

# **The Need for Multidisciplinary Evidence-based Policymaking: Evidence from the COVID-19 Crisis**

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## **Abstract**

This article investigates evidence-based policymaking in the context of the COVID-19 health crisis, exposing the different stances toward knowledge required to address complex situations such as a pandemic. The study identifies the deficiencies associated with a monocular epistemological view, based almost exclusively in the medical field and the advantages of an integrative model, which combines quantitative and qualitative analyses, metrics and experience, hard and soft sciences. The conclusion emphasizes that an integrative approach (multi- or interdisciplinary) is essential for the evidence-based methodology to become a useful tool in a more inclusive, functional, and responsive policymaking process.

**KEYWORDS:** Evidence-based policymaking, multidisciplinary, COVID-19, public health, public policy

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## Introduction

On December 31, 2019, the World Health Organization was informed of cases of pneumonia of unknown etiology.<sup>1</sup> By June 1<sup>st</sup>, 2021, over 170 million cases of the new SARS-CoV-2 had already been reported globally.<sup>2</sup> A noteworthy aspect of this unprecedented global threat is that it has narrowed the gap between the languages of science and politics. A strong pro-science discourse came to the forefront of the policy debate<sup>3</sup> and scientists, especially from the medical field, were called to directly influence short-term policies regarding the fight against the spread of the virus.<sup>4</sup> For sure, Kingdon had previously stressed that academics, researchers, and consultants are the most important nongovernmental political actors after interest groups,<sup>5</sup> but an open channel between the realms of scientific research and policymaking can be considered a relatively new phenomenon. A silver lining of the coronavirus pandemic could be that elected leaders might be acknowledging the need for *evidence-based policymaking* (EBPM).

Still, for three main reasons, this conjuncture is more complex than it may appear at first sight. First, the science-driven approach might be used as a camouflage to subjective decisions, a renewed political label to the old politics.<sup>6</sup> Second, even when the pursuit of objectivity is authentic, a narrow view of evidence-based policymaking may represent a step towards more technocracy and less comprehensive democracy.<sup>7</sup> Third, the difficulty to integrate “science” in a broader (multidisciplinary) perspective may signal a failure to

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<sup>1</sup> Harris Carlyn et al., “An evidence-based framework for priority clinical research questions for COVID-19”, *Journal of Global Health* 10, no. 1 (2020).

<sup>2</sup> Max Roser et al., “Coronavirus (COVID-19) Cases”, *Our World in Data*, June 1<sup>st</sup>, 2021. <https://ourworldindata.org/covid-cases>.

<sup>3</sup> “Biden unveils science-driven coronavirus task force”, *DW News*. November 10, 2020. <https://www.dw.com/en/biden-unveils-science-driven-coronavirus-task-force/av-55550957>.

<sup>4</sup> Andrew Anthony, “Neil Ferguson: ‘I gave them an open goal to some extent’”. *The Guardian*. December 6, 2020.

<https://www.theguardian.com/world/2020/dec/06/professor-neil-ferguson-covid-modelling-epidemiologist-faces-of-2020>.

<sup>5</sup> John W. Kingdon, *Agendas, Alternatives, and Public Policies* (Harlow: Pearson, 2014), 53-54.

<sup>6</sup> Deborah Stone, “Causal stories and the formation of policy agendas”, *Political Science Quarterly* 104, no. 2 (1989).

<sup>7</sup> Jerry Z. Muller, *The Tyranny of Metrics* (Princeton: Princeton University Press, 2018).

recognize the different stances toward knowledge that addressing complex situations such as a pandemic entails.<sup>8</sup>

The purpose of this study is to investigate how EBPM acted in the context of the COVID-19 health crisis. Throughout the process, it will show how an integrative approach (multi- or interdisciplinary), by combining quantitative and qualitative analyses, metrics and experience, hard and soft sciences, is essential for the evidence-based methodology to become a useful tool in a more inclusive, functional, and responsive policymaking process.

### **Evidence-based policymaking: gap between theory and practice**

The novel coronavirus health crisis raised questions that will remain subject to intensive debate in the coming years, including, but not only, what were the best policies to answer the pandemic;<sup>9</sup> the limits of governmental authority in exceptional times, and the balance between public intervention and individual rights;<sup>10</sup> the imperative for universal access to healthcare<sup>11</sup> and basic income.<sup>12</sup> All these questions seem to require elements from different areas to be answered, namely Law, Sociology, Psychology, Economics, Political Theory, Philosophy, at least. However, throughout most of the COVID-19 crisis, Medicine turned the debate into a monolog. Even when it was acknowledged that “more than ever, we are in need of widespread scientific collaboration,” and the discussion bent toward the mechanisms of cooperation among different disciplines, the framework remained mostly limited to the medical field, as expressed in a journal: “integrative science of microbiology, molecular pathology (including immunology), and epidemiology”.<sup>13</sup>

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<sup>8</sup> Jussi Pakkasvirta, “Interdisciplinary Perspectives on Latin American Studies”, *Iberoamericana. Nordic Journal of Latin American and Caribbean Studies* XI, 1-2 (2010).

<sup>9</sup> Henrik Sjödin et al., “Only strict quarantine measures can curb the coronavirus disease (COVID-19) outbreak in Italy, 2020”, *Eurosurveillance* 25, no. 13 (2020).

<sup>10</sup> Manuel Adrian Acuña-Zegarra, Mario Santana-Cibrian, and Jorge X. Velasco-Hernandez, “Modeling behavioral change and COVID-19 containment in Mexico: A trade-off between lockdown and compliance”, *Mathematical Biosciences* 325 (2020).

<sup>11</sup> Jaime S. King, Covid-19 and the Need for Health Care Reform, *The New England Journal of Medicine* 382:e104 (2020).

<sup>12</sup> Priyanka Pulla, “Covid-19: India imposes lockdown for 21 days and cases rise”, *BMJ* 368:m1251 (2020).

<sup>13</sup> Negar Moradian et al., “The urgent need for integrated science to fight COVID-19 pandemic and beyond”, *Journal of Translational Medicine* 18, no. 205 (2020): 2.

Initially, this should come as no surprise, given the world was taken aback by a pandemic and, all of a sudden, lives depended on the efficiency of solutions grounded on the best medical evidence and the expertise in the determinants of disease. The resistance to integrating other sources of knowledge<sup>14</sup> after this initial moment has passed, though, might be due to the fact that “evidence-based thinking and acting” was virtually equated to the use of medical knowledge, transported to the epicenter of the policymaking process as though it could offer objective unquestionable answers.

Yet, differently than it could be commonly thought, evidence-based medicine, the “conscientious, explicit, and judicious use of current best evidence in making decisions”, still causes controversy among clinicians and health practitioners.<sup>15</sup> Medical practices have been long designed by the use of experience<sup>16, 17</sup> and even today the evidence base for much of the medical practice is relatively weak. The literature is used, but “highlighting its strengths and weaknesses through critical appraisal and pragmatic application”. Decisions are determined by factors that extend beyond the simplistic notion of the strength of evidence. It is not simply a matter of objectivity.<sup>18</sup>

Evidence-based medicine rests on certain philosophical assumptions: a singular truth, ascertainable through empirical enquiry; a linear logic of causality in which interventions have particular effect sizes; rigour defined primarily in methodological terms (especially, a hierarchy of preferred study designs and tools for detecting bias); and a deconstructive approach to problem-solving (the evidence base is built by answering focused questions, typically framed as ‘PICO’—population-intervention-comparison-outcome). The trouble with pandemics is that these assumptions rarely hold.<sup>19</sup>

<sup>14</sup> Jay J. Van Bavel et al., “Using social and behavioural science to support COVID-19 pandemic response”, *Natural Human Behavior* 4, (2020).

