

Supplementary Materials

Table S1. Variation % in the concentration of air pollutants during the lockdown periods compared with baseline period (2015–2018) for 19 countries.

Variation, % compared with baseline period (2015–2018)						
China	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	-116.22	-190.60	-47.90	-70.52	-2.23	12.90
Jan-20	0.29	-96.21	-121.23	-41.88	56.45	57.48
Jan-21	-61.30	-163.43	-50.21	-86.40	30.87	43.55
Jan-22	-80.61	-222.56	-119.40	-76.86	13.59	15.18
Feb-19	-114.74	-186.52	-96.81	-118.87	-18.35	-4.05
Feb-20	-37.57	-117.20	-166.31	-79.38	30.58	23.89
Feb-21	28.23	-164.04	-171.00	-112.20	24.70	16.47
Feb-22	-54.01	-147.09	-122.00	-75.76	23.93	18.00
Mar-19	-137.30	-187.46	-85.64	-120.89	-18.38	5.99
Mar-20	59.79	-105.48	-6.44	-94.08	18.16	20.91
Mar-21	-49.61	-125.53	-83.67	-96.35	33.02	30.76
Mar-22	-33.10	-139.14	-108.38	-73.96	12.84	9.55
Average value	-49.68	-153.77	-98.25	-87.26	17.10	20.89
Variation, % compared with baseline period (2015–2018)						
South Korea	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	-22.1	-15.2	-50.1	4.9	21.5	9.3
Jan-20	-36.2	-37.1	-88.1	3.5	10.8	-22.1
Jan-21	-34.4	-34.7	-102.6	4.1	5.6	-14.4
Jan-22	-51.7	-34.9	-113.1	8.6	10.9	-21.7
Feb-19	-10.3	-2.3	-14.0	10.0	4.7	-4.7
Feb-20	-11.0	-12.2	-43.1	3.3	-7.9	-29.3
Feb-21	-8.8	-10.2	-55.7	11.8	-6.8	-22.4
Feb-22	-44.0	-18.4	-73.4	11.6	-15.9	-32.7
Mar-19	-15.4	-7.1	-15.1	8.2	2.3	0.6
Mar-20	-27.4	-27.4	-54.7	-3.7	-16.2	-22.7
Mar-21	-20.1	-19.5	-72.2	6.2	-6.3	23.9
Mar-22	-39.4	-26.0	-94.1	2.6	-18.0	-18.4
Average value	-26.7	-20.4	-64.7	5.9	-1.3	-12.9
Variation, % compared with baseline period (2015–2018)						
India	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	-111.4	-30.5	-64.5	-13.2	21.5	19.3
Jan-20	-109.5	-53.3	-2.7	-19.3	12.5	0.2
Jan-21	-122.4	-24.7	-9.7	-23.9	21.9	25.8
Jan-22	-147.3	-86.4	-1.0	-34.0	15.1	16.5
Feb-19	-131.5	-41.3	-88.2	-40.9	-4.0	-0.1
Feb-20	-114.5	-24.1	16.9	-17.0	-3.6	7.7
Feb-21	-88.2	-7.3	-6.8	-36.9	14.1	35.0
Feb-22	-128.9	-54.0	6.3	-17.6	9.4	23.1
Mar-19	-94.9	-34.5	-74.0	-33.6	9.4	-12.9
Mar-20	-84.0	-69.4	-4.9	-32.0	2.7	-18.0
Mar-21	-75.0	-1.3	9.3	-23.8	27.8	31.3
Mar-22	-62.7	-44.2	13.3	-1.9	21.5	29.5
Average value	-105.9	-39.3	-17.2	-24.5	12.4	13.1

Variation, % compared with baseline period (2015–2018)						
Israel	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	–190.6	16.4	–43.5	22.9	17.7	20.1
Jan-20	92.8	53.2	87.4	80.8	62.9	59.0
Jan-21	–165.5	–6.2	–67.6	3.3	9.3	–18.2
Jan-22	–58.8	25.7	29.0	55.8	–11.6	–81.2
