



DCMR Milieudienst Rijnmond

Assessing impacts of interventions

Innsbruck, 16th Sept. 2013, Miriam Weber





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Assumptions and hypotheses



A: The population response to noise abatement measures and subsequent changes in noise exposure is in line with dose-response relations for annoyance



H: The population response to a decrease in noise exposure experiences a greater benefit (in terms of annoyance reduction) than predicted with dose-response relations (cf. Van Kamp & Brown, 2013)

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Rotterdam studies introduced



- Type 2 changes (cf Brown & Van Kamp, 2009), i.e.
 - low noise pavement and noise barrier
 - resulting in decrease of noise exposure levels from (road) traffic
 - in residential areas and in urban parks
- ROAM and QUADMAP studies
 - similar approaches of calculating and measuring noise exposure and field surveys/questionnaires on perception of sound, well-being, annoyance etc.
 - before and after intervention



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ROAM: interventions (1)

→ Selection of intervention group (> 2.5 dB exposure reduction) and control group (no changes in exposure)



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Wilgenplaslaan:

bricks -> low noise
pavement



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ROAM: interventions (3)

	Dag dB(A)	Avond dB(A)	Nacht dB(A)	Lden dB
Gemeten niveau*	62.6	60.4	54.9	64.2
Berekend niveau	62.3	61.2	53.9	63.7
Vershil gemeten - berekend	0.3	-0.8	1.0	0.5



ROAM: interventions (4)

	Percentage		Adressen		Inwoners		Gehinderden		Ernstig gehinderden	
	%A	%HA	voor	na	voor	na	voor	na	voor	na
<35	0	0	149	149	343	343	0	0	0	0
35-40	0	0	0	0	0	0	0	0	0	0
40-45	4	0	528	544	1214	1251	49	50	0	0
45-50	8	3	1153	1157	2652	2661	212	213	80	80
50-55	14	5	1701	1742	3912	4007	548	561	196	200
55-60	21	8	1100	1056	2530	2429	531	510	202	194
60-65	30	13	682	833	1569	1916	471	575	204	249
65-70	41	20	512	344	1178	791	483	324	236	158
70-75	54	30	7	7	16	16	9	9	5	5
>75	61	37	0	0	0	0	0	0	0	0
Eindtotaal			5832	5832	13414	13414	2302	2242	922	887

afname # gehinderden:	60
afname # ernstig gehinderden:	35



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QUADMAP: interventions (1)



Spinozapark -
Spinozaweg



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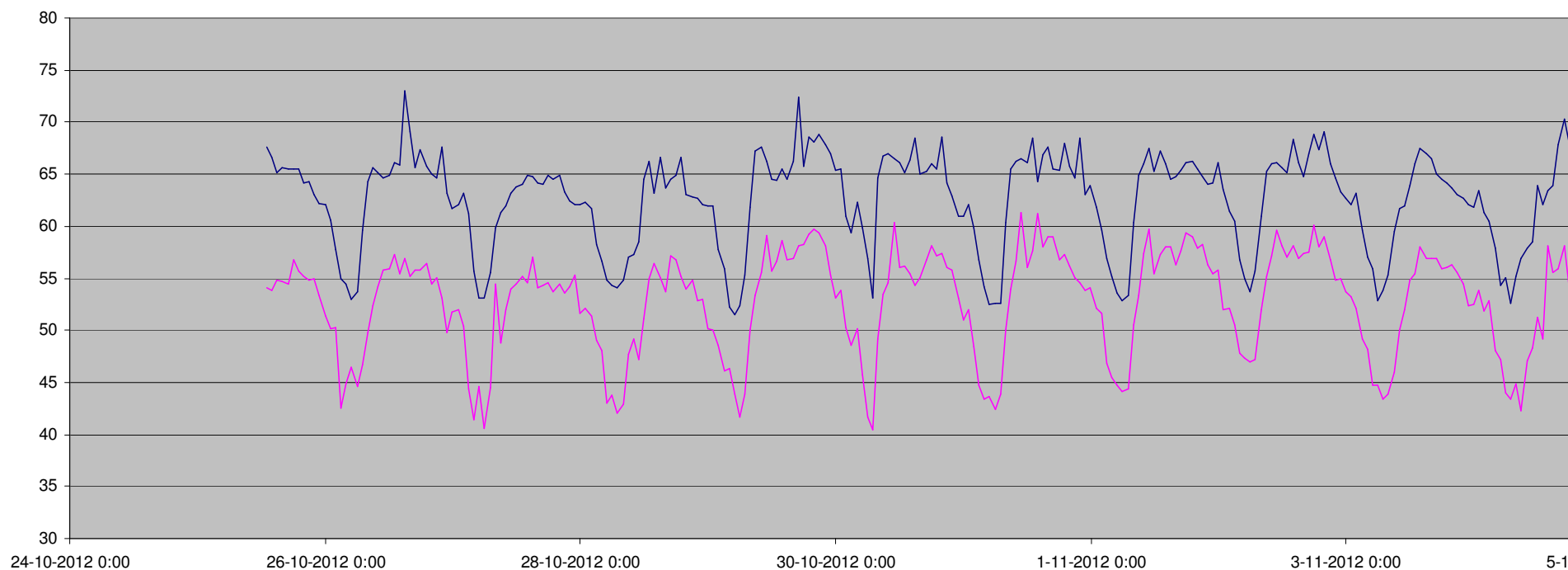


