




Original software publication

scorecovid for scoring individual country COVID-19 policies in the world 

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ABSTRACT

There are two types of policy analysis tools: snapshot tool and time-series tool. scorecovid is a snapshot tool to score individual COVID-19 policies in the world and sort a list of scores. The population mortality rate is used for evaluating the outcomes of COVID-19 country policies. The lower the score, the less the COVID-19 deaths. The lower the score, the better the policy. The scorecovid tool is intended for poorly scored countries to learn good strategies from countries with excellent scores where scorecovid attracted 15192 users worldwide.

Code metadata

Current code version
Permanent link to code/repository used for this code version
Permanent link to reproducible capsule
Legal code license
Code versioning system used
Software code languages, tools and services used
Compilation requirements, operating environments and dependencies
If available, link to developer documentation/manual
Support email for questions

0.0.8
<https://github.com/SoftwareImpacts/SIMPAC-2022-256>
<https://codeocean.com/capsule/5377943/tree/v1>
MIT License
PyPI
python
apt-get: wget, pip3: lxml, matplotlib, pandas, scorecovid
<https://pypi.org/project/scorecovid/>
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1. Motivation and significance

There is no open-source policy outcome analysis tool against the COVID-19 pandemic. For this purpose, scorecovid was created.

- The population mortality rate is used for evaluating country scores. The latest data is scraped over the Internet. Countries file indicates a list of countries. You are allowed to add or delete countries to be evaluated.
- scorecovid is a snapshot tool intended for policymakers to learn good strategies from countries with excellent scores. The list of sorted scores plays a key role in discovering excellent countries.
- The scorecovid tool is a PyPI application so that it can be installed by the pip command. PyPI packaging allows scorecovid to run on Windows, MacOS, and Linux operating systems as long as Python is installed on the system.
- The score calculation in scorecovid is based on the daily cumulative population mortality of COVID-19: dividing the number of cumulative deaths by the population in millions. There are two

types of policy outcome analysis tools: a snapshot list of sorted scores and time-series scores. The scorecovid is a snapshot policy outcome analysis tool.

2. Limitations

- The snapshot analysis tools such as scorecovid cannot visualize and observe the progress and transition of scores while time-series policy outcome analysis tools such as hiscovid allow us to visualize and observe the behavior of the transition and to identify when policymakers made mistakes over time. The scorecovid is a PyPI application so that as long as Python is installed on the system, it can run on Windows, MacOS, and Linux operating systems.

3. Software description

Software is composed of setup.py, scorecovid.py, and _main_.py and _init_.py.

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The code (and data) in this article has been certified as Reproducible by Code Ocean: (<https://codeocean.com/>). More information on the Reproducibility Badge Initiative is available at <https://www.elsevier.com/physical-sciences-and-engineering/computer-science/journals>.

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3.1. Software architecture:

The directory and software structure is as follows:

```

|-- README.md
|-- setup.py
|-- src
    |-- __init__.py
    |-- __main__.py
    |-- scorecovid.py

```

3.2. Software functionalities

The latest data on deaths due to COVID-19 is scraped over the Internet from: https://github.com/owid/covid-19-data/raw/master/public/data/jhu/total_deaths.csv. Using pandas. DataFrame, scraped deaths and population are used for calculating scores. The result is stored in result.csv file. The filename countries can contain target countries which you can modify, delete or add countries.

4. Illustrative examples

To run scorecovid, install it and type the following command:
 \$ pip install scorecovid
 \$ scorecovid

Country	Deaths	Population	Score
Japan	46817	126.48	370.2
New Zealand	2106	4.82	436.9
Taiwan	12876	23.82	540.6
South Korea	29239	51.27	570.3
Australia	15665	25.5	614.3
Iceland	219	0.34	644.1
Canada	46705	37.74	1237.5
Israel	11767	8.66	1358.8
Germany	153814	83.78	1835.9
Sweden	20659	10.1	2045.4
France	157063	65.27	2406.4
United Kingdom	209208	67.89	3081.6
United States	1070788	331	3235
Brazil	688219	212.56	3237.8
Hungary	47938	9.66	4962.5

As of Nov. 1, 2022.

5. Impact

Unfortunately, scorecovid does not show vaccination rates such as at least one dose, fully vaccinated, or booster given. However, the scorecovid tool discovered that the mandatory test-isolation policy successfully suppressed the COVID-19 pandemic. It is to test and identify infected individuals at an early stage and to isolate them from uninfected people during the quarantine time. scorecovid attracted 15192 users worldwide.

scorecovid is with MIT license. The software can be freely used. The method of scorecovid was peer-reviewed by five journals [1–5].

The proposed method is based on the single metric of the daily cumulative population mortality. The proposed software can be applied to other disease outbreak. As long as the dataset is ready to be used, the proposed scorecovid has the high transferability.

6. Conclusions

In order to mitigate the COVID-19 pandemic, it is wise to adopt the best policy in the world. scorecovid can reveal what is currently the best policy.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. This research has no fund.

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