Feb-19	–171.8	–3.9	–56.0	–3.6	–21.2	–38.2
Feb-20	83.8	6.7	63.3	38.1	–1.9	32.2
Feb-21	–225.8	5.3	25.5	57.3	–24.2	–95.4
Feb-22	–167.4	27.0	22.6	59.0	–31.2	–59.7
Mar-19	–211.6	–0.6	–90.2	–8.4	–8.2	–26.1
Mar-20	–180.4	–12.3	–154.1	–8.0	–17.6	–15.8
Mar-21	–126.2	10.3	17.9	52.8	–26.7	11.7
Mar-22	–143.5	25.8	0.0	50.1	–45.6	–14.6
Average value	–122.1	12.3	–13.8	33.3	–8.2	–18.8
Variation, % compared with baseline period (2015–2018)						
Japan	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	–18.5	–7.0	–10.7	3.5	–6.7	–15.3
Jan-20	–25.5	–18.0	–45.2	–2.7	–14.6	–23.5
Jan-21	–32.2	–12.6	–49.4	–2.7	–9.3	–17.0
Jan-22	–49.4	–14.4	–56.2	1.3	–21.3	–36.0
Feb-19	–7.7	–8.7	–14.5	1.5	1.6	3.1
Feb-20	–15.2	–11.9	–27.9	–6.1	–9.7	2.6
Feb-21	–23.9	–12.2	–34.0	3.5	–8.9	–16.0
Feb-22	–35.1	–22.2	–50.3	0.3	–20.2	–38.1
Mar-19	–19.2	–12.4	–9.7	0.6	–3.3	–5.6
Mar-20	–29.6	–22.7	–50.0	–12.6	–24.1	–17.9
Mar-21	–32.2	–18.6	–54.4	–5.7	–14.3	–13.6
Mar-22	–5.4	–18.9	–47.2	–3.2	–16.1	–16.3
Average value	–24.5	–15.0	–37.5	–1.8	–12.3	–16.1
Variation, % compared with baseline period (2015–2018)						
Turkey	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	–3.4	10.1	–21.0	–3.2	–19.9	–32.1
Jan-20	–30.7	–19.9	6.4	–10.8	–51.5	–143.3
Jan-21	–7.2	–4.1	–10.6	–27.2	–55.5	–153.4
Jan-22	–44.9	–8.3	–1.5	–37.1	–57.3	–137.0
Feb-19	3.2	6.3	–15.8	–10.0	–8.0	–4.2
Feb-20	–41.1	–22.9	2.5	12.2	–47.4	–147.7
Feb-21	–14.8	–10.8	–4.1	–27.2	–43.1	–147.0
Feb-22	–44.5	–10.1	–7.0	–45.2	–32.7	–132.2
Mar-19	4.5	8.4	3.1	–10.0	–9.6	–18.0
Mar-20	–35.8	–21.0	–14.4	–20.1	–44.6	–157.4
Mar-21	–26.9	–19.7	9.9	–33.2	–61.3	–158.5
Mar-22	–89.0	–21.0	0.3	–32.7	–42.9	–149.8
Average value	–27.6	–9.4	–4.4	–20.4	–39.5	–115.0
Variation, % compared with baseline period (2015–2018)						
USA	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	–25.6	–5.7	–102.2	1.8	–5.3	3.2
Jan-20	–17.7	–9.5	–147.6	2.2	–13.3	–8.2
Jan-21	–32.9	–16.4	–160.8	4.1	–0.8	36.2

Jan-22	-20.9	-3.4	-104.1	5.9	-2.1	14.3
Feb-19	-31.5	-2.5	-134.3	57.0	3.4	-7.8
Feb-20	-9.2	-10.5	-130.6	4.4	-14.5	-15.6
Feb-21	-24.1	-13.5	-134.3	6.0	-5.5	8.1
Feb-22	-14.1	-5.2	-83.9	6.0	-3.8	6.2
Mar-19	-13.7	13.7	-59.0	56.2	15.5	-8.8
Mar-20	13.8	-23.2	-136.9	-6.8	-15.7	-46.7
Mar-21	-15.7	-8.5	-46.0	4.5	0.2	4.1
Mar-22	-14.1	-6.7	-47.9	3.7	-9.4	-12.4
Average value	-17.1	-7.6	-107.3	12.1	-4.3	-2.3
Variation, % compared with baseline period (2015–2018)						
Canada	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	-1010.0	-21.9	-254.6	-25.9	-2.4	41.5