<sup>15</sup> David L Sackett et al., “Evidence based medicine: what it is and what it isn't” *BMJ* 312 (1996): 71.

<sup>16</sup> Sackett et al., “Evidence based medicine”, 71.

<sup>17</sup> Heinrich Von Staden. “Experiment and experience in Hellenistic medicine”, *Bulletin of the Institute of Classical Studies*, no. 22 (1975).

<sup>18</sup> Carley et al., “Evidence-based medicine”, 572.

<sup>19</sup> Trisha Greenhalgh, “Will COVID-19 be evidence-based medicine’s nemesis?” *PLoS Med* 17, no. 6 (2020): e1003266. <https://doi.org/10.1371/journal.pmed.1003266>.

Should “evidence-based” be considered a problematic conception in the realm of medicine, the topic becomes even more intricate when it gets knit up into the world of politics. A positive view, presented by the OECD, asserts that coherent and more effective policies require governments to weigh costs and benefits and take account of *all* pertinent information for more informed decisions.<sup>20</sup> For this exact reason, Cairney believes that EBPM is primarily a political slogan. There is always too much evidence to be considered, clashing opinions of specialists. Policymakers then resort to shortcuts and biases, basing their decisions on one selected piece of research or one preferred consultant’s advice. According to him, in the one-sided, fragmented, and pressurized world of politics, the standards set by EPBM (evaluation of “all pertinent information”) are unattainable.<sup>21</sup> Muller adds the risks to the democratic principle. EBPM gives too much power to researchers and policymakers, leaving the “common” people, practical experience, and on-the-ground expertise out of the decision-making process. It establishes a technocracy, the tyranny of technical metrics.<sup>22</sup>

A way to minimize these problems would be by opening the debate to the social (soft) sciences. “Hard sciences”, like Physics, Chemistry, and Biology, are characterized by certain social distance due to their reliance on the quantitative approach, high degree of rigor, and impersonality.<sup>23</sup> Soft sciences, such as Sociology, History, Political Theory, and Law, in this sense, are more connected to the society and more easily allow for multidisciplinary, which can bring “innovative and flexible responses to ever more complex realities”.<sup>24</sup>

However, as Porter and Rafols maintain, despite the assertions that science is becoming ever more interdisciplinary, “the evidence [to support this thesis] has been anecdotal or partial.” By computing bibliometric indicators, they found that over the last 30 years there has been only a modest increase in multi- and interdisciplinary — “the distribution of citations of an article remains

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<sup>20</sup> OECD, *Government at a Glance 2009* (Paris: OECD Publishing, 2009): 21.

<sup>21</sup> Paul Cairney, *The Politics of Evidence-Based Policy Making* (London: Palgrave Macmillan UK, 2016).

<sup>22</sup> Muller, *The Tyranny of Metrics*.

<sup>23</sup> Norman W. Storer, “The Hard Sciences and the Soft: Some Sociological Observations”, *Bulletin of the Medical Library Association* 55, no. 1 (1967).

<sup>24</sup> Simon Schaffer, “Indiscipline and Interdisciplines: Some Exotic Genealogies of Modern Knowledge”. *HSU University* (2010).

mainly within neighboring disciplinary areas”, with few connections to distant cognitive fields.<sup>25</sup>

The COVID-19 pandemic could have been a critical juncture to catalyze this process, since a multidisciplinary scrutiny of the policies to fight the health crisis is a basic requirement to operate the necessary adaptations to a given country or region, with its distinctive legal features, culture, social and economic conditions. Nonetheless, amidst all the rhetoric of science-based decision-making, the bridges between knowledges remained under-utilized.

### **Multidisciplinary evidence-based approach**

Much of the measures adopted around the globe to fight the novel coronavirus were and are (where vaccines are still scarce) grounded on uniform epidemiologic advice. The results across countries have been remarkably heterogeneous, sometimes disappointing. More recently, some societies wondered “what are we doing wrong?”<sup>26</sup> Potential missteps could be pointed out, with the criticism being centered on a simple idea, an incomplete vision of EBPM.

Evidence-based decision making examines and measures the likely benefits, costs and effects of government decisions. Evidence can be gathered using a *360-degree approach*: looking to the future to identify risks and opportunities, looking to the past to evaluate what has worked and what has not, and looking horizontally to identify synergies across [...] levels of government.<sup>27</sup>

“360-degree approach” must mean a wider view, not a narrower one, rigidly focused on a single discipline. Sackett observes that a description of what evidence-based is helps clarify what evidence-based is not, and how it cannot be conducted from ivory towers and armchairs.<sup>28</sup> This brings attention to the three main concerns about EBPM: its use as a political label, the impacts of a technocracy on the democratic policymaking process, and the dangers of the insularity — reduction to some branches of science.

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<sup>25</sup> Alan L. Porter and Ismael Rafols, “Is science becoming more interdisciplinary? Measuring and mapping six research fields over time”. *Scientometrics* 81, no. 719 (2009).

<sup>26</sup> “Four weeks into lockdown, cases in Toronto remain high”, *CTV News*.

<sup>27</sup> OECD, *Government at a Glance 2011*, 34.

<sup>28</sup> Sackett et al., “Evidence based medicine”, 71.

When politicians use the term “guided by science”<sup>29</sup> with no clear sense of its meaning, they might be using it for certification, deviating judgments from the domain of will or political ideology and shielding them with an external and allegedly neutral element.<sup>30</sup> However, as Stone articulates, the claim that there are objective and impartial standards of evaluation to politics, which are untainted by the interests of political players, masks that behind every policy issue lurks a dispute over conflicting political conceptions.<sup>31</sup> And not even science escapes from this fate. Science uses its powerful intellectual authority to serve as an arbiter of empirical questions, legitimating political choices.<sup>32</sup>

The other side of the coin is that not always science is a tool for politics; politics is sometimes a tool for science — “science is, indeed, a social activity and, as such, is governed by the same sort of forces that govern social behavior generally”.<sup>33</sup> Cairney observes that as policymakers cannot acquire all evidence to solve policy problems, they often draw on emotions, beliefs, and habits. Scientists then identify the cases in which policymakers have incomplete evidence and try to solve it by supplying information. This information is accompanied by stories precisely to exploit the emotional or ideological biases of policymakers.<sup>34</sup>

Such ability to influence politics is potentialized when, by the hands of EBPM, science is “drawn out from its relative social isolation, its elite status, and moved closer to the mundane concerns of society.”<sup>35</sup> This raises concerns about an over-technical policymaking process. Surely, to answer questions, societies need data. But (quantitative) data is not enough. This is especially true in complex

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<sup>29</sup> Lisa Mascaro, “Pelosi to church: 'Follow science' on COVID-19 restrictions”, *ABC News*. September 18, 2020. <https://abcnews.go.com/Politics/wireStory/pelosi-church-follow-science-covid-19-restrictions-73100133>.

<sup>30</sup> Daniel Capurro, “What the Government's 'guided by science' mantra really means”, *The Telegraph*, 26 April 2020. <https://www.telegraph.co.uk/politics/2020/04/26/governments-guided-science-mantra-really-means/>.

<sup>31</sup> Deborah Stone, *Policy paradox: the art of political decision making* (New York: Norton & Company, 2012): 14.

<sup>32</sup> Stone, “Causal stories”, 294-5.

<sup>33</sup> Storer, “The Hard Sciences and the Soft”, 83.

<sup>34</sup> Cairney, *The Politics of Evidence-Based Policy Making*.

