

Appendix A

Results of the Spearman's rank correlation test on the degree of association between % mobility change and noise indicators and between % mobility change and chemical pollutants PM₁₀ and NO₂.

Table 7 Relationship between the noise indicators (L_d, L_e, L_n, L_{den}) and % mobility change.

	Point 1				Point 2				Point 3			
	L_d	L_e	L_n	L_{den}	L_d	L_e	L_n	L_{den}	L_d	L_e	L_n	L_{den}
Spearman's rho	0.766	0.620	0.756	0.771	0.663	-	0.715	0.29	0.430	-	0.431	0.22
p value	<0.00	<0.00	<0.00	<0.00	<0.00	n.s.	<0.00	<0.0	<0.00	<0.00	<0.00	<0.0
	1	1	1	1	1	1	1	1	1	1	1	5

n.s.: Non-significant correlation ($p > 0.05$)

Table 8 Relationship between PM₁₀, NO₂ and % mobility change.

	PM ₁₀	NO ₂
Spearman's rho	0.364	0.692
p value	<0.001	<0.001

Appendix B

Spearman's rank correlation test was employed to analyze the relationship between meteorological variables and noise indicators, as well as between meteorological variables and atmospheric chemical pollutants.

Table 9 Spearman's correlation among the noise indicators and meteorological parameters.

		Point 1				Point 2				Point 3			
		L_d	L_e	L_n	L_{den}	L_d	L_e	L_n	L_{den}	L_d	L_e	L_n	L_{den}
Temperature	rho	-	-	0.210	-	-	-	0.251	-	0.15	-	0.323	0.178
	p	0.085	0.085	0.009	0.117	0.427	0.245	0.01	0.245	6	0.139	0.01	0.178
Precipitation	rho	-	-	-	-	-	0.052	-	-	0.02	0.204	-	-
	p	<0.0	<0.0	<0.00	<0.00	n.s.	n.s.	<0.01	n.s.	n.s.	n.s.	n.s.	<0.0
Wind speed	rho	0.012	-	-	-	0.038	0.050	0.028	0.027	0.16	0.154	0.086	0.174
	p	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Sunshine hours	rho	0.058	0.071	0.238	0.094	-	-	0.304	-	0.05	-	0.339	0.325
	p	n.s.	n.s.	<0.01	n.s.	n.s.	<0.01	<0.00	0.073	1	0.121	<0.0	<0.0
		1	1	1	1	1	1	1	1	1	1	1	1

n.s.: Non-significant correlation ($p > 0.05$)

Table 10 Relationship between PM₁₀, NO₂ and meteorological parameters.

		PM ₁₀	NO ₂
Temperature	rho	0.480	-0.143
	<i>p</i>	<0.001	n.s.
Precipitation	rho	-0.414	-0.471
	<i>p</i>	<0.001	<0.001
Wind speed	rho	-0.090	-0.345
	<i>p</i>	n.s.	<0.001
Sunshine hours	rho	0.384	0.089
	<i>p</i>	<0.001	n.s.

Appendix C

Mean values of the noise indicators L_d , L_e and L_n during the stages considered.

Table 11 Mean values of the noise indicators L_d , L_e and L_n along with the standard error of the mean, for the three measurement points, during the various stages considered for weekdays and weekends.

