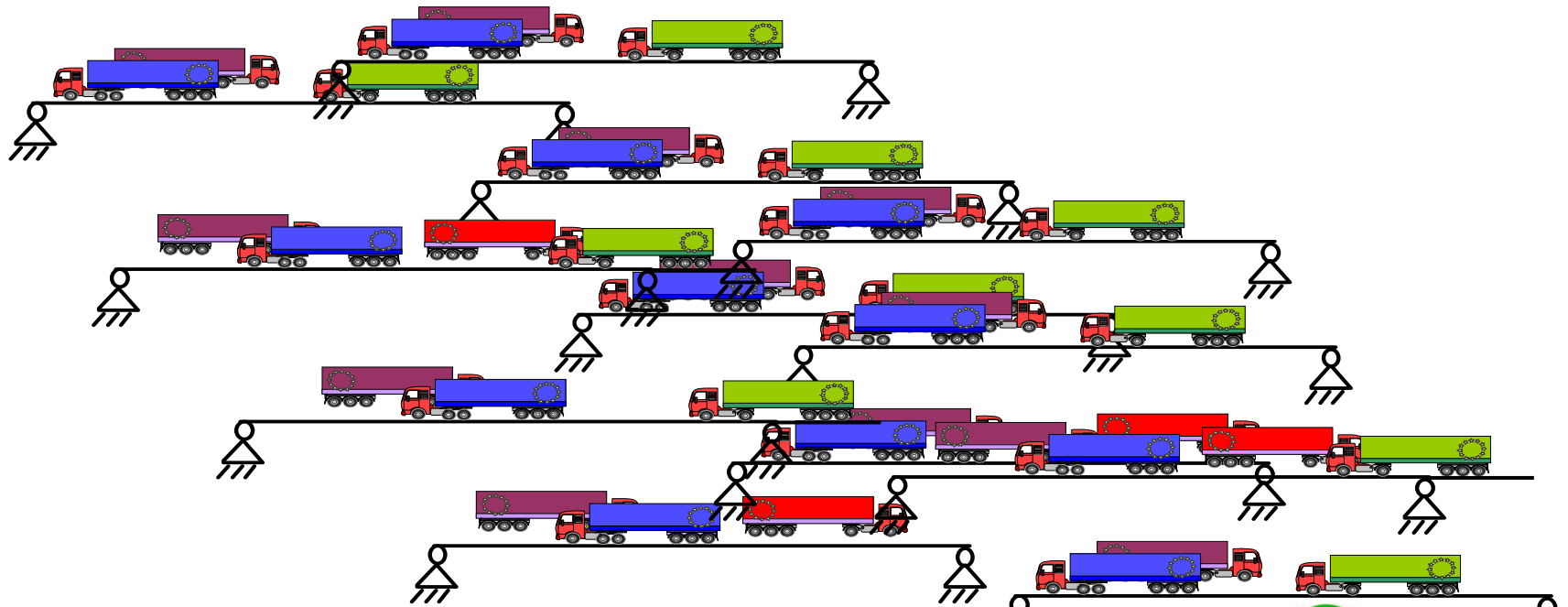


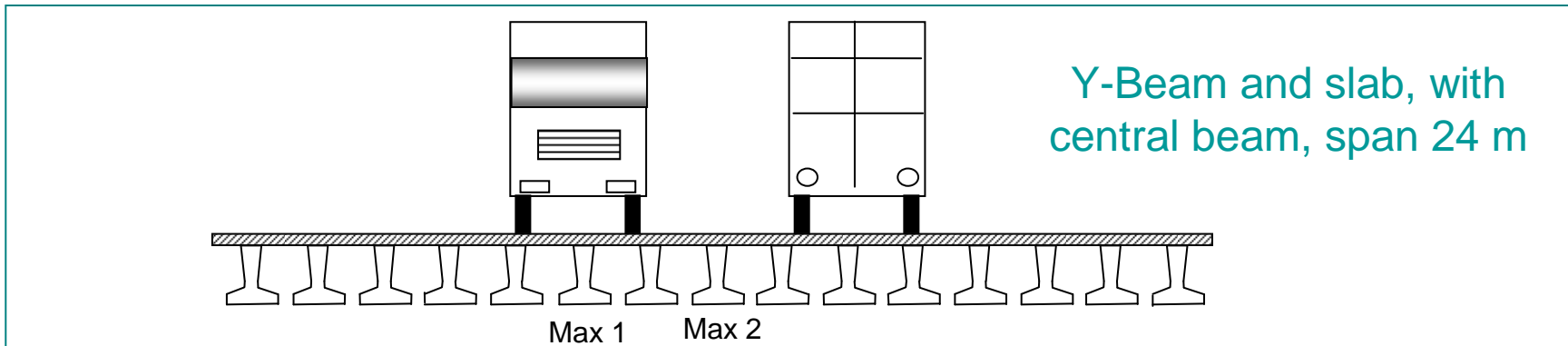
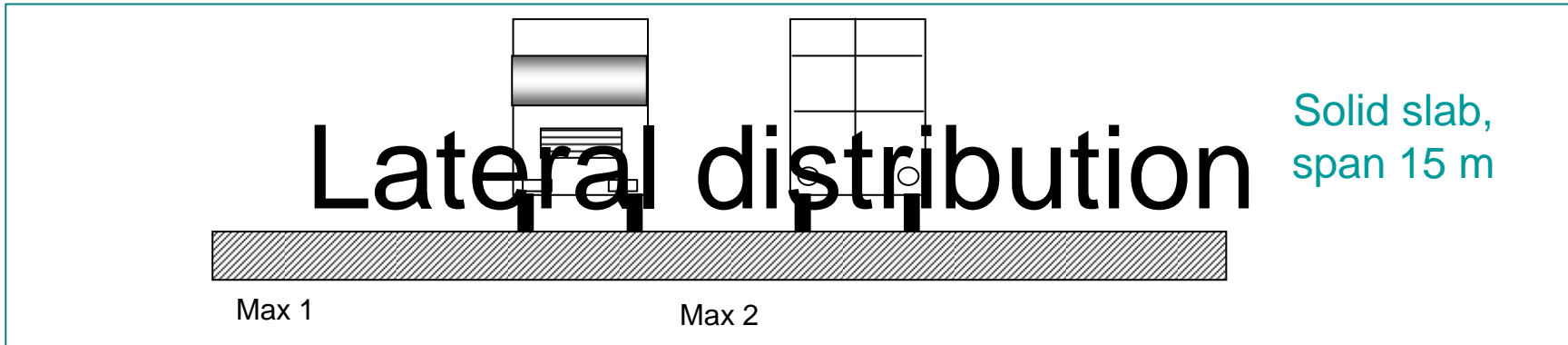