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QUADMAP: interventions (3)



Spinozaweg Leq

QUADMAP



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QUADMAP: interventions (4)



Intervention	Reduction	Effect Lden > 55 and exposure reduction > 2,51 dB			
Length	Number A	Number HA	Number dwellings	Number exposed population	
1140 m	61	36	240	552	



QUADMAP



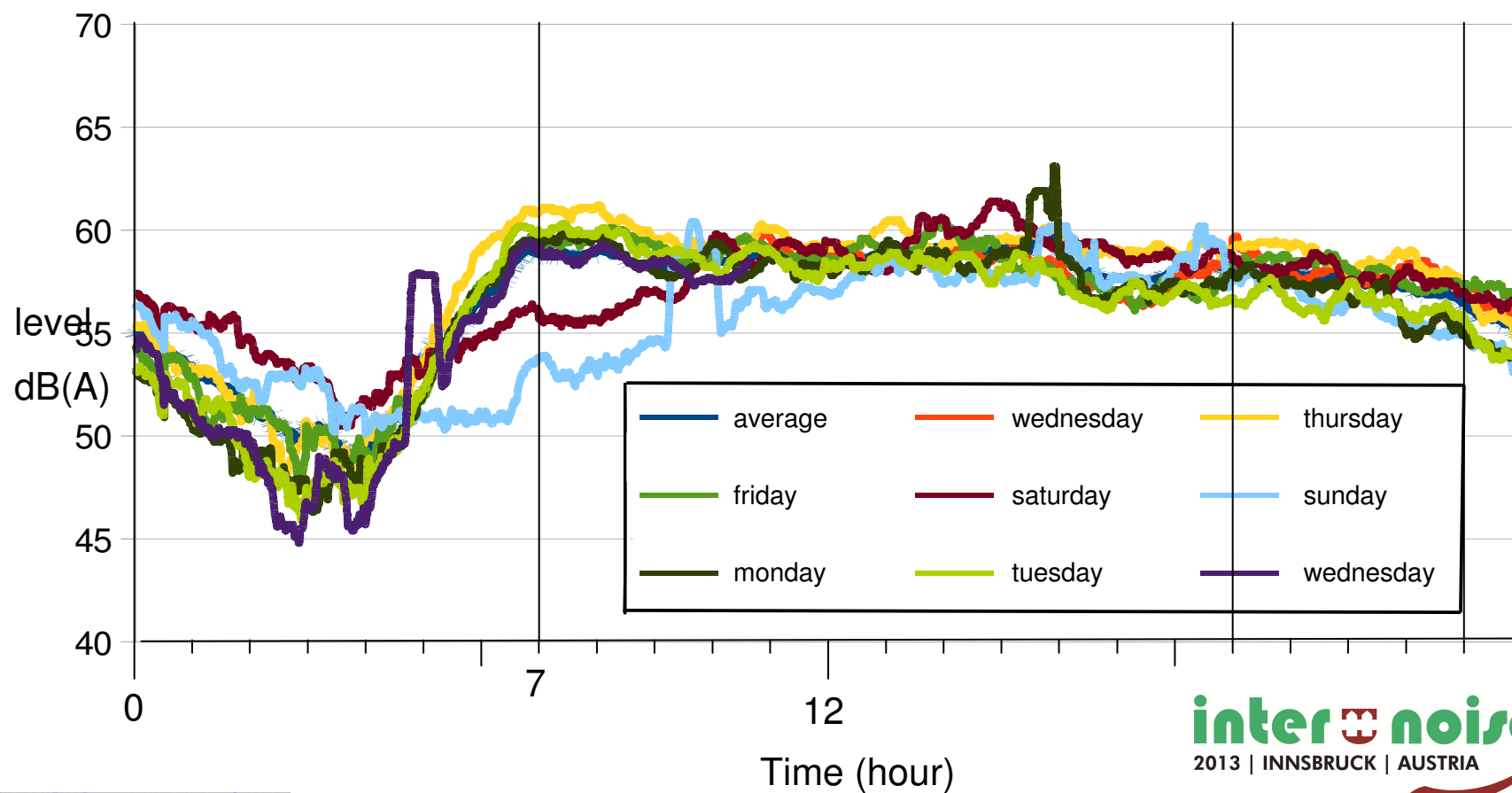
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Some figures: L10



