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Supplementary appendix

This online publication has been corrected. The corrected version first appeared at thelancet.com/psychiatry on Aug 27, 2021.

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Pirkis J, John A, Shin S, et al. Suicide trends in the early months of the COVID-19 pandemic: an interrupted time-series analysis of preliminary data from 21 countries. *Lancet Psychiatry* 2021; **8:** 579–88.

Appendix

Compliance with the Guidelines for Accurate and Transparent Health Estimates Reporting (GATHER)

Table 1: GATHER checklist

CHECKLIST ITEM	DESCRIPTION OF COMPLIANCE
Objectives and funding	
1. Define the indicator(s), populations (including age, sex, and geographic entities), and time period(s) for which estimates were made.	• Manuscript: Methods (Data inputs [Inclusion and exclusion criteria])
2. List the funding sources for the work.	• Manuscript: Summary (Funding)
Data inputs	
For all data inputs from multiple sources that are synthesised as part of the study:	
3. Describe how the data were identified and how the data were accessed.	• Manuscript: Methods (Data inputs [Identifying and accessing suicide data])
4. Specify the inclusion and exclusion criteria. Identify all ad-hoc exclusions.	• Manuscript: Methods (Data inputs [Inclusion and exclusion criteria])
5. Provide information about all included data sources and their main characteristics. For each data source used, report reference information or contact name/institution, population represented, data collection method, year(s) of data collection, sex and age range, diagnostic criteria or measurement method, and sample size, as relevant.	• Manuscript: Table 1
6. Identify and describe any categories of input data that have potentially important biases (e.g., based on characteristics listed in item 5).	• Manuscript: Table 1; Results; Discussion (Strengths and limitations)
For data inputs that contribute to the analysis but were not synthesised as part of the study:	
7. Describe and give sources for any other data inputs.	• Not applicable.
For all data inputs:	
8. Provide all data inputs in a file format from which data can be efficiently extracted (e.g., a spreadsheet rather than a PDF), including all relevant meta-data listed in item 5. For any data inputs that cannot be shared because of ethical or legal reasons, such as third-party ownership, provide a contact name or the name of the institution that retains the right to the data.	• Supplementary appendices: Appendix 5
Data analysis	
9. Provide a conceptual overview of the data analysis method. A diagram may be helpful.	• Manuscript: Methods (Data analysis) • Supplementary appendices: Appendices 2 and 3
10. Provide a detailed description of all steps of the analysis, including mathematical formulae. This description should cover, as relevant, data cleaning, data pre-processing, data adjustments and weighting of data sources, and mathematical or statistical model(s).	• Manuscript: Methods (Data analysis) • Supplementary appendices: Appendices 2 and 3
11. Describe how candidate models were evaluated and how the final model(s) were selected.	• Supplementary appendices: Appendices 2 and 3
12. Provide the results of an evaluation of model performance, if done, as well as the results of any relevant sensitivity analysis.	• Supplementary appendices: Appendices 2 and 3
13. Describe methods of calculating uncertainty of the estimates. State which sources of uncertainty were, and were not, accounted for in the uncertainty analysis.	• Manuscript: Methods (Data analysis) • Supplementary appendices: Appendices 2 and 3
14. State how analytical or statistical source code used to generate estimates can be accessed.	• Supplementary appendices: Appendix 4
Results and discussion	
15. Provide published estimates in a file format from which data can be efficiently extracted.	• Supplementary appendices: Appendix 5
16. Report a quantitative measure of the uncertainty of the estimates (e.g., uncertainty intervals).	• Manuscript: Figures 2, 3 and 4
17. Interpret results in light of existing evidence. If updating a previous set of estimates, describe the reasons for changes in estimates.	• Manuscript: Discussion (Interpreting the findings)
18. Discuss limitations of the estimates. Include a discussion of any modelling assumptions or data limitations that affect interpretation of the estimates.	• Manuscript: Discussion (Strengths and limitations) • Supplementary appendices: Appendices 2 and 3

Data modelling strategy

Our modelling strategy was to identify the best fitting model of suicide trends pre-COVID from the available data for each country or area-within-country. Ideally, the models would have allowed for non-linear time trends and seasonality. However, in some cases, this was not possible because of limited pre-COVID data (typically only from January 2019 onwards) and/or because the number of suicides per month was low. In addition, we were aware that there might be some countries or areas-within-countries where a non-linear model for time trends offered no improvement over a model fitting a linear trend for time. The process of identifying a model for each of the 35 countries or areas-within-countries was as follows:

1. We first fit a model to the pre-COVID data that fit a non-linear trend for time and predictors for seasonality. We identified the best fitting non-linear time trend by fitting a series of fractional polynomials to the data. We accounted for seasonality using Fourier terms – pairs of sine and cosine variables that allow for oscillations over a 12-month period of a variety of different shapes. Fractional polynomials differ from regular polynomials in that they allow a much larger range of curve shapes to be fit to the data. This is because regular polynomials only allow cubic and higher order terms and therefore can produce biologically implausible shapes. Fractional polynomials do not have this problem because they allow logarithms, negative and non-negative powers and powers to be repeated, thus giving much greater flexibility and opportunity for better fit to the data than cubic and quadratic powers. Using standard Stata software, all possible fractional polynomial power combinations (44 different models) were fit to each country or area-within-country's data to select the best fitting fractional polynomial model, adjusting for seasonality. The best fitting time trend model was chosen on the basis of the deviance statistic (twice the negative log-likelihood value) which was compared to competing models using the likelihood-ratio test. The software also allowed direct comparison to a model with a linear time trend. Therefore, if the best fitting fractional polynomial model offered significant improvement over an equivalent model with a linear time trend, then the fractional polynomial model was selected.

2. If the best fitting fractional polynomial model from the previous step was not significantly better than the linear model, then we instead selected the linear model. Note that this model still included seasonality terms.

3. Having estimated a model for each country or area-within-country, we used the model to plot the expected number of suicides over time. This included the pre-COVID period, on which the model was based, and the COVID period (March to July 2020 in the primary analysis). We visually compared the expected values to the observed values over these two periods, noting any countries or areas-within-countries where there was a large discrepancy between the model's estimated values and those that were observed. We paid particular attention to the fit during the COVID period.

4. In some countries or areas-within-countries we observed a poor fit to the data. This occurred for all countries or areas-within-countries that only had data from January 2019 onwards and in areas where the

number of suicides per month was low. In these cases, we then fit a simpler model to the pre-COVID data – one that only allowed for a linear time trend (i.e., excluding the seasonality terms). We again plotted the expected values over time and compared this to the observed values and observed no evidence of lack of fit.

Model results

Table 2 shows the number of countries and areas-within countries that were fit to each model in the primary analysis.

Table 2: Summary of models for the primary analysis

Model	Number of countries or areas-within-counties
Predictors for non-linear time trends and seasonality	10
Predictors for linear time trends and seasonality	15
Predictor for linear time trend only	10

Tables 3 and 4 present the coefficients (and the precise fractional polynomial powers) for each country or area-within-country for the primary analysis and the two sensitivity analyses. These analyses were based on two underlying analytic approaches that involved slightly different cuts of the data. These were:

1. **The data used for the primary analysis and sensitivity analysis 1:** In the primary analysis, the COVID period was defined as 1 April 2020 to 31 July 2020, and the pre-COVID period was the period for which data were available for each country or area-within-country to 31 March 2020. After fitting a model for a country or an area-within-country on the pre-COVID data, we calculated the observed number of suicides in the COVID period and used the model coefficients to estimate the expected number of suicides in the same period. Sensitivity analysis was based on these data and involved extending the COVID period from 31 July 2020 to the latest month for which data was available in any given country or area-within-country (up until 31 October 2020). Observed and expected suicides were therefore calculated over this longer period.

2. **The data used for sensitivity analysis 2:** In this analysis the COVID period was defined as beginning a month earlier, starting on 1 March 2020, and extending to 31 July 2020. Because this used one month less data to estimate the pre-COVID trends, a new model was fit to each country or area-within-countries, and observed and expected suicides calculated as above.