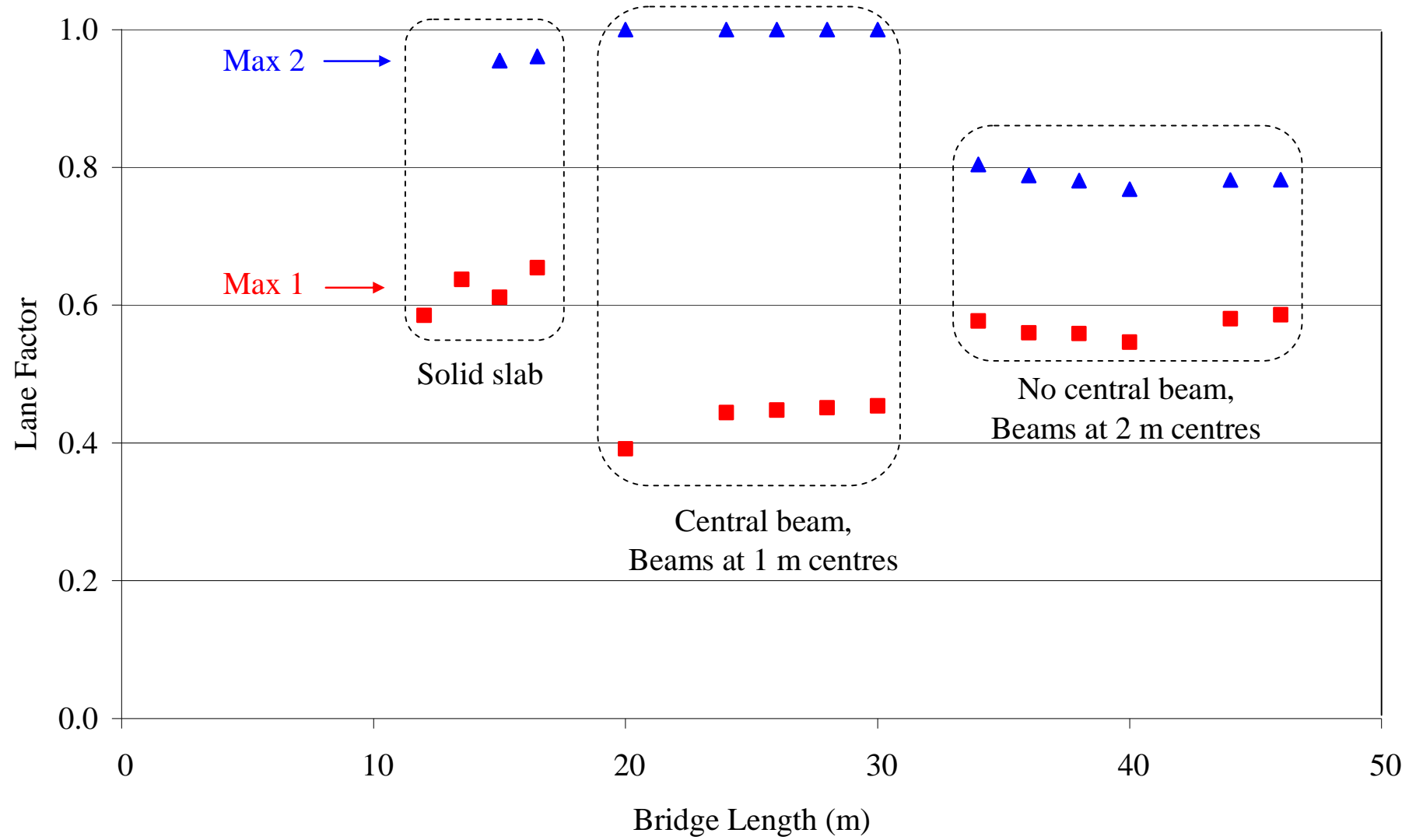


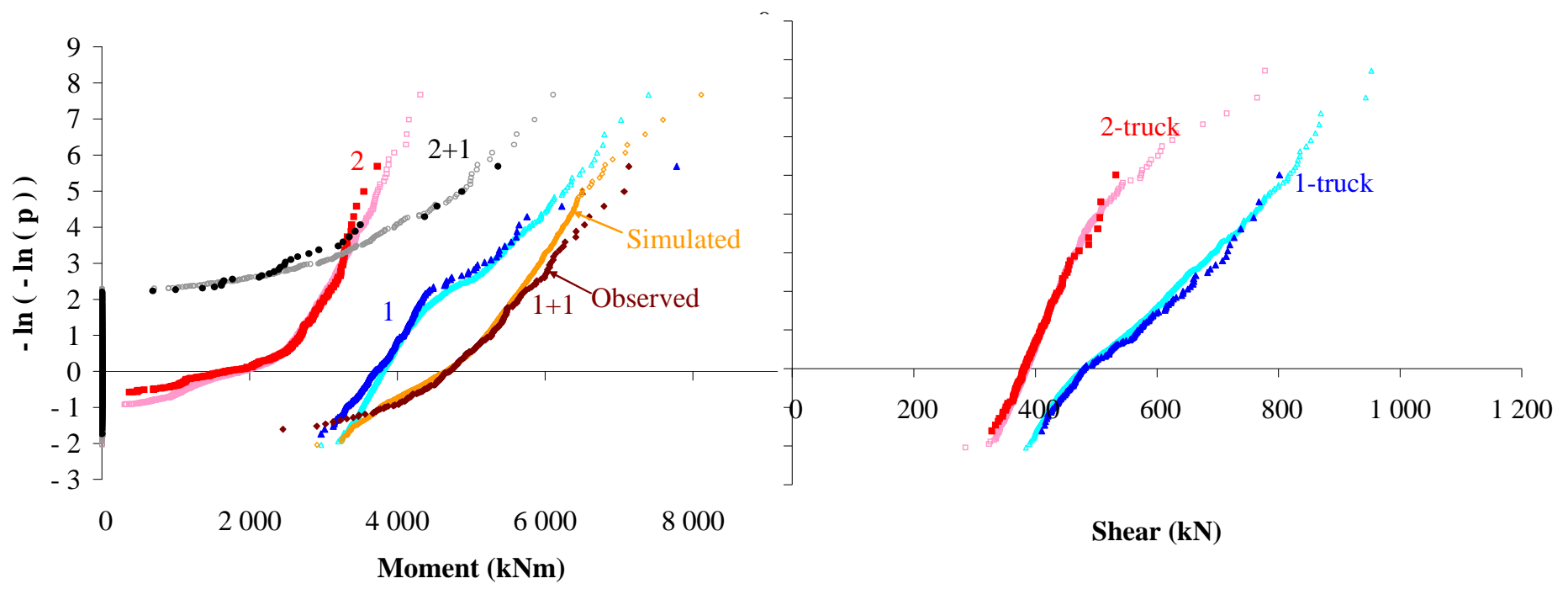
Monte Carlo Simulation

- Generates typical weights, axle configurations, gaps, flows, etc.
- Hence generate many years of loading events, far more than measurement would allow



