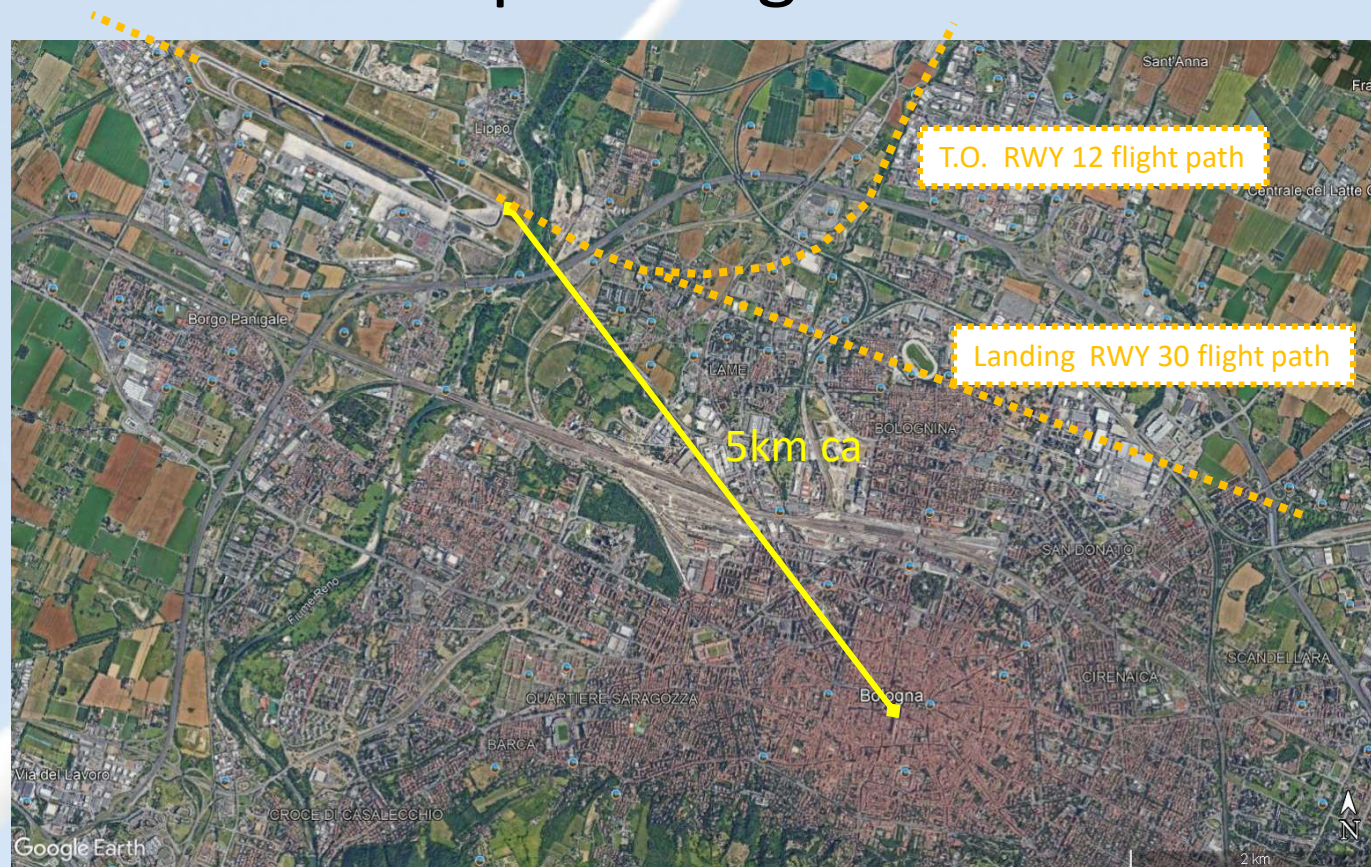


Aircraft Noise from “G. Marconi” Bologna-Italy

Three case-study in the north-west
quarters of the city
(Quartiere Navile)