Table 3: Model coefficients for the primary analysis and sensitivity analysis 1 for all countries and areas-within-countries

Country or area within country	Model	FP1	FP2	Linear time, coef. (se)	FP 1 time, coef. (se)	FP 2 time, coef. (se)	Cosine 1, coef. (se)	Cosine 2, coef. (se)	Sine 1, coef. (se)	Sine 2, coef. (se)	Constant, coef. (se)
New South Wales, Australia	Linear time trend only			0.0120 (0.0087)							4.2830 (0.0736)
Queensland, Australia	Linear time trends and seasonality			0.0022 (0.0011)			0.0830 (0.0230)	0.0125 (0.0231)	-0.0562 (0.0236)	0.0423 (0.0231)	4.0832 (0.0326)
Victoria, Australia	Linear time trends and seasonality			0.0032 (0.0012)			0.0431 (0.0248)	0.0010 (0.0249)	-0.0089 (0.0253)	-0.0049 (0.0249)	3.9877 (0.0355)
Carinthia, Austria	Linear time trends and seasonality			-0.0183 (0.0079)			-0.0795 (0.0833)	-0.0640 (0.0825)	-0.0042 (0.0856)	-0.0944 (0.0834)	2.4433 (0.1121)
Tyrol, Austria	Linear time trends and seasonality			-0.0047 (0.0063)			-0.0215 (0.0689)	0.0338 (0.0693)	0.1786 (0.0737)	0.0391 (0.0699)	2.3611 (0.0944)
Vienna, Austria	Linear time trend only			-0.0144 (0.0202)							2.6585 (0.1614)
Alberta, Canada	Linear time trends and seasonality			-0.0012 (0.0013)			0.0117 (0.0276)	-0.0349 (0.0275)	-0.0043 (0.0277)	0.0077 (0.0275)	3.9696 (0.0382)
British Columbia, Canada	Linear time trends and seasonality			0.0083 (0.0039)			-0.0712 (0.0419)	0.0081 (0.0421)	0.0472 (0.0437)	0.0312 (0.0422)	3.8392 (0.0605)
Manitoba, Canada	Linear time trend only			0.0060 (0.0145)							2.8983 (0.1205)
Chile	Linear time trends and seasonality			0.0001 (0.0009)			0.0692 (0.0184)	0.0319 (0.0186)	-0.1230 (0.0191)	0.0105 (0.0186)	5.0388 (0.0260)
Croatia	Non-linear time trends and seasonality	-2	3		0.0019 (0.0013)	-0.0017 (0.0005)	-0.1302 (0.0257)	-0.0067 (0.0253)	-0.0049 (0.0251)	0.0271 (0.0249)	3.9942 (0.0245)
Thames Valley, England	Linear time trend only			0.0097 (0.0152)							2.7988 (0.1275)
Estonia	Linear time trends and seasonality			-0.0007 (0.0022)			-0.1359 (0.0463)	-0.0286 (0.0462)	0.1015 (0.0468)	-0.0697 (0.0462)	2.8250 (0.0647)
Cologne and Leverkusen, Germany	Linear time trend only			-0.0070 (0.0179)							2.5110 (0.1455)
Frankfurt, Germany	Linear time trend only			0.0144 (0.0240)							1.8285 (0.2323)

Country or area within country	Model	FP1	FP2	Linear time, coef. (se)	FP 1 time, coef. (se)	FP 2 time, coef. (se)	Cosine 1, coef. (se)	Cosine 2, coef. (se)	Sine 1, coef. (se)	Sine 2, coef. (se)	Constant, coef. (se)
Leipzig, Germany	Linear time trend only			0.0724 (0.0246)							1.2252 (0.2295)
Udine and Pordenone, Italy	Linear time trends and seasonality			0.0001 (0.0041)			-0.0449 (0.0842)	0.0386 (0.0853)	0.1465 (0.0881)	0.0096 (0.0855)	1.8550 (0.1191)
Japan	Non-linear time trends and seasonality	-2	1		0.0008 (0.0006)	-0.0216 (0.0056)	-0.0451 (0.0111)	-0.0347 (0.0109)	0.0595 (0.0108)	0.0114 (0.0107)	7.5177 (0.0168)
Netherlands	Linear time trends and seasonality			-0.0016 (0.0008)			0.0210 (0.0160)	0.0166 (0.0161)	0.0077 (0.0165)	0.0034 (0.0162)	5.0817 (0.0223)
New Zealand	Linear time trends and seasonality			0.0035 (0.0014)			-0.0221 (0.0285)	0.0157 (0.0288)	-0.0450 (0.0294)	-0.0388 (0.0288)	3.9089 (0.0414)
Poland	Non-linear time trends and seasonality	-2	-2		-0.0077 (0.0089)	-0.0037 (0.0039)	-0.1048 (0.0200)	-0.0231 (0.0201)	0.0463 (0.0209)	-0.0358 (0.0197)	6.0759 (0.0175)
South Korea	Non-linear time trends and seasonality	3	3		0.0040 (0.0031)	-0.0022 (0.0020)	-0.0611 (0.0155)	-0.0489 (0.0152)	0.0336 (0.0152)	0.0019 (0.0152)	6.9704 (0.0196)
Las Palmas, Spain	Linear time trends and seasonality			0.0009 (0.0030)			-0.1440 (0.0624)	-0.0638 (0.0617)	0.0189 (0.0618)	0.0418 (0.0618)	2.3315 (0.0874)
California, US	Non-linear time trends and seasonality	1	2		0.0774 (0.0443)	-0.0197 (0.0108)	-0.0732 (0.0165)	0.0191 (0.0163)	0.0078 (0.0168)	0.0242 (0.0164)	5.8582 (0.0383)
Illinois (Cook County), US	Non-linear time trends and seasonality	-0.5	-0.5		-0.5521 (0.2317)	-0.2126 (0.0878)	-0.0683 (0.0394)	-0.0983 (0.0380)	0.0395 (0.0373)	0.0095 (0.0374)	4.1362 (0.1969)
Louisiana, US	Linear time trends and seasonality			-0.0010 (0.0033)			-0.1490 (0.0350)	-0.0338 (0.0349)	0.0196 (0.0361)	0.0214 (0.0351)	4.0957 (0.0494)
New Jersey, US	Non-linear time trends and seasonality	0	3		0.0895 (0.0352)	-0.0020 (0.0008)	-0.0254 (0.0288)	0.0387 (0.0288)	0.0118 (0.0295)	-0.0165 (0.0288)	4.1292 (0.0279)
Texas (4 counties), US	Linear time trends and seasonality			0.0026 (0.0016)			-0.0517 (0.0320)	-0.0006 (0.0322)	0.0318 (0.0327)	0.0191 (0.0322)	3.4275 (0.0458)

Country or area within country	Model	FP1	FP2	Linear time, coef. (se)	FP 1 time, coef. (se)	FP 2 time, coef. (se)	Cosine 1, coef. (se)	Cosine 2, coef. (se)	Sine 1, coef. (se)	Sine 2, coef. (se)	Constant, coef. (se)
Puerto Rico, US	Non-linear time trends and seasonality	2	2		0.0732 (0.0415)	-0.0537 (0.0259)	0.0407 (0.0556)	-0.0278 (0.0550)	-0.0364 (0.0555)	-0.0285 (0.0553)	2.8761 (0.0910)
Botucato, Brazil	Linear time trend only			-0.0179 (0.0615)							0.1222 (0.4887)
Maceió, Brazil	Linear time trend only			0.0123 (0.0353)							1.0758 (0.2973)
Ecuador	Non-linear time trends and seasonality	3	3		-0.0182 (0.0084)	0.0152 (0.0064)	-0.0448 (0.0220)	0.0392 (0.0216)	-0.0288 (0.0223)	-0.0168 (0.0218)	4.6015 (0.0279)
Mexico City, Mexico	Linear time trend only			0.0086 (0.0108)							3.7666 (0.0904)
Peru	Non-linear time trends and seasonality	2	3		0.1371 (0.0314)	-0.0292 (0.0083)	0.0536 (0.0334)	0.0003 (0.0326)	-0.0419 (0.0333)	-0.0294 (0.0328)	3.5707 (0.0527)
Saint Petersburg, Russian Federation	Linear time trends and seasonality			-0.0036 (0.0019)			0.0165 (0.0395)	0.0811 (0.0405)	0.0735 (0.0421)	-0.0475 (0.0406)	3.4828 (0.0553)

Notes: Fractional polynomial powers that we tested were -2, -1, -0.5, 0, 0.5, 1, 2, 3, where 0 = log(time) and all other powers are $time^{-2}$, $time^{-1}$, etc.

Table 4: Model coefficients for sensitivity analysis 2 for all countries and areas-within-countries

Country or area within country	Model	FP1	FP2	Linear time, coef. (se)	FP 1 time, coef. (se)	FP 2 time, coef. (se)	Cosine 1, coef. (se)	Cosine 2, coef. (se)	Sine 1, coef. (se)	Sine 2, coef. (se)	Constant, coef. (se)
New South Wales, Australia	Linear time trend only			0.0111 (0.0101)							4.2871 (0.0790)
Queensland, Australia	Linear time trends and seasonality			0.0022 (0.0012)			0.0830 (0.0233)	0.0125 (0.0235)	-0.0564 (0.0243)	0.0422 (0.0237)	4.0833 (0.0335)
Victoria, Australia	Linear time trends and seasonality			0.0027 (0.0012)			0.0407 (0.0247)	0.0050 (0.0249)	-0.0158 (0.0257)	-0.0105 (0.0251)	3.9957 (0.0357)
Carinthia, Austria	Linear time trends and seasonality			-0.0145 (0.0082)			-0.0723 (0.0809)	-0.0760 (0.0802)	0.0259 (0.0858)	-0.0724 (0.0823)	2.4079 (0.1126)
Tyrol, Austria	Linear time trends and seasonality			-0.0072 (0.0070)			-0.0246 (0.0696)	0.0430 (0.0710)	0.1593 (0.0780)	0.0253 (0.0725)	2.3854 (0.0990)
Vienna, Austria	Linear time trend only			-0.0205 (0.0232)							2.6840 (0.1707)
Alberta, Canada	Linear time trends and seasonality			-0.0008 (0.0014)			0.0139 (0.0276)	-0.0383 (0.0275)	0.0018 (0.0281)	0.0127 (0.0278)	3.9624 (0.0387)
British Columbia, Canada	Linear time trends and seasonality			0.0105 (0.0042)			-0.0682 (0.0412)	-0.0018 (0.0418)	0.0662 (0.0450)	0.0441 (0.0424)	3.8167 (0.0618)
Manitoba, Canada	Linear time trend only			0.0239 (0.0113)							2.8179 (0.0902)
Chile	Linear time trends and seasonality			-0.0002 (0.0009)			0.0678 (0.0185)	0.0342 (0.0188)	-0.1269 (0.0195)	0.0076 (0.0189)	5.0427 (0.0263)
Croatia	Non-linear time trends and seasonality	-2	3		0.0019 (0.0013)	-0.0016 (0.0005)	-0.1300 (0.0260)	-0.0075 (0.0257)	-0.0035 (0.0258)	0.0282 (0.0254)	3.9930 (0.0251)
Thames Valley, England	Linear time trend only			-0.0019 (0.0160)							2.8499 (0.1218)
Estonia	Linear time trends and seasonality			-0.0000 (0.0023)			-0.1321 (0.0462)	-0.0333 (0.0461)	0.1115 (0.0473)	-0.0607 (0.0466)	2.8131 (0.0655)
Cologne and Leverkusen, Germany	Linear time trend only			-0.0037 (0.0204)							2.4969 (0.1549)
Frankfurt, Germany	Linear time trend only			0.0103 (0.0275)							1.8497 (0.2471)