<sup>35</sup> Schaffer, “Indiscipline and Interdisciplines”, 5.

situations, such as a pandemic, when the best available data is far from perfect.<sup>36</sup> Besides, what can be rigorously measured is often not the most important element. There are social aspects that are difficult to measure<sup>37</sup> — it is possible to have some intuition about the effects of a culture, but not a measure of the culture itself; much of its effects are subtle and unseen, even though strongly present.

It should not be surprise, therefore, that due to numerous challenges in measuring outcomes, it has been difficult to evaluate not only the short-term effects but the long-term implications, including social and economic, of the measures adopted to fight the spread of the virus — which policies are effective, what could be adjusted, what may be further built upon for the future, and what conditions lead to successful responses. At the political level, the explanatory inability is likely to be associated with overlooking aspects that go beyond the medical field. Curbing a pandemic requires a big change of behavior, thus a plethora of social features greatly influence the extent and pace of this process.

Multidisciplinarity can build bridges to connect multiple standpoints and offer a comprehensive interpretation of the reality. Interdisciplinarity can erase frontiers and integrate pieces of knowledge to deliver meaningful answers. Collaboration among disciplines will not solve everything on political appropriation and partisan bias but can spark the necessary rethinking of the relationship between method and data, improving EBPM. An integrative attitude recognizes that “no method can be the path to ‘truth’” and that in most cases of complex questions a multi-methodological approach yields the most reliable results<sup>38</sup>.

It is worth noticing that inter-, trans- and multidisciplinary are sometimes used interchangeably for embracing “academic cooperation, problem-solving teamwork and disciplinary structures.” In many practical ways, the concepts are almost synonymous, but there are still technical differences. *Multidisciplinarity* is a non-integrative mixture of disciplines, that is, the disciplines cooperate but do not mix, preserving their methodologies and assumptions. *Interdisciplinarity* is a step further, once practices and assumptions of each discipline are deliberately combined to better solve research problems.

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<sup>36</sup> Max Roser et al., “Coronavirus Pandemic (COVID-19)”

<sup>37</sup> Jerry Z. Muller, *The Tyranny of Metrics*.

<sup>38</sup> Pakkasvirta, “Interdisciplinary Perspectives”, 169-70.



*Transdisciplinarity* implies an academic and institutional radicalism that defies the identity of the whole traditional disciplinary thinking: “the researcher’s position to the common object traverses the traditional epistemological standpoints”.<sup>39</sup>

Transdisciplinarity may be setting a too high bar, since in proposing programs to deal with the problems of specialization, it is essential to understand that the current organization of knowledge is the result of centuries of history.<sup>40</sup> If the mainstream academia is still bound to the classical system of strict disciplinarity, that is because it has a long history dating to the Middle Ages — even in the ‘young sciences’, including the social sciences, the ‘ways of doing’ are more than a hundred years old.<sup>41</sup> Multidisciplinarity, on the other hand, can be considered a current imperative while interdisciplinarity is a desirable medium-term goal.

### Quantitative analysis

An assertion for multidisciplinarity does not mean abandoning quantitative analysis, but the opposite: it means the necessity of integrating numbers in an environment in which they can provide valuable information. For instance, by collecting data from the research developed by “Our World in Data”,<sup>42</sup> it is possible to build a dataset made up of 190 countries, here measuring from the beginning of the pandemic up to January 12, 2021. A basic “Ordinary Least Squares” (OLS) takes the following form, where the variable  $Y$  is the outcome,  $x_i$  indicates various independent variables and  $\varepsilon$  is the standard error:

$$Y = \beta_0 + \sum_{i=1}^n \beta_i x_i + \varepsilon$$

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<sup>39</sup> Pakkasvirta, “Interdisciplinary Perspectives”, 165-66.

<sup>40</sup> Joseph J. Kockelmans, “Interdisciplinarity and the University: The Dream and the Reality”, *Interdisciplinary Studies* (1986).  
[https://interdisciplinarystudies.org/docs/Vol4\\_1986/02\\_Vol\\_4\\_pp\\_1\\_16\\_Kockelmans.pdf](https://interdisciplinarystudies.org/docs/Vol4_1986/02_Vol_4_pp_1_16_Kockelmans.pdf).

<sup>41</sup> Immanuel Wallerstein, “Open the Social Sciences.” *Report of the Gulbenkian Commission on the Restructuring of the Social Sciences* (Stanford: Stanford University Press, 1996).

<sup>42</sup> Max Roser et al., “Coronavirus Pandemic (COVID-19)”, January 12, 2021.  
<https://ourworldindata.org/coronavirus>.

I ran two regressions. The first includes factors about underlying conditions of the population were considered, especially the elderly (population aged 65 and above), the number of deaths weighted for the population size was inserted as the dependent variable. The second bent to social factors not connected with mortality, and it was considered appropriate to bring the number of positive cases as the dependent variable, a more intuitive proxy for the spread of the disease and the policy efficacy.

The explanatory independent variables attempt to construct a general sense of the policies implemented by governments to address the crisis. In the first regression, these variables were: **(a)** government stringency, a value between 0 and 100 according to the Oxford COVID-19 Government Response Tracker (OxCGRT), which considers ten metrics: school closures, workplace closures, cancellation of public events, restrictions on public gatherings, closures of public transport, stay-at-home requirements, face covering, public information campaigns, restrictions on internal movements, and international travel control;<sup>43</sup> **(b)** tests for coronavirus per thousand of population; **(c)** population density; and **(d)** percent of the population aged 65 and above.

When social factors were pondered in the second regression, the sample had to be reduced to 40 countries due to the lack of data regarding other nations. In this part of the analysis, besides the research from the World in Data, for the variables **(a)** government stringency, **(b)** tests for coronavirus per thousand of population, and **(c)** income support and debt relief, the “World Values Survey Wave 7 (2017-2020)” was also used to incorporate new independent variables: **(d)** confidence in the national government; **(e)** trust in other people; **(f)** individual responsibility.

“Income support” captures if a given government is providing direct cash payments to people who lose their jobs or cannot work during the pandemic. It is assigned 0 to no income support; 1 if the government is replacing less than 50 percent of lost salary; and 2 if the government is replacing 50 percent or more of lost salary. “Debt relief” records if the government is freezing financial obligations. It is assigned 0 to no debt relief; 1 to narrow relief; and 2 to broad

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<sup>43</sup> Thomas Hale et al., “Coronavirus Government Response Tracker”, *University of Oxford*, January 7, 2021. <https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker#data>.

debt/contract relief. The final metric is a flat sum of both indicators, going from 0 (no support and relief) to 4 points (strong support and relief).<sup>44</sup>

“Confidence in the national government” was measured with the percentage of the respondents in the country that answered that they had “a great deal of confidence” and “quite a lot of confidence” in their government when answering the World Values Survey Wave 7 (Question 71). The same survey was used to quantify “Trust in others” and “Individual responsibility. In the former, it was considered the percentage of respondents that answered “most people can be trusted” (Question 57). In the latter, it was considered the mean of each country, given the respondents were asked how they would place their views on the following scale: 1 meant they agreed completely with government responsibility; 10 meant they agreed completely with individual responsibility. If their views fell somewhere in between, they could choose any number in between (Question 108).<sup>45</sup>

Descriptive statistics were conducted, and the analyses revealed that the distributions of the dependent variables (cases and deaths per million people) and some of the independent variables (number of tests, population density, elderly population, hospital beds, trust in government, and individual responsibility) were skewed and displayed levels of kurtosis above the threshold considered desirable. They were therefore log-transformed to better meet the normality assumptions.