inter noise
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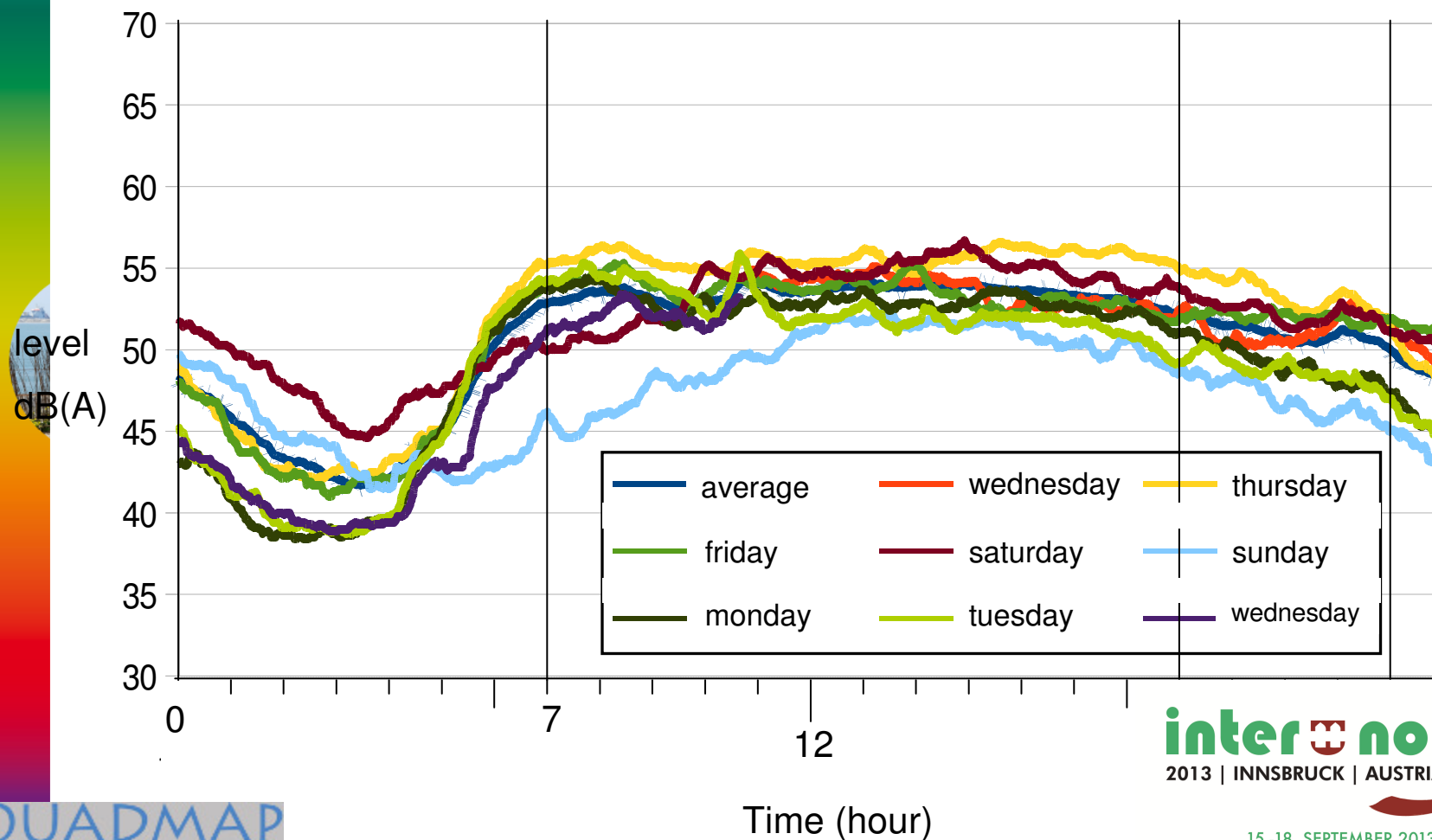
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Some figures: L90