Three case-study in Navile Quartier

Location of the Airport Guglielmo Marconi



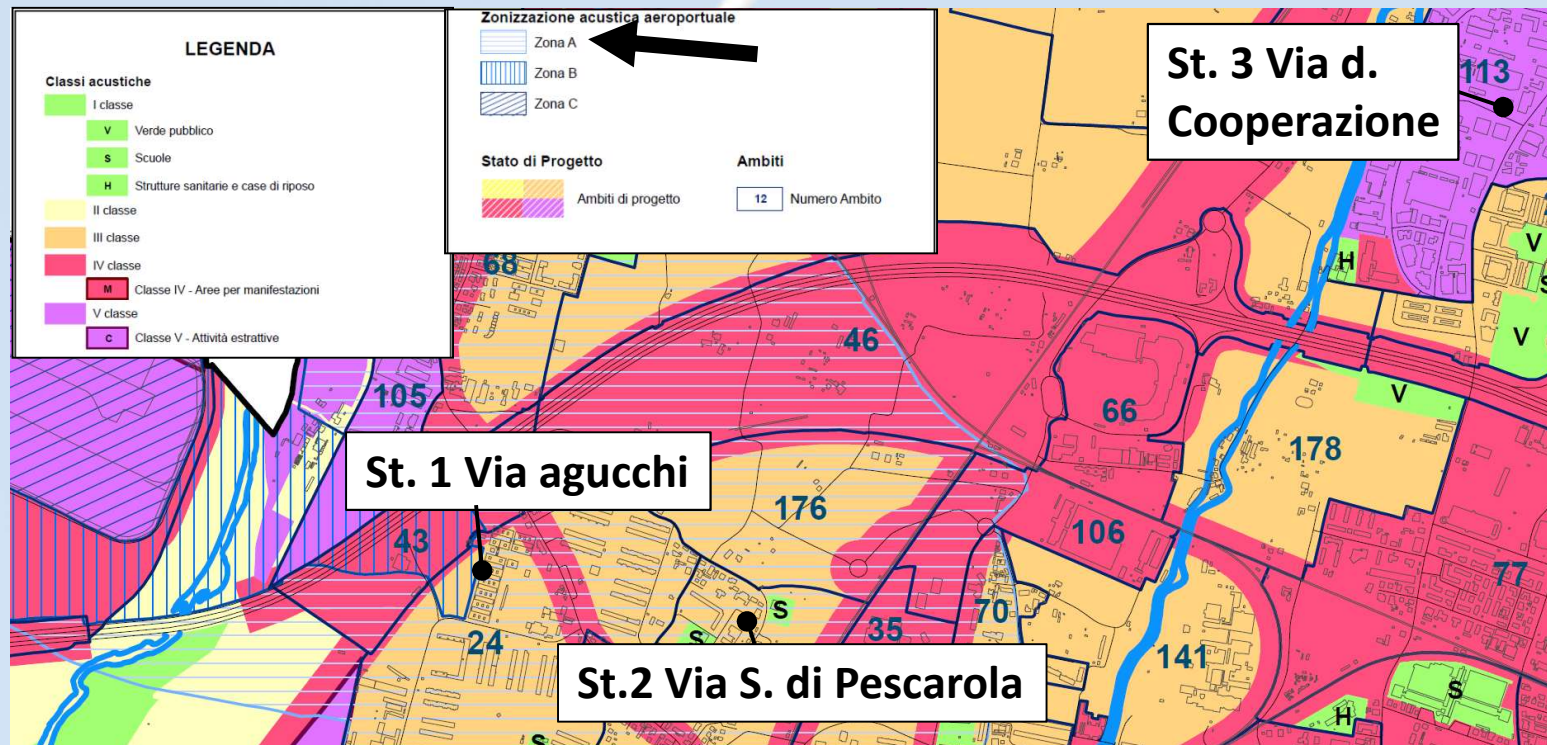
Three case-study in Navile Quartier

Location of the microphone stations



Three case-study in Navile Quartier

Acoustic classification – Bologna

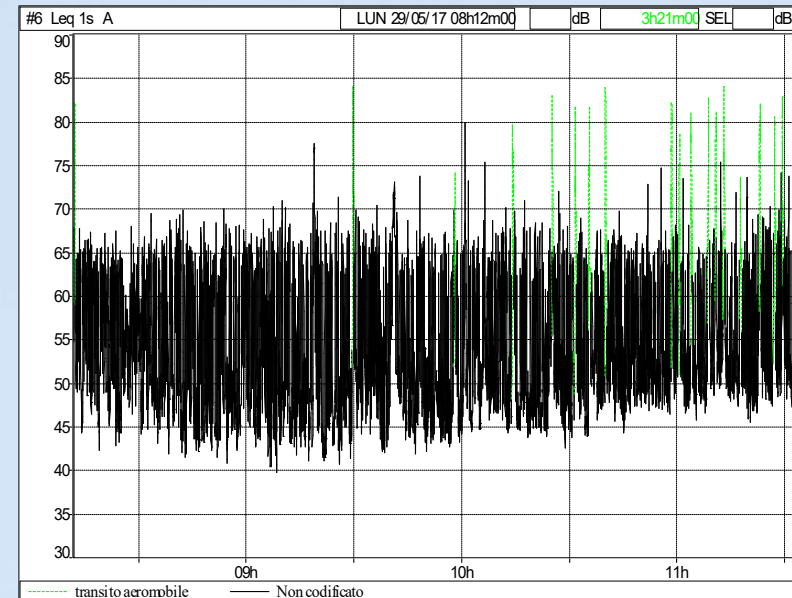


Airport noise is regulated by Italian law which imposes maximum limits for inhabited areas called «Zona A»

