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Data Article

Survey data regarding perceived air quality in Australia, Brazil, China, Ghana, India, Iran, Italy, Norway, South Africa, United States before and during Covid-19 restrictions[☆,☆☆]

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ABSTRACT

The dataset deals with the air quality perceived by citizens before and during the enforcement of COVID-19 restrictions in ten countries around the world: Australia, Brazil, China, Ghana, India, Iran, Italy, Norway, South Africa and the United States. An online survey conveniently translated into Chinese, English, Italian, Norwegian, Persian, Portuguese collected information regarding the perceived quality of air pollution according to a Likert scale. The questionnaire was distributed between 11-05-2020 and 31-05-2020 and 9 394 respondents took part. Both the survey and the dataset (stored in a Microsoft Excel Worksheet) are available in a public repository. The collected data offer the people's subjective perspectives related to the objective improvement in air quality occurred during the COVID-19 restrictions. Furthermore, the dataset can be used for research studies involving the reduction in air pollution as experienced, to a different extent, by populations of all the ten countries.

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Specification table

Subject	Social Sciences
Specific subject area	Health psychology, Perceived air pollution
Type of data	Primary data, Table
How data were acquired	The data were collected by an online survey hosted on two platforms: Google Forms (English, Italian, Norwegian, Persian, Portuguese versions) and WenJuanXing (Chinese version). An English copy is available in the data repository. The survey was distributed by means of professional and social networks
Data format	Raw Analyzed
Parameters for data collection	The survey data were obtained from 9 394 respondents older than 18 years old having internet access
Description of data collection	The online survey was distributed using a combination of purposive and snowball techniques
Data source location	Countries: Australia, Brazil, China, Ghana, India, Iran, Italy, Norway, South Africa and the United States
Data accessibility	Dataset is uploaded on Mendeley Data Repository name: Perceived air pollution in Australia, Brazil, China, Ghana, India, Iran, Italy, Norway, South Africa, USA before and during COVID-19 restrictions Data identification number: DOI: 10.17632/fb38h4tyzn.2 Direct URL to data: https://data.mendeley.com/datasets/fb38h4tyzn/2

Value of the data

- The data are related to the perception of air quality and air pollution during the COVID-19 restrictions as experienced by a large pool comprising 9 394 respondents located in ten countries on six continents
- The data can be useful for researchers dealing with the environmental and tropospheric changes occurring during the COVID-19 restrictions
- The data can be used to assess the relationship between the perceived and the quantified change in air quality and air pollution during the COVID-19 restrictions
- The data can be of interest to both citizens and policymakers to realise the tremendous lesson learned during COVID-19, being air quality a key indicator for sustainable development

1. Data description

The dataset provides information regarding the quantity of air pollution perceived before and during the restrictions enforced in ten countries around the world as a consequence of the COVID-19 pandemic: Australia, Brazil, China, Ghana, India, Iran, Italy, Norway, South Africa and the United States (also referred to as AU, BR, CH, GH, IN, IR, IT, NO, ZA and USA, respectively). The dataset is stored in a public repository as Microsoft Excel Worksheet [1]. The total amount of the respondents who joined the survey is 9 394, their geographical distribution is reported in Table 1. Information regarding gender and age are reported in Fig. 1 with box-and-whisker plots: overall, the largest portion of the surveyed population is composed of young and middle-aged individuals. Furthermore, the participants have high education (Fig. 2). The two questions of the survey are "How do you regard the amount of air pollution before the epidemic?" and "How do you regard the amount of air pollution during the restrictions?": the respondents expressed their opinions according to a 7-point Likert scale varying from "extremely low/absent air pollution" to "extremely high air pollution". The responses pertaining to before and during the applications of the COVID-19 restrictions are reported in Fig. 3a and Fig. 3b, respectively.

Table 1
Geographical distribution of survey respondents.