Country or area within country	Model	FP1	FP2	Linear time, coef. (se)	FP 1 time, coef. (se)	FP 2 time, coef. (se)	Cosine 1, coef. (se)	Cosine 2, coef. (se)	Sine 1, coef. (se)	Sine 2, coef. (se)	Constant, coef. (se)
Leipzig, Germany	Linear time trend only			0.0942 (0.0251)							1.1083 (0.2226)
Udine and Pordenone, Italy	Linear time trends and seasonality			0.0002 (0.0043)			-0.0448 (0.0853)	0.0384 (0.0868)	0.1470 (0.0906)	0.0100 (0.0877)	1.8544 (0.1224)
Japan	Non-linear time trends and seasonality	-2	1		0.0008 (0.0006)	-0.0217 (0.0059)	-0.0452 (0.0113)	-0.0347 (0.0111)	0.0594 (0.0111)	0.0113 (0.0110)	7.5179 (0.0173)
Netherlands	Linear time trends and seasonality			-0.0015 (0.0008)			0.0215 (0.0162)	0.0158 (0.0164)	0.0090 (0.0169)	0.0045 (0.0165)	5.0801 (0.0229)
New Zealand	Linear time trends and seasonality			0.0037 (0.0015)			-0.0211 (0.0288)	0.0141 (0.0292)	-0.0422 (0.0302)	-0.0365 (0.0294)	3.9059 (0.0423)
Poland	Non-linear time trends and seasonality	-2	-2		-0.0104 (0.0092)	-0.0049 (0.0040)	-0.1021 (0.0201)	-0.0264 (0.0203)	0.0533 (0.0218)	-0.0300 (0.0203)	6.0819 (0.0183)
South Korea	Non-linear time trends and seasonality	-2	2		-0.0005 (0.0009)	0.0033 (0.0015)	-0.0600 (0.0158)	-0.0489 (0.0156)	0.0359 (0.0155)	0.0034 (0.0154)	6.9788 (0.0178)
Las Palmas, Spain	Linear time trends and seasonality			0.0022 (0.0030)			-0.1367 (0.0613)	-0.0737 (0.0606)	0.0391 (0.0615)	0.0589 (0.0613)	2.3073 (0.0873)
California, US	Non-linear time trends and seasonality	1	3		0.0469 (0.0285)	-0.0035 (0.0020)	-0.0730 (0.0168)	0.0198 (0.0167)	0.0062 (0.0174)	0.0234 (0.0168)	5.8691 (0.0341)
Illinois (Cook County), US	Non-linear time trends and seasonality	-0.5	-0.5		-0.5802 (0.2377)	-0.2216 (0.0896)	-0.0666 (0.0397)	-0.1010 (0.0385)	0.0442 (0.0383)	0.0137 (0.0382)	4.1618 (0.2026)
Louisiana, US	Linear time trends and seasonality			-0.0010 (0.0037)			-0.1489 (0.0359)	-0.0340 (0.0362)	0.0201 (0.0389)	0.0217 (0.0369)	4.0952 (0.0525)
New Jersey, US	Non-linear time trends and seasonality	-0.5	3		-0.1282 (0.0532)	-0.0012 (0.0007)	-0.0218 (0.0286)	0.0359 (0.0287)	0.0189 (0.0295)	-0.0107 (0.0287)	4.2672 (0.0602)
Texas (4 counties), US	Linear time trends and seasonality			0.0030 (0.0016)			-0.0496 (0.0321)	-0.0039 (0.0323)	0.0379 (0.0333)	0.0242 (0.0326)	3.4202 (0.0466)

Country or area within country	Model	FP1	FP2	Linear time, coef. (se)	FP 1 time, coef. (se)	FP 2 time, coef. (se)	Cosine 1, coef. (se)	Cosine 2, coef. (se)	Sine 1, coef. (se)	Sine 2, coef. (se)	Constant, coef. (se)
Puerto Rico, US	Non-linear time trends and seasonality	2	2		0.0815 (0.0432)	-0.0598 (0.0272)	0.0395 (0.0561)	-0.0228 (0.0558)	-0.0432 (0.0566)	-0.0340 (0.0562)	2.8672 (0.0926)
Botucato, Brazil	Linear time trend only			-0.0220 (0.0714)							0.1392 (0.5239)
Maceió, Brazil	Linear time trend only			0.0171 (0.0401)							1.0540 (0.3159)
Ecuador	Non-linear time trends and seasonality	3	3		-0.0204 (0.0090)	0.0171 (0.0070)	-0.0458 (0.0222)	0.0363 (0.0221)	-0.0253 (0.0230)	-0.0146 (0.0221)	4.6042 (0.0283)
Mexico City, Mexico	Linear time trend only			-0.0018 (0.0108)							3.8118 (0.0827)
Peru	Linear time trends and seasonality			0.0138 (0.0023)			0.0393 (0.0342)	-0.0109 (0.0346)	-0.0315 (0.0359)	-0.0281 (0.0347)	3.5826 (0.0520)
Saint Petersburg, Russian Federation	Linear time trends and seasonality			-0.0034 (0.0020)			0.0179 (0.0398)	0.0788 (0.0409)	0.0776 (0.0430)	-0.0441 (0.0413)	3.4780 (0.0564)

Notes: Fractional polynomial powers that we tested were -2, -1, -0.5, 0, 0.5, 1, 2, 3, where 0 = log(time) and all other powers are $time^{-2}$, $time^{-1}$, etc.