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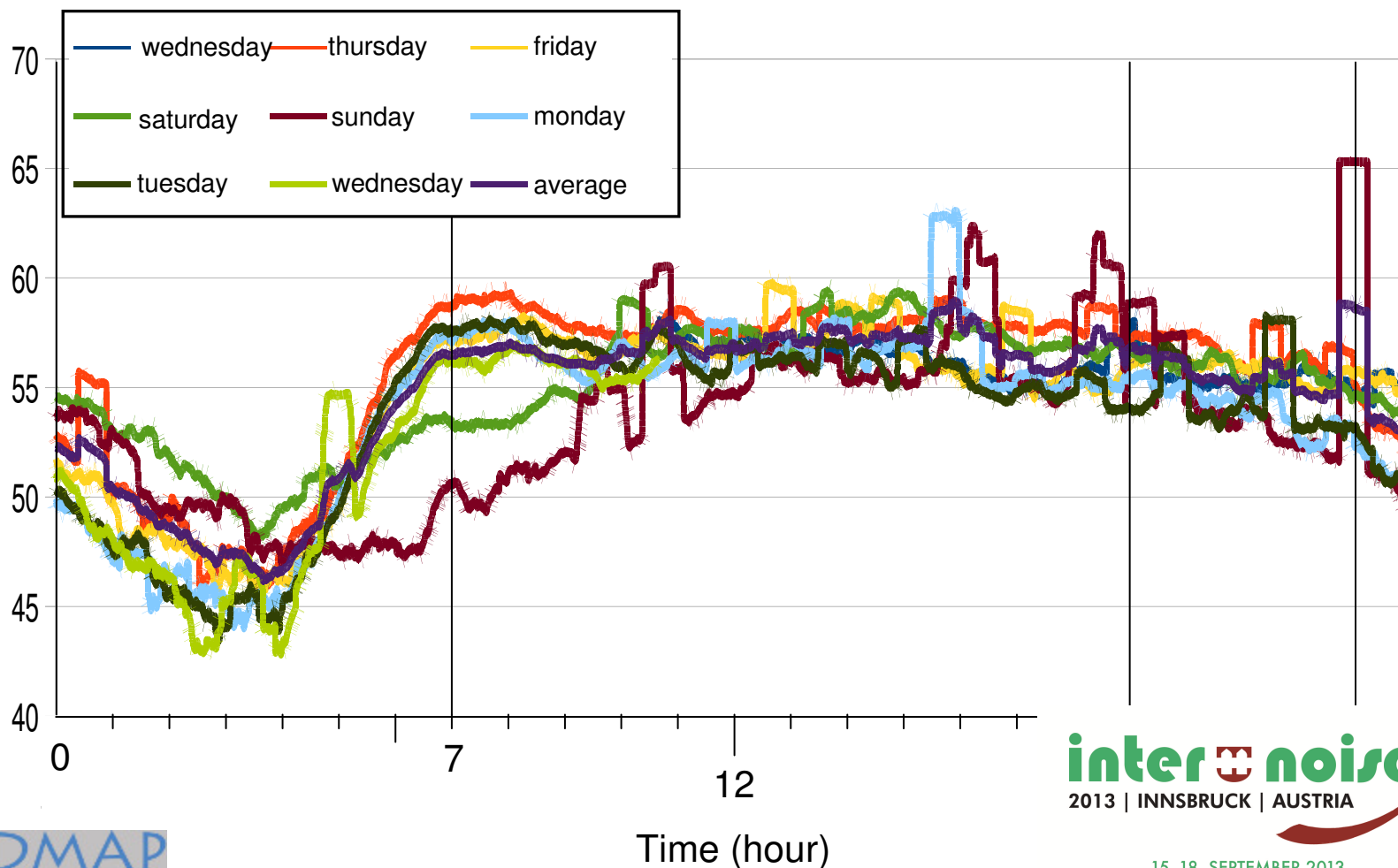


