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Data note for cross-country data on social cohesion and Covid-19

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ABSTRACT

This Data Note is a brief explanation of a dataset compiled for a study on the relationship between social cohesion and Covid-19. The innovative variable in this cross-country dataset is social cohesion, which appears as a consolidated index and as two sub-indices on, respectively, the interpersonal dimension and the intergroup dimension of social cohesion. This variable is available for 187 countries. We discuss the underlying indicators, provide their sources and a link to the full dataset. In addition, we provide information about the online, freely available database called Indices of Social Development of which the social cohesion sub-indices make part. With our explanation of the theoretical background, substance of the indicators, and construction of the three social cohesion indices, we hope to inspire researchers to use them in their own cross-country research.

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KEYWORDS

Dataset; Social Cohesion;
Covid-19

1. Introduction

This data note presents an innovative measure for social cohesion at the country level, with data available for 187 countries. Social cohesion refers to feelings of connectedness and belonging between individuals in a society as well as to attitudes of mutual respect between different social groups in a society (Durkheim, 1997; Manca, 2014). Hence, social cohesion involves interpersonal trust, prosocial norms, tolerance and willingness to cooperate with members of other social groups (f.e. different religious, ethnic and socio-economic groups). We have developed a composite index which tries to capture as many of these intangible elements as possible. Following Christoforou and Davis (2014), we use measures of the extent, strength, duration, and underlying values of social relations.

The dataset was created for three goals. First, empirical cross-country research on social cohesion uses a wide variety of measures, which are not always consistent with the (sociological) literature on social cohesion. Moreover, many economic studies tend to use similar measures for social cohesion and social capital even though these are different

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concepts.¹ We offer a new composite index for social cohesion consistent with the theoretical literature of the concept. It consists of measures for the two dimensions of social cohesion: the interpersonal dimension and the intergroup dimension. Second, the dataset was constructed to enable cross-country analysis of the relationship between social cohesion on the one hand and Covid-19 outcomes on the other hand. The research article using the dataset was published under the title ‘Surviving Together: Social Cohesion and Covid-19 Infections and Mortality Across the World’.² The dataset allows for replication studies. A third goal is that it expands the database Indices of Social Development, with a new index of social cohesion combining two existing indices.³ This extension will help to make the dataset more widely known and even more useful to researchers, in particular for researchers interested in cross-country studies of social cohesion.

We have made our dataset available in a publicly available repository.⁴ The objective of the dataset is to enable researchers to use three composite indices of social cohesion for cross-country analyses. Researchers can also use data for all the other variables available in our dataset, which has data on Covid-19 infections and mortality, as well as a large set of economic, governance and healthcare control variables, all for the year 2020.

2. Materials and methods

The dataset contains observations at the country-level and are all secondary data and refer to a single year: 2020. The data can be divided into two categories. The first and main category consists of three measures of social cohesion and their underlying indicators. The indicators are from secondary sources and were collected by the data management team of the Indices of Social Development database (ISD), in order to initially compute two of the social cohesion indices.⁵ These reflect the two theoretical dimensions of social cohesion: interpersonal cohesion and intergroup cohesion. These indices are labeled, respectively, the Interpersonal Safety and Trust Index and the Intergroup Cohesion Index. We used all indicators of these two indices to calculate a third social cohesion index: the Social Cohesion Index. We describe the three indices as follows.

- (1) The Interpersonal Safety and Trust Index refers to interpersonal norms of trust and security that exist to the extent that individuals in a society feel they can rely on those whom they have not met before. Where this is the case, the costs of social organisation and collective action are reduced. Where these norms do not exist or have been eroded over time, it becomes more difficult for

¹Social capital tends to be oriented toward individual or group benefits, whereas social cohesion tends to be inclusive and oriented toward the common good.

²Pacheco-Miranda, Jimena, Sanchita Bakshi and Irene van Staveren (2023) ‘Surviving Together: Social Cohesion and Covid-19 Infections and Mortality Across the World’, *Critical Public Health* 33(5): 553-565.