Three case-study in Navile Quartier

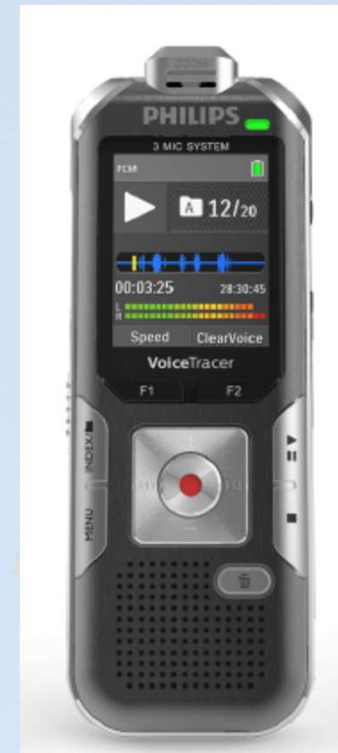
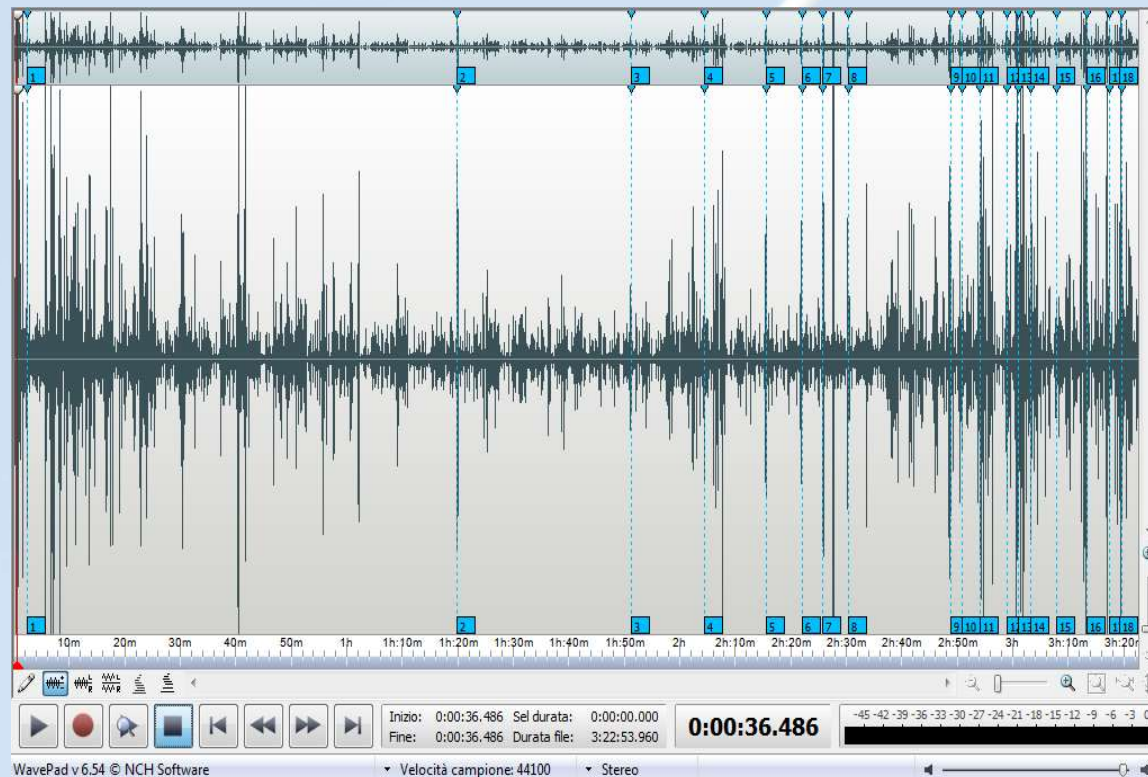
Acustical measures – instrumentation

Sound level meter class 1 01dB «Solo» Blue (calibrated), with shielded microphone extension cable (10m). Microphone at +6m above the ground.