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Some figures: Leq,30minutes

level
dB(A)



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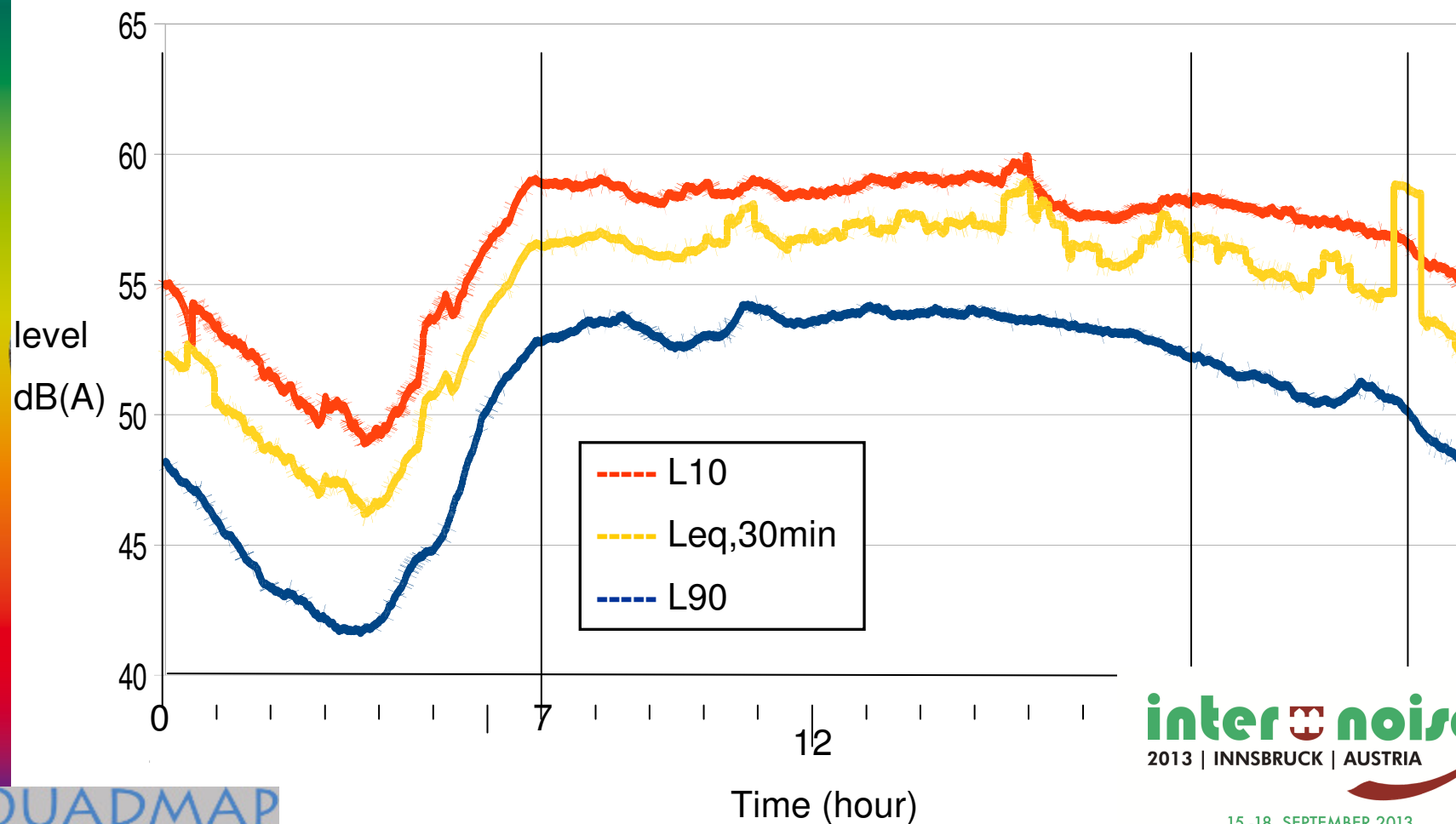
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Some figures: weekly averages