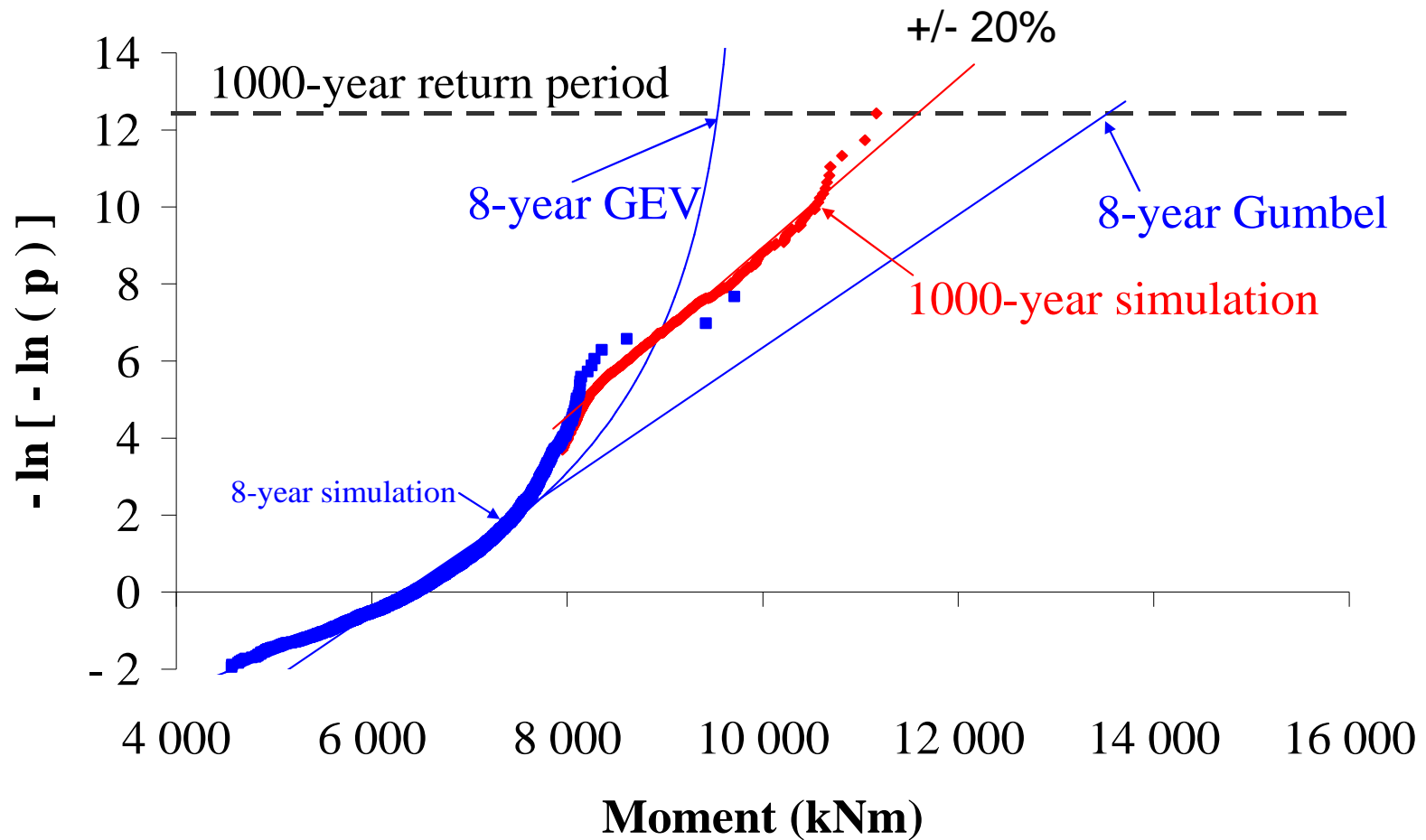


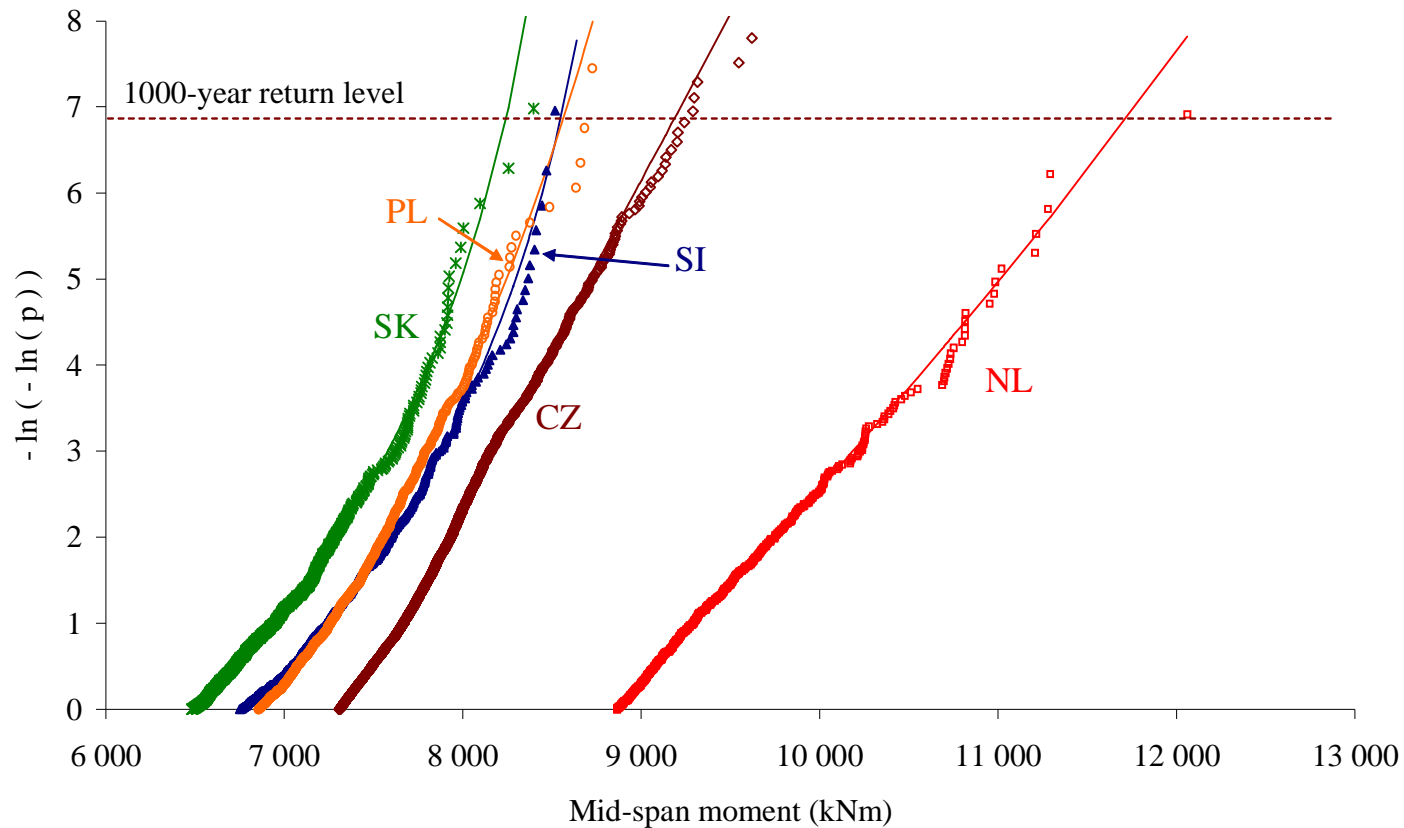




Slovakia, bi-directional traffic

Czech Republic, same-direction