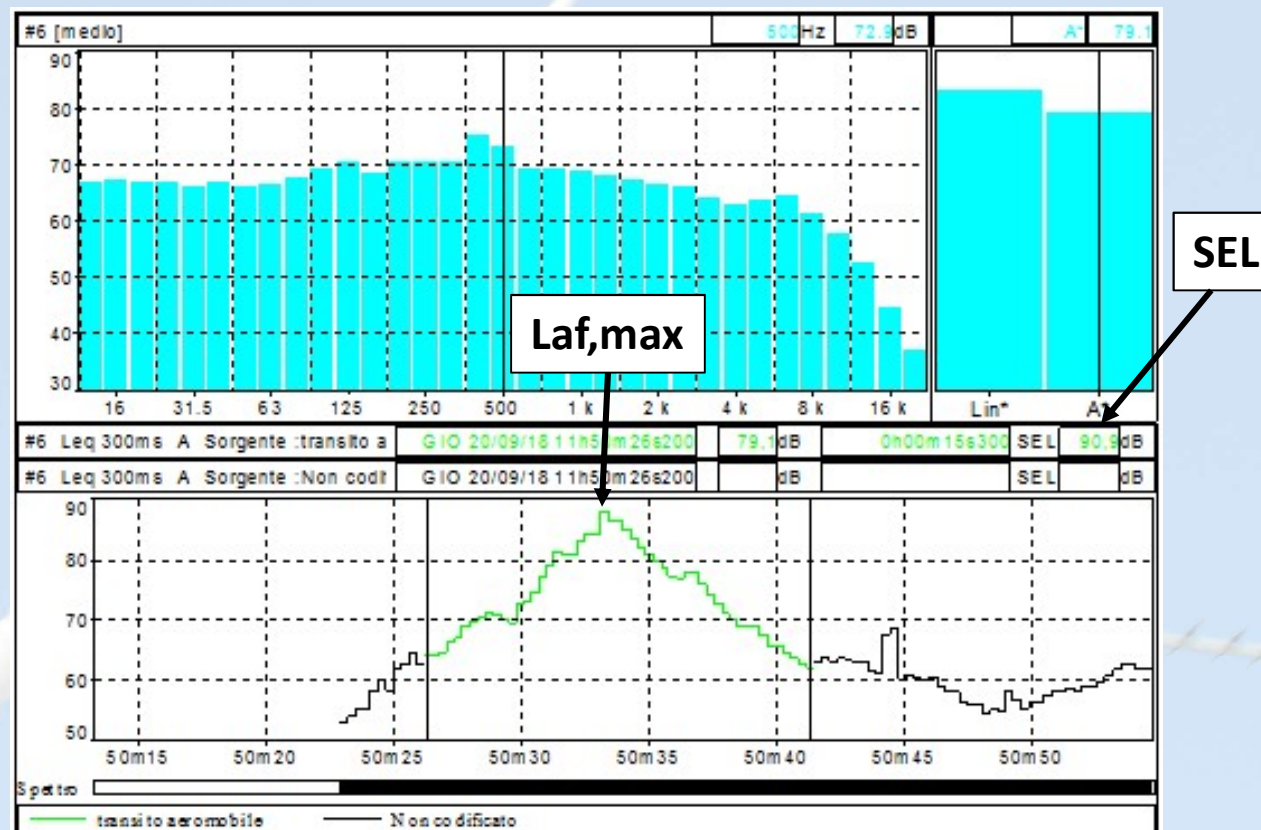
Three case-study in Navile Quartier

Acustical measures – instrumentation Sound level meter class 1 Digital recorder for event recognition, Philips DVT 6010



Three case-study in Navile Quartier

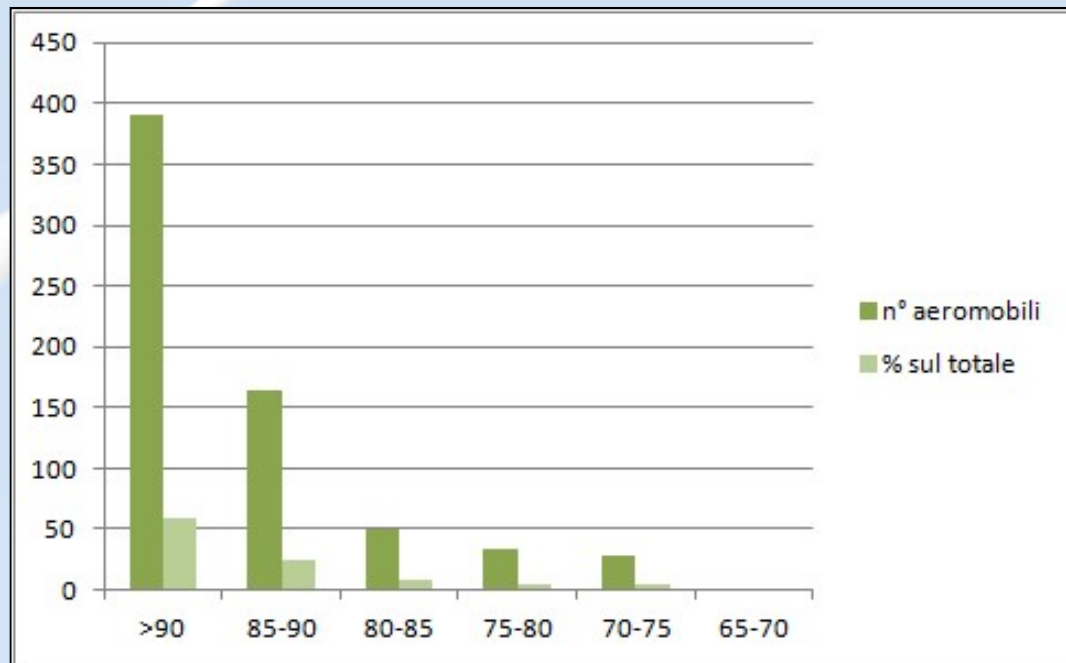
Acustical measures – finding and studying the events