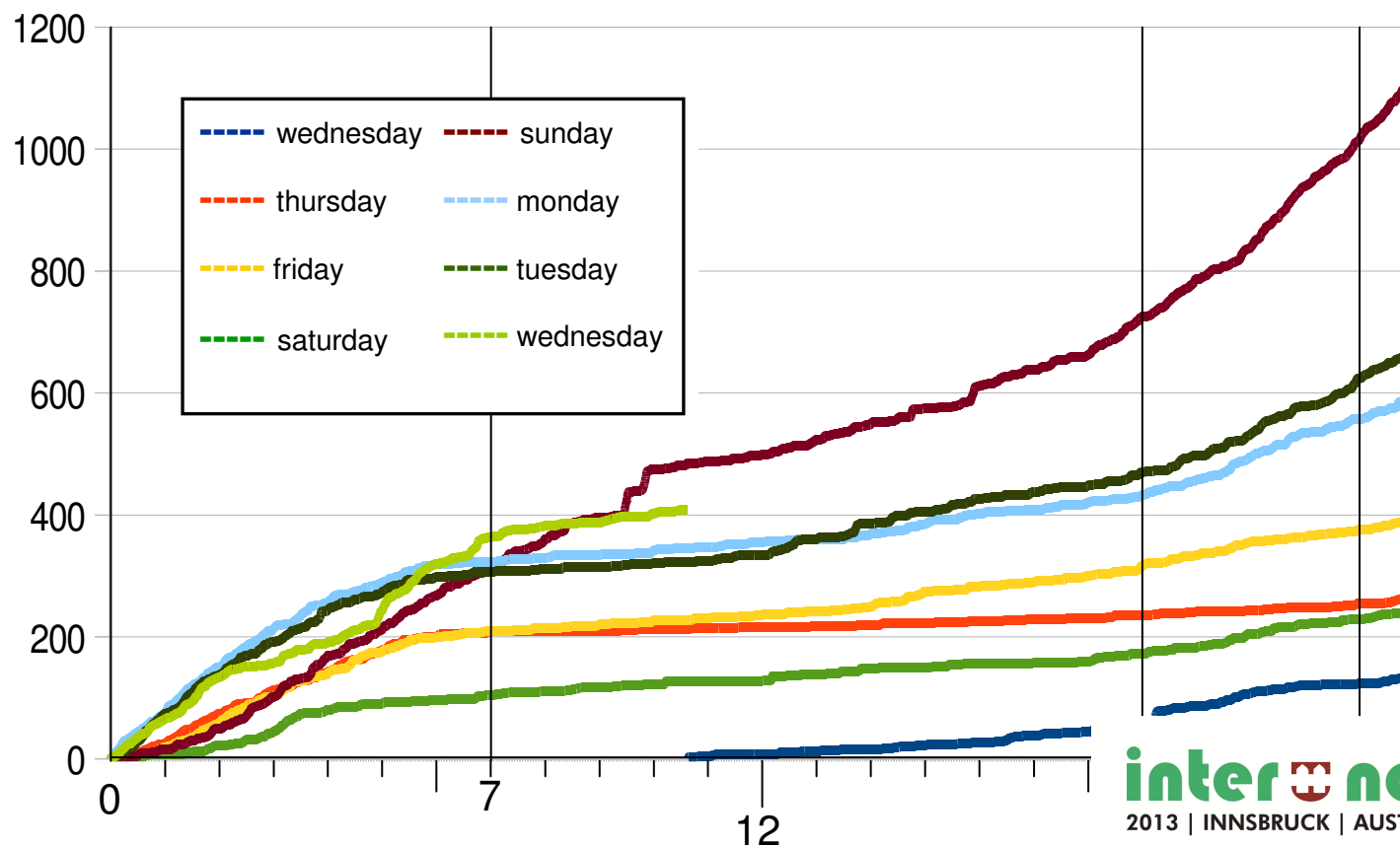
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Event count per day