AUSTRALIA - AU (N = 387)			
Victoria	New South Wales	Queensland	South Australia
40.6 %	29.2 %	16.3 %	11.9 %
Western Australia	Tasmania	Northern Territory	Australian Capital Territory
0.8 %	0.5 %	0.5 %	0.3 %
BRAZIL - BR (N = 930)			
Minas Gerais	São Paulo	Rio de Janeiro	Bahia
60.0 %	21.6 %	3.7 %	2.4 %
Distrito Federal	Santa Catarina	Paraná	Espírito Santo
2.3 %	1.7 %	1.3 %	1.1 %
Goiás	Mato Grosso	Rio Grande do Sul	Pernambuco
1.0 %	1.0 %	0.9 %	0.5 %
Rio Grande do Norte	Alagoas	Pará	Amazonas
0.5 %	0.4 %	0.4 %	0.3 %
Mato Grosso do Sul	Paraíba	Tocantins	Ceará
0.3 %	0.2 %	0.2 %	0.1 %
Piauí	*other*		
0.1 %	0.0 %		
CHINA - CH (N = 1731)			
Guangdong	Shaanxi	Jiangsu	Hunan
14.9 %	13.1 %	11.9 %	6.9 %
Anhui	Gansu	Hebei	Hubei
4.9 %	4.7 %	4.2 %	3.8 %
Shandong	Beijing	Shanxi	Heilongjiang
3.6 %	3.5 %	3.0 %	2.7 %
Sichuan	Henan	Inner Mongolia	Fujian
2.0 %	1.8 %	1.8 %	1.7 %
Jiangxi	Guangxi	Tianjin	Hainan
1.6 %	1.3 %	1.2 %	1.1 %
Jilin	Chongqing	Liaoning	Guizhou
1.1 %	1.0 %	1.0 %	1.0 %
Shanghai	Xinjiang	Ningxia	Zhejiang
1.0 %	0.9 %	0.9 %	0.8 %
Qinghai	Yunnan	Taiwan	Tibet
0.6 %	0.5 %	0.5 %	0.5 %
Macau	Hong Kong		
0.4 %	0.3 %		
GHANA - GH (N = 437)			
Greater Accra	Ashanti	Northern	Eastern
29.7 %	27.0 %	10.3 %	8.5 %
Central	Western Region	Volta Region	Bono Region
6.4 %	5.0 %	3.4 %	2.1 %
Upper East	Bono East Region	Upper West	Ahafo Region
2.1 %	1.6 %	1.6 %	1.1%
Oti	Savannah	North East	Western North
0.5 %	0.2 %	0.2%	0.2%
INDIA - IN (N = 1334)			
West Bengal	Maharashtra	NCR Delhi	Rajasthan
15.0 %	13.2 %	9.2 %	7.4 %
Uttar Pradesh	Tamil Nadu	Karnataka	Bihar
6.8 %	6.7 %	6.7 %	6.6 %
Madhya Pradesh	Haryana	Uttarakhand	Gujarat
4.9 %	3.9 %	3.7 %	2.8 %
Assam	Telangana	Punjab	Jammu & Kashmir
2.0 %	1.7 %	1.6 %	1.3 %
Andhra Pradesh	Odisha	Himachal Pradesh	Kerala
1.2 %	0.9 %	0.8 %	0.8 %
Goa	Jharkhand	Chhattisgarh	Meghalaya
0.7 %	0.7 %	0.4 %	0.3 %

(*continued on next page*)

Table 1 (*continued*)

Chandigarh	Ladakh	Puducherry	Tripura
0.1 %	0.1 %	0.1 %	0.1 %
other			
0.0 %			
IRAN - IR (N = 778)			
Kerman	Tehran	Fars	Razavi Khorasan
48.7 %	28.5 %	5.1 %	5.0 %
Isfahan	Yazd	Mazandaran	East Azarbaijan
3.3 %	1.5 %	1.4 %	1.2 %
Alborz	Hormozgan	Hamedan	West Azerbaijan
0.8 %	0.6%	0.6 %	0.5 %
Qazvin	Sistan Baluchestan	Kermanshah	Kohg. B.-Ahmad
0.5 %	0.4 %	0.4 %	0.3%
Golestan	Ilam	Bushehr	North Khorasan
0.3 %	0.1 %	0.1 %	0.1 %
South Khorasan	Zanjan	Semnan	*other*
0.1 %	0.1 %	0.1 %	0.0 %
ITALY - IT (N = 604)			
Emilia-Romagna	Lombardiao	Lazio	Veneto
32.5 %	17.7 %	12.1 %	9.8 %
Piemonte	Toscana	Campania	Puglia
8.8 %	3.6 %	2.5 %	2.3 %
Friuli-Venezia Giulia	Sicilia	Marche	Calabria
2.2 %	1.7 %	1.3 %	1.2 %
Liguria	Sardegna	Trentino-Alto Adige	Abruzzo
1.0 %	0.8 %	0.8 %	0.5 %
Molise	Umbria	Valle d'Aosta	*other*
0.5 %	0.5%	0.3%	0.0 %
NORWAY - NO (N = 681)			
Trøndelag	Rogaland	Oslo	Viken
54.2 %	13.4 %	9.0%	5.9 %
Agder	Innlandet	Møre og Romsdal	Vestland
5.4 %	5.0 %	2.8 %	1.9%
Troms og Finnmark	Vestfold og Telemark	*other*	
1.6 %	0.9 %	0.0 %	
SOUTH AFRICA - ZA (N = 582)			
KwaZulu-Natal	Gauteng	Western Cape	Eastern Cape
61.7 %	16.0%	10.5%	6.4 %
North West	Mpumalanga	Free State	Limpopo
2.4 %	1.2 %	1.0%	0.9 %
other			
0.0 %			
UNITED STATES - USA (N = 1928)			
Connecticut	Ohio	Texas	California
13.9 %	13.6 %	12.7 %	11.3 %
Idaho	Florida	Virginia	Washington
6.9 %	6.8 %	6.7 %	5.9 %
North Carolina	Illinois	Arizona	New York
2.7 %	2.1 %	1.3 %	1.3 %
Colorado	Oregon	Pennsylvania	Michigan
1.2 %	1.2 %	1.1 %	1.0 %
Massachusetts	New Jersey	Wisconsin	Georgia
1.0 %	1.0 %	0.6 %	0.6 %
Maryland	Vermont	Indiana	Iowa
0.5 %	0.5 %	0.4 %	0.4 %
Nevada	South Carolina	Minnesota	Missouri
0.4 %	0.4 %	0.4 %	0.4 %
Tennessee	Kentucky	Washington D.C. Columbia	Alaska
0.4 %	0.3 %	0.3 %	0.3 %