Stata code used to generate all results

Each country or area within-country's data is set up such that there two columns of data. The first column is the year-month (e.g., January 2019). The second column is the number of suicides in that month. The corresponding variable names are *date* and *suicides*.

```
cd "S:\ADP020 - Global Suicide Study"
log using "Analysis and results `c(current_date)'.txt", text replace

tempfile myfile
tempname p

postfile `p' str40(country) double(analysis order exp obs fp1 fp2) str10(model) using `myfile'

// list countries in the (reverse) order you want them in the graph
global dataset ///
	ADP020_20_01_RUSSIA_SAINTPETERSBURG ///
	ADP020_01_PERU ///
	ADP020_15_01_MEXICO_MEXICOCITY ///
	ADP020_23_ECUADOR ///
	ADP020_21_02_BRAZIL_MACEIO ///
	ADP020_21_01_BRAZIL_BOTUCATU ///
	ADP020_13_04_USA_PUERTORICO ///
	ADP020_13_06_USA_TEXAS_4C ///
	ADP020_13_03_USA_NEWJERSEY ///
	ADP020_13_07_USA_LOUISIANA ///
	ADP020_13_02_USA_COOKCOUNTRY ///
	ADP020_13_01_USA_CALIFORNIA ///
	ADP020_25_01_SPAIN_LASPALMAS ///
	ADP020_07_KOREA ///
	ADP020_11_POLAND ///
	ADP020_08_NEWZEALAND ///
	ADP020_09_NETHERLANDS ///
	ADP020_06_JAPAN ///
	ADP020_19_01_ITALY_UDINE_PORDENONE ///
	ADP020_17_02_GERMANY_LEIPZIG ///
	ADP020_17_03_GERMANY_FRANKFURT ///
	ADP020_17_01_GERMANY_COLOGNE_LEVERKUSEN ///
	ADP020_18_ESTONIA ///
	ADP020_24_01_UK_THAMESVALLEY ///
	ADP020_05_CROATIA ///
	ADP020_02_CHILE ///
	ADP020_03_03_CANADA_MANITOBA ///
	ADP020_03_02_CANADA_BRITISH_COLUMBIA ///
	ADP020_03_01_CANADA_ALBERTA ///
	ADP020_14_03_AUSTRIA_VIENNA ///
	ADP020_14_02_AUSTRIA_TYROL ///
	ADP020_14_01_AUSTRIA_CARINTHIA ///
	ADP020_16_01_AUSTRALIA_VICTORIA ///
	ADP020_16_03_AUSTRALIA_QUEENSLAND ///
	ADP020_16_04_AUSTRALIA_NEWSOUTHWALES

// setup each country's dataset

local i = 1

foreach place of global dataset {
```

```
import delimited using "data 20201211/`place'.csv", ///
                    varnames(1) encoding("utf-8") clear

drop if suicides == .

// Country variable
gen str30 country = "`place'"

// Date and time variables
if real(substr(date, 1, 2)) != . {

   gen mdate = monthly(date, "YM", 2020)
      format mdate %tm
      label var mdate "Month and Year"
}
else {

   gen mdate = monthly(date, "MY", 2020)
      format mdate %tm
      label var mdate "Month and Year"
}

sort mdate
        drop if mdate >= tm(2020m11)

        // Leipzig -- drop data prior to 2019
        if "`place'" == "ADP020_17_02_GERMANY_LEIPZIG" {
                    drop if mdate < tm(2019m1)
        }

// check there are at least 12 months of pre-COVID data
gen test = tm(2020m4) - mdate
   replace test = 12 if mdate >= tm(2019m4)
   assert test >= 12
   drop test

// time trends variables
gen time = _n - 1
label var time "Time trend"

gen degrees=(time/12)*360
gen cos_11 = cos(1 * _pi * degrees/180)
        gen cos_21 = cos(2 * _pi * degrees/180)
        gen sin_11 = sin(1 * _pi * degrees/180)
        gen sin_21 = sin(2 * _pi * degrees/180)

di as red "`place'"

// -------------------------------------------
// primary analysis -- April 2020 to July 2020
// -------------------------------------------

        if "`place'" == "ADP020_15_01_MEXICO_MEXICOCITY" | ///
          "`place'" == "ADP020_17_01_GERMANY_COLOGNE_LEVERKUSEN" | ///
          "`place'" == "ADP020_16_04_AUSTRALIA_NEWSOUTHWALES" | ///
          "`place'" == "ADP020_03_03_CANADA_MANITOBA" | ///
          "`place'" == "ADP020_14_03_AUSTRIA_VIENNA" | ///
          "`place'" == "ADP020_17_03_GERMANY_FRANKFURT" | ///
          "`place'" == "ADP020_21_01_BRAZIL_BOTUCATU" | ///
```

```
		"`place'" == "ADP020_21_02_BRAZIL_MACEIO" | ///
		"`place'" == "ADP020_24_01_UK_THAMESVALLEY" | ///
		"`place'" == "ADP020_17_02_GERMANY_LEIPZIG" {

   glm suicides time if mdate < tm(2020m4), ///
      family(poisson) link(log) scale(x2)

			// save results to a matrix
			matrix table = r(table)'
			local model = "linear-no sin"
			local fp1 = .
			local fp2 = .

}
else {
	qui glm suicides time cos* sin* if mdate < tm(2020m4), ///
      family(poisson) link(log) scale(x2)

			estimates store linear

   qui fp <time>, scale all replace: glm suicides <time> cos* sin* ///
				if mdate < tm(2020m4), family(poisson) link(log) scale(x2)

			estimates store fp

			lrtest fp linear

			if r(p) > 0.05 {
				estimates restore linear
				local model = "linear"
				local fp1 = .
				local fp2 = .
			}
			else {
				estimates restore fp
				local model = "fp"
				local fp1 = el(e(fp_fp), 1, 1)
				local fp2 = el(e(fp_fp), 1, 2)
			}
}
// show model
estimates replay

	// save results to a matrix
	matrix table = r(table)'

	// autocorrelation check
	predict resid, response
	wntestq resid

// expected values
predictnl expected = predict(), ci(min max) level(95)

qui sum expected if mdate >= tm(2020m4) & mdate <= tm(2020m7), detail
local exp = r(sum)

// observed values
qui sum suicides if mdate >= tm(2020m4) & mdate <= tm(2020m7), detail
local obs = r(sum)
```

```
// output to postfile
        post `p' ("`place'") (1) (`i') (`exp') (`obs') (`fp1') (`fp2') ("`model'")

        // save matrix as a dataset
        preserve
                local rownames : rowfullnames table
                local c : word count `rownames'

                drop _all
                svmat table, names(col)

                gen rownames = ""
                forvalues j = 1/`c' {
                        replace rownames = "`:word `j' of `rownames''" in `j'
                }

                gen model = 1
                gen place = `i'

                save "analysis/`place'_1_`i'", replace

                list
        restore

// save dataset for drawing figures
save "analysis/`place' - primary", replace

// -----------------------------------------------------------
// sensitivity analysis 1 -- April 2020 to latest data available
// -----------------------------------------------------------

// expected values
qui sum expected if mdate >= tm(2020m4), detail
local exp = r(sum)

// observed values
qui sum suicides if mdate >= tm(2020m4), detail
local obs = r(sum)

// output to postfile
post `p' ("`place'") (2) (`i') (`exp') (`obs') (`fp1') (`fp2') ("`model'")

        // ---------------------------------------------------------------------
        // sensitivity analysis 2 - add 5% to observed values during Apr to Jul 2020
        // ---------------------------------------------------------------------

// expected values
qui sum expected if mdate >= tm(2020m4) & mdate <= tm(2020m7), detail
local exp = r(sum)

// observed values
qui sum suicides if mdate >= tm(2020m4) & mdate <= tm(2020m7), detail
local obs = r(sum) * 1.05

// output to postfile
post `p' ("`place'") (3) (`i') (`exp') (`obs') (`fp1') (`fp2') ("`model'")

        // ----------------------------------------------------------------------------
        // Sensitivity analysis 3 - add 5% to observed values during Apr to latest available
        // ----------------------------------------------------------------------------
```

```
        // expected values
qui sum expected if mdate >= tm(2020m4), detail
local exp = r(sum)

// observed values
qui sum suicides if mdate >= tm(2020m4), detail
local obs = r(sum) * 1.05

// output to postfile
post `p' ("`place'") (4) (`i') (`exp') (`obs') (`fp1') (`fp2') ("`model'")

        // clean-up for next analysis
drop expected min max resid

// ------------------------------------------------
// sensitivity analysis 4 -- March 2020 to July 2020
// ------------------------------------------------

        if "`place'" == "ADP020_15_01_MEXICO_MEXICOCITY" | ///
          "`place'" == "ADP020_17_01_GERMANY_COLOGNE_LEVERKUSEN" | ///
          "`place'" == "ADP020_16_04_AUSTRALIA_NEWSOUTHWALES" | ///
          "`place'" == "ADP020_03_03_CANADA_MANITOBA" | ///
          "`place'" == "ADP020_14_03_AUSTRIA_VIENNA" | ///
          "`place'" == "ADP020_17_03_GERMANY_FRANKFURT" | ///
          "`place'" == "ADP020_21_01_BRAZIL_BOTUCATU" | ///
          "`place'" == "ADP020_21_02_BRAZIL_MACEIO" | ///
          "`place'" == "ADP020_24_01_UK_THAMESVALLEY" | ///
          "`place'" == "ADP020_17_02_GERMANY_LEIPZIG" {

  glm suicides time if mdate < tm(2020m3), ///
    family(poisson) link(log) scale(x2)

  // save results to a matrix
                matrix table = r(table)'
                local model = "linear-no sin"
                local fp1 = .
                local fp2 = .

}
        else {
                qui glm suicides time cos* sin* if mdate < tm(2020m3), ///
    family(poisson) link(log) scale(x2)

                estimates store linear

  qui fp <time>, scale all replace: glm suicides <time> cos* sin* if mdate < tm(2020m3), ///
    family(poisson) link(log) scale(x2)

                estimates store fp

                lrtest fp linear

                if r(p) > 0.05 {
                        estimates restore linear
                        local model = "linear"
                        local fp1 = .
                        local fp2 = .
                }
                else {
```

```
					estimates restore fp
					local model = "fp"
					local fp1 = el(e(fp_fp), 1, 1)
					local fp2 = el(e(fp_fp), 1, 2)
				}
	}
		estimates replay

		// save results to a matrix
		matrix table = r(table)'

		// autocorrelation check
		predict resid, response
		wntestq resid

	// expected values
	predictnl expected = predict(), ci(min max) level(95)

	qui sum expected if mdate >= tm(2020m3) & mdate <= tm(2020m7), detail
	local exp = r(sum)

	// observed values
	qui sum suicides if mdate >= tm(2020m3) & mdate <= tm(2020m7), detail
	local obs = r(sum)

	// output to postfile
	post `p' ("`place'") (5) (`i') (`exp') (`obs') (`fp1') (`fp2') ("`model'")

		// save matrix as a dataset
		preserve
				local rownames : rowfullnames table
				local c : word count `rownames'

				drop _all
				svmat table, names(col)

				gen rownames = ""
				forvalues j = 1/`c' {
					replace rownames = "`:word `j' of `rownames''" in `j'
				}

				gen model = 5
				gen place = `i'

				save "analysis/`place'_3_`i'", replace

				list
		restore

		// save dataset for drawing figures
	save "analysis/`place' - secondary", replace

		// clean-up and prepare for the next loop
	local i = `i' + 1
	local fp1 = .
	local fp2 = .

}

postclose `p'
```

```
// -----------------------------------
// Create dataset of summary estimates
// -----------------------------------

use `myfile', clear

bysort order: assert _N == 5

label define analysis ///
   1  "Primary analysis (Apr 2020 to Jul 2020)" ///
   2  "Sensitivity analysis 1 (Apr 2020 to latest available)" ///
   3  "Sensitivity analysis 2: adding 5% to obs (Apr to Jul 2020)" ///
   4  "Sensitivity analysis 3: adding 5% to obs (Apr to latest available)" ///
   5  "Sensitivity analysis 4 (Mar 2020 to Jul 2020)"

label values analysis analysis

recode order ///
        (1 = 1 "Peru") ///
        (2 = 2 "Russia") ///
        (3 = 3 "Mexico") ///
        (4 = 4 "Ecuador") ///
        (5 6 = 5 "Brazil") ///
        (7/11 = 6 "US") ///
        (12 = 7 "Spain") ///
        (13 = 8 "South Korea") ///
        (14 = 9 "Poland") ///
        (15 = 10 "New Zealand") ///
        (16 = 11 "Netherlands") ///
        (17 = 12 "Japan") ///
        (18 = 13 "Italy") ///
        (19/21 = 14 "Germany") ///
        (22 = 15 "Estonia") ///
        (23 = 16 "England") ///
        (24 = 17 "Croatia") ///
        (25 = 18 "Chile") ///
        (26/28 = 19 "Canada") ///
        (29/31 = 20 "Austria") ///
        (32/34 = 21 "Australia"), gen(place)

label var obs "Observed"
label var exp "Expected"
format obs exp %8.0fc

gen log_rr = log(obs / exp)
gen se_rr =  1 / sqrt(obs)

label var log_rr "Log rate ratio"
label var se_rr "Log standard error"
label var country "Country"

// 95% CIs of all estimates
gen min = log_rr - 1.96 * se_rr
gen max = log_rr + 1.96 * se_rr


// save data for export
export delimited using "analysis/summary_data", quote replace
```