Three case-study in Navile Quartier

Results – 1-Via Agucchi 17-23 giu. 2017– SEL

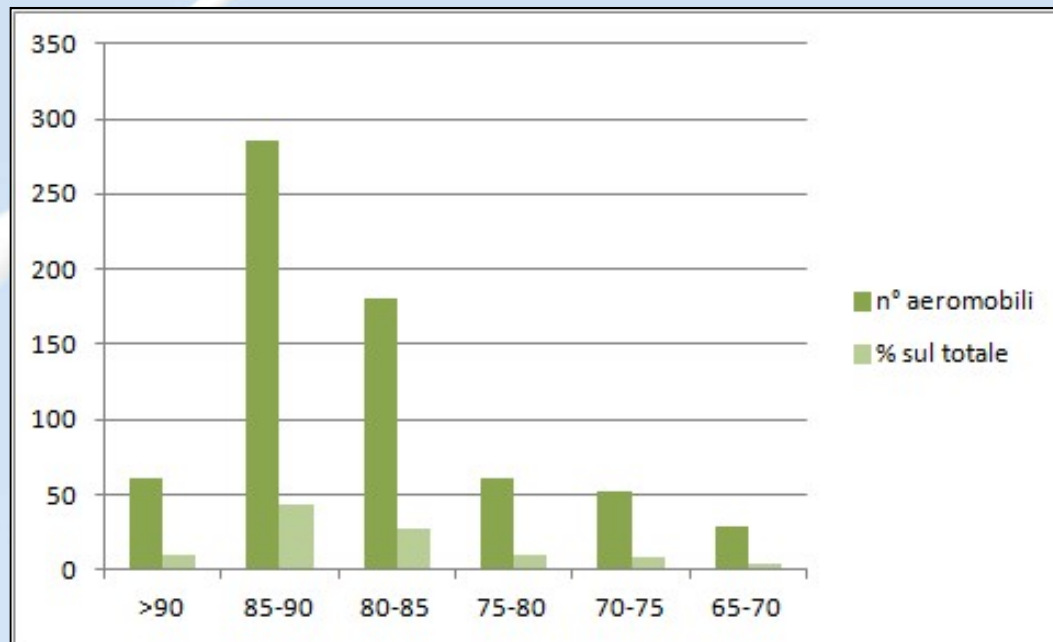
17-23 Giugno 2017		
Range dei SEL	n° aeromobili	% sul totale
>90	390	58,5
85-90	165	24,7
80-85	49	7,3
75-80	34	5,1
70-75	29	4,3
65-70	0	0,0
Totale	667	100,0



Three case-study in Navile Quartier

Results –1-Via Agucchi 17-23 giu. 2017– Laf,max

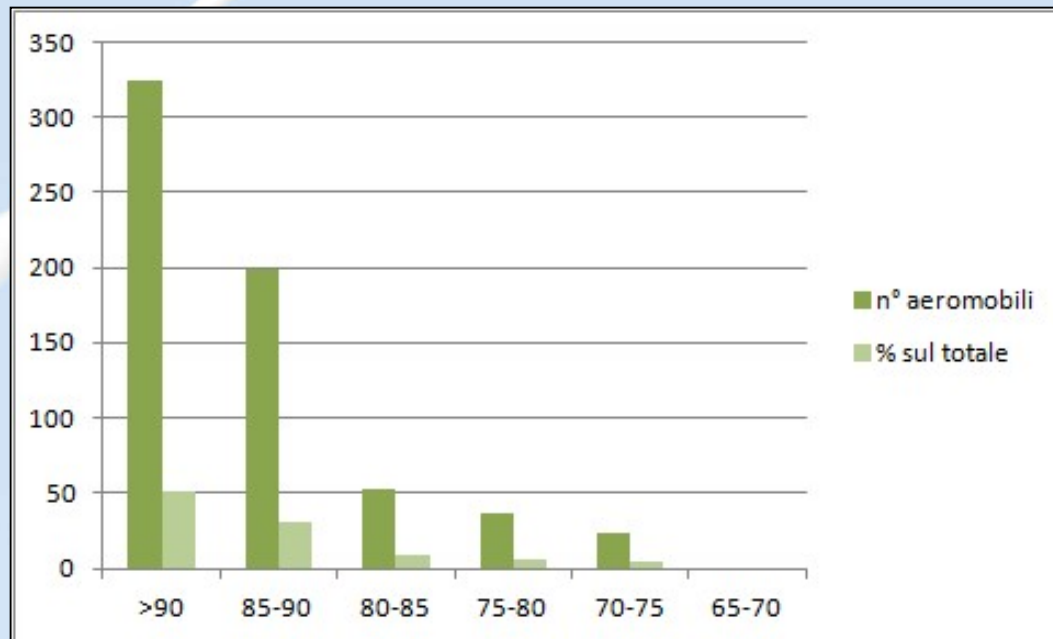
17-23 Giugno 2017		
Range dei Laf,max	n° aeromobili	% sul totale
>90	60	9,0
85-90	286	42,9
80-85	181	27,1
75-80	60	9,0
70-75	52	7,8
65-70	28	4,2
Totale	667	100,0