(*continued on next page*)

Table 1 (*continued*)

West Virginia	Alabama	Arkansas	Kansas
0.3 %	0.2 %	0.2 %	0.2 %
Louisiana	New Hampshire	Montana	North Dakota
0.2 %	0.2 %	0.2 %	0.1 %
Maine	Rhode Island	Wyoming	Hawaii
0.1 %	0.1 %	0.1 %	0.1 %
Nebraska	New Mexico	Oklahoma	South Dakota
0.1 %	0.1 %	0.1 %	0.1 %
Utah	Guam	US Virgin Islands	*other*
0.1 %	0.1 %	0.1 %	0.0 %

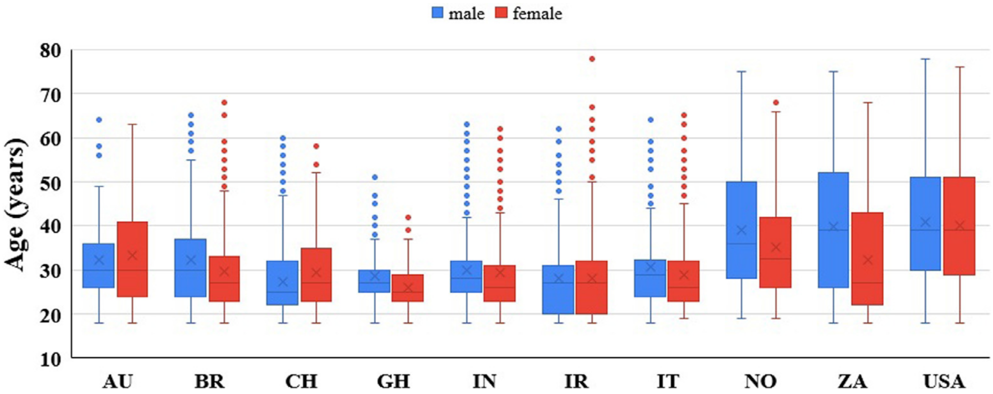

Fig. 1. Age and gender of the respondents for each country.