There are many obstacles to building reliable cross-country comparisons — how much countries are testing and how deaths are recorded (some countries may only count hospital deaths, whilst others include deaths in homes)<sup>46</sup> just to mention two examples. Thus, the numbers presented in the next section are not meant to assert relations of cause and effect.

Table 1 reports the correlations, standard errors, and P-values of four independent variables, government stringency index (Stringency), number of tests for coronavirus per thousand people

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<sup>44</sup> Max Roser et al., “Policy Responses to the Coronavirus Pandemic”, Our World in Data, January 10, 2021. <https://ourworldindata.org/policy-responses-covid>.

<sup>45</sup> Christian Haerpfer et al., *World Values Survey: Round Seven* (Madrid, Spain & Vienna, Austria: JD Systems Institute & WWSA Secretariat, 2020). [doi.org/10.14281/18241.1](https://doi.org/10.14281/18241.1).

<sup>46</sup> Roser et al., “Coronavirus (COVID-19) Deaths”.

(Tests), national population density (Pop Density), and percent of population aged 65 and above (Elderly) on the dependent variable, the natural logarithm of the number of **deaths** for coronavirus per million of population.

**Table 1. Results of OLS Regressions**

	Model 1	Model 2	Model 3	Model 4
Stringency	.0472 (.0118) <i>[0.000]</i>	.0447 (.0134) <i>[0.001]</i>	.0419 (.0140) <i>[0.000]</i>	.0545 (.0139) <i>[0.000]</i>
Tests (log)		.8038 (.1031) <i>[0.000]</i>	.7586 (.1063) <i>[0.000]</i>	.5592 (.1171) <i>[0.000]</i>
Pop Density (log)			-.2536 (.1138) <i>[0.028]</i>	-.2475 (.1082) <i>[0.024]</i>
Elderly (log)				.8013 (.2376) <i>[0.001]</i>
R-sq	0.0896	0.3967	0.3678	0.4348
R-sq adj	0.0840	0.3846	0.3482	0.4112
F	16.13	32.88	18.81	18.46
N	166	103	101	101

Note: Standardized beta coefficients; Standard errors in parentheses; P-values in brackets [P < 0.1 in italic].

Transformation: log = natural logarithm.

All variables included in the models had a significant association with the number of deaths for coronavirus, including “Government stringency”. There are two explanations for this result: (a) it reflects an “answer effect”, such that an increasing number of deaths leads to stricter measures; (b) lockdowns are not effective in the medium- and long-run.

The mentioned “answer effect” also may justify the positive correlation between “Tests” per thousand of population and the number of deaths for coronavirus. Remarkably, when this variable is included in Model 2, the adjusted R-squared (coefficient of determination) rises steeply from 0.0840 to 0.3846, an increase of 357.86 percent. This stresses the difficulty in interpreting objectively the effects of policies on a complex situation like a pandemic.

“Population density” presented a surprising negative correlation when controlled by government stringency, tests, and elderly population. The literature and empirical evidence propose that high population densities catalyze the spread of COVID-19,<sup>47</sup> such that a positive linear relationship could be assumed between population size and the number of cases.<sup>48</sup> A possible explanation for these results is that the dataset used in this study features national numbers, which may distort the true relationship — sub-national or regional differences in population density are likely to be relevant.

The last model confirms that the parcel of “Elderly population” (aged 65 and above) is critical in the fight against the virus. This result is in line with the existent empirical evidence showing that the mortality rate of COVID-19 is more than sixty times higher (IRR = 62.1; 95%CI = 59.7, 64.7) among those ages 65 or older.<sup>49</sup>

One significant question of interest for politics is how countries like Japan and New Zealand were able to keep a low mortality relative to their elderly population and why other nations, like Qatar, had so many fatalities despite their young populations (Figure 1). This should remind analysts that outliers, “cases that stand out from the rest of the data almost always deserve attention [...], may be the most important values in the dataset, pointing out an exceptional case or illuminating a pattern by being the exception to the rule.”<sup>50</sup>

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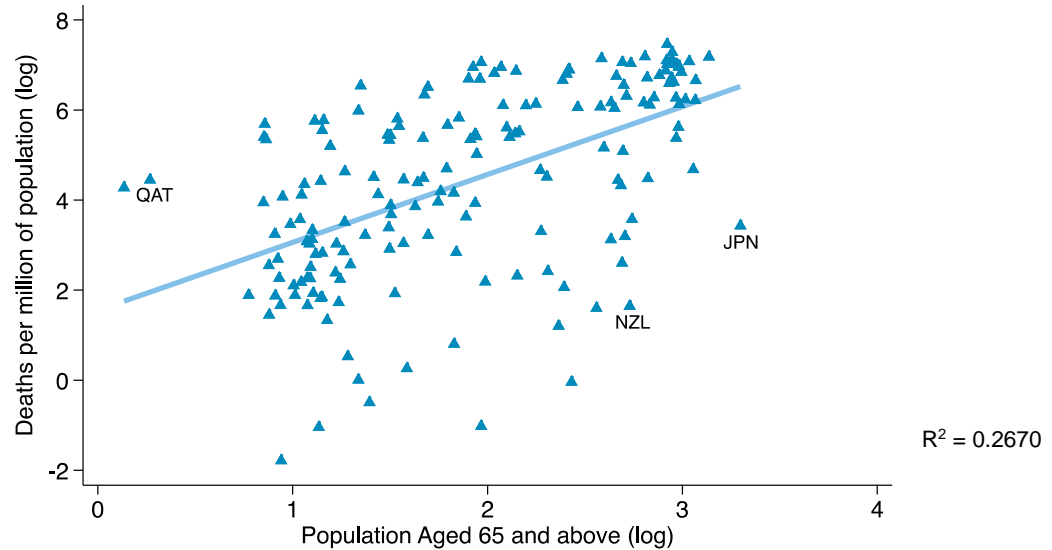
<sup>47</sup> Joacim Rocklöv and Henrik Sjödin, “High population densities catalyse the spread of COVID-19”, *Journal of Travel Medicine* 27, no. 3 (2020).

<sup>48</sup> Sjödin et al., “Only strict quarantine measures can curb the coronavirus”.

<sup>49</sup> David Yanez, “COVID-19 mortality risk for older men and women”, *BMC Public Health* 20(1742) (2020).

<sup>50</sup> Richard D. De Veaux, Paul F. Velleman, David E. Bock, *Stats: Data and Models* (Pearson, Hoboken, 2020).

**Figure 1. Number of deaths for coronavirus and countries' elderly population**



Source: Max Roser et al., “Coronavirus Pandemic (COVID-19)”, January 12, 2021.

The graph distribution (Figure 2) suggests that additional factors (e.g., social), along with underlying population health and gerontology, play an important role in the outcomes of the countries' policies. This is what was expected according to the thesis of this article. But the process of replicating policies is far from simple, once it is affected by all the aspects before mentioned.

Taking this partial conclusion into consideration, Table 2 displays an embryonic attempt to evaluate social aspects through quantitative methodology. It reports the correlations, standard errors, and P-values of six independent variables, government stringency index (Stringency), number of tests for coronavirus per thousand people (Tests), income support and debt relief (Income & Relief), trust in the national government (Trust Gov), trust in other people (Trust Others), and individual responsibility (Responsibility) on the dependent variable, the natural logarithm of the number of **cases** of coronavirus per million of population.