Three case-study in Navile Quartier

Results –1-Via Agucchi 15-21 Lug. 2017– SEL

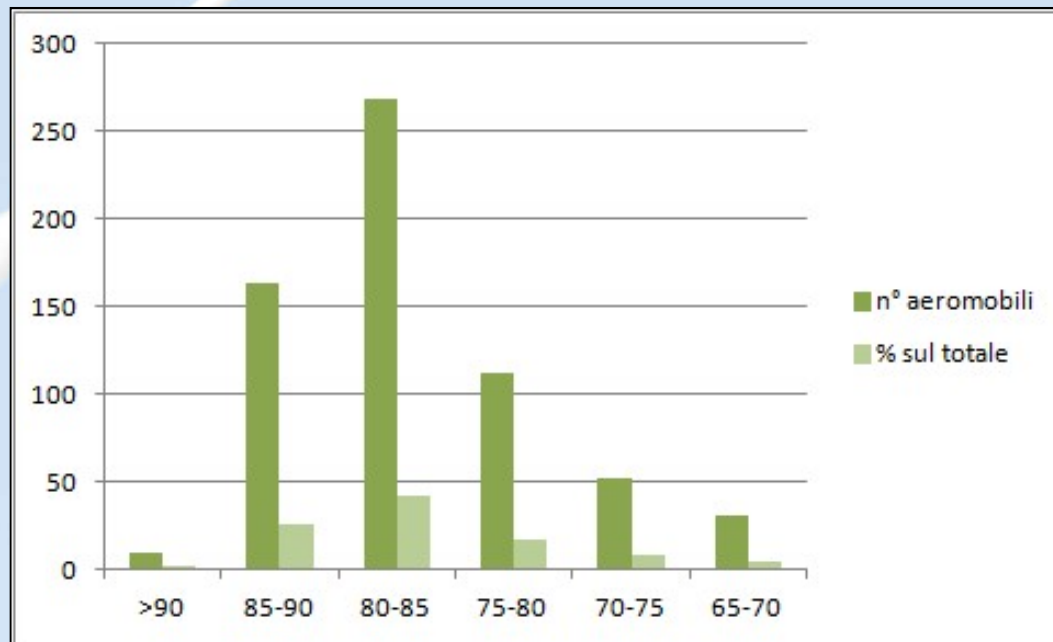
15-21 Luglio 2017		
Range dei SEL	n° aeromobili	% sul totale
>90	324	50,9
85-90	198	31,1
80-85	53	8,3
75-80	37	5,8
70-75	24	3,8
65-70	0	0,0
Totale	636	100,0



Three case-study in Navile Quartier

Results –1-Via Agucchi 15-21 Lug. 2017– Laf,max

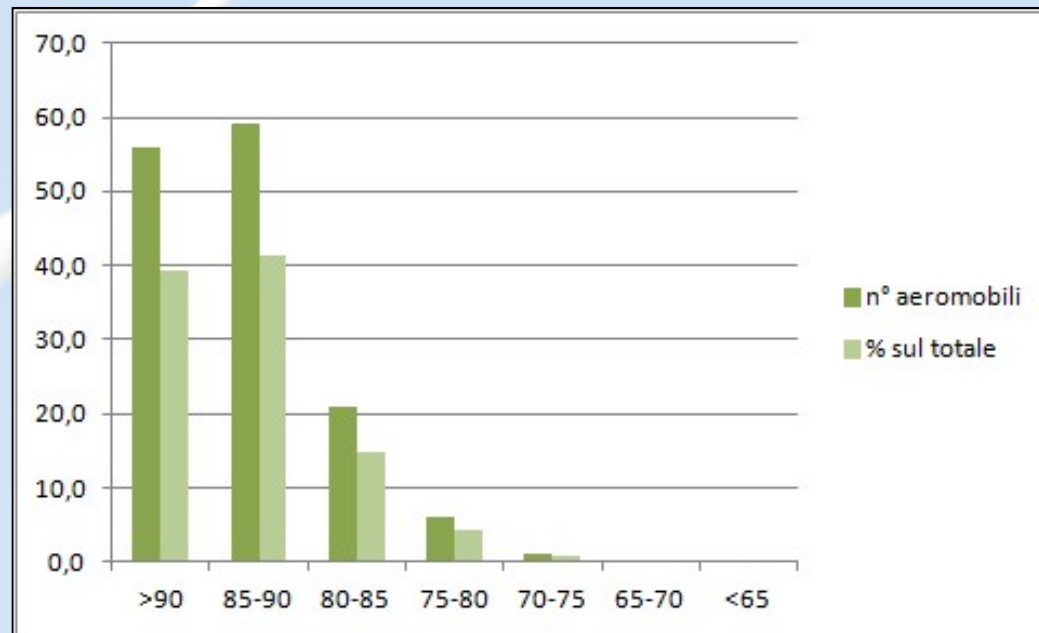
15-21 Luglio 2017		
Range dei Laf,max	n° aeromobili	% sul totale
>90	9	1,4
85-90	163	25,6
80-85	269	42,3
75-80	112	17,6
70-75	52	8,2
65-70	31	4,9
Totale	636	100,0