Country/area-within-country suicide data

Table 5 provides details of the suicide data available from countries and areas-within-countries included in the primary analysis and sensitivity analyses.

Table 5: Details of country/area-within-country suicide data

Country	Area-within-country	Source of suicide data	Suicide data details	Suicide data availability
High-income countries[a]				
Australia	New South Wales	New South Wales Health[c]	Suicide data were sourced from the New South Wales Suicide Monitoring and Data Management System (NSWSMDMS). The NSWSMDMS draws on police and coronial data. Deaths are flagged as "suspected" suicides in a two-step process that involves automated screening and manual checking. The majority of these are ultimately recoded as "confirmed suicides". "Suspected suicides" and "confirmed suicides" (combined) were used as the unit of counting across the study period, removing the possible impact of changes in counts as investigations proceed.	Jan 2019 – Sep 2020
	Queensland	Australian Institute of Suicide Research and Prevention[d]	Suicide data came from the interim Queensland Suicide Register (iQSR). The iQSR relies on police reports of deaths prepared for coroners. iQSR coders classify the probability of the death being a suicide as "possible", "probable", or "beyond reasonable doubt". For all analyses, deaths classified as "probable" or "beyond reasonable doubt" are considered "suspected suicides". In the iQSR, these "suspected suicides" are not updated to "confirmed suicides", so using them as the unit of counting across the whole study timeframe ensured a like-with-like comparison between the pre-COVID and COVID periods. There is a high level of correspondence between the number of "suspected suicides" recorded in the iQSR and the official suicide figures reported by the Australian Bureau of Statistics (ABS); for example, in 2016, there were 675 "suspected suicides" recorded in the iQSR and 688 reported for Queensland by the ABS.	Jan 2016 – Aug 2020
	Victoria	Coroners Court of Victoria[e]	Suicide data were sourced from the Victorian Suicide Register (VSR). Potential suicides are initially identified and included in the VSR through review of police reports and case notes for deaths reported to the Coroners Court of Victoria. Deceased intent is coded as "intentional self-harm" (if they occur in circumstances consistent with suicide), "unable to be determined" (if the available evidence is equivocal) or "still enquiring" (if there is insufficient evidence to date on deceased intent). Cases where the deceased intent is coded as "intentional self-harm" are deemed to be suicides. Intent coding is reviewed as the coronial investigation continues and finalised once it is completed. In the current study, the deceased intent coding for older data (2016 to 2019), would have been reviewed at least once; these data can be considered to be highly reliable and likely to change only very slightly upon any further review. For the more recent data, particularly in deaths that occurred after March 2020, minimal review had occurred after initial coding; based on past experience, the suicide frequency during this latter period would be likely be revised down slightly (≈2-4%). There is a high degree of concordance between VSR data and official data from the Australian Bureau of Statistics (ABS); comparing ABS and VSR data for Victorian suicides between 2016 to 2019, the difference in aggregate frequencies was 1.1%.	Jan 2016 – Sep 2020
Austria	Carinthia	Kärntner Suiziddatenbank, Amt der Kärntner Landesregierung[d]	Suicide data were sourced from the Carinthian Suicide Database (Kärntner Suiziddatenbank) which has existed since 2018. This database draws on police reports and case notes of the Red Cross (which is always involved in suicide cases) and both psychiatric departments of Carinthia. Each case is checked and rechecked and the overall figures are compared with relevant data from the Austrian suicide database, which is part of the official Statistik Austria. The data are timely; cases are up-to-date at the end of each month.	Jan 2018 – Aug 2020

Country	Area-within-country	Source of suicide data	Suicide data details	Suicide data availability
	Tyrol	Tyrol Suicide Register[d]	Suicide data were sourced from the Tyrol Suicide Register (TSR). The TSR draws on data from police reports of deaths judged to be suicides by a public medical officer. These deaths were used as the unit of counting across the study period. There is no evidence that the assessment procedure changed after the beginning of the pandemic.	Jan 2018 – Oct 2020
	Vienna	Municipal Health Service[d]	Suicide data were sourced from the Municipal Health Service. To provide further cross-validity, data were also sourced from the Police and Vienna´s public transport service, which provided further evidence for the completeness of the Municipal Health Service data source.	Jan 2019 – Oct 2020
Canada	Alberta	Office of the Chief Medical Examiner[d,f]	The data source was records from the Office of the Chief Medical Examiner of Alberta. The standard for identifying a suicide was evidence of intent to die, including preparations for death inappropriate to or unexpected in the context of the decedent's life, expression of parting or the desire to die or an acknowledgment of impending death. The data provided may not be entirely complete as some investigations from 2019 and 2020 may be ongoing.	Jan 2016 – Aug 2020
	British Columbia	British Columbia Coroners Service[g]	Suicide deaths were sourced from the British Columbia Coroners Services (BCCS) which operates in a live database environment. A finding of suicide is made on the balance of probabilities, in that it is more likely than not, that the death was the result of intentional self-harm. The numbers are tabulated on the basis of cases that satisfy the criteria mentioned. The data are preliminary and subject to change as coroners' investigations are finalised.	Jan 2018 – Aug 2020
	Manitoba	Office of the Chief Medical Examiner[d]	Data were sourced from the Office of the Chief Medical Examiner. The definition of suicide used was death resulting from a volitional act of the decedent with the knowledge that said act would be likely to result in self-harm. The standard of certifying a death as suicide was according to a high degree of probability throughout. The data provided should be considered final/not preliminary. The manner of death certification does not take place until the end of the investigation, so it is extremely unlikely that it would change without the appearance of new relevant information.	Jan 2019 – Oct 2020
Chile	Whole country	Department of Statistics and Health Information[h]	Suicide data were sourced from the national Department of Statistics and Health Information (DEIS), which in turn receives data from the National Institute of Statistics (INE) and the Civil Register and Identification Service (SRCeI). At the time of sourcing, 2019 registered deaths were in the phases of reviewing, validation and coding, while 2020 registered deaths were in the phase of data recollection. Therefore, data for these two years may be subject to change. Cause of death is coded based on ICD-10 and suicide defined as X60-X84.	Jan 2016 – Oct 2020
Croatia	Whole country	Ministry of the Interior[d]	Suicide data were based on mandatory death reports (certificates) that accompany all deaths. Causes of death are determined by medical doctors, immediately (and then also filed and submitted), or in case of any uncertainty, after autopsy. Data from both possible sources, death and autopsy reports, are submitted to the Ministry of the Interior Affairs and are then aggregated and statically analysed by the National Committed Suicide Registry by the Croatian institute of Public Health (and as such publicly published in their annual reports). For the study period, all the reports on death deemed to be suicides were completed and filed accordingly (fully closed) and they were used as the unit of counting across study period.	Jan 2016 – Oct 2020
England	Thames Valley	Thames Valley Police[d]	The Thames Valley Real Time Suicide Surveillance (RTSS) data are primarily collected from police reports to the Coroners Services in Oxfordshire, Berkshire, Buckinghamshire and Milton Keynes. The data are provided either directly by the officers following attendance at the suspected suicide or subsequently by the coroners' teams themselves (especially in hospital-reported deaths post incident). An audit is conducted approximately every two months in which RTSS data are compared with coroners' records, and there is minimal correction post inquest outcome.	Jan 2019 – Oct 2020
Estonia	Whole country	National Institute for Health Development[d]	Suicide data were sourced from the Estonian Causes of Death Registry managed by the National Institute for Health Development. Information is gathered from death certificates, which are filled in by medical doctors and forensic pathologists who have ascertained death. The ICD-10 is used to code the causes of death, and all deaths	Jan 2016 – Sep 2020