**Table 2. Results of OLS Regressions**

	Model 1	Model 2	Model 3	Model 4	Model 5
Stringency	.0639 (.0249) <i>[0.014]</i>	.0596 (.0206) <i>[0.006]</i>	.0659 (.0200) <i>[0.002]</i>	.0285 (.0160) <i>[0.084]</i>	.0322 (.0155) <i>[0.046]</i>
Tests (log)		.8052 (.1861) <i>[0.000]</i>	.6057 (.2115) <i>[0.007]</i>	.8485 (.1574) <i>[0.000]</i>	.8309 (.1515) <i>[0.000]</i>
Income & Relief			.2495 (.4373) <i>[0.572]</i>	-.3255 (.3181) <i>[0.314]</i>	-.2688 (.3071) <i>[0.388]</i>
Trust Gov				-.0304 (.0077) <i>[0.000]</i>	-.0299 (.0074) <i>[0.000]</i>
Trust Others				-1.0335 (.2855) <i>[0.001]</i>	-.9734 (.2761) <i>[0.001]</i>
Responsibility (log)					-1.7002 (.8873) <i>[0.065]</i>
R-sq	0.1474	0.4338	0.4503	0.7503	0.7767
R-sq adj	0.1249	0.4032	0.4018	0.7113	0.7335
F	6.57	14.17	9.28	19.23	17.97
N	40	40	38	38	38

Note: Standardized beta coefficients; Standard errors in parentheses; P-values in brackets [P < 0.1 in italic].

Transformation: log = natural logarithm.

Of the six variables included in the models, all had a significant association with the number of cases for coronavirus, except “Income support and Debt relief”. It is expected that financial helps holding the spread of the virus by relieving pressure on the budgets of economically disadvantaged people, who otherwise may not be able to self-isolate. The absence of statistical significance, anyway, should not be interpreted as a lack of correlation because in statistical models “we never declare the null hypothesis to be true (or ‘accept’ the null), because we simply do not know whether it’s true or not”.<sup>51</sup>

<sup>51</sup> De Veaux, Velleman, and Bock, *Stats: Data and Models*.

“Trust in Government”, in its turn, had a significant negative relationship with the number of cases when inserted in Models 4 and 5 ( $\beta = -.0304$  and  $-.0299$  respectively;  $P = 0.000$ ). This evidence is in accordance with the literature where the effectiveness of government actions relies on public’s confidence — “1) government does not have a monopoly on public authority and resources; and 2) contemporary governments govern most effectively in concert with others.” Trust stems from credibility, processes and structures for fostering integrity and preventing corruption while considering the contextual factors and conditions that influence policies efficacy.<sup>52</sup> Brazil is an example of a country where the low level of confidence in the national government (17 percent of population in 2018)<sup>53</sup> is likely to explain part of the weak answer against the virus.<sup>54</sup>

Besides trust in government, “Trust in others”, the dynamic between citizens, also matters, which is indicated by the strong positive association found in Models 4 and 5 ( $\beta = -1.0335$  and  $-.9734$  respectively;  $P = 0.001$ ). Although traditionally the political science research concerns primarily with citizens’ trust in the public sector, trust is also a feature of relationships (a supporting way) of individuals and organizations. There are many relationships in many directions.<sup>55</sup>

This is a critical finding because empirical studies have suggested that “the degree of quarantine adherence needs to be very high regardless of population size in order to be effective”.<sup>56</sup> As a consequence, if policymakers ignore trust and other social elements that lead to adherence and lie far beyond the medical epidemiologic field (legal, cultural, psychological, political, etc.), treating compliance as though it was an external and accidental element, not a condition to the implementation or even a factor to be addressed, the outcomes of the policies may be very poor.

More than that, evidence was found that trust may be negatively correlated with government stringency, which means that,

<sup>52</sup> OECD, *Government at a Glance 2011* (Paris: OECD Publishing, 2011), 20.

<sup>53</sup> OECD, *Government at a Glance 2019* (Paris: OECD Publishing, 2019), 158-162.

<sup>54</sup> Anna Petherick et al., “Brazil’s Fight Against Covid-19: Risk, Policies, And Behaviours”, University of Oxford, November 4, 2020.

<https://www.bsg.ox.ac.uk/research/publications/brazils-fight-against-covid-19-risk-policies-and-behaviours>.

<sup>55</sup> Geert Bouckaert, “Trust and public administration”, *Administration* 60, no. 1 (2012), 94.

<sup>56</sup> Sjödin et al., “Only strict quarantine measures can curb the coronavirus”.



on average, societies with higher levels of trust might employ lower degrees of stringency — plugging “Government stringency” as the dependent variable and “Trust in others” (log) as the independent variable, the parallel regression exhibits:  $\beta = -7.1986$ ;  $P = 0.004$ ; 95%CI =  $-11.9505$ ,  $-2.4467$ ;  $R^2 = 0.1984$ ;  $F = 9.40$ .

The last independent variable introduced was “Individual Responsibility”, which featured a strong negative association with the number of cases for coronavirus ( $\beta = -1.7002$ ;  $P = 0.065$ ), controlling for government stringency, tests, and financial support, as well as aspects of social capital (trust in government and others).

This result does not suggest that individual responsibility works everywhere, but instead that governments should know how to use this social quality at the service of the welfare of all citizens — how to lower barriers to individual responsibility and engage it positively as a “risk-reducing tool”. In other words, individual responsibility does not reduce the government's duty to work for the collective interest. What governments need is to rethink how they approach this role collaboratively.

The strength of the influence of these social factors is showed by the adjusted R-squared rising from 0.4032 in Model 3 to 0.7335 in the Model 5 (an increase of 81.92 percent). The value of 73.35 percent reveals a very good model fit. The literature on Statistics considers that to data from observational studies, R-squared of 50 to 30 percent or even lower might be taken as evidence of a useful regression.<sup>57</sup>

The overall inference from these numbers is that even the best policy can fail if governments do not take into account all the elements that impact its implementation, such as trust in government, trust in others, perception of individual responsibility, and many other social determinants. This not only imposes significant obstacles to the intention to replicate policies across countries without considering the pertinent underlying differences but also evidences that in a science-driven EBPM *everything* has to be considered — in policymaking, neglecting the challenges of the implementation phase can create unsurmountable obstacles for a policy to be successful in attaining its goals.<sup>58</sup>

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<sup>57</sup> De Veaux, Velleman, and Bock, *Stats: Data and Models*.

<sup>58</sup> OECD, *Government at a Glance 2009*, 39.

### **Evaluation under an integrative approach**

An integrative approach (multi- or interdisciplinary), in practical terms, means to recognize and work with the interplay among the overwhelming number of elements that can influence the output of the policies designed to answer complex issues. In the case of the coronavirus crisis, economic limitations of each country and region, social questions (e.g., inequality and culture), social capital (trust in government and among peers), political scenario (bipartisan agreement or polarization), geography, climate, and population density, infrastructure (healthcare structure), etc. Governments can and should look at the countries whose responses have been most successful and try to learn what allows them to make progress against the virus.

All that considered, if the multifaced vies of a pandemic uncover the need for an integrative approach to EBPM, what can go wrong should this imperative be ignored? A non-integrative EBPM may lead to poorly planned policies, which effective implementation is difficult (if not impossible) and whose results are often far from what was projected. A deeper and broader comprehension from a multidisciplinary perspective, in its turn, raises numerous theoretical and practical implications, with direct repercussion in the policymaking process.

For instance, numbers can be used to find patterns and associations, to test hypotheses, and show possible correlations. However, numbers need to be complemented by qualitative analysis to become meaningful. The over-reliance on numerical data may drive governments to chase metrics that fail to reflect reality. According to Muller, the tyranny of metrics threatens the quality of people's lives and the most important institutions.<sup>59</sup> While the existence of objective output measures can push governments to strive for improved performance, it may also lead them to neglect non-measured dimensions or to “gaming”, that is, adjusting the output itself or distorting the measurements to “achieve the appearance (rather than the reality) of ‘good’ performance”.<sup>60</sup>

One example of this scenario may have been the excessive attention to the absolute number of tests for coronavirus in the United

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<sup>59</sup> Muller, *The Tyranny of Metrics*.