Three case-study in Navile Quartier

Results –2-Via S. di Pescarola 29-30 Mag. 2017– SEL

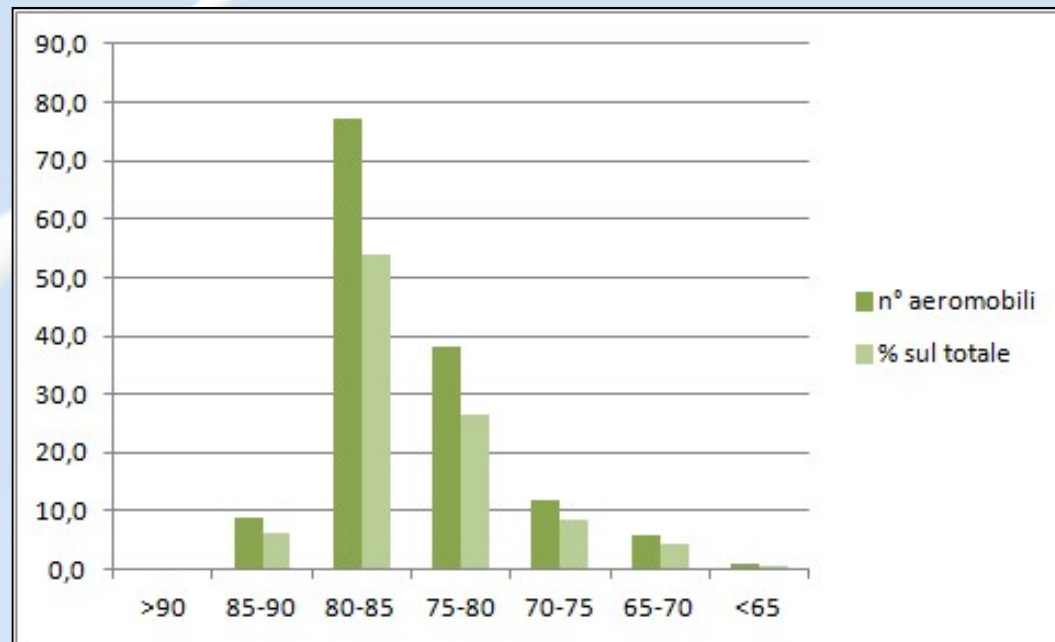
29-31 Maggio 2018		
range dei SEL	n° aeromobili	% sul totale
>90	56,0	39,2
85-90	59,0	41,3
80-85	21,0	14,7
75-80	6,0	4,2
70-75	1,0	0,7
65-70	0,0	0,0
<65	0,0	0,0
Totale	143,0	100,0



Three case-study in Navile Quartier

Results –2-Via S. di Pescarola 29-30 Mag.2017–
Laf,max

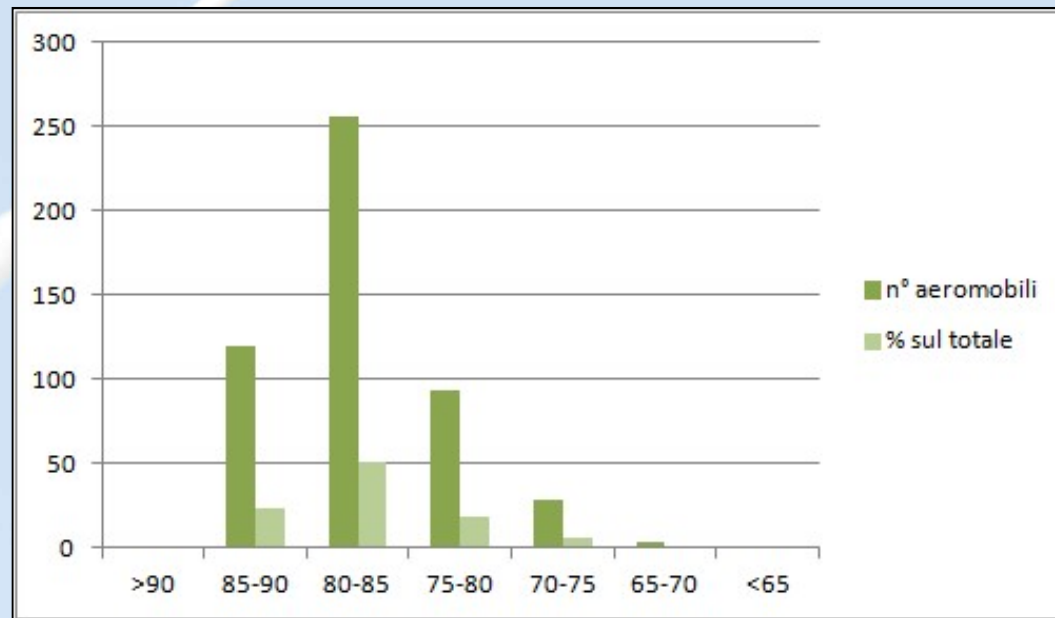
29-31 Maggio 2018		
range del Laf,max	n° aeromobili	% sul totale
>90	0,0	0,0
85-90	9,0	6,3
80-85	77,0	53,8
75-80	38,0	26,6
70-75	12,0	8,4
65-70	6,0	4,2
<65	1,0	0,7
Totale	143,0	100,0