Country	Area-within-country	Source of suicide data	Suicide data details	Suicide data availability
			coded as X60 – X84 are considered to be suicides. All causes of death had been finalised in the study period. Deaths deemed to be suicides by this process were used as the unit of counting across the study period.	
Germany	Cologne and Leverkusen	Police Headquarters Cologne[d]	Suicide data were sourced from the relevant police office, Police Headquarters Cologne. At the request of the public prosecutor, police investigate all deaths for which there is doubt about the cause or suicide is suspected. The police office provides data on deaths that are then confirmed to be suicides to the local health department, which then passes them on to the State Statistical Offices. All of the cases in the current study were confirmed as suicide by the police, and no investigations were pending.	Jan 2019 – Oct 2020
	Frankfurt	Research Project FraPPE / Frankfurt Municipal Health Authority / University Hospital Frankfurt[d]	Suicide data were sourced from the Research Project Frappe, based on autopsy data which were obtained in the same way the whole study period so biases during the latter months are minimal.	Jan 2019 – Jul 2020
	Leipzig	Leipzig Health Authority[d]	Suicide data were based on cause of death statistics provided by the Leipzig Health Authority (LHA). Cause of death is determined by medical doctors, and if it is uncertain or non-natural an autopsy may be conducted. The LHA collates statistics on causes of death from death certificates and autopsy results. All autopsies had been completed and all causes of death had been finalised in the study period. Deaths deemed to be suicides by this process were used as the unit of counting across the study period.	Jan 2019 – Jul 2020
Italy	Udine and Pordenone	Regional Scoial and Health Information System (SISSR) of the Friuli Venezia Guilia (FVG) Region[d]	Suicide data were obtained from the Regional Social and Health Information System (SISSR) of the Friuli Venezia Giulia (FVG) Region, available for consultation at the Epidemiological Service, Healthcare Agency for Health Coordination. They were identified through the Death Register of Region FVG, which uses ICD-9 codes E95*and E98* for intentional self-harm and events of undetermined intent. The Death Register collects data on cause of death based on death certificates, as provided by the National Institute of Statistics (Istat). The certificates are completed by a physician, usually a coroner. Deaths due to undetermined intent are rare (approximately 10%), and they were deemed to be "suspected suicides" for the purpose of this study. These data are used for regional mortality statistics and were registered in the same way for the full study period. The south-eastern area of the region, corresponding to Trieste and Gorizia areas, was excluded from the analysis, due to a delay in mortality data registration.	Jan 2016 – Jul 2020
Japan	Whole country	National Police Agency[i]	Suicide data were sourced from the National Police Agency (NPA). The NPA suicide statistics are derived from police investigations of suicide cases. All suspected suicides are investigated by the police, and the NPA records all deaths that are deemed to be suicides following this investigation. The data used in this study are provisional data, but the discrepancy between the provisional and the finalised data (released in March the following year) has been ≈1% in the past three years. The NPA data are closely correlated with those tabulated by the Ministry of Health, Labour, and Welfare, which are based on death certificates (r=0.995 for suicides occurring between 1978 and 2018).	Jan 2016 – Oct 2020
Netherlands	Whole country	Statistics Netherlands[d]	Suicide data are based on the cause of death statistics, sourced from Statistics Netherlands. This is a legal registration of causes of death of all deceased residents of the Netherlands. A cause of death certificate is completed by a medical doctor for every deceased person, and in case of uncertainty about a (un)natural cause of death, by a coroner. This statement of cause of death is sent to and processed at Statistics Netherlands. The data up to and including 2019 is final. The data in 2020 is preliminary. However, minimal numbers have been added in previous years when data was still preliminary, so no major adjustments are expected.	Jan 2016 – Jul 2020
New Zealand	Whole country	Coronial Services of New Zealand[d,j]	Suicide data were sourced from Coronial Services. These data are published as provisional and are a count of deaths that the police have notified the Coroner as being "suspected suicides". These deaths are subsequently	Jan 2016 – Oct 2020

Country	Area-within-country	Source of suicide data	Suicide data details	Suicide data availability
			investigated by the Coroner, and those with a finding/verdict of suicide are later published by the New Zealand Ministry of Health, as "confirmed deaths by suicide", after a delay of several years due to delays in Coronial inquests. The provisional Coronial Services data were used across the full study period.	
Poland	Whole country	Working Group on Prevention of Suicide and Depression at Public Health Council Ministry of Health[d]	Suicide data were provided by the Working Group on Prevention of Suicide and Depression at Public Health Council Ministry of Health. These.data are gathered by the National Police Headquarters on the basis of police reports. (In Poland, suicide data are also gathered by Statistics Poland). Since 2013, police have entered data on given suicide cases into a database (called "KSIP-10 reporting suicide/suicidal behaviour" since 2017), immediately after it has been determined that a suicide took place. Data can be modified for up to one month, enabling modifications to the record in the event that additional suicides are identified or deaths that were previously identified as suicides are no longer thought to be so. After one month, the system "freezes" the data and no further updates can be made. These data were used as the unit of counting across the study period. In Poland	Jan 2018 – Oct 2020
South Korea	Whole country	Statistics Korea[k]	Suicide data were taken from figures published by Statistics Korea. Data for January 2016 to December 2019 are finalised figures while data for January to September 2020 are preliminary. Statistics Korea releases the provisional numbers within about two months, and then releases the finalised figures in September of the following year. In terms of counting provisional cases, a death was classified as a suicide if either the death certificate or the police report indicated that it was a suicide. The cases reported as being due to different causes of death are comprehensively investigated to and are reflected only in the finalised numbers. The finalised figures may be 3-7% higher than the provisional counts, based on 2018 and 2019 data.	Jan 2016 – Sep 2020
Spain	Las Palmas	Institute of Legal Medicine[d]	Suicide data were sourced from Institute of Legal Medicine from Las Palmas de Gran Canaria. These are based on death certificates and are the same statistics provided to the Spanish National Statistics Institute to produce the official annual death reports. Although coroners' verdicts could change as they complete pending investigations, these changes are not reflected in the death certificates nor in the National Statistics Institute figures. In any case, such changes are uncommon.	Jan 2016 – Oct 2020
United States	California	California Department of Public Health[l]	Suicide data were sourced from the California Department of Public Health. The information was derived from collating records available from the California Electronic Death Registration System where the cause of death was coded as X60-X84 in ICD-10.	Jan 2017 – Sep 2020
	Illinois (Cook County)	Medical Examiner Case Archive[m]	Suicide data were sourced from the Medical Examiner Case Archive (MECA) which collates suicide cases that occur in Cook County under the Medical Examiner's jurisdiction. The total suicides according to MECA will differ from the total provided in other statistical collections in that not all suicides that occur in Cook County are reported to the Medical Examiner or fall under their jurisdiction. These data were used consistently across the study period, however.	Jan 2016 – Oct 2020
	Louisiana	Louisiana Department of Health[d]	Suicide data were based on cause of death statistics provided by death record filed with the Louisiana Department of Health. Cause of death is determined by coroners. Examining pathologists work for and report to coroners who make the ultimate determination. Data from the latter months in the study period should be regarded as preliminary and subject to amendment. However, the number of pending investigations was relatively small and a number of these would ultimately not be classified as suicides.	Jan 2018 – Jul 2020
	New Jersey	New Jersey Department of Health[n]	Suicide data were sourced from the New Jersey Death Certificate database, which draws on data from death certificates. New Jersey law requires death certificates to be completed by the proper authority (e.g., hospital personnel, medical doctors, medical examiners, funeral directors) and filed promptly. These certificates are submitted to the office of the State Registrar, where they are recorded and filed permanently. Deaths deemed to be suicides according to this death certificate data were used as the unit of counting across the study period.	Jan 2016 – Oct 2020

Country	Area-within-country	Source of suicide data	Suicide data details	Suicide data availability
	Texas (Denton, Johnson, Parker, Tarrant Counties)	Medical Examiners Case Records[o]	Suicide counts were collated from individual reports released from Medical Examiners Case Records, spanning four counties in Texas– Denton, Johnson, Parker, Tarrant Counties. This is updated in daily basis. Individual cases in which the manner of death was coded as "suicide" were selected and aggregated.	Jan 2016 – Oct 2020
	Puerto Rico[b]	Health Department[p]	Suicide data were sourced from the monthly suicide report issued by the Puerto Rico Forensic Sciences Institute (which is the sole medical examiner of Puerto Rico and its municipalities) as reported by the Health Department. Preliminary data may subsequently be updated as more conclusive findings are returned. Deaths deemed to be suicide according to this data source were used as the unit of counting across the study period	Jan 2016 – Oct 2020
Upper middle-income countries[a]				
Brazil	Botucatu	Municipal Secretary of Health[d]	Suicide data were based on death certificates that are completed by a medical doctor who certifies the cause of death (as "suicide" or "undetermined cause"); in Brazil, burials cannot take place without the presentation of such death certificate. Information from death certificates at a county level is submitted by the respective Municipal Secretaries of Health to the federal Ministry of Health, which publishes the data and sends them to the World Health Organization. In the event of a possible subsequent inquiry modifying the originally recorded cause of death, the central federal data are not changed because the case is regarded as "closed". All data in the current study came from Municipal Secretaries of Health and will be submitted to the Ministry of Health, and can be considered "closed cases".	Jan 2019 – Sep 2020
	Maceió	Municipal Secretary of Health[d]	Suicide data were based on death certificates that are completed by a medical doctor who certifies the cause of death (as "suicide" or "undetermined cause"); in Brazil, burials cannot take place without the presentation of such death certificate. Information from death certificates at a county level is submitted by the respective Municipal Secretaries of Health to the federal Ministry of Health, which publishes the data and sends them to the World Health Organization. In the event of a possible subsequent inquiry modifying the originally recorded cause of death, the central federal data are not changed because the case is regarded as "closed". All data in the current study came from Municipal Secretaries of Health and will be submitted to the Ministry of Health, and can be considered "closed cases".	Jan 2019 – Sep 2020
Ecuador	Whole country	Government Ministry (Police Reports)[d]	Suicide data were sourced from police reports (Dirección Nacional de Delitos contra la Vida, Muertes Violentas, Desapariciones, Extorsión y Secuestro (DINASED) de la Policía Nacional, Ministerio de Gobierno) for the whole study period. These reports capture 80-95% of all suicides that are represented in the official statistics of the National Institution of Statistics and Information (INEC), because some information is not collected by the police (e.g., cases where the person makes a suicide attempt and subsequently dies in hospital). However, the consistent use of police data across the study period means that like-with-like comparisons were made. In addition, the distribution of suicide methods was similar across the whole period, instilling further confidence that biases were not introduced in the latter period.	Jan 2017 – Oct 2020
Mexico	Mexico City	Attorney General's Office, Government of Mexico City[q]	Data were sourced from the Attorney General's Office. This dataset records crimes, and one of these is labelled "loss of life by suicide". This was used as the unit of counting across the study period.	Jan 2019 – Oct 2020
Peru	Whole country	National Death Registry Information System[r]	Data were sourced from the National Death Registry Information System, which is the computer application that generates death certificates and aggregates these into a statistical report. Data are updated on a daily basis.	Jan 2017 – Sep 2020