³The dataset Indices of Social Development (ISD) is freely available online, without registration, at <https://isd.iss.nl>.

⁴https://datarepository.eur.nl/articles/dataset/Surviving_Together_Social_Cohesion_and_Covid-19_Infections_and_Mortality_Across_the_World_Database/23523690

⁵Since social cohesion is intangible, indicators are all proxy measures and often relate to sensitive issues such as victimization. Hence, we acknowledge that some of these measures may suffer from low reporting rates, limited capacity of institutions to register a crime, dark figure of crimes, and or heterogeneous definitions. We refer to the original sources (as provided in Table 1) for these measures for further information on the quality of these measures.

Table 1. Indicators included in the three social cohesion indices.

	Social Cohesion Index	No. countries	Sub-Index	Source
1	Societal polarization: Rating of differences of opinion on major political issues in this society	177	intergroup	Varieties of Democracy database, Gothenburg University
2	Confidence in law and order: "Do you have confidence in the local police force, feel safe walking alone at night, had money or property stolen or have been assaulted or mugged?"	134	intergroup	World Happiness Report-Gallup
3	Group grievance: Rating of legacy of vengeance-seeking group grievance or group paranoia	178	intergroup	Fund for Peace/Fragile States Index
4	Terrorist attacks: Terrorist coded attacks based on weighted average of last four years (2016–2019) of 9 types	138	intergroup	Global Terrorism Database (GTD)
5	Deaths in organized conflict (>25): Rating on deaths in organized conflict (at least 25 deaths)	38	intergroup	Uppsala Conflict Data Program (UCDP)
6	Guerrilla conflict instances: Log instances of guerrilla conflict per log capita	56	intergroup	Cross-National Time Series Data Archive
7	Political risk: Average values of all indicators of the International Country Risk Guide	138	intergroup	International Country Risk Guide
8	Internal conflict: Rating of the level of internal conflict	140	intergroup	International Country Risk Guide
9	Risk of terrorism: Rating of risk of terrorism	134	intergroup	IEP Global Terrorism Index
10	Riots: Log riots per log capita	133	intergroup	Cross national Time Series Data Archive
11	Felt unsafe at home: Felt unsafe in home, % "never"	34	safety & trust	Afrobarometer
12	Trust family: Trust your family, % "not very much" or "not at all"	73	safety & trust	World Values Surveys
13	Trust people meet for the first time: Trust people you meet for the first time, % "not very much" or "not at all"	73	safety & trust	World Values Surveys
14	Trust people you know personally: Trust people you know personally, % "not very much" or "not at all"	73	safety & trust	World Values Surveys
15	Most people can be trusted: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" % "yes"	18	safety & trust	Latinobarometer
16	Had stuff stolen from home: Had stuff stolen from home, % "never"	34	safety & trust	Afrobarometer
17	Have not been attacked: % have not been attacked	34	safety & trust	Afrobarometer
18	Feel safe in their area at night: % Feel safe in their area at night	40	safety & trust	European Social Survey
19	Prefers not to go out at night: % "yes"	42	safety & trust	World Values Surveys
20	Theft of motorized land vehicle: Theft of motorized land vehicle, police recorded offences, p/100,000 pop.	60	safety & trust	UN Office On Drugs and Crime
21	Theft: Theft, police recorded offences, per 100,000 population	74	safety & trust	UN Office On Drugs and Crime
22	Sexual exploitation: Sexual exploitation per 100,000 inhabitants	44	safety & trust	UN Office On Drugs and Crime
23	Crime victim: "Have you, or someone in your family, been assaulted, attacked, or victim of crime in the last 12 months?" % "yes"	18	safety & trust	Latinobarometer

(Continued)

Table 1. (Continued).