Jan-20	72.6	21.2	51.0	29.5	-7.9	-18.7
Jan-21	-1010.0	-41.3	-265.7	-6.9	-27.2	15.3
Jan-22	-1010.0	-36.9	-194.0	17.3	-110.5	-82.8
Feb-19	-990.0	-6.7	-317.3	-9.8	9.1	26.1
Feb-20	68.9	22.8	54.2	24.9	6.4	-1.4
Feb-21	-990.0	-28.2	-413.2	-5.4	-16.3	1.7
Feb-22	-990.0	-35.0	-278.4	-18.0	-94.3	-67.5
Mar-19	-975.0	1.6	-239.7	-4.7	18.5	34.5
Mar-20	71.1	13.9	48.8	19.4	6.5	19.7
Mar-21	-975.0	-13.1	-268.0	-11.8	2.5	15.0
Mar-22	-128.7	-42.1	-247.0	45.6	-112.3	-81.0
Average value	-655.5	-13.8	-193.7	4.5	-27.3	-8.1
Variation, % compared with baseline period (2015–2018)						
Brazil	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	-35.8	18.1	-106.2	25.2	8.5	7.9
Jan-20	-70.4	-16.7	-184.8	-17.3	5.3	-7.3
Jan-21	-79.5	-8.3	-111.8	2.2	0.9	-3.0
Jan-22	-78.8	-3.9	-199.8	-4.6	26.5	-12.3
Feb-19	-15.1	-9.6	-69.4	-6.9	11.1	-26.1
Feb-20	-18.3	-34.1	-46.5	-13.7	-7.2	-21.6
Feb-21	4.5	-19.6	-19.5	21.1	20.2	-15.9
Feb-22	-50.4	-6.5	-70.5	11.5	23.0	-1.7
Mar-19	-22.2	-20.6	-6.5	11.3	-0.4	-28.4
Mar-20	-112.3	-24.1	5.7	5.9	-6.3	9.2
Mar-21	-57.4	-10.8	-122.9	18.4	22.0	-4.9
Mar-22	-46.7	4.9	-135.3	3.3	-0.4	11.9
Average value	-48.5	-10.9	-89.0	4.7	8.6	-7.7
Variation, % compared with baseline period (2015–2018)						
Colombia	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	-150.9	-21.3	39.8	-342.6	-16.5	-37.3
Jan-20	-138.6	26.0	32.2	-108.0	-27.8	-36.8
Jan-21	-93.5	14.1	35.7	-116.3	-26.8	-54.8
Jan-22	-141.8	10.4	93.9	-122.6	-5.7	-61.9
Feb-19	1.7	-16.0	74.2	26.1	31.7	9.1
Feb-20	-9.9	28.6	48.3	58.1	15.2	-36.9
Feb-21	21.5	34.6	69.8	51.0	2.5	-66.4
Feb-22	-24.5	26.8	58.3	53.5	4.0	-78.3

Mar-19	42.5	22.8	63.1	23.7	-6.8	-7.9
Mar-20	-56.1	23.1	-39.0	56.7	-19.8	-46.4
Mar-21	-3.4	46.5	-223.8	35.1	-49.8	-60.9
Mar-22	0.0	32.3	-30.4	33.8	-48.6	-76.7
Average value	-46.1	19.0	18.5	-29.3	-12.4	-46.3
Variation, % compared with baseline period (2015–2018)						
Chile	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	41.1	-8.1	15.7	22.1	-11.6	26.7
Jan-20	13.2	-10.4	-0.7	14.7	-13.7	18.3
Jan-21	22.5	-17.8	16.4	-14.2	25.7	8.9
Jan-22	-10.6	-54.2	-132.1	-13.6	22.5	22.6
Feb-19	18.3	-1.8	6.9	28.3	-1.8	37.4
Feb-20	5.8	-3.7	-9.6	22.1	-11.3	10.4
Feb-21	-32.7	-10.0	-64.7	-10.4	25.9	-13.7
Feb-22	8.3	-19.8	-81.7	5.8	29.8	6.8
Mar-19	-0.8	-3.3	10.2	8.3	-11.9	23.8
Mar-20	2.9	-29.0	16.3	23.5	-21.3	-1.7
Mar-21	-25.6	-22.3	-26.9	-11.7	33.3	24.5
Mar-22	9.6	-8.9	-42.6	5.9	37.6	36.8
Average value	4.3	-15.8	-24.4	6.7	8.6	16.7
Variation, % compared with baseline period (2015–2018)						