Country	Area-within-country	Source of suicide data	Suicide data details	Suicide data availability
Russian Federation	Saint Petersburg	Saint Petersburg City Bureau of Forensic Medical Examinations[d]	Suicide data originate from registries of the Saint Petersburg City Bureau of Forensic Medical Examinations. These data are referred as "preliminary" and after confirmation from police authorities are transferred into the open access system of the demographic statistics of Saint Petersburg. Any discrepancy between "preliminary" and "confirmed" suicides may be positive or negative, and in most cases within the range 5% from initial numbers.	Jan 2016 – Jul 2020

a. Source: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups
b. Unincorporated territory of the United States
c. Source: https://www.health.nsw.gov.au/mentalhealth/resources/Publications/suicide-monitoring-report-oct-20.pdf
d. Data received directly from source
e. Source: https://www.coronerscourt.vic.gov.au/sites/default/files/2020-10/Coroners%20Court%20Suicide%20Data%20Report%20-%20Report%202%20-%2005102020.pdf
f. Source: https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/statistical/suicide_knowledge_update.pdf
g. Source: https://calgary.ctvnews.ca/alberta-suicide-deaths-trend-downward-despite-pandemic-recession-1.5100299
h. Source: https://public.tableau.com/profile/deis4231#!/vizhome/DefuncionesSemanales1_0/DEF?publish=yes
i. Source: https://www.npa.go.jp/publications/statistics/safetylife/jisatsu.html
j. Source: https://coronialservices.justice.govt.nz/assets/Documents/Publications/2020-Annual-Provisional-Suicide-Statistics.pdf
k. Source: http://kosis.kr/statHtml/statHtml.do?orgId=101&tblId=DT_1B34E17&conn_path=I3
l. Source: https://data.chhs.ca.gov/dataset/statewide-death-profiles
m. Source: https://datacatalog.cookcountyil.gov/Public-Safety/Medical-Examiner-Case-Archive-Manner-of-Death-Char/jjtx-2ras
n. Source: https://www-doh.state.nj.us/doh-shad/query/result/provdth/Mort/Count.html
o. Source: https://mepublic.tarrantcounty.com/
p. Source: http://www.salud.gov.pr/Estadisticas-Registros-y-Publicaciones/Pages/Suicidio.aspx
q. Source: Víctimas en carpetas de investigación FGJ — Datos CDMX (opendatasoft.com)
r. Source: https://www.datosabiertos.gob.pe/dataset/informaci%C3%B3n-de-fallecidos-del-sistema-inform%C3%A1tico-nacional-de-defunciones-sinadef-ministerio

Raw data from countries and areas-within-countries

Monthly suicide counts are included below for all countries and areas-within-countries for which data were publicly available or for which data custodians have provided permission for data to be shared. Note also that cells with small numbers (≤10) have been redacted to ensure that no individuals can be identified.

Table 6: New South Wales, Australia

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	75	75	91	57	68	68	73	77	88	89	93	97
2020	82	63	88	59	66	72	89	87	67			

Table 7: Queensland, Australia

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	63	65	60	46	41	55	52	59	49	65	61	63
2017	75	72	77	56	54	63	59	70	64	79	70	64
2018	72	67	68	51	54	61	57	58	66	72	79	63
2019	66	67	58	67	66	45	76	58	62	69	63	59
2020	74	75	68	65	69	53	50	54	62	60		

Table 8: Victoria, Australia

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	60	51	61	44	59	49	48	58	61	49	57	56
2017	62	48	72	51	52	50	67	59	40	61	62	63
2018	53	51	67	64	54	54	70	56	54	67	76	63
2019	73	61	54	57	65	54	54	61	54	66	55	64
2020	63	63	73	52	57	55	57	61	49			

Table 9: Carinthia, Austria

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	≤10	12	≤10	12	≤10	11	11	14	≤10	≤10	≤10	≤10
2019	≤10	≤10	15	11	13	11	≤10	≤10	≤10	≤10	≤10	≤10
2020	≤10	≤10	≤10	≤10	11	11	≤10	≤10				

Table 10: Tyrol, Austria

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	14	≤10	13	12	11	11	≤10	12	11	≤10	≤10	≤10
2019	11	≤10	16	11	11	≤10	14	≤10	≤10	≤10	≤10	≤10
2020	≤10	≤10	13	≤10	≤10	≤10	≤10	≤10	≤10	13		

Table 11: Vienna, Austria

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	n/a	n/a	n/a	≤10	17	12	≤10	n/a	n/a	n/a	n/a	n/a
2020	n/a	n/a	n/a	≤10	≤10	12	16	n/a	n/a	n/a		

Table 12: Botucato, Brazil

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10
2020	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10			

Table 13: Maceió, Brazil

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10
2020	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10			

Table 14: Alberta, Canada

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	49	54	42	57	42	49	60	46	62	54	47	47
2017	61	46	58	52	57	51	47	62	56	53	41	63
2018	47	53	54	55	49	61	50	46	54	46	59	56
2019	43	49	68	58	52	34	46	46	40	59	55	50
2020	47	48	44	39	46	30	42	17				

Table 15: British Columbia, Canada

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	43	40	48	41	63	52	62	44	54	56	41	35
2019	54	54	57	56	63	45	50	61	64	42	50	55
2020	61	60	50	37	41	60	51	48				

Table 16: Chile

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	191	159	135	123	152	139	150	158	152	159	165	175
2017	192	146	147	146	135	126	153	161	178	174	148	173
2018	197	134	125	137	146	103	144	158	169	151	163	196
2019	167	158	141	133	131	146	144	156	194	186	186	154
2020	180	139	156	120	131	105	115	120	122	146		

Table 17: Croatia

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	59	48	46	59	53	61	66	54	64	45	57	51
2017	40	43	56	54	49	46	68	51	67	59	52	40
2018	56	47	59	64	62	61	58	63	55	43	46	43
2019	54	37	43	44	51	52	48	59	59	43	36	40
2020	40	41	40	33	48	57	52	44	62	38		

Table 18: Estonia

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	12	13	18	19	23	15	14	15	14	14	12	17
2017	22	≤10	18	22	24	26	26	20	17	21	12	≤10
2018	17	12	15	18	19	22	19	14	19	≤10	19	13
2019	13	16	21	13	24	15	16	15	13	20	15	13
2020	20	12	12	≤10	23	17	14	31	20			

Table 19: Cologne and Leverkusen, Germany

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	16	≤10	≤10	15	13	≤10	15	11	≤10	12	17	≤10
2020	15	11	≤10	≤10	13	15	12	11	12	12		

Table 20: Frankfurt, Germany

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	≤10	≤10	≤10	≤10	≤10	15	≤10	≤10	≤10	≤10	≤10	≤10
2020	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	11			

Table 21: Leipzig, Germany

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	n/a	n/a	n/a	n/a	n/a	≤10	≤10	≤10	≤10	≤10	≤10	≤10
2020	≤10	≤10	≤10	n/a	n/a	≤10	≤10					

Table 22: Udine and Pordenone, Italy

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10
2017	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10
2018	11	11	≤10	≤10	≤10	12	≤10	11	≤10	≤10	≤10	≤10
2019	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10
2020	≤10	≤10	≤10	≤10	≤10	≤10	≤10					

Table 23: Japan

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	1,851	1,729	2,113	1,880	2,065	1,862	1,862	1,701	1,765	1,820	1,683	1,566
2017	1,815	1,646	1,915	1,940	2,024	1,869	1,837	1,852	1,821	1,642	1,565	1,395
2018	1,641	1,599	2,005	1,825	1,863	1,740	1,725	1,708	1,728	1,793	1,623	1,590
2019	1,684	1,615	1,856	1,814	1,853	1,640	1,793	1,603	1,662	1,539	1,616	1,494
2020	1,680	1,453	1,749	1,502	1,581	1,570	1,851	1,910	1,849	2,158		