<sup>60</sup> OECD, *Government at a Glance 2009*, 16.

States during the Trump administration.<sup>61</sup> To look at the number of tests in isolation is not informative. Tests must be evaluated in relation to the size of the outbreak and the moment when they are performed. Under the World Health Organization recommendations, the United States tested little relative to the size of the outbreak and probably started testing a little too late<sup>62</sup> — South Korea, Taiwan, and Singapore were able to keep a flat epidemic curve by applying contact tracing in the *very early* stages of the outbreak.<sup>63</sup>

Moreover, even when numbers are meaningfully presented, professionals from different specialties should be called to collaborate and confirm the accuracy of predictions and models,<sup>64</sup> once protocols of transparency are implemented.<sup>65</sup> An illustrative case is the Imperial College London's projection, which is credited with having changed the British government's strategy from "Sweden-style light touch to full lockdown".<sup>66</sup> Months after the turnover, epidemiologist Neil Ferguson, who headed the study, agreed that the simulation did not use current best-practice coding methods. Computational scientists independently rerun the simulation and sharply criticized the code, calling it "a buggy mess", "totally unreliable".<sup>67</sup>

Besides practical considerations, the **legal framework** is also significant. When Constitutions and Bills of Rights are reconstructed in the turmoil of an emergency, citizens may fear for a perennial redefinition of civic life, politics, and economies. For example, early in the pandemic, when pressed in an interview, New Jersey Governor Phil Murphy confessed he "wasn't thinking about the Bill of Rights when he issued social distancing orders to stem the spread of the

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<sup>61</sup> "Coronavirus: President Trump's testing claims fact-checked", *BBC News*. 15 May 2020. <https://www.bbc.com/news/world-us-canada-52493073>.

<sup>62</sup> Joe Hasell, "Testing early, testing late: four countries' approaches to COVID-19 testing compared", *Our World in Data*, May 19, 2020. <https://ourworldindata.org/covid-testing-us-uk-korea-italy>.

<sup>63</sup> Vernon J Lee, Calvin J Chiew, and Wei Xin Khong, "Interrupting transmission of COVID-19: lessons from containment efforts in Singapore" *Journal of Travel Medicine* 27, no. 3 (2020).

<sup>64</sup> Martin I. Meltzer, "Interdisciplinary Public Health Reasoning and Epidemic Modelling: The Case of Black Death", *Emerg Infect Dis.* 12, no. 2 (2006): 361.

<sup>65</sup> Negar Moradian et al., "The urgent need for integrated science", 2.

<sup>66</sup> Anthony, "Neil Ferguson".

<sup>67</sup> Dalmeet Singh Chawla, "Critiqued coronavirus simulation gets thumbs up from code-checking efforts", *Nature*, Jun 8, 2020. <https://www.nature.com/articles/d41586-020-01685-y>.

coronavirus”.<sup>68</sup> It does not mean that the governor’s orders were not the right thing to do, but he *must* think about the Bill of Rights to make an informed decision. In fact, elected politicians swear solemnly to uphold the Constitution before assuming the duties of the office.<sup>69</sup>

Of course, it is comprehensible that people may feel inclined to surrender rights temporarily if it helps lessen a serious health crisis. Still, **history** shows that there are relevant considerations associated with this decision. Once citizens defer their rights, they may struggle to reconquer them. In the voice of the Israeli historian Yuval Harari, Israel declared a state of emergency during its War of Independence, which permitted a range of temporary measures, from press censorship to land confiscation. “The War of Independence has long been won; but Israel never declared the emergency over, and has failed to abolish many of the ‘temporary’ measures of 1948”.<sup>70</sup> About this point, Feder reasons that the major steps forward on the part of the State take place in times of public misery and is couched in a great need for citizens’ protection or the defense of the community. As States’ expansionary targets are always active, at certain favorable times the government takes a big step, and then it is impossible to make it retreat.<sup>71</sup>

Slipping into tyranny is not a fate that societies inevitably meet when relinquishing some individual rights.<sup>72</sup> Yet one possible **philosophical** interpretation suggests that it means adopting a more utilitarian (Benthamian) approach,<sup>73</sup> by denying a moral basis for civil

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<sup>68</sup> Mark Moore, “Murphy says he ‘wasn’t thinking’ of Bill of Rights for coronavirus measures”, *New York Post*, April 16, 2020.

<https://nypost.com/2020/04/16/murphy-says-he-wasnt-thinking-of-bill-of-rights-for-coronavirus-measures/>.

<sup>69</sup> Oath of Office. United States Senate. Accessed on January 20, 2021. [https://www.senate.gov/artandhistory/history/common/briefing/Oath\\_Office.htm](https://www.senate.gov/artandhistory/history/common/briefing/Oath_Office.htm).

<sup>70</sup> Yuval Noah Harari, “The world after coronavirus”, *Financial Times*, March 20, 2020. <https://www.ft.com/content/19d90308-6858-11ea-a3c9-1fe6fedcca75>.

<sup>71</sup> João Feder. *O Estado sem poder* (São Paulo: Max Limonad, 1997): 156.

<sup>72</sup> Jørn Henrik Petersen, “Nordic Model of Welfare States”, In *Nordic Law in European Context*, Pia Letto-Vanamo, Ditlev Tamm, and Bent Ole Gram Mortensen, *Ius Gentium: Comparative Perspectives on Law and Justice* 73 (Springer, 2019): 21-39.

<sup>73</sup> Jessica Robertson, “Utilitarianism and the Nordic Model: A Case Study”, *Philosophy Graduate Conference* (2020). [https://www.researchgate.net/publication/343163241\\_Utilitarianism\\_and\\_the\\_Nordic\\_Model\\_A\\_Case\\_Study](https://www.researchgate.net/publication/343163241_Utilitarianism_and_the_Nordic_Model_A_Case_Study).

rights and make them contingent — they are protected when useful.<sup>74</sup> Many academics have claimed that the COVID-19 crisis is an opportunity to realize that communities less focused on individual rights are more efficient and suitable to pursue the common good.<sup>75,76</sup> <sup>77</sup> This should revive Stone’s warning: underlying every policy issue — it does not matter how neutral or scientific it might seem on the surface — there is a clash of ideological conceptions.<sup>78</sup>

Lastly, from an **economic** perspective, responding successfully to the pandemic has to mean two complementary things: limiting the direct and the indirect impacts of the crisis, that is, reducing the spread of the virus and the number of deaths, but also dealing with social and economic consequences.<sup>79</sup> A response that brings increasing rates of poverty and higher mortality from other causes, often associated with economic determinants,<sup>80</sup> disproportionately impacting the poorer,<sup>81</sup> cannot be considered successful.

### **Practical implications: integrative policymaking**

After reflecting on what is at stake when making policy decisions in critical matters such as the response to a pandemic, one can ask what can happen when multidisciplinary is embraced, given the plentiful elements involved in the process. For one, collaboration/integration among disciplines may be the only way to achieve the necessary level

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<sup>74</sup> Hugo Adam Bedau, “Anarchical Fallacies: Bentham's Attack on Human Rights”, *Human Rights Quarterly* 22, no. 1 (2000).

<sup>75</sup> Greg Latemore, “COVID and the Common Good”, *Philosophy of Management* (2020). <https://doi.org/10.1007/s40926-020-00154-w>.

<sup>76</sup> Neve Gordon and Catherine Rottenberg, “The coronavirus conundrum and human rights”, *Aljazeera*, March 21, 2020. <https://www.aljazeera.com/indepth/opinion/coronavirus-conundrum-human-rights-200320120352737.html>.