35 m span, low lane factors, overall annual maxima

Lifetime Loading Scenarios

35 m bridge

LE: 1 10 681 kNm

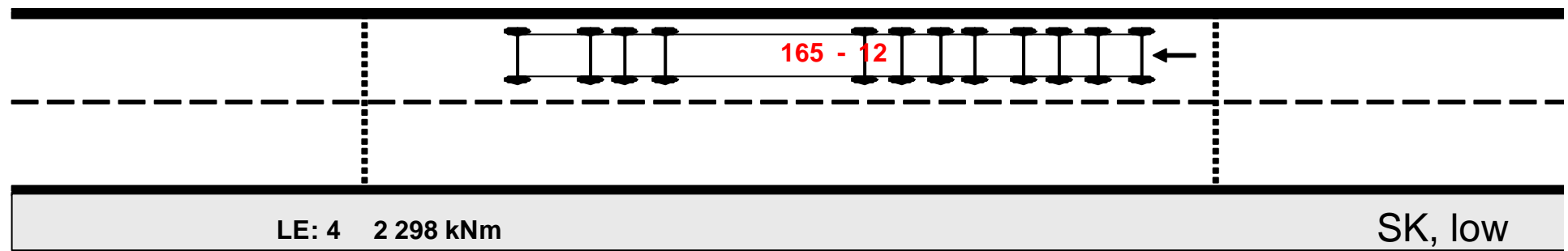
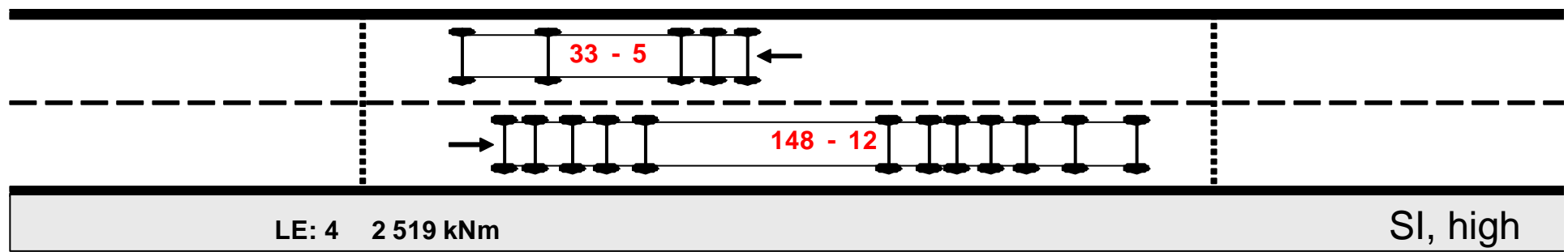
CZ, high