Three case-study in Navile Quartier

Results – 3-Via d. Cooperazione 6-12 Set.2018–
SEL

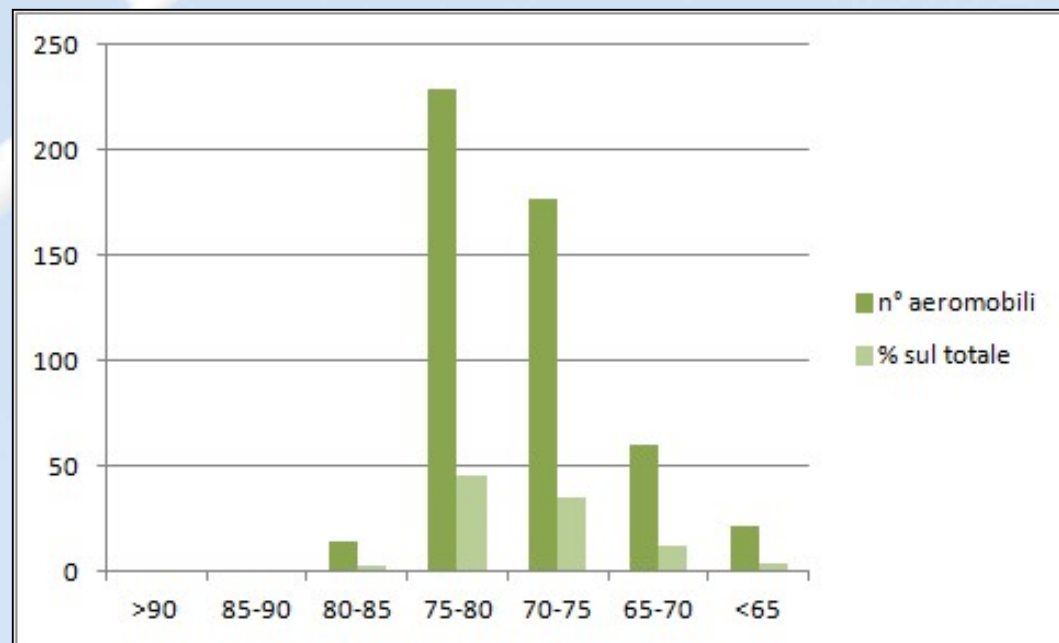
06-12 Settembre 2018		
Range dei SEL	n° aeromobili	% sul totale
>90	1	0,2
85-90	120	24,0
80-85	256	51,1
75-80	93	18,6
70-75	28	5,6
65-70	3	0,6
<65	0	0,0
Totale	501	100,0



Three case-study in Navile Quartier

Results –3-Via d. Cooperazione 6-12 Set.2018–
Laf,max

06-12 Settembre 2018		
Range dei Laf,max	n° aeromobili	% sul totale
>90	0	0,0
85-90	0	0,0
80-85	14	2,8
75-80	229	45,7
70-75	177	35,3
65-70	60	12,0
<65	21	4,2
Totale	501	100,0



Three case-study in Navile Quartier

Via Agucchi 17-23 giu. e 15-21 lug. 2017

Calculating L_{den} with ISO 1996

$$L_{den} = 10 \cdot \log_{10} \left[\frac{1}{24} \cdot \left(12 \cdot 10^{\frac{L_{day}}{10}} + 4 \cdot 10^{\frac{L_{evening}+5}{10}} + 8 \cdot 10^{\frac{L_{night}+10}{10}} \right) \right]$$

3.6.3

night sound level

$L_{night,h}$

equivalent continuous sound pressure level when the reference time interval is the night

Note 1 to entry: Subscript h indicates the number of hours, e.g. $L_{night,8}$.

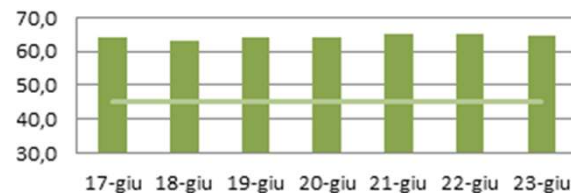
Note 2 to entry: A night is normally the 8 h between 23 h and 7 h or the 9 h between 22 h and 7 h. However, individual countries define night differently, e.g. 22 h to 6 h.

Three case-study in Navile Quartier

Via Agucchi 17-23 giu. e 15-21 lug. 2017

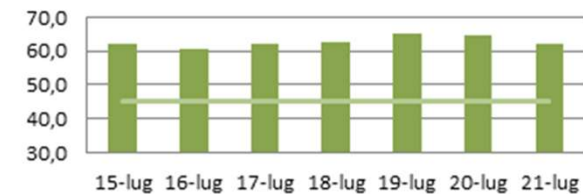
Calculating Lden with ISO 1996

Via Agucchi (abitazione privata) 17-23 giugno 2017



	17-giu	18-giu	19-giu	20-giu	21-giu	22-giu	23-giu
Lden riscontrato (dB(A))	64,0	63,2	63,9	64,2	65,1	65,3	64,6
Limite imposto da OMS-Lden (dB(A))	45	45	45	45	45	45	45

Via Agucchi (abitazione privata) 15-21 luglio 2017



	15-lug	16-lug	17-lug	18-lug	19-lug	20-lug	21-lug
Lden riscontrato (dB(A))	62,3	60,8	62,3	62,7	65,0	64,8	62,0
Limite imposto da OMS-Lden (dB(A))	45	45	45	45	45	45	45

Il Rumore prodotto dall'Aeroporto "G. Marconi" di Bologna

11/11/2021 – U.E.C.N.A. meeting

Thanks for your attention

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Technician (N° 5157 ENETECA List)