<sup>77</sup> Christopher Beem, “Coronavirus reminds Americans that pursuit of happiness is tied to the collective good”, *The Conversation*, March 18, 2020. <https://theconversation.com/coronavirus-reminds-americans-that-pursuit-of-happiness-is-tied-to-the-collective-good-133599>.

<sup>78</sup> Deborah Stone, *Policy paradox*, 14.

<sup>79</sup> Max Roser et al., “Coronavirus Pandemic (COVID-19)”.

<sup>80</sup> William C Cockerham, Bryant W Hamby, and Gabriela R Oates, “The Social Determinants of Chronic Disease”, *Am J Prev Med* 52, no. 1S1 (2017).

<sup>81</sup> Alice Fothergill and Lori A. Peek, “Poverty and Disasters in the United States: A Review of Recent Sociological Findings”, *Natural Hazards* 32 (2004).

of understanding to a real EBPM, which at the same time is inclusive (incorporating inputs from the society) and functional (effective). To make this conclusion more palpable, it is possible to emphasize some practical strategies derived from multiple disciplines.

Starting with psychological factors, individuals' behaviors depend on affective reactions, especially when associated with potential outcomes of risky choices.<sup>82</sup> Thus, **psychology** can offer inputs on how policymakers should manage stimulus to design more efficient policies,<sup>83</sup> for example by restructuring the format of public reports regarding the pandemic. As opposed to trying to show how all the time their response is successful and effective, governments should search for an equilibrium, avoiding excessive negative emotions<sup>84</sup> but stressing the harmful aspects of the disease, not only through numbers (cases and deaths), but also stories of real people, sensitizing those who otherwise might neglected risks.<sup>85</sup> Such evidence strongly conflict with actions as those taken by Brazilian President Jair Bolsonaro, who insistently underestimate the virus,<sup>86</sup> or former-President Donald Trump, who undermined public health messages and advise Americans, "Don't be afraid of Covid".<sup>87</sup>

Further aspects can be considered under this methodology: (a) "there exists a trade-off between the proportion of the population under sanitary emergency measures and the average time an individual is committed to all the behavioral changes needed to achieve an effective social distancing";<sup>88</sup> (b) appealing to fear to shape behavior (e.g., stay at home) may lead people to defensive reactions when they

<sup>82</sup> Yuval Rottenstreich and Christopher K Hsee, "Money, kisses, and electric shocks: on the affective psychology of risk", *Psychol Sci.* 12, no. 3 (2001).

<sup>83</sup> Christopher K Hsee and Yuval Rottenstreich, "Music, pandas, and muggers: on the affective psychology of value", *Journal Exp Psychol Gen* 133, no. 1 (2004).

<sup>84</sup> Witte and Allen "A meta-analysis of fear appeals", 591.

<sup>85</sup> Van Bavel et al., "Using social and behavioural science", 462.

<sup>86</sup> Sergio Lima, "Remember 15 times that Bolsonaro publicly underestimated the covid-19", *Web24News*, July 7, 2020

<https://www.web24.news/u/2020/07/remember-15-times-that-bolsonaro-publicly-underestimated-the-covid-19-2.html>.

<sup>87</sup> Gina Kolata and Roni Caryn Rabin, "'Don't Be Afraid of Covid,' Trump Says, Undermining Public Health Messages", *The New York Times*, October 5, 2020. <https://www.nytimes.com/2020/10/05/health/trump-covid-public-health.html>.

<sup>88</sup> Acuña-Zegarra, Santana-Cibrian, and Velasco-Hernandez, "Modeling behavioral change and COVID-19".

feel helpless to act — incapable of dealing with the threat;<sup>89</sup> (c) people often exhibit an ‘optimism bias’, the belief that bad things are more likely to happen to others, which “can lead people to underestimate their likelihood of contracting a disease and to therefore ignore public health warnings”.<sup>90</sup> These elements might explain why countries that were able to flatten the curve through lockdowns in the first wave (Spring 2020), like Canada, were not so successful in a second attempt (Winter 2020-2021). “People are not staying home as they did during the first lockdown in spring, which is contributing to the spread of the virus”<sup>91</sup> — low adherence means that a large amount of time (up to 10 hours) is spent out of the household per day and per person.<sup>92</sup>

To help with this problem, **anthropological** research can use its tools to bring means to attain compliance and conformity by revealing how human interactions and social processes work, which are often subtle, indirect, and outside of awareness.<sup>93</sup> Individual behaviors are embedded in social relations, including social identity, social influence, and message-based persuasion. Processing this information for attitude change and understanding central motivations that generate resistance is critical to shaping the desirable social attitude.<sup>94</sup> Governments may then “leverage the impact of attitude change by targeting well-connected individuals and making their behavior change visible and salient to others”.<sup>95</sup>

Indeed, culture and human behavior can determine by itself the level of efficiency of the policies chosen to fight the virus. For instance, North American and much of Western European culture tend to positively value acts like kissing and hugging. This expressivity of the self is much less common in Asian cultures,<sup>96</sup> a relevant issue to be considered in the policy implementation and that can define how

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<sup>89</sup> Kim Witte and Mike Allen “A meta-analysis of fear appeals: implications for effective public health campaigns”, *Health Educ Behav.* 27, no. 5 (2000): 591.

<sup>90</sup> Van Bavel et al., “Using social and behavioural science”, 461.

<sup>91</sup> “Four weeks into lockdown, cases in Toronto remain high. What are we doing wrong?” *CTV News*. December 16, 2020. <https://toronto.ctvnews.ca/four-weeks-into-lockdown-cases-in-toronto-remain-high-what-are-we-doing-wrong-1.5234788>.

<sup>92</sup> Sjödin et al., “Only strict quarantine measures can curb the coronavirus”.

<sup>93</sup> Robert B Cialdini and Noah J Goldstein, “Social influence: compliance and conformity”, *Annu Rev Psychol* 55 (2004).

<sup>94</sup> W. Wood “Attitude change: persuasion and social influence”, *Annu Rev Psychol* 51 (2000).

<sup>95</sup> Van Bavel et al., “Using social and behavioural science”, 463.

<sup>96</sup> Van Bavel et al., “Using social and behavioural science”, 463.

likely is the interpersonal transmission of the virus. Indeed, people's behavior is influenced by "what they perceive that others are doing or what they think that others approve or disapprove of".<sup>97</sup> Thus, if what most people are doing is underestimating health-promoting behaviors and overestimating unhealthy habits, i.e., insisting on face touching, avoiding hand washing, refusing wearing masks in public, gathering in large crowds, "providing purely descriptive normative information can backfire by reducing positive behaviors among people who already engage in them."<sup>98</sup>

Next, **sociology** points out that the emergence and spread of a pandemic are related to individuals' and groups behavior within the social arrangement in which they are inserted, and the political and civic environment that make some outcomes more likely than others.<sup>99</sup> More generally, any topic related to population health requires considering people within their living contexts.<sup>100</sup> Thus, Governments' ability to monitor, manage, anticipate, and adapt to social conditions are key to achieving successful policies.<sup>101</sup> As a consequence, the fact that the poor and minorities were disproportionately impacted by the pandemic<sup>102</sup> has many causes but one of them is for sure the lack of especial strategies to address the most vulnerable groups. People living in deprived areas and minorities experience both historical and current of events of discrimination and feelings of "being left-behind", which leads to distrust in public institutions. Members of these communities may be more reluctant to follow the recommended safety measures. A way to overcome this hurdle is to engage in partnerships with trusted organizations that are internal to these communities.<sup>103</sup>

Regarding the **legal framework**, research indicates that strict cultures such as those of Singapore, Japan, and China have harsh

<sup>97</sup> Robert B Cialdini and Noah J Goldstein, "Social influence: compliance and conformity", *Annu Rev Psychol.* 55 (2004).