	Point 1					
	Weekdays			Weekend		
	L_d (dB)	L_e (dB)	L_n (dB)	L_d (dB)	L_e (dB)	L_n (dB)
Stage A	62.6 ^{+0.2} _{-0.2}	60.2 ^{+0.2} _{-0.2}	54.7 ^{+0.2} _{-0.2}	59.8 ^{+0.2} _{-0.2}	61.1 ^{+0.2} _{-0.2}	52.8 ^{+0.3} _{-0.3}
Stage B	59.3 ^{+0.5} _{-0.6}	57.2 ^{+0.4} _{-0.5}	47.7 ^{+1.2} _{-0.9}	56.1 ^{+0.6} _{-0.8}	60.1 ^{+1.1} _{-1.4}	47.7 ^{+0.3} _{-0.3}
Stage C	57.3 ^{+0.3} _{-0.3}	55.8 ^{+0.4} _{-0.5}	45.7 ^{+1.0} _{-1.3}	55.0 ^{+0.6} _{-0.7}	58.3 ^{+1.9} _{-3.4}	47.9 ^{+0.7} _{-0.8}
Stage D	59.9 ^{+0.5} _{-0.6}	57.7 ^{+1.5} _{-2.3}	49.0 ^{+1.5} _{-2.4}	56.3 ^{+0.7} _{-0.9}	59.6 ^{+1.2} _{-1.6}	46.5 ^{+0.5} _{-0.5}
Stage E	60.2 ^{+1.3} _{-1.9}	56.0 ^{+0.7} _{-0.9}	46.2 ^{+0.6} _{-0.7}	56.4 ^{+0.7} _{-0.8}	59.6 ^{+1.7} _{-2.8}	47.0 ^{+0.8} _{-1.0}
Stage F	68.0 ^{+1.1} _{-1.4}	55.1 ^{+0.1} _{-0.1}	47.6 ^{+0.2} _{-0.2}	55.9 ^{+0.5} _{-0.6}	56.8 ^{+0.4} _{-0.5}	48.3 ^{+0.5} _{-0.5}
Stage G	62.5 ^{+1.4} _{-1.1}	58.5 ^{+0.3} _{-0.3}	51.1 ^{+0.5} _{-0.6}	56.8 ^{+0.6} _{-0.6}	59.4 ^{+0.4} _{-0.4}	51.3 ^{+0.8} _{-1.0}
Stage H	60.6 ^{+0.6} _{-0.6}	59.3 ^{+0.5} _{-0.6}	54.2 ^{+0.6} _{-0.7}	57.3 ^{+0.4} _{-0.4}	59.7 ^{+0.3} _{-0.3}	52.2 ^{+0.6} _{-0.7}
Stage I	61.2 ^{+0.2} _{-0.2}	60.4 ^{+0.5} _{-0.5}	56.2 ^{+1.2} _{-1.7}	59.5 ^{+0.6} _{-0.5}	60.6 ^{+0.4} _{-0.4}	53.1 ^{+0.6} _{-0.7}
Stage J	61.4 ^{+0.3} _{-0.3}	59.1 ^{+0.2} _{-0.2}	56.4 ^{+0.5} _{-0.5}	58.2 ^{+1.0} _{-1.3}	60.5 ^{+0.2} _{-0.2}	53.4 ^{+0.4} _{-0.4}

	Point 2					
	Weekdays			Weekend		
	L_d (dB)	L_e (dB)	L_n (dB)	L_d (dB)	L_e (dB)	L_n (dB)
Stage A	59.9 ^{+0.1} _{-0.1}	59.1 ^{+0.2} _{-0.2}	49.8 ^{+0.4} _{-0.5}	57.7 ^{+0.6} _{-0.7}	57.8 ^{+0.5} _{-0.5}	49.8 ^{+0.8} _{-1.0}
Stage B	57.0 ^{+0.5} _{-0.5}	62.1 ^{+1.2} _{-1.7}	46.4 ^{+0.3} _{-0.3}	54.5 ^{+1.1} _{-1.4}	61.1 ^{+1.4} _{-2.2}	47.4 ^{+1.9} _{-3.3}
Stage C	57.0 ^{+0.3} _{-0.3}	62.0 ^{+1.4} _{-2.1}	47.8 ^{+0.8} _{-0.9}	53.8 ^{+1.6} _{-2.7}	60.8 ^{+1.4} _{-2.0}	43.2 ^{+1.0} _{-1.3}
Stage D	56.8 ^{+0.2} _{-0.2}	62.7 ^{+1.0} _{-1.2}	46.4 ^{+0.5} _{-0.5}	54.5 ^{+1.2} _{-1.7}	58.2 ^{+0.9} _{-1.1}	45.9 ^{+0.8} _{-1.0}
Stage E	56.8 ^{+0.2} _{-0.2}	57.0 ^{+1.4} _{-2.0}	47.8 ^{+0.6} _{-0.7}	53.6 ^{+1.8} _{-3.1}	56.6 ^{+1.1} _{-1.6}	43.6 ^{+1.7} _{-2.8}
Stage F	56.7 ^{+0.1} _{-0.1}	54.8 ^{+0.5} _{-0.6}	47.1 ^{+0.4} _{-0.4}	54.9 ^{+2.0} _{-3.8}	53.6 ^{+1.1} _{-1.4}	45.5 ^{+2.2} _{-4.8}
Stage G	57.6 ^{+0.3} _{-0.3}	56.0 ^{+0.2} _{-0.2}	48.3 ^{+0.3} _{-0.4}	55.6 ^{+1.0} _{-1.2}	55.1 ^{+0.3} _{-0.3}	47.2 ^{+0.4} _{-0.5}