	Social Cohesion Index	No. countries	Sub-Index	Source
24	Freq. alcohol on streets: Frequency of alcohol consumed on the streets in your neighbourhood, % "very frequently" and "quite frequently"	42	safety & trust	World Values Surveys
25	Freq. drug sale in neighbourhood: Frequency of drug sale in streets in your neighborhood, % "very frequently" and "quite frequently"	42	safety & trust	World Values Surveys
26	Freq. robbery in neighbourhood: Frequency of robberies in your neighbourhood, % "very frequently" and "quite frequently"	42	safety & trust	World Values Surveys
27	Victim crime in neighbourhood: Have you been victim of any crime in the past 12 months, % "yes"	43	safety & trust	Americas Barometer
28	Victim of attempted murder: Have you been victim of attempted murder in the past 12 months, % "yes"	5	safety & trust	UN Office On Drugs and Crime
29	Kidnapping Rate: Have you been victim of attempted kidnapping in the past 12 months, % "yes"	65	safety & trust	UN Office On Drugs and Crime
30	Homicide rate: homicide rate	183	safety & trust	UN Crime and Justice Information Network
31	Satisfied freedom to choose in life: Are you satisfied with your freedom to choose what you do with your life? % "yes"	144	safety & trust	World Happiness Report-Gallup
32	Trust neighbourhood: Trust your neighbourhood, % "not very much" or "not at all"	73	safety & trust	World Values Surveys

Source: Indices of Social Development, two web pages: (1) <https://isd.iss.nl/home/intergroup-cohesion/> and (2) <https://isd.iss.nl/home/interpersonal-safety-and-trust/>.

individuals to form group associations, undertake an enterprise, and live safely and securely.

- (2) The Intergroup Cohesion Index refers to relations of cooperation and respect between identity groups in a society. Where this cooperation breaks down, there is the potential for polarization and conflictual acts such as ethnically or religiously motivated killing, targeted assassination and kidnapping, acts of terror such as public bombings or shootings, or riots involving grievous bodily harm to citizens, with concomitant effects upon countries' development.
- (3) The Social Cohesion Index combines the two dimensions of social cohesion, namely, the interpersonal dimension and the intergroup dimension. It is the most comprehensive measure of social cohesion in the dataset.

The social cohesion data are available for a large number of countries:

- (1) Intergroup Cohesion Index: 10 indicators;168 countries
- (2) Interpersonal Safety and Trust Index: 22 indicators;160 countries
- (3) Social Cohesion Index: 32 indicators;187 countries

The reason why the number of cases for the combined index is higher than that of either of the two underlying indices, is the nonparametric aggregation methodology that is used for constructing the indices. First, a principal component analysis was performed for the selection of indicators per index. Second, a percentile matching method was used, resulting in a ranking of all countries in an index, ranging between zero and one (Foa & Tanner, 2010). The ranking is based on a relatively large set of indicators, but data does not need to be available on every single indicator for every country. In other words, if an index has a total set of 15 indicators, some countries may have data for 5, others for 8, and a few for 10 indicators. Moreover, for each indicator, data tends to be available for different countries. For example, Afro Barometer has data only for African countries while the European Value Survey has data only for Europe. A minimum of three data points is required for a country to appear in the ranking.⁶ The measurement of all variables is rescaled to a range of 0–1. The matching percentiles method starts with a random master variable and assigns the values of the master variable to the country ranking in the next variable. This is repeated until all indicators have been matched in this manner. Then an average is calculated per country for the results of the matching. Finally, a Monte Carlo simulation is applied 1,000 times and the final country scores per index are an average of these 1,000 results.

Although the dataset is only for the year 2020, data for the two sub-indices of social cohesion are freely available online from the ISD database for the period 1990–2020, on a five-year basis. In the [Appendix A](#), we provide the Stata code for researchers who may want to calculate the index for other years. Moreover, researchers are welcome to approach one of the authors for further information.

⁶This may seem to limit the reliability of an index, or at least for the value of a country with only three data points. However, the matching percentiles method has been tested with different thresholds, and it was found that a minimum of three data points gives a relatively reliable value (Foa & Tanner, 2010). Moreover, we are transparent about this by providing the standard error for each country value in every index, which is automatically included when one downloads data from the ISD online database.

Table 2. Data from secondary sources.