<sup>98</sup> Van Bavel et al., "Using social and behavioural science", 463.

<sup>99</sup> Negar Moradian et al., "The urgent need for integrated science", 4.

<sup>100</sup> Joelle Kivits, Laetitia Ricci, and Laetitia Minary, "Interdisciplinary research in public health: the 'why' and the 'how'" *Journal Epidemiology & Community Health* 73 (2019): 1061-1062.

<sup>101</sup> OECD, *Government at a Glance 2009*, 10-11.

<sup>102</sup> Don Bambino Geno Tai et al., "The Disproportionate Impact of COVID-19 on Racial and Ethnic Minorities in the United States", *Clinical Infectious Diseases*, ciaa815 (2020).

<sup>103</sup> Van Bavel et al., "Using social and behavioural science", 463.



punishments for deviance, while loose cultures, such as those of the United States, Italy, and Brazil are more permissive.<sup>104</sup> This can make all the difference when enforcing sanitary measures. Moreover, plugging rights into the equation completes the quadrangular structure — Psychology, Sociology, Anthropology, and Law. With these four instruments working together, policymakers have the tools to pursue effective behavioral changes. When these gears work disjointedly, reaching the desired change is a much more complex task.

**Philosophical** investigations, in their turn, reveal that countries that normally prioritize freedom over security (like the United States) were expected to have more difficulty coordinating in the face of a pandemic. Yet, this very same feature “may also help to spawn the development of creative technical solutions that are needed to contain the pandemic, as well as creating novel tools to help people feel connected.”<sup>105</sup> For instance, **economists** could have tried innovative solutions to address problems like the sharp rise in the public debt due to the relief spending<sup>106</sup> and the concern that giant corporations may be the only survivors of the crisis.<sup>107</sup> An idea would be to apply the Coase Theorem<sup>108</sup> to issue licenses to big businesses that remained operating during the pandemic,<sup>109</sup> using the money levied to help small businesses that needed to be closed.

To allow measures like this, cross-partisan understanding is normally necessary. **Political scientists** can work to fathom what may allow for bipartisan political arrangements — good policy proposals

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<sup>104</sup> Michele J Gelfand, Jesse R Harrington, and Joshua Conrad Jackson, “The Strength of Social Norms Across Human Groups”, *Perspect Psychol Sci* 12, no. 5 (2017).

<sup>105</sup> Van Bavel et al., “Using social and behavioural science”, 463-64.

<sup>106</sup> László Török, “Impact of a Coronavirus Epidemic on China’s Public Debt Ratio Growth”, *International Journal of Engineering and Management Sciences* 5, no. 3 (2020).

<sup>107</sup> James Kwak, “The End of Small Business: Giant corporations may be the only survivors in the post-pandemic economy”, *The Washington Post*, July 9, 2020. <https://www.washingtonpost.com/outlook/2020/07/09/after-covid-19-giant-corporations-chains-may-be-only-ones-left/?arc404=true>.

<sup>108</sup> Carlos Hervés-Beloso and Emma Moreno-García, “Revisiting the Coase theorem” *Econ Theory* (2021).

<sup>109</sup> Jack Kelly, “The Rich Are Getting Richer During The Pandemic”, *Forbes*, July 22, 2020. <https://www.forbes.com/sites/jackkelly/2020/07/22/the-rich-are-getting-richer-during-the-pandemic/?sh=2a2749985c7e>.

must avoid too much opposition and/or too little support.<sup>110</sup> Kingdon, e.g., observes that “the proposals that survive to the status of serious consideration meet several criteria, including their technical feasibility, their fit with dominant values and the current national mood, their budgetary workability”.<sup>111</sup> In the United States, strategies to achieve political collaboration are very much needed since the efforts to reach a common ground repeatedly failed and, until the Biden Administration takes place, coronavirus aid-packages were rejected, delayed or remained in limbo.<sup>112</sup>

In spite of all the disadvantages of a monocular epistemological approach to policymaking and all the advantages of an integrative EBPM, integration meets intentional resistance. A possible explanation is that interdisciplinary studies are sometimes seen as competition by the traditional disciplines or get underestimated as not adequately academic<sup>113</sup> — soft sciences are still perceived by some as “less scientific”<sup>114</sup> and “*disciplina* refers both to the organization of knowledge and the exercise of power”.<sup>115</sup> The hope is that Stuart Mill’s guidance prevails somehow: “only through diversity of opinion is there, in the existing state of human intellect, a chance of fair play to all sides of the truth”.<sup>116</sup>

## Conclusion

The challenges imposed by the COVID-19 have underlined the role of politics in a health crisis while requiring policymaking to be more effective, efficient and science-driven. The evidence presented in this article supports the hypothesis that to meet these criteria, governments cannot act without regard for socio-legal-economic conditions.

<sup>110</sup> Eugene Bardach, *A practical guide for policy analysis: the eightfold path to more effective problem solving*. (Washington: CQ Press, 2009).

<sup>111</sup> Kingdon, *Agendas, Alternatives, and Public Policies*, 19-20.

<sup>112</sup> Lindsay Wise and Andrew Restuccia, “House Efforts to Alter Coronavirus Package Fail, Leaving Aid in Limbo”, *The Wall Street Journal*, December 24, 2020. <https://www.wsj.com/articles/house-efforts-to-alter-coronavirus-package-fail-leaving-aid-in-limbo-11608821983>.

<sup>113</sup> Pakkasvirta, “Interdisciplinary Perspectives”, 165-67.

<sup>114</sup> Fritz Machlup, “Are the Social Sciences Really Inferior?”, *Southern Economic Journal* 27, no. 3 (1961).

<sup>115</sup> Schaffer, “Indiscipline and Interdisciplines”, 2.

<sup>116</sup> John Stuart Mill, “On liberty”, in *Princeton Readings in Political Thought: Essential Texts since Plato*, Mitchell Cohen (Princeton: Princeton University Press. Kindle Edition, 2018): 376.

However, an incomplete view of what means evidence-based policymaking has been led to superficial analyses about the limitations, weaknesses, and side-effects of the policies adopted to fight the pandemic and the under-exploration of complementary strategies that could be employed to produce positive effects by themselves or in combination with the current instruments.

As the root of these flaws, this study identifies the use of a monocular (non-integrative) policymaking approach, based almost exclusively on medical inputs and that fails to recognize that sciences, like other human products, are ways to tell stories. By ignoring the inherent uncertainty of the scientific process and painting an inexistent objectivity, this political vision opens room for the politicization of the scientific knowledge and to a certain despotism of quantitative metrics. The solution to this state of things is not to abandon EBPM, but to (re)insert it into an integrative and collaborative epistemological environment, embracing multidisciplinary, with a strong emphasis on communication and interaction, shared field engagement, and skilled knowledge brokering. This setup provides a broader and enhanced set of tools for policymaking.

EBPM can substantially improve politics by enlarging the amount of evidence considered in policymaking decisions and by bringing rationality to the process. But to do that, it needs to use all available information, from all disciplines. By combining quantitative and qualitative analyses, metrics and experience, hard and soft sciences, an integrative evidence-based methodology has the potential to become a useful tool in a more inclusive, functional and responsive policymaking process. Now, if EBPM is reduced to quantitative metrics delivered by some selected scientific disciplines, then the science-driven approach turns into a political label and a step away from an inclusive policymaking process.