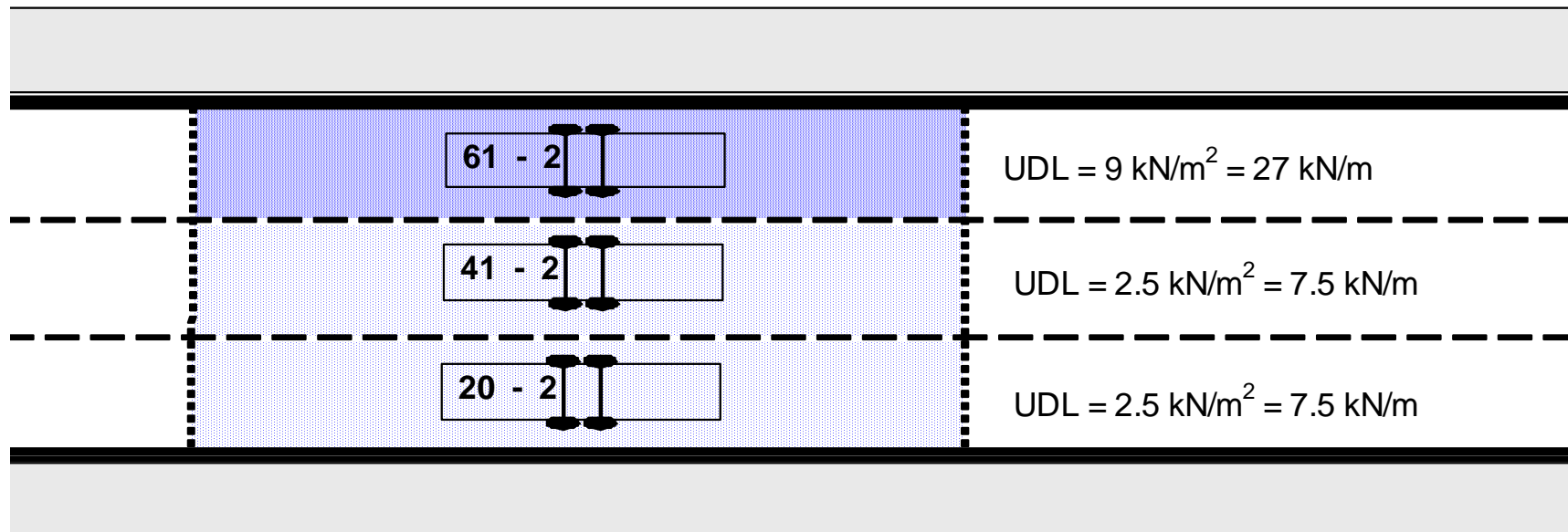
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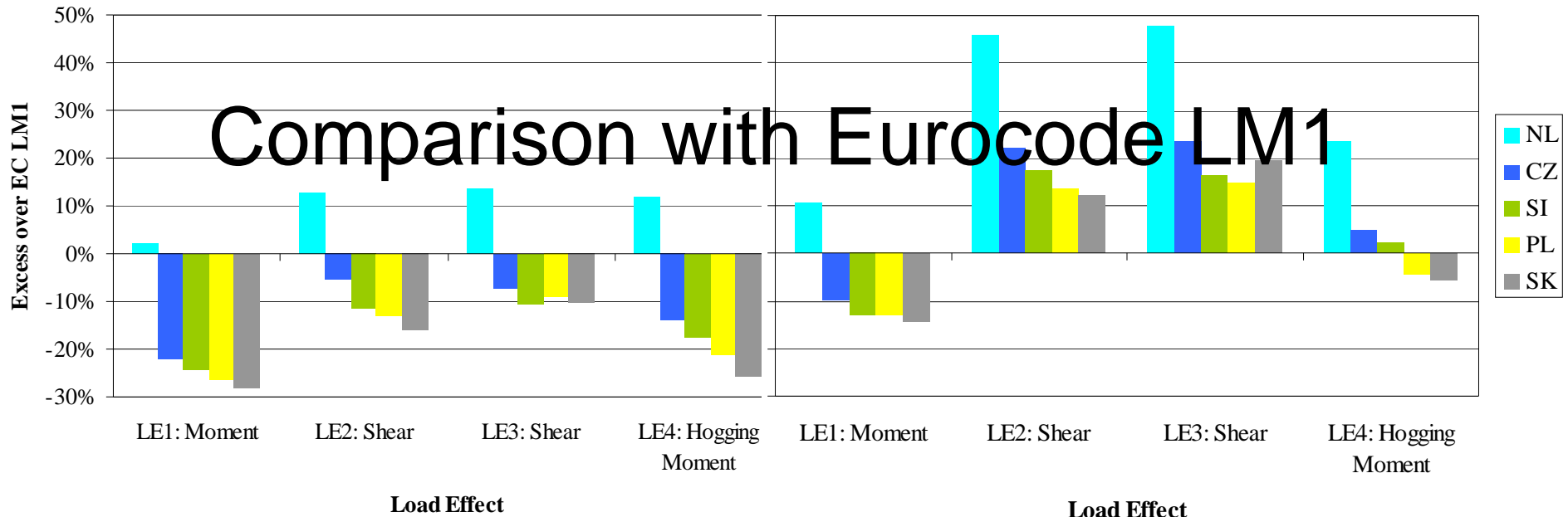
LE: 2 1 054 kN