Variable	Description	Source
Covid cases per 10,000	Cases: Counts include confirmed and probable (where reported)	Covid-19 Data Repository CSSE, Johns Hopkins University
Covid deaths per 10,000	Deaths: Counts include confirmed and probable (where reported)	Covid-19 Data Repository CSSE, Johns Hopkins University
Excess deaths	Excess mortality estimates associated with Covid-19	WHO
GDP per capita	GDP per capita is gross domestic product divided by midyear population. Data are in constant 2015 U.S. dollars	World Bank
Hospital beds per thousand	The number of hospital beds available per every 1,000 inhabitants in a population	World Bank
Percentage over 65	Population aged 65 and above as a percentage of the total population	World Bank
Health expenditure % GDP	Level of current health expenditure expressed as a percentage of GDP	World Bank
Universal health coverage	All people have access to the full range of quality health services they need, when and where they need them, without financial hardship, %	WHO
Gini index	The extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution	World Bank
Developing countries	Countries with low and lower middle incomes	World Bank
Democracy index	Democracy ratings	Varieties of Democracy database, Gothenburg University
Public services index	The presence of basic state functions that serve the people	Fund for Peace/Fragile States Index
Governance performance index	Perceptions of the quality of public services, the civil service and the degree of independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies	World Bank
Corruption index	Perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.	World Bank

The data reported has values between 0 and 1 and include not only the index value but also reports the standard error for each country. Moreover, the dataset includes all the underlying indicators per index. The indicators for the three social cohesion indices are listed in [Table 1](#).

The second category of variables in the dataset consists of data from freely available online secondary sources without any form of data transformation. They include Covid-19 data (infection rate, death rate and excess deaths), economic data (GDP per capita and Gini index), governance data (democracy index, public services index, government performance index and corruption index), and health care data (health expenditure as % of GDP, hospital beds per 1,000, percentage over 65 years, universal health coverage). The details of these variables are described in [Table 2](#).

3. Conclusion

The dataset that we present here was tailor-made for our research on the effect of social cohesion on the differences in Covid-19 infections and death rates between countries across the world in 2020. As such, it is limited to the variables that were used in the

published article. In addition, the data is cross-section only. However, the many control variables that the dataset contains also allows its use for the analysis of social cohesion in relation to other public health outcomes, for example, the spread of Dengue or Ebola, or for inequality of health care access, by substituting the dependent variable for an outcome variable of one's choice. Moreover, we have provided the Code to calculate the Social Cohesion Index for earlier years with data of the two sub-indices that are freely available in the online ISD database.⁷

At the same time, the innovative and key explanatory variable, the Social Cohesion Index, may be used for the analysis of a wide variety of research topics and could address very different research questions than those related to public health. In particular, we have clearly distinguished the concept and measurement of social cohesion from that of social capital. For this reason, our Social Cohesion Index may be used for applied research on effects of social cohesion instead of social capital. Examples of other research topics in which the index could be used as an independent variable in cross-country analysis range from inequality, human development and sustainability to innovation and economic growth. These are all topics in which social cohesion may play a role because of its concern with trust, tolerance, solidarity and cooperation. We hope that researchers will feel inspired and encouraged to use our cross-country index of social cohesion in their own research.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Data availability statement

The dataset is called Surviving Together: Social Cohesion and Covid-19 Infections and Mortality Across the World Dataset. It is available in the following repository: https://datarepository.eur.nl/articles/dataset/Surviving_Together_Social_Cohesion_and_Covid-19_Infections_and_Mortality_

⁷We plan to publish the data for the Social Cohesion Index for all years (1990–2020) before the end of 2024 on the website of the ISD database (<https://isd.iss.nl/>).

[Across_the_World_Database/23523690](https://doi.org/10.25397/eur.23523690). The DOI of the dataset is: <https://doi.org/10.25397/eur.23523690.v2>. Appendix A provides the Stata code for calculating the Social Cohesion Index for other years (from 1990 onwards).