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Some figures (1)

	Audibility		
	Traffic	Humans	Nature
Soundscape evaluation	,269**	,266*	-,042
Overall quality			



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Some figures (3)

	Soundscape scenario differentials									
	Upbeat	Unknown	Characteristic	Discontinuous	Annoying	Noisy	Chaotic	Mindboggling	Boiling	Artificial
Soundscape evaluation	,561**		,560**		,606**	,331**	,332**		,460**	,497**
Overall quality	,29*									



	Other qualities									
	Air quality	Safety	Maintenance	Materials	Entrance	Soundscape	Nature	Climate	Visual	Smell
Soundscape evaluation										
Overall quality			,304**	,394**		,213*	,390**		,524**	,284**



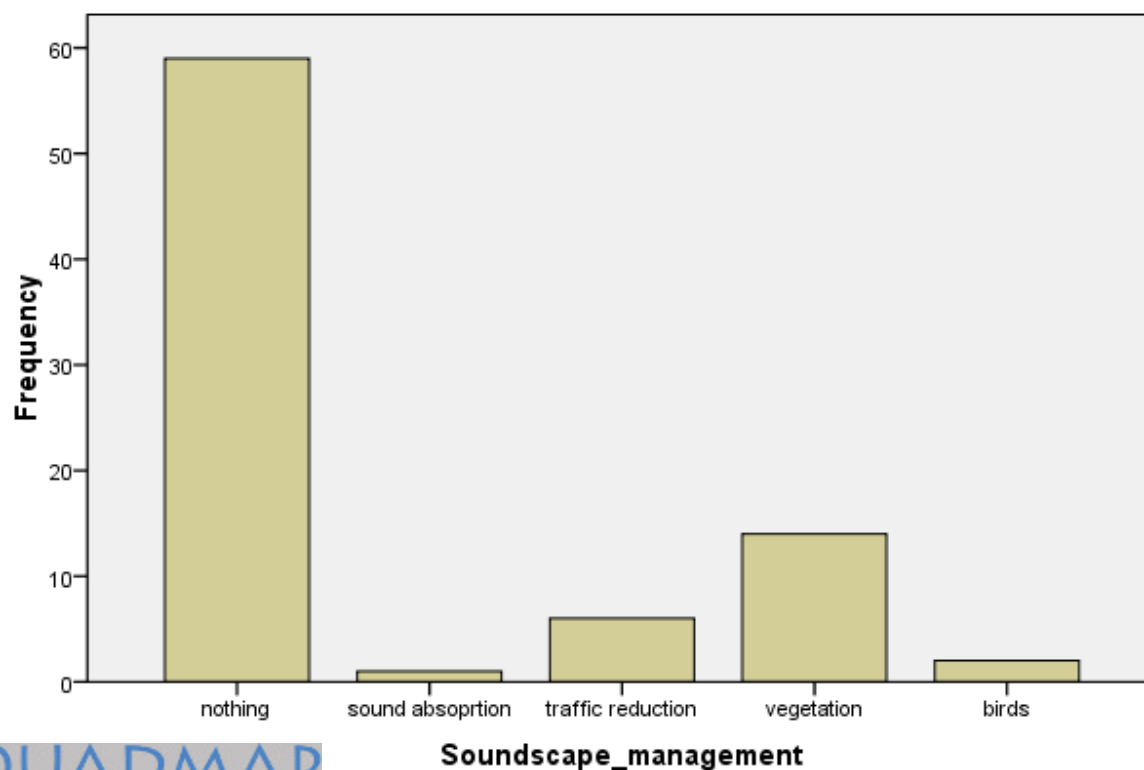
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Future steps and challenges: intervention effect

Correlations

	Sound traffic audible	Soundscape management
Sound traffic audible	1	-,271*
Pearson Correlation	,014	81
relation	81	1
	81	82

level (2-tailed).