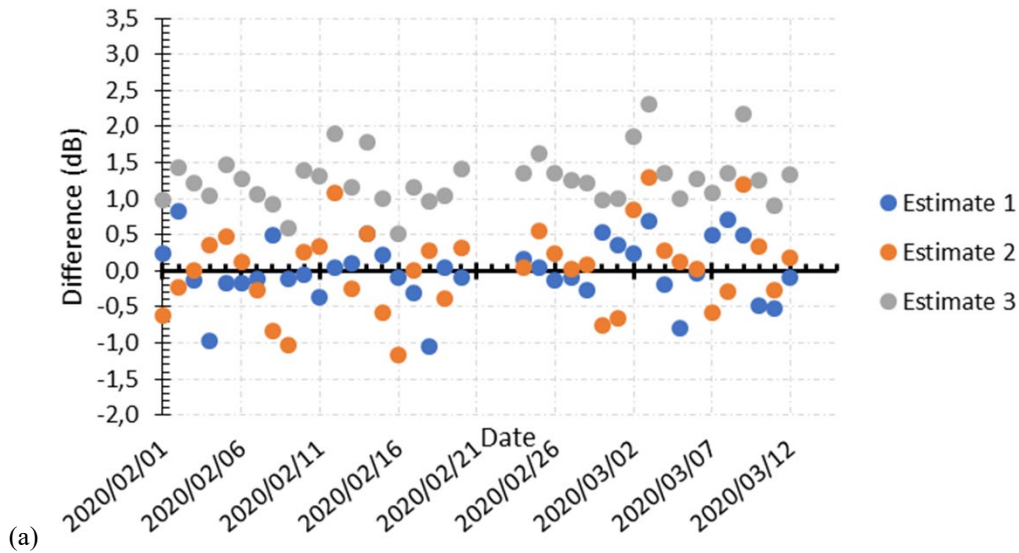
Stage H	57.4 ^{+0.3} _{-0.4}	57.2 ^{+0.4} _{-0.4}	48.8 ^{+0.4} _{-0.5}	57.4 ^{+1.0} _{-1.3}	56.9 ^{+0.7} _{-0.8}	49.3 ^{+0.4} _{-0.5}
Stage I	57.9 ^{+0.1} _{-0.1}	58.0 ^{+0.3} _{-0.3}	50.2 ^{+0.2} _{-0.2}	56.4 ^{+0.8} _{-1.0}	57.0 ^{+0.4} _{-0.4}	50.7 ^{+0.5} _{-0.6}
Stage J	58.2 ^{+0.1} _{-0.1}	58.4 ^{+0.1} _{-0.1}	52.3 ^{+0.1} _{-0.1}	56.3 ^{+1.4} _{-2.1}	57.1 ^{+0.7} _{-0.8}	52.6 ^{+0.8} _{-0.9}