Other information

The authors of this Data Note declare that they have no conflict of interest. There was also no funding for developing this Data Note and the dataset it describes, apart from support from the Institute of Social Studies at which all three authors were based at the time of developing the dataset and writing this data note.

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Appendix A

The code below indicates how the Social Cohesion Index was created using the matching percentiles method. For replication purposes STATA version 18 is used. The general steps followed in the code to calculate the index are:

1. Introduce general settings
2. Import the database (From the Data Access of the Social Development Index website <https://isd.iss.nl/data-access/>. Select the Intergroup Cohesion indicators, and the Interpersonal Safety and Trust indicators, all the countries, and 2020 year. Later group the indicators by index. Save the data as an.dta file called ISD_data.dta)
3. Introduce the indexing program (matching percentiles method)
4. Calculate the three indices: a) the intergroup cohesion index b) the safety and trust index c) the social cohesion index.

```
**** DO FILE SOCIAL COHESION INDEX*****
```

```
//This file runs all of the other files to create the Social Cohesion Index
```

```
*****
```

```
*INITIALIZE the settings we'll need
```

```
clear matrix
```

```
clear
```

```
set more off
```

```
set mem 400 M
set seed 1234
```

```
*****
```

```
*Technical Settings:
```

```
//Settings for the random normal standardization of all the variables:
```

```
global rnormmu 0.5
global rnormsd 0.15
global iterations 15
global convergence 0.0001
global minvars 3
```

```
*****
```

```
*Open database
```

```
use ISD_data.dta, replace
```

```
*** Group the variables**
```

```
global intergroupcohesion pol_polarization law_and_order vengeance
terrorist_attack_ave deaths_in_conflict_rating guerrilla political_risk
internal_conflict_rating terrorism_risk_rating riots
```

```
global safety felt_unsafe_at_home trust_family trust_people_know_personally
trust_people_meet_first_time most_people_can_be_trustednever_stolen_from_home
never_been_attacked feels_safe_at_night not_go_out car_theft_rate
theft_nationalsexexploitation attacked_last_year freq_alcohol_use_in_streets
freq_drugs_sale_in_steet robberies_in_neighbourhood
feel_secure_in_neighbourhood attempted_murder attempted_kidnapping
homicide_rate_UNCJIN_trust_neighbourhood freedom_of_choice_in_life_satisf
```

```
*SUM: Look at the variables we're using for the final indices
```

```
egen countries=group(country)
tsset countries year
egen t = group(year)
bys year: sum $safety
bys year: sum $intergroupcohesion
```

```
*****
```

```
*INDEXING
```

```
*DEFINE SLAVECOUNTING PROGRAM: slavecounting
```

```
capture program drop slavecounting
program define slavecounting
    local i = 1
    cap drop slave*
    foreach var1 in $indexvarlist{
        foreach var2 in $indexvarlist{
            if("`var1'"=="`var2'"){
                qui gen slave`i'=`var1'
            }
        }
        local i=`i'+1
    }
    local i=`i'-1
```

```

    global i `i'
end

*DEFINE INDEXING PROGRAM: matching
capture program drop matching
program define matching, rclass
    cap drop master newmaster index sd_index

qui drawnorm master, m($rnormmu) sd($rnormsd)
replace master =. if(year!=$year)

    qui gen newmaster=master
    local sse = 1
    while `sse'>$convergence{
        qui replace master=newmaster
            drop newmaster
        cap drop master_vals_conj
        cap drop squarederror
        cap drop *_matched
        foreach var of varlist slave1-slave$i{
            cap drop master_vals_conj
            cap drop `var'_vals_conj
            cap drop `var'_trank_conj
            cap qui gen `var'_matched=.
            qui gen `var'_vals_conj=`var' if `var'!=. & master!=. & year==$year
            qui egen `var'_trank_conj=rank(`var'_vals_conj) if year==$year,track
            qui gen master_vals_conj=master if `var'!=. & master!=. & year==$year
                sort master_vals_conj
            qui replace `var'_matched=master_vals_conj[`var'_trank_conj]
        }
        qui egen newmaster=rmean(*_matched)
        qui gen squarederror=(master-newmaster)^2
        local sse=sum(squarederror)
        di "year:$year run:$x sse=`sse'"
    }
    qui gen index=newmaster
    qui egen sd_index=rsd(*_matched)
end

```

//RUN THE INDICES. We could easily do this in a loop, but it's better to be able run each individually

//NOTE: This setup calculates each index for each year separately. Does not pool across years.

