Sanitary Sufficiency and COVID-19

Standardized comparison among countries of the pademic evolution

Date of the report: April 27th, 2020

From the beginning of the COVID-19 outbreak, the impact of the pandemic in different countries has been assessed by directly comparing the figures reported by their authorities, mainly as confirmed cases, recovered people, and deaths. This gross comparison presents important drawbacks, especially due to the different magnitude of the data according to the size of each country and, in some cases, because the criteria used by countries to define each one of the categories aforementioned may differ. However, these data can be treated as a sample, not a crude measurement of the reality. By using this strategy, it is possible to apply the techniques of modern statistics and produce more useful indicators, as the Sanitary Sufficiency Indicator (SSI) that we present in this report.

This indicator is calculated every day as:

$SSI=(solved\_d/confirmed\_d)\ x\ 100$,

where $confirmed\_d$ is the number of accumulated confirmed cases until day d of the pandemic, and $solved\_d$ is the number of accumulated solved cases until day d of the pandemic, that is, $solved\_d=recovered\_d+deaths\_d$, being $recovered\_d$ the number of accumulated cases recovered until day d and $deaths\_d$ is the number of accumulated death cases until day d.

Notice that the SSI has the same invariant performance for every country; that is, at the beginning of the pandemic it takes values close to zero as a lot of cases are suddenly confirmed and just a few cases solved, whereas at the end of the pandemic most confirmed cases are solved, taking the SSI values close to 100%. So, low values of the indicator may imply that there is a lack of sanitary sufficiency (and resources to the sanitary system should be added), whereas a large value of this indicator points out that there are sufficient resources.

This invariant performance of the SSI for all territories is the key to allow a fair comparison among different countries with regards to the evolution of the pandemic. As already mentioned, the indicator just needs a sample to be calculated, which is the current case within the COVID-19 pademic. The available data do not correspond to the complete population of confirmed cases, but can be considered as a sample of such a population and, therefore, useful to build the indicator.

Figure 1 shows a comparison of the value of the SSI at the date of the current report for those countries most affected by the COVID-19 pandemic:

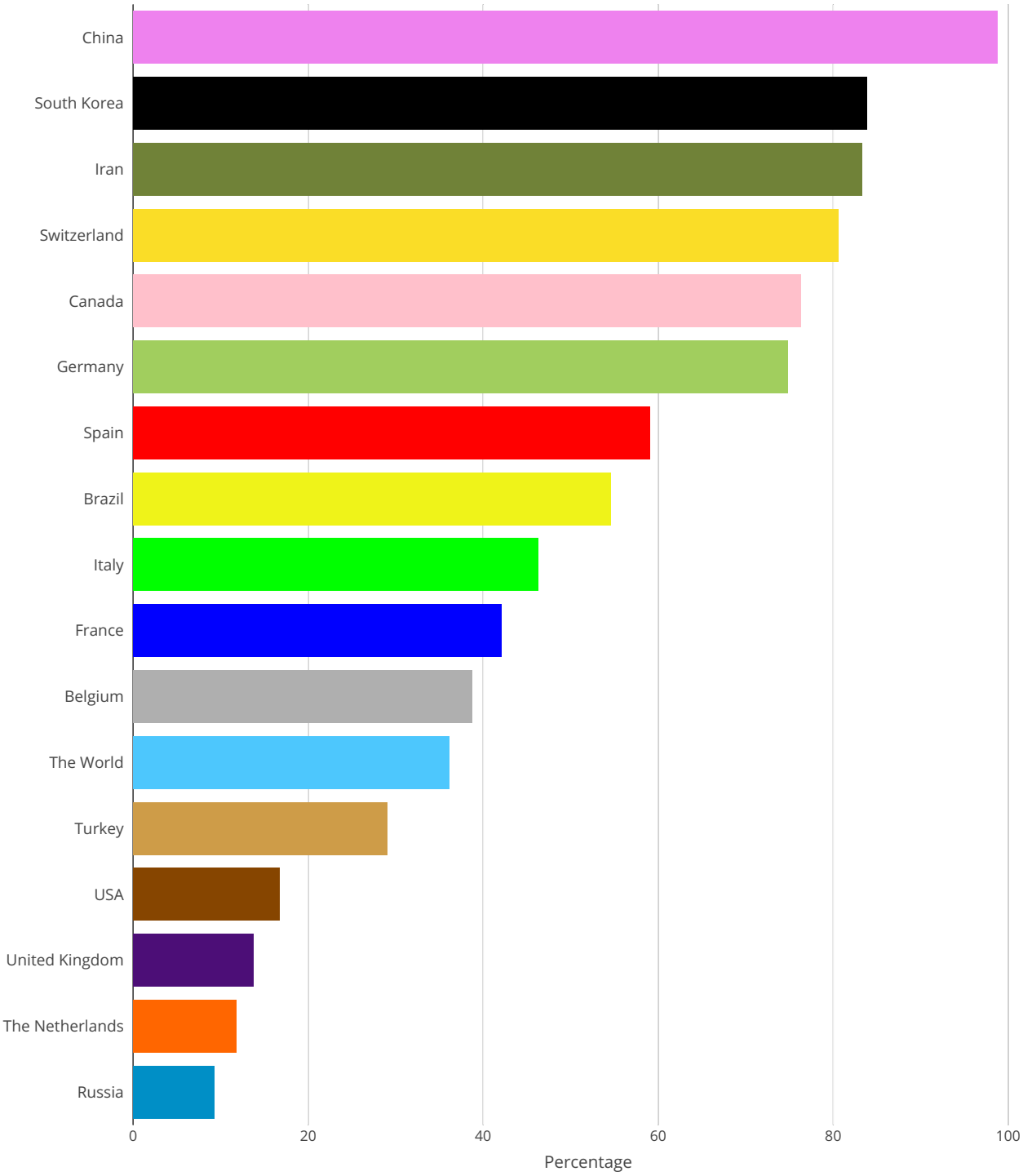

Figure 1: Comparison among countries of the current SSI

Figure 2 shows a comparison of the evolution of the COVID 19 pandemic since the day each country exceeds 100 confirmed cases:

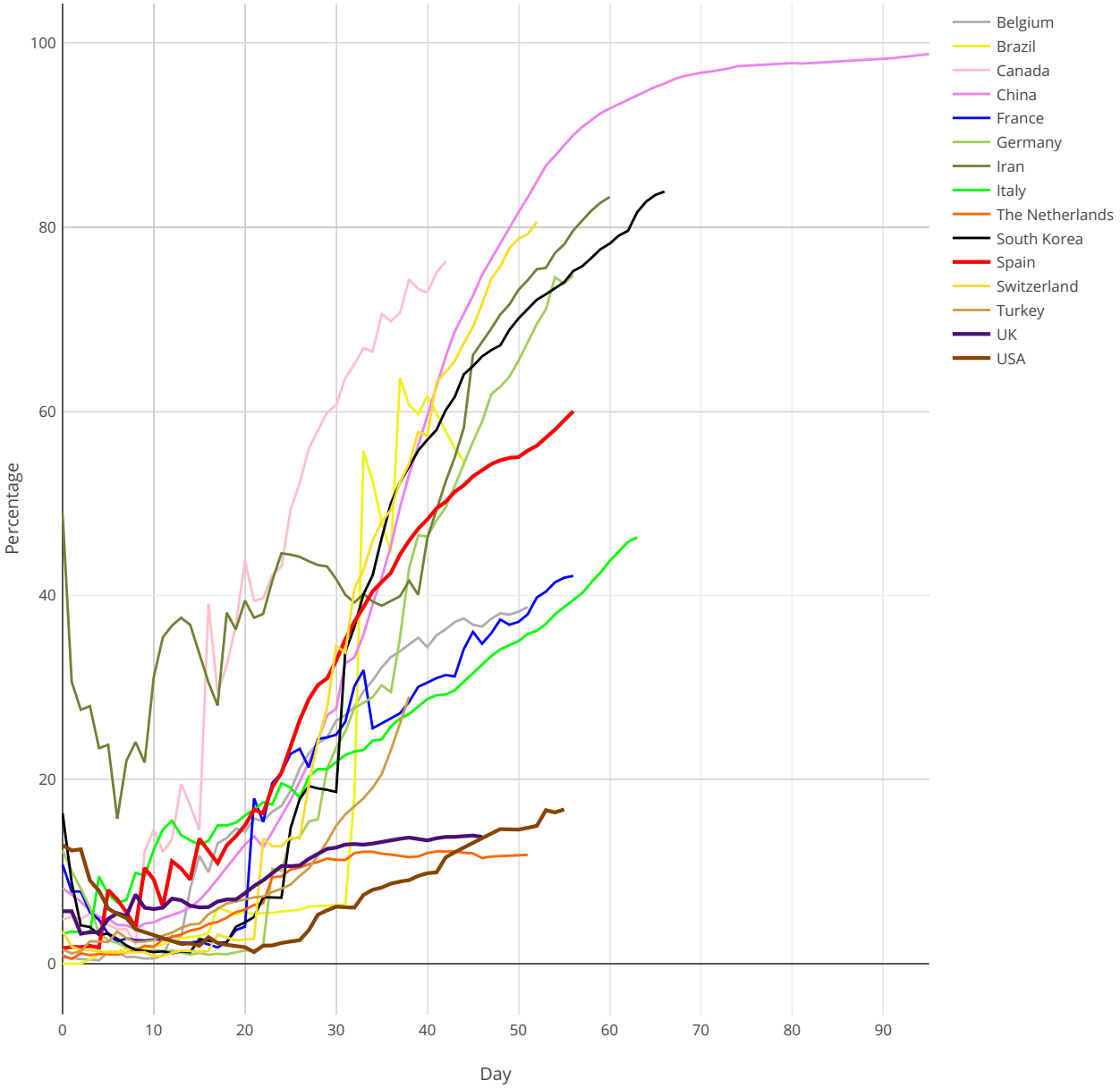

Figure 2: Comparison among countries of the SSI evolution

Access to the complete information (in Spanish)