Point 3						
	Weekdays			Weekend		
	L_d (dB)	L_e (dB)	L_n (dB)	L_d (dB)	L_e (dB)	L_n (dB)
Stage A	58.1 ^{+0.3} _{-0.4}	56.9 ^{+0.6} _{-0.7}	51.5 ^{+0.5} _{-0.5}	55.7 ^{+0.4} _{-0.4}	56.2 ^{+0.3} _{-0.3}	53.5 ^{+0.6} _{-0.7}
Stage B	56.3 ^{+0.5} _{-0.6}	61.7 ^{+1.3} _{-1.9}	51.9 ^{+0.7} _{-0.9}	54.5 ^{+0.2} _{-0.2}	57.2 ^{+0.7} _{-0.8}	49.9 ^{+1.1} _{-1.6}
Stage C	55.5 ^{+0.3} _{-0.3}	59.3 ^{+0.5} _{-0.6}	50.7 ^{+0.7} _{-0.9}	55.9 ^{+0.6} _{-0.8}	60.6 ^{+1.0} _{-1.4}	48.7 ^{+1.7} _{-2.7}
Stage D	57.5 ^{+0.4} _{-0.5}	59.4 ^{+0.7} _{-0.9}	50.3 ^{+0.6} _{-0.7}	56.1 ^{+0.2} _{-0.2}	58.8 ^{+0.9} _{-1.2}	49.2 ^{+0.8} _{-1.0}
Stage E	57.0 ^{+0.6} _{-0.6}	60.2 ^{+0.1} _{-0.1}	49.7 ^{+1.3} _{-1.9}	56.9 ^a	61.5 ^a	57.8 ^a
Stage F						
Stage G						
Stage H	55.6 ^a	57.1 ^a		53.2 ^{+0.2} _{-0.2}	55.8 ^{+1.1} _{-1.4}	54.8 ^{+0.5} _{-0.6}
Stage I	57.9 ^{+0.5} _{-0.5}	57.3 ^{+0.4} _{-0.4}	52.4 ^{+0.4} _{-0.4}	55.8 ^{+0.4} _{-0.4}	57.0 ^{+0.9} _{-1.1}	55.1 ^{+0.4} _{-0.5}
Stage J	56.7 ^{+0.3} _{-0.4}	57.5 ^{+0.3} _{-0.4}	53.6 ^{+0.3} _{-0.3}	56.8 ^{+0.4} _{-0.4}	58.1 ^{+0.5} _{-0.6}	51.8 ^{+0.4} _{-0.5}

^a There was only one value for this stage.

Appendix D

The actual values measured of L_{den} on the days prior to the declaration of the state of alarm were compared with three estimates considered for L_{den} .