*INTERGROUP COHESION

```

global indexvarlist $intergroupcohesion
foreach year in 2020 {
    global year `year'
    slavecounting
    forvalues x = 1/$iterations{
        global x `x'
        matching
        qui gen cohesion_`year'`x'=index
        qui gen cohesion_sd_`year'`x'=sd_index
    }
}

```

```

    }
    qui egen n_cohesion_`year`=robs(*_matched)
    qui egen cohesion_`year`=rmean(cohesion_`year`_*)
    qui egen cohesion_sd_`year`=rmean(cohesion_sd_`year`_*)
    qui egen cohesion_s dofmean_`year`=rsd(cohesion_`year`_*)
    qui egen cohesion_s dof sd_`year`=rsd(cohesion_sd_`year`_*)
    drop cohesion_`year`_* cohesion_sd_`year`_* slave*
    foreach var of varlist cohesion_`year` cohesion_sd_`year` cohesion_s dofmean_`year`
    cohesion_s dof sd_`year`{
        replace `var`= . if n_cohesion_`year`<$minvars
    }
}

```

*CRIME

```

global indexvarlist $safety
foreach year in 2020{
    global year `year`
    slavecounting
    forvalues x = 1/$iterations{
        global x `x`
        matching
        qui gen safety_`year`_`x`=index
        qui gen safety_sd_`year`_`x`=sd_index
    }
    qui egen n_safety_`year`=robs(*_matched)
    qui egen safety_`year`=rmean(safety_`year`_*)
    qui egen safety_sd_`year`=rmean(safety_sd_`year`_*)
    qui egen safety_s dofmean_`year`=rsd(safety_`year`_*)
    qui egen safety_s dof sd_`year`=rsd(safety_sd_`year`_*)
    drop safety_`year`_* safety_sd_`year`_* slave*
    foreach var of varlist safety_`year` safety_sd_`year` safety_s dofmean_`year`
    safety_s dof sd_`year`{
        replace `var`= . if n_safety_`year`<$minvars
    }
}

```

*SOCIAL COHESION

```

global indexvarlist $safety $intergroupcohesion
foreach year in 2020{
    global year `year`
    slavecounting
    forvalues x = 1/$iterations{
        global x `x`
        matching
        qui gen scohesion_`year`_`x`=index
        qui gen scohesion_sd_`year`_`x`=sd_index
    }
    qui gen n_scohesion_`year`=robs(*_matched)
    qui egen scohesion_`year`=rmean(scohesion_`year`_*)
    qui egen scohesion_sd_`year`=rmean(scohesion_sd_`year`_*)
    qui egen scohesion_s dofmean_`year`=rsd(scohesion_`year`_*)
    qui egen scohesion_s dof sd_`year`=rsd(scohesion_sd_`year`_*)
    drop scohesion_`year`_* scohesion_sd_`year`_* slave*
}

```

```
    foreach var of varlist scohesion_`year' scohesion_sd_`year' scohesion_sdoftimean_`year'  
scohesion_sdoftimean_`year'{  
        replace `var'=. if n_scohesion_`year'<$minvars  
    }  
}
```

Drop intermediate variables

```
drop n_scohesion_2020 scohesion_sd_2020 scohesion_sdoftimean_2020 scohesion_sdoftimean_2020  
sd_index index squarederror newmaster master_vals_conj master safety_sdoftimean_2020 safety_s-  
doftimean_2020 safety_sd_2020 n_safety_2020 cohesion_sdoftimean_2020 cohesion_sdoftimean_2020  
cohesion_sd_2020 n_cohesion_2020
```

```
save Socialcohesionindex.dta, replace
```

```
*****
```