Germany	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	-110.0	-5.9	-79.3	8.6	-19.5	17.4
Jan-20	-110.0	-0.3	-73.8	-0.7	-4.7	30.6
Jan-21	-110.0	-27.6	-105.7	-1.2	-32.2	-22.5
Jan-22	-110.0	-30.3	-191.1	13.5	-27.3	-17.7
Feb-19	-162.5	19.8	-74.2	6.2	7.5	33.3
Feb-20	-162.5	-10.6	-140.9	21.9	-73.3	-34.3
Feb-21	-162.5	-13.6	-69.6	4.3	-24.7	16.5
Feb-22	-162.5	-25.1	-147.8	25.9	-89.5	-24.9
Mar-19	-132.5	-1.6	-99.3	13.7	-22.5	-11.7
Mar-20	-132.5	-19.4	-26.4	5.8	-41.4	-19.0
Mar-21	-132.5	-13.2	-85.9	4.2	-29.8	-3.6
Mar-22	-132.5	-10.6	-12.3	15.8	2.1	16.4
Average value	-135.0	-11.5	-92.2	9.8	-29.6	-1.6
Variation, % compared with baseline period (2015–2018)						
Netherlands	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	56.8	-9.1	1.7	8.4	9.2	-5.6
Jan-20	10.1	-25.3	-6.7	0.8	3.4	-13.1
Jan-21	5.0	-18.5	-74.4	2.2	-2.5	-37.5
Jan-22	0.0	-18.0	-46.1	10.7	5.2	-31.8
Feb-19	30.8	5.4	36.5	-7.0	10.4	12.6
Feb-20	3.6	-34.3	-11.2	18.4	-38.8	-9.2
Feb-21	19.6	-11.8	-38.3	9.0	-8.4	3.2
Feb-22	-18.9	-26.0	-32.3	23.1	-23.8	-16.7
Mar-19	-3.2	-21.7	25.1	6.1	-5.5	-5.1
Mar-20	7.7	-25.7	-35.3	6.1	-16.9	-18.2
Mar-21	16.2	-6.8	6.4	8.4	-1.4	11.0
Mar-22	-1.3	-0.5	-20.8	11.6	15.6	18.2
Average value	10.5	-16.0	-16.3	8.2	-4.5	-7.7

Variation, % compared with baseline period (2015–2018)						
Spain	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	30.8	−9.6	−3.8	9.5	0.5	1.7
Jan-20	10.6	−15.7	−2.8	12.5	6.0	1.2
Jan-21	23.3	−37.3	−15.2	3.3	−14.8	−16.1
Jan-22	−360.1	−18.9	−37.8	8.4	2.8	1.0
Feb-19	32.7	16.6	11.9	11.7	23.2	17.5
Feb-20	31.3	−5.8	−1.3	−4.1	20.3	16.0
Feb-21	12.2	−39.1	−30.5	1.9	0.4	9.4
Feb-22	−346.9	−8.7	−7.6	1.3	−0.5	−3.0
Mar-19	17.9	−6.4	−8.2	9.6	4.7	6.3
Mar-20	17.0	−56.6	−46.3	−3.3	4.0	−15.4
Mar-21	9.7	−31.3	−25.6	0.6	−8.0	7.3
Mar-22	−363.7	−53.2	−55.2	−0.6	8.8	40.6
Average value	−73.8	−22.2	−18.5	4.2	3.9	5.5
Variation, % compared with baseline period (2015–2018)						
France	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	−261.2	1.7	−31.3	0.1	−6.0	−6.8
Jan-20	−4667.5	−3.2	−46.2	−2.8	−4.7	−8.4
Jan-21	−4667.5	−24.2	−30.7	−6.2	−6.5	−3.6
Jan-22	−4667.5	−24.2	−48.3	−5.3	5.9	−3.4
Feb-19	−81.8	20.3	5.4	7.4	10.9	24.6
Feb-20	−4607.5	−18.8	−47.0	8.6	−43.5	−17.8
Feb-21	−4607.5	−29.4	−50.5	−2.5	−11.1	−0.5
Feb-22	−4607.5	−31.2	−12.3	14.4	−26.8	−15.8
Mar-19	−390.9	−8.6	−7.7	11.1	−29.5	−6.1
Mar-20	−4367.5	−53.4	−61.8	2.4	−23.8	−10.0
Mar-21	−4367.5	−28.0	17.0	0.4	−8.9	13.2
Mar-22	−4367.5	−15.9	−88.8	14.9	7.0	12.5
Average value	−3471.8	−17.9	−33.5	3.6	−11.4	−1.8
Variation, % compared with baseline period (2015–2018)						