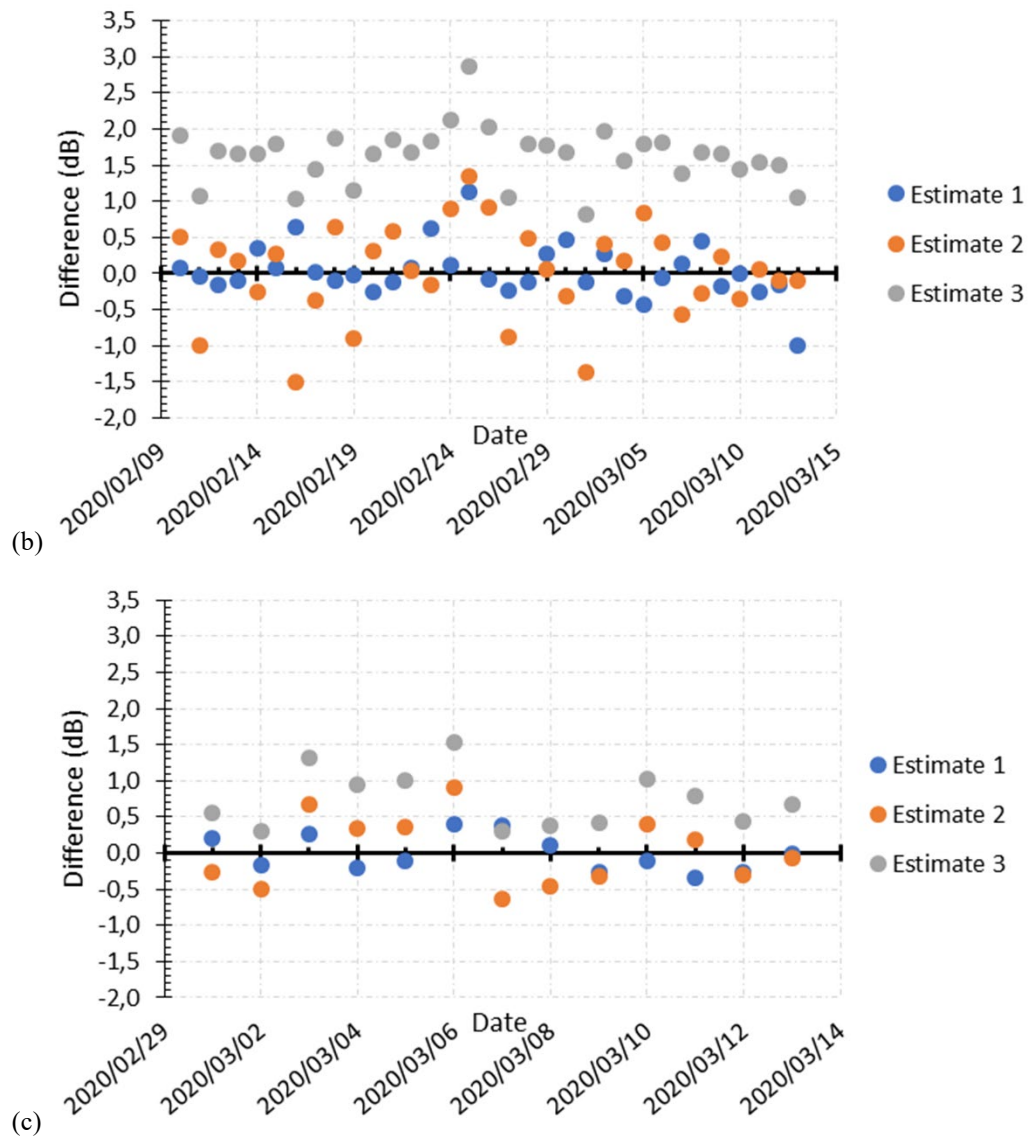


Fig. 8 Differences between the actual values of L_{den} during stage A and the different estimates considered for the three points: (a) Point 1; (b) Point 2; (c) Point 3.

Table 12 Some statistical parameters for the differences between the real values of L_{den} during stage A and the different estimates considered for the three points. Abs() stand for the absolute value of the differences. Min: minimum difference; max: maximum difference, SD: standard deviation.

	estimate 1	abs(estimate 1)	estimate 2	abs(estimate 2)	estimate 3
Point 1					
min	-1.0	0.0	-1.2	0.0	0.5
max	0.8	1.0	1.3	1.3	2.3
range	1.9	1.0	2.4	1.3	1.8
mean	0.0	0.3	0.0	0.4	1.3
SD	0.4	0.3	0.6	0.4	0.4
Point 2					
min	-1.0	0.0	-1.5	0.0	0.8
max	1.1	1.1	1.4	1.5	2.9

range	2.1	1.1	2.9	1.5	2.0
mean	0.0	0.3	0.0	0.5	1.6
SD	0.4	0.3	0.7	0.4	0.4
Point 3					
min	-0.3	0.0	-0.6	0.1	0.3
max	0.4	0.4	0.9	0.9	1.5
range	0.7	0.4	1.5	0.9	1.2
mean	0.0	0.2	0.0	0.4	0.7
SD	0.3	0.1	0.5	0.2	0.4

Appendix E

Values established by the Ministry for Ecological Transition and Demographic Challenge of the Spanish government and for the WHO for air quality.

Table 13 Air quality values established by the Ministry for Ecological Transition and Demographic Challenge of the Spanish government (2020)

PM ₁₀ (µg/m ³)	NO ₂ (µg/m ³)	Index category
0–20	0–40	Good
21–40	41–90	Reasonably good
41–50	91–120	Fair
51–100	121–230	Unfavourable
101–150	231–340	Very unfavourable
151–1200	341–1000	Extremely unfavourable

Table 14 Air quality values established by the WHO (2021)

Pollutant	Averaging period	WHO guideline 2021
		(µg/m ³)
PM ₁₀	Annual	15
	24 h	45
NO ₂	Annual	10
	24 h	25