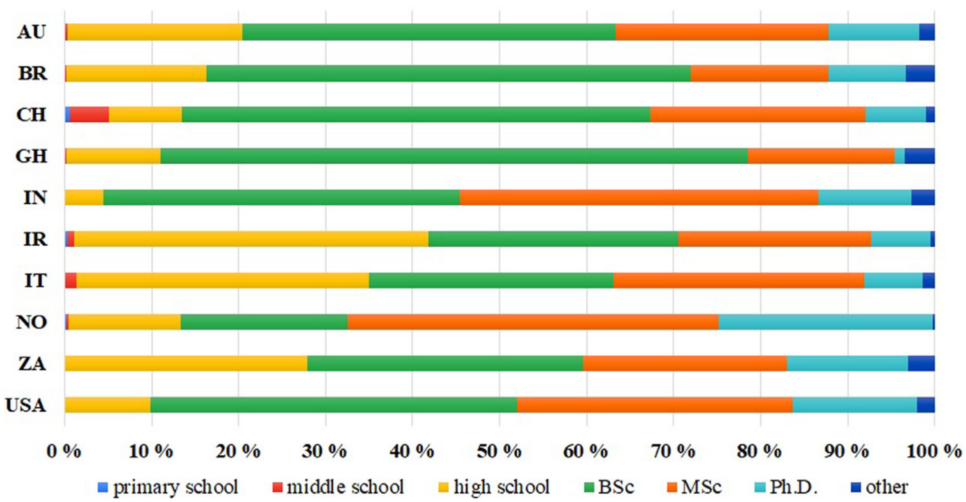

Fig. 2. Education of the respondents for each country.

2. Experimental design, materials, and methods

The online survey has assessed the air quality as subjectively perceived by citizens in ten countries: Australia, Brazil, China, Ghana, India, Iran, Italy, Norway, South Africa and the United States. The online questionnaire was hosted on two platforms: Google Forms (English, Italian,

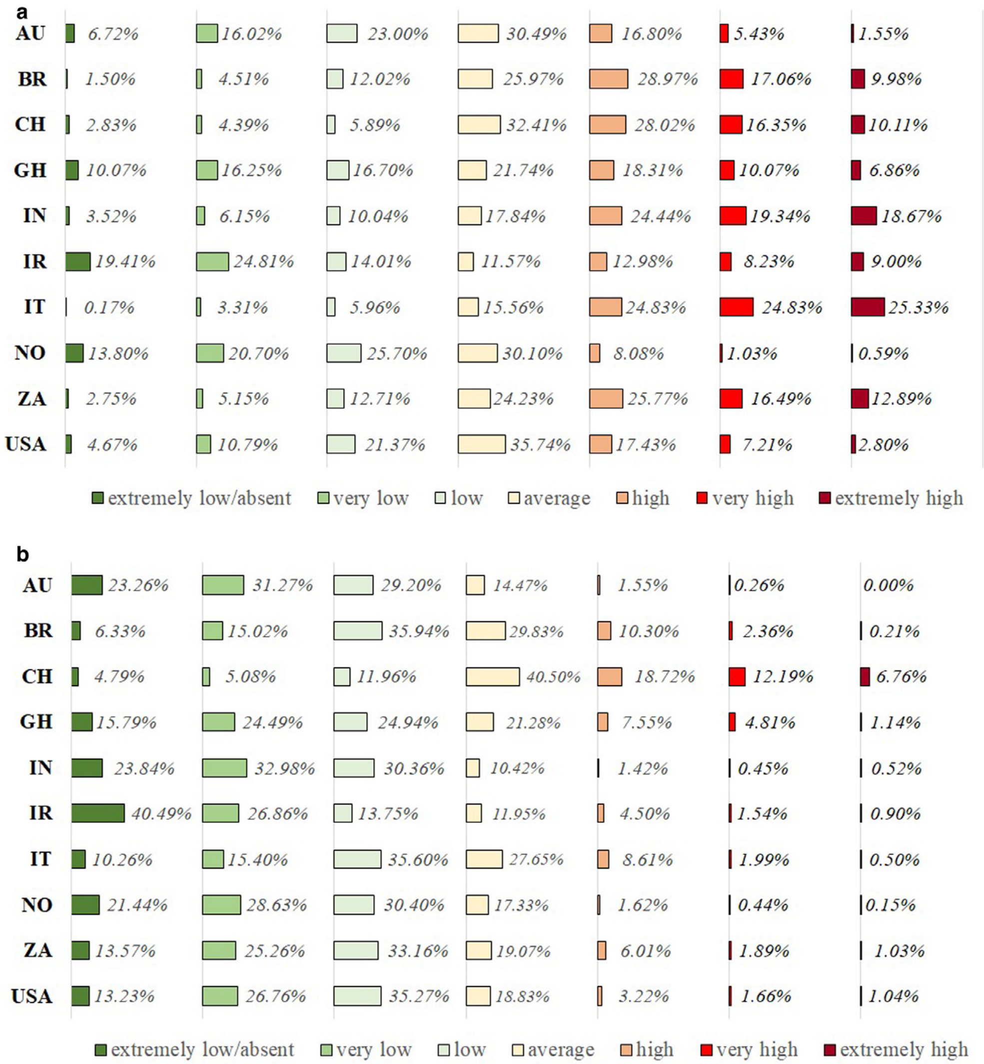

Fig. 3. Perceived amount of air pollution before (a) and during (b) the COVID-19 restrictions as experienced by the survey respondents in each country.