PL, low



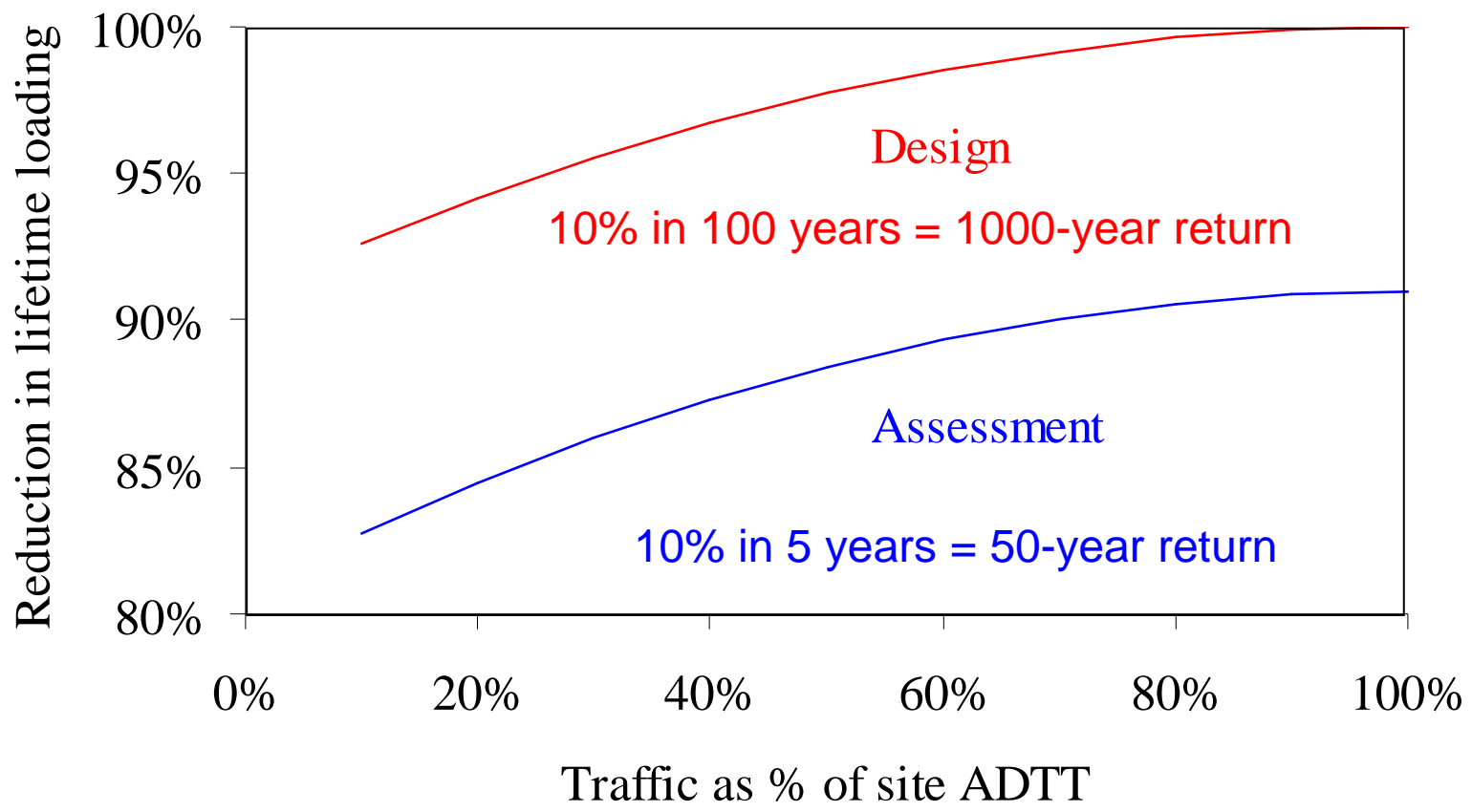
Eurocode Load Model 1 – Normal traffic





High lateral distribution

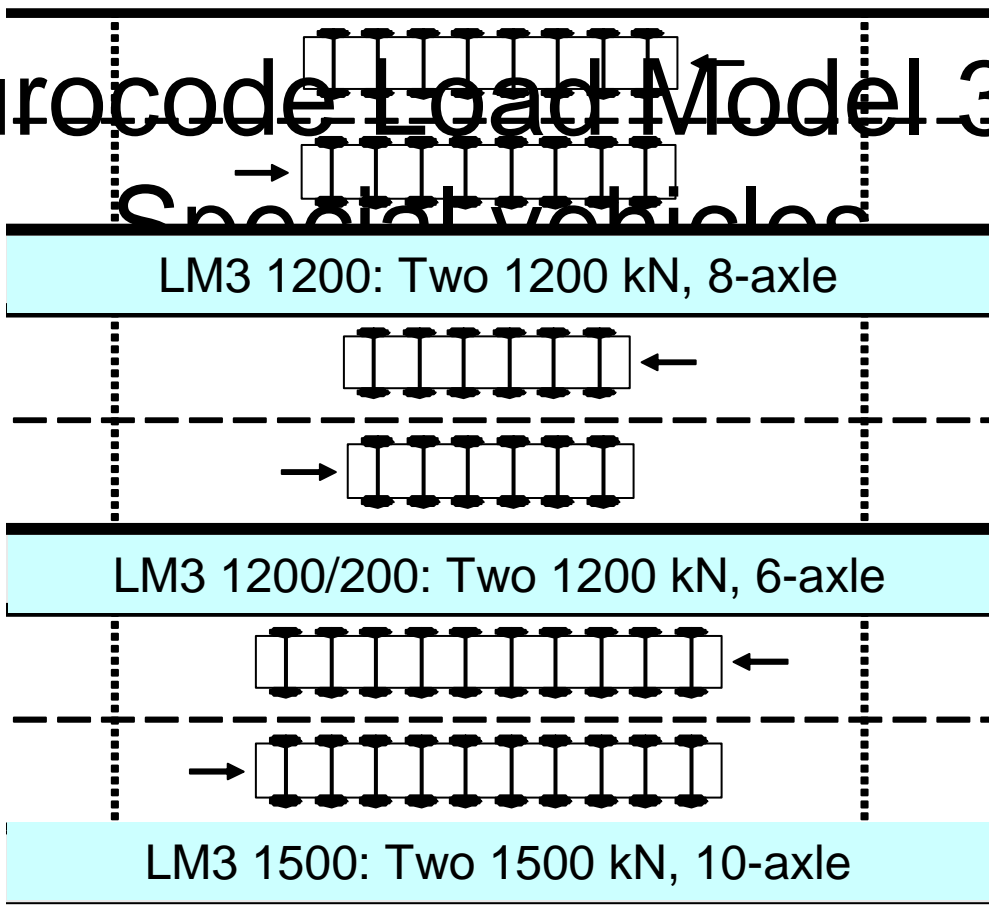
Low lateral distribution



Assessment α factors with 50% of site ADTT

Lane Factors	Site	Mid-span moment	Shear at supports	Hogging moment
High	Netherlands	0.88	0.96	0.96
	Czech Republic	0.66	0.81	0.75
	Slovenia	0.65	0.78	0.71
	Poland	0.63	0.76	0.70
	Slovakia	0.61	0.74	0.66
Low	Netherlands	0.94	1.24	1.05
	Czech Republic	0.79	1.06	0.89
	Slovenia	0.75	1.02	0.86
	Poland	0.73	0.98	0.83
	Slovakia	0.71	0.97	0.82

Eurocode Load Model 3 – Special vehicles



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	1000-year GVW (t)	Lane Factors	Max LM3
Netherlands	234	High	1200/200
		Low	1800/200
Czech Republic	189	High	1200
		Low	1500
Slovenia	175	High	1200
		Low	1500
Poland	158	High	900
		Low	1200/200
Slovakia	167	High	900
		Low	1200/200

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