Table 24: South Korea

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	905	968	1,232	1,141	1,197	1,128	1,108	1,115	1,217	1,151	967	963
2017	923	935	1,037	1,097	1,158	1,075	1,018	1,119	1,050	1,105	981	965
2018	1,128	958	1,409	1,269	1,194	1,180	1,183	1,087	1,087	1,145	1,044	986
2019	1,114	971	1,182	1,131	1,274	1,108	1,248	1,152	1,093	1,248	1,098	1,180
2020	1,071	961	1,120	1,096	1,111	1,109	1,186	1,132	969			

Table 25: Mexico City, Mexico

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	42	46	38	40	59	50	43	39	52	44	54	35
2020	37	47	63	40	42	58	42	34	38	51		

Table 26: Netherlands

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	171	141	191	143	171	146	163	153	144	174	148	148
2017	185	165	176	144	159	163	154	144	158	148	156	165
2018	153	143	152	170	144	147	169	153	138	160	151	149
2019	175	152	143	163	142	138	161	146	159	146	138	148
2020	179	141	146	140	153	136	165					

Table 27: New Zealand

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	52	44	43	54	57	49	54	60	46	50	49	47
2017	57	34	58	47	52	52	46	67	65	48	64	55
2018	54	51	59	43	54	62	58	43	69	58	55	52
2019	69	50	54	41	57	79	50	49	53	66	69	58
2020	64	58	51	40	54	42	54	57	39	58		

Table 28: Peru

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017	33	41	28	40	37	42	33	40	36	42	46	42
2018	44	39	46	35	36	39	53	46	46	63	55	70
2019	41	56	55	61	56	46	61	42	56	53	54	55
2020	68	54	45	29	54	49	44	49	39			

Table 29: Poland

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	426	332	440	512	482	481	458	484	379	423	400	363
2019	401	385	415	452	479	507	442	478	419	453	408	416
2020	416	373	393	379	479	486	497	478	411	446		

Table 30: Las Palmas, Spain

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	≤10	11	12	15	13	≤10	≤10	12	≤10	12	≤10	≤10
2017	14	≤10	≤10	11	≤10	≤10	14	13	12	16	12	≤10
2018	≤10	11	≤10	13	11	12	15	≤10	15	15	≤10	≤10
2019	12	≤10	13	≤10	14	17	14	16	12	≤10	≤10	≤10
2020	≤10	≤10	≤10	≤10	≤10	17	≤10	≤10	15	12		

Table 31: California, US

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017	342	307	396	339	401	383	366	407	365	406	318	338
2018	388	351	355	353	367	417	426	411	374	400	368	341
2019	368	334	382	384	352	411	380	442	369	341	308	307
2020	379	338	349	301	295	337	347	315	195			

Table 32: Cook County, US

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	43	33	46	43	49	28	26	42	36	27	27	36
2017	21	25	48	40	43	52	43	38	29	52	39	51
2018	28	44	40	42	37	49	40	36	48	44	41	36
2019	25	42	49	41	42	30	38	47	46	42	40	37
2020	38	39	40	36	28	35	43	48	40	35		

Table 33: New Jersey, US

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	44	56	63	68	63	57	62	63	60	51	45	56
2017	57	79	71	55	61	72	72	63	53	63	72	77
2018	70	46	66	52	69	83	66	79	64	69	50	64
2019	68	56	61	61	65	50	60	67	51	60	71	58
2020	67	47	43	62	59	57	67	67	37	40		

Table 34: Puerto Rico, US

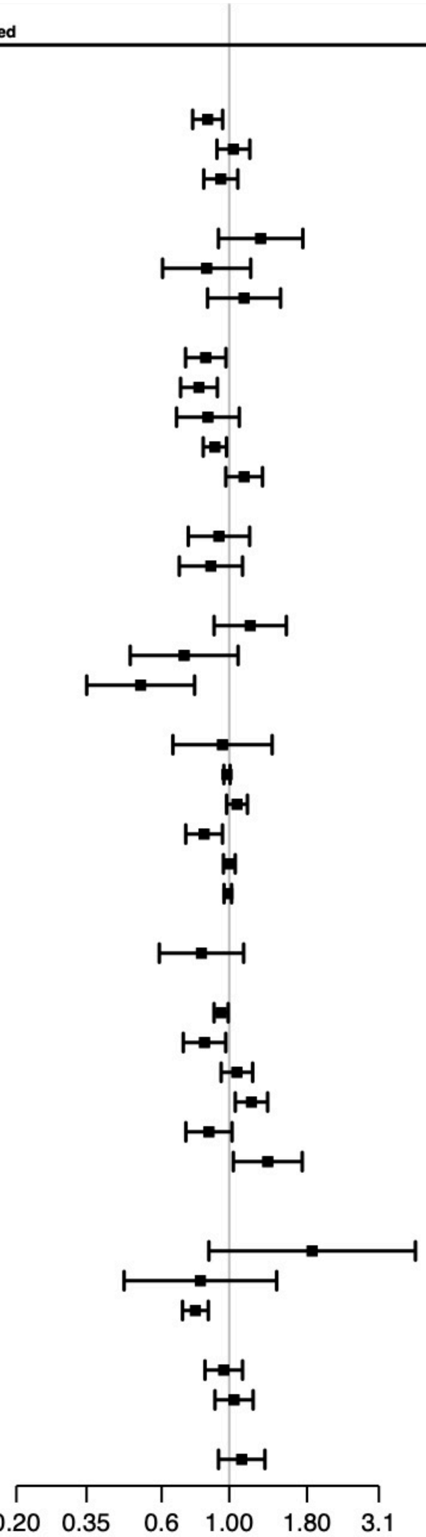
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	22	17	16	17	18	19	15	21	19	19	14	14
2017	28	≤10	18	21	27	19	24	16	27	22	27	22
2018	14	18	24	31	13	22	21	16	25	20	25	14
2019	24	17	15	≤10	17	11	12	≤10	18	11	13	20
2020	23	≤10	15	≤10	≤10	18	17	12	15	≤10		

Table 35: Texas (4 counties), US

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	31	29	28	30	32	35	30	24	32	37	27	31
2017	27	24	43	35	34	38	34	35	35	31	28	28
2018	47	32	30	33	46	36	35	39	37	25	28	24
2019	30	31	33	36	25	35	32	31	44	34	36	30
2020	40	38	31	30	31	25	34	33	30	20		

Supplementary analysis: Observed (+5%) and expected numbers of suicides in the COVID-19 period based on trends in pre-COVID-19 period by country or area in the primary analysis

Country	Observed	Expected	RR (95% CI)
High Income Countries			
Australia			
New South Wales [1]	300	354	0.85 (0.76-0.95)
Queensland [2]	249	241	1.03 (0.91-1.17)
Victoria [2]	232	247	0.94 (0.82-1.07)
Austria			
Carinthia [2]	38	30	1.27 (0.92-1.74)
Tyrol [2]	35	41	0.84 (0.60-1.18)
Vienna [1]	50	45	1.12 (0.85-1.47)
Canada			
Alberta [2]	165	197	0.84 (0.72-0.98)
British Columbia [2]	198	250	0.80 (0.69-0.91)
Manitoba [1]	68	80	0.85 (0.67-1.08)
Chile [2]	495	551	0.90 (0.82-0.98)
Croatia [3]	200	178	1.12 (0.97-1.29)
England			
Thames Valley [1]	71	77	0.93 (0.73-1.17)
Estonia [2]	67	77	0.87 (0.69-1.11)
Germany			
Cologne and Leverkusen [1]	51	44	1.17 (0.89-1.54)
Frankfurt [1]	23	32	0.71 (0.47-1.07)
Leipzig [1]	23	45	0.51 (0.34-0.77)
Italy			
Udine and Pordenone [2]	27	29	0.95 (0.65-1.38)
Japan [3]	6,829	6,947	0.98 (0.96-1.01)
Netherlands [2]	624	588	1.06 (0.98-1.15)
New Zealand [2]	200	241	0.83 (0.72-0.95)
Poland [3]	1,933	1,932	1.00 (0.96-1.05)
South Korea [3]	4,727	4,778	0.99 (0.96-1.02)
Spain			
Las Palmas [2]	38	47	0.81 (0.59-1.11)
United States			
California [3]	1,344	1,429	0.94 (0.89-0.99)
Illinois (Cook County) [3]	149	180	0.83 (0.71-0.97)
Louisiana [2]	271	256	1.06 (0.94-1.19)
New Jersey [3]	257	217	1.18 (1.05-1.34)
Texas (4 counties) [2]	126	147	0.86 (0.72-1.02)
Puerto Rico [3, 4]	57	42	1.34 (1.03-1.74)
Upper Middle Income Countries			
Brazil			
Botucatu [1]	6	3	1.87 (0.86-4.09)
Maceió [1]	12	14	0.80 (0.45-1.43)
Ecuador [3]	403	521	0.77 (0.70-0.85)
Mexico			
Mexico City [1]	191	199	0.96 (0.83-1.11)
Peru [3]	185	178	1.04 (0.90-1.20)
Russian Federation			
Saint Petersburg [2]	125	114	1.10 (0.92-1.31)



The COVID-19 period was defined as April 1 to July 31, 2020, and the pre-COVID-19 period as at least Jan 1, 2019 to March 31, 2020 (with data included from Jan 1, 2016, if available). (1) Predictor for linear time trends only; (2) Predictors for linear time trends and seasonality; (3) Predictors for non-linear time trends and seasonality; (4) Unincorporated territory of the United States.