Norwegian, Persian, Portuguese versions) and WenJuanXing (Chinese version) and promoted on professional and social networks. The survey content was the same for each language; only the question regarding the respondents' geographical location was tailored for each country. A Likert scale was employed to collect information about subjective perceptions [2] regarding both the situation before and during the enforcement of the restrictions due to the COVID-19 pandemic [3,4]. The online survey was distributed using a combination of purposive and snowball techniques between 11-05-2020 and 31-05-2020. Previously, other opinion surveys at regional and national scale also dealt with the perception of air quality [5–7] and examined the psychological impacts on people's subjective emotional state [8]. The created dataset can allow to explore how air quality was experienced by the populations dealing with different levels of air pollution before the COVID-19 outbreak [9–11].

Ethics statement

All the survey respondents informed their consent before joining the survey consistent with the Declaration of Helsinki.

Credit Author Statement

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Declaration of competing interest

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.dib.2020.106169.

References

[1] D.M. Barbieri, B. Lou, M. Passavanti, C. Hui, D.A. Lessa, B. Maharaj, A. Banerjee, F. Wang, K. Chang, B. Naik, L. Yu, Z. Liu, G. Sikka, A. Tucker, A. Foroutan Mirhosseini, S. Naseri, Y. Qiao, A. Gupta, M. Abbas, K. Fang, N. Ghasemi, P. Peprah, S. Goswami, A. Hessami, N. Agarwal, L. Lam, S. Adomako, Perceived air pollution in Australia, Brazil, China, Ghana, India, Iran, Italy, Norway, South Africa, USA before and during COVID-19 restrictions, (2020). http://dx.doi.org/10.17632/fb38h4tyzn.2.

[2] D. Stockemer, Quantitative Methods for the Social Sciences, Springer, Cham, 2019 https://doi.org/10.1007/978-3-319-99118-4.

[3] T. Acter, N. Uddin, J. Das, A. Akhter, T.R. Choudhury, S. Kim, Evolution of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) as coronavirus disease 2019 (COVID-19) pandemic: A global health emergency, Sci. Total Environ. 730 (2020) 138996, doi:10.1016/j.scitotenv.2020.138996.

[4] Oxford University, Coronavirus government response tracker, (2020). https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker (accessed June 30, 2020).

[5] M. Nikolopoulou, J. Kleissl, P.F. Linden, S. Lykoudis, Pedestrians' perception of environmental stimuli through field surveys: Focus on particulate pollution, Sci. Total Environ. 409 (2011) 2493–2502, doi:10.1016/j.scitotenv.2011.02.002.

[6] T.G. Reames, M.A. Bravo, People, place and pollution: Investigating relationships between air quality perceptions, health concerns, exposure, and individual- and area-level characteristics, Environ. Int. 122 (2019) 244–255, doi:10.1016/j.envint.2018.11.013.

[7] S. Pu, Z. Shao, M. Fang, L. Yang, R. Liu, J. Bi, Z. Ma, Spatial distribution of the public's risk perception for air pollution: a nationwide study in China, Sci. Total Environ. 655 (2019) 454–462, doi:10.1016/j.scitotenv.2018.11.232.

[8] Y. Li, D. Guan, S. Tao, X. Wang, K. He, A review of air pollution impact on subjective well-being: Survey versus visual psychophysics, J. Clean. Prod. 184 (2018) 959–968, doi:10.1016/j.jclepro.2018.02.296.

[9] P. Lal, A. Kumar, S. Kumar, S. Kumari, P. Saikia, A. Dayanandan, D. Adhikari, M.L. Khan, The dark cloud with a silver lining: Assessing the impact of the SARS COVID-19 pandemic on the global environment, Sci. Total Environ. 732 (2020) 139297, doi:10.1016/j.scitotenv.2020.139297.

[10] S. Muhammad, X. Long, M. Salman, COVID-19 pandemic and environmental pollution: A blessing in disguise? Sci. Total Environ. 728 (2020) 138820, doi:10.1016/j.scitotenv.2020.138820.

[11] A. Chauhan, R.P. Singh, Decline in PM2.5 concentrations over major cities around the world associated with COVID-19, Environ. Res. 187 (2020) 109634, doi:10.1016/j.envres.2020.109634.