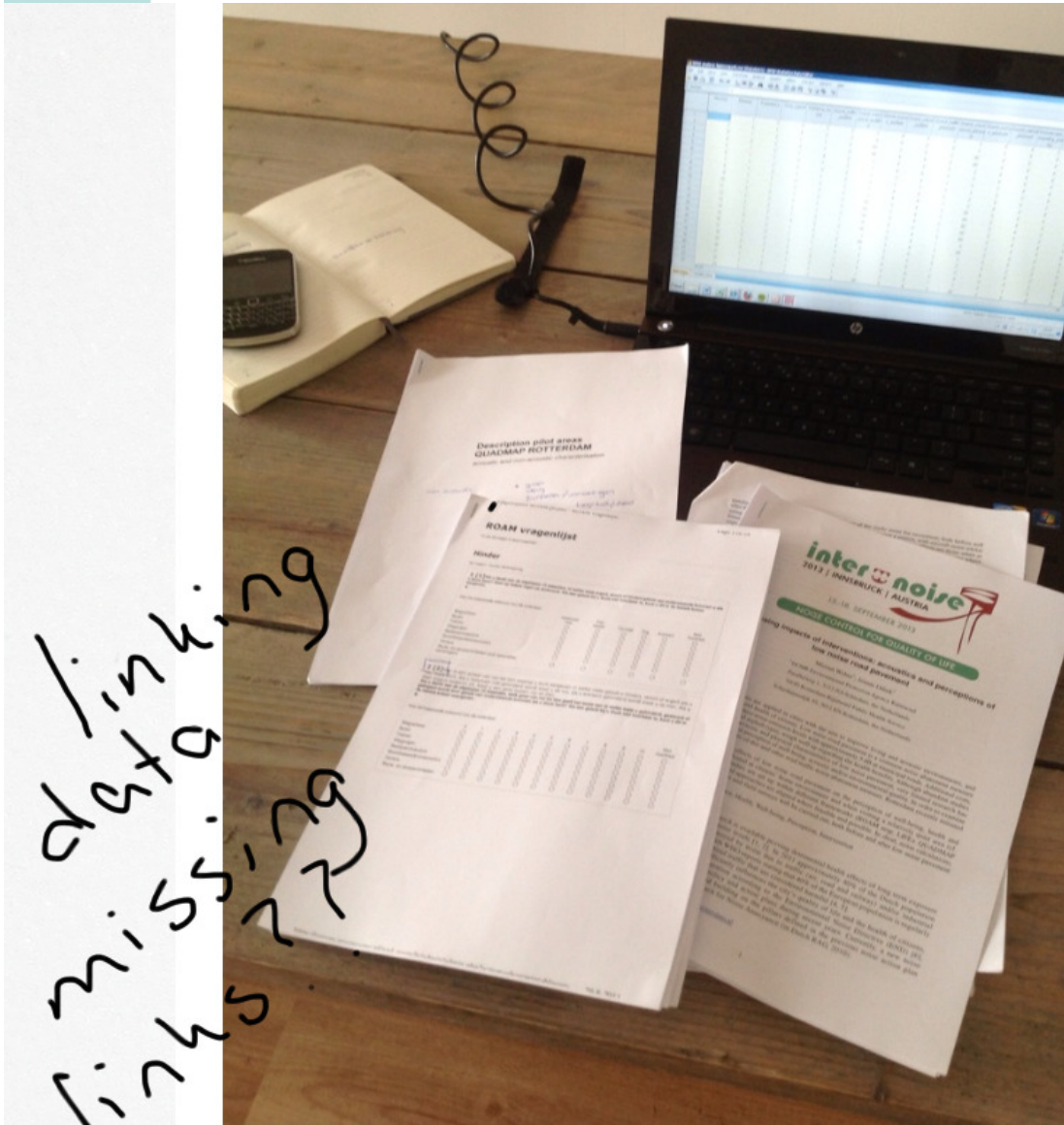


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Discussion

- Which acoustic indicator links best with perception and appraisal of sound environment?
- Could this acoustic indicator (better) predict population response to changes (increase and/or decrease) in noise exposure in terms of annoyance?
- Or could this acoustic indicator predict population response to changes in noise exposure in *other* (well being or health) variables?
- Will population responses to changes in noise exposure differ in both situations (at home and in a park)?



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Further questions and updates on research results:

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