United Kingdom	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	−9.3	5.2	−22.6	15.4	11.3	29.6
Jan-20	−32.7	−6.5	−7.6	5.4	−15.1	−11.6
Jan-21	−15.6	−28.0	−52.7	−10.7	−9.0	−22.5
Jan-22	−49.8	−18.6	−54.6	3.5	24.1	7.8
Feb-19	29.9	8.1	−16.0	8.5	19.6	41.3
Feb-20	−8.9	−26.8	1.3	11.3	−28.6	−37.1
Feb-21	9.9	−42.4	−79.5	6.6	−14.1	−29.2
Feb-22	−23.4	−56.8	83.6	17.2	−37.9	−48.7
Mar-19	−20.8	−12.8	−47.2	11.0	−11.2	−15.9
Mar-20	−37.7	−25.1	−26.5	7.9	−11.8	−5.3
Mar-21	−3.7	−37.0	−52.9	−0.3	−2.5	−1.3
Mar-22	−70.6	−39.9	−39.8	10.2	16.4	8.4
Average value	−19.4	−23.4	−26.2	7.2	−4.9	−7.0
Variation, % compared with baseline period (2015–2018)						
Croatia	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	0.0	−12.7	−51.0	0.8	−70.6	−17.7
Jan-20	0.0	13.6	−146.1	3.3	−8.3	23.1
Jan-21	0.0	−38.0	−168.8	−10.1	−16.1	−19.0

Jan-22	0.0	-14.7	-80.3	-2.6	28.4	5.3
Feb-19	0.0	18.4	30.2	5.6	-18.9	14.5
Feb-20	0.0	1.5	-43.0	17.6	-13.3	-9.0
Feb-21	0.0	5.1	-18.4	-23.3	-2.6	19.2
Feb-22	0.0	-16.3	-32.7	8.4	-1.2	-12.2
Mar-19	0.0	4.1	-84.2	-4.0	-56.7	3.0
Mar-20	0.0	-37.9	-18.6	6.0	-13.8	18.8
Mar-21	0.0	-7.3	-51.3	-9.9	10.3	15.4
Mar-22	0.0	-12.9	-56.5	7.8	20.3	26.5
Average value	0.0	-8.1	-60.1	-0.02	-11.9	5.7
Variation, % compared with baseline period (2015–2018)						
Poland	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	-1.0	12.1	-24.6	21.0	34.8	-18.6
Jan-20	-7.7	5.2	-23.5	12.7	35.8	-22.7
Jan-21	1.0	2.0	-22.4	6.5	39.6	50.5
Jan-22	-23.5	-9.1	-56.2	26.3	19.6	-38.1
Feb-19	-8.8	13.1	-4.6	22.4	4.6	-19.0
Feb-20	-36.8	-11.9	-49.9	28.0	-31.4	-72.6
Feb-21	5.3	12.5	14.6	86.6	11.0	1.4
Feb-22	-41.0	-16.3	-52.4	29.8	-47.9	-63.2
Mar-19	-0.3	6.5	-14.6	23.4	-7.7	-17.5
Mar-20	-12.2	-5.6	-23.5	23.1	4.9	-20.4
Mar-21	11.8	7.7	-31.8	18.3	5.6	3.2
Mar-22	-1.5	18.1	-2.7	29.3	14.8	15.6
Average value	-9.6	2.9	-24.3	27.3	7.0	-16.8
Variation, % compared with baseline period (2015–2018)						
Australia	CO	NO₂	SO₂	O₃	PM_{2.5}	PM₁₀
Jan-19	-115.9	-190.9	-47.9	-70.5	-2.2	12.9
Jan-20	0.2	-96.2	-121.6	-41.9	56.5	57.5
Jan-21	-61.1	-163.4	-50.2	-86.4	30.9	43.6
Jan-22	-80.9	-222.6	-119.3	-76.9	13.6	15.2
Feb-19	-114.7	-186.3	-96.8	-118.9	-18.4	-4.1
Feb-20	-37.6	-117.0	-166.4	-79.4	30.6	23.8
Feb-21	28.2	-163.8	-171.0	-112.2	24.7	16.4
Feb-22	-54.5	-146.9	-122.0	-75.8	23.9	17.9
Mar-19	-136.4	-187.4	-85.6	-120.9	-18.4	6.0
Mar-20	-61.4	-105.5	-6.5	-94.1	18.2	20.9
Mar-21	-49.7	-125.5	-83.7	-96.3	33.4	30.8
Mar-22	-33.8	-139.1	-108.4	-74.9	12.8	9.6
Average value	-59.8	-153.7	-98.3	-87.3	17.1	20.9