The Origins and Political Persistence of COVID-19 Lockdowns

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Over the course of just two weeks in mid-March 2020, most of the world went into a state of general lockdown in response to the novel coronavirus disease 2019 (COVID-19). This rapid shift in public-health policy implemented a suite of countermeasures referred to as nonpharmaceutical interventions (NPIs), including wide-scale "nonessential" business closures, event cancellations, school closures, numerical restrictions on gathering sizes, suspensions of international travel, and shelter-in-place orders—all intended to reduce or mitigate the transmission of the virus. Although initially presented as short-term emergency measures to "flatten the curve" of demand for hospital capacity, many of these responses quickly morphed into persistent policies for the duration of the pandemic.

No single event precipitated the widespread adoption of NPIs. However, the political movement behind them reached something of a tipping point on March 16, 2020. This was the day that a team of experts at Imperial College London (ICL) released an epidemiological model of the pandemic, predicting catastrophic death tolls of 2.2 million in the United States and more than 500,000 in the United Kingdom, barring the immediate adoption of lockdown-style NPIs (Ferguson, Laydon, et al. 2020). The ICL report's death-toll forecasts directly induced the governments of both countries to alter their pandemic-response strategies in favor of wide-scale lockdowns,

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which saw implementation across the majority of both countries over the following two weeks (Fink 2020). Most governments around the world shortly thereafter adopted similar policies in conjunction with this model (Oxford Stringency Index n.d.).

This unprecedented succession of events is distinctive for its direct reliance on the prescriptive forecasts of an epidemiological computer simulation—arguably the first time in history and certainly the first instance of this scale. As the lead author of an influential paper in 2006 on the use of NPIs during an influenza pandemic (Ferguson, Cummings, et al. 2006), Neil Ferguson, the primary modeler of the ICL report, played a central role in this shift toward modeling. (Ferguson directly adapted the same influenza model to forecast the coronavirus outbreak in the ICL report.) In addition to the study published on March 16 (Ferguson, Laydon, et al. 2020), Ferguson personally advised the U.K. government's decisions as a member of its SAGE (Scientific Advisory Group for Emergencies) committee on COVID-19 and directly influenced a similar course taken by Dr. Anthony Fauci, the primary figure on the U.S. government's COVID-19 task force at the time (Adam 2020).

The speed with which the ICL recommendations took hold as policy obscures both the novelty and untested effectiveness of this approach. A little more than a decade earlier, a significant portion of the epidemiological literature directly questioned the scientific accuracy of these same modeling simulations and strongly advised against a counterpandemic strategy built upon "large-scale quarantines"—an older name for the lockdown approach that has come to dominate the ongoing COVID-19 response. As recently as September 2019, a team of well-regarded epidemiologists at Johns Hopkins University advised that "[i]n the context of a high-impact respiratory pathogen, quarantine may be the least likely NPI to be effective in controlling the spread due to high transmissibility" (Nuzzo et al. 2019, 57). They further cautioned that such NPIs could become politically dangerous during "a novel pathogen for which no medical countermeasures will exist" due to the risk that lockdown-style quarantines "might be pursued for social or political purposes by political leaders, rather than pursued because of public health evidence" (Nuzzo et al. 2019, 73, 13; see also Inglesby et al. 2006). In the months since the COVID-19 lockdown decisions were made, however, governments have been slow to retreat from the drastic measures they imposed in mid-March and in some cases have even reimposed full lockdowns in response to a "second wave" of the virus in the autumn after relaxing them during the summer months.

On the surface, this outcome presents something of a political paradox. Despite the widespread adoption of modeling-derived NPIs, empirical evidence for their effectiveness at mitigating or preventing the spread of COVID-19 remains surprisingly scant. Indeed, the core ICL coronavirus model fails basic internal robustness checks (Chin et al. 2020). Furthermore, one could legitimately argue that the modeling approach has neglected to meet basic evidentiary minimums for validating the effectiveness of the model's prescriptive measures (Atkeson, Kopecky, and Tao 2020).

In this paper, we investigate the origins of the model-derived NPI response to COVID-19 and assess the reasons for its persistence despite substantial evidentiary challenges to its overall effectiveness in the subsequent months. We find that the persistence of lockdowns reflects (1) a political bias toward action in response to a crisis, even if such action is ineffectual; (2) political path dependency around a sunk cost; and (3) elements of a classic transitional gains trap wherein modeling-inclined public-health experts have become an interest group in favor of the continuation of their own prescriptive response.

The Dubious Track Record of Epidemiological Modeling

The projected scenarios of the ICL model directly upended the American and British policy strategies for mitigating the COVID-19 pandemic and did so at surprising speed over a few short days in mid-March 2020. There can be little doubt that the catastrophic severity of the ICL model's projections played a central role in elevating its political influence. Although the ICL paper laid out a range of scenarios, with diminishing death tolls under an array of increasingly stringent NPIs, the numbers that received primary attention reflected a "do nothing" option of allowing the pandemic to run its course uncontrolled through the population.

The ICL paper described this "do nothing" scenario as "unlikely" (Ferguson, Laydon, et al. 2020, 3, 6), given that the scenario assumed the complete absence of policy and behavioral responses to the emerging pandemic. At the time of the report's release on March 16, however, the conditions of the ICL's "do nothing" scenario were already violated. Human behavioral responses alone had already precipitated the widespread voluntary adoption of hygienic measures such as hand washing and mask wearing as well as a rapid decline in public gatherings, restaurant reservations, and general population mobility (Luther 2020). Increased public-health-awareness measures similarly predated the shift to general lockdown in both countries, as did earlier mitigation efforts such as large-event cancellations. Observing these and related behavioral changes, a group of authors at the National Bureau of Economic Research noted in early April that "estimates from scenarios that assume unchecked exponential spread of disease, such as the reported figures from the Imperial College model of 500,000 deaths in the UK and 2.2 million in the United States, do not correspond to the behavioral responses one expects in practice" (Avery et al. 2020, 8).

The unrealistic nature of the "do nothing" scenario made it an unsuitable counterfactual upon which to base policy decisions, let alone a reason for raising public alarm. Curiously, though, the ICL team itself appears to have stoked the alarm by overemphasizing that "unlikely" scenario in its own public communications about the model. Lead author Neil Ferguson repeatedly stressed the catastrophic "do nothing" projections for both countries in his public commentary the week of March 16. As late as March 20, Ferguson touted a "worst-case" scenario of 2.2 million deaths in the United States to *New York Times* columnist Nicholas Kristof. When Kristof inquired about a "best-case" alternative, Ferguson answered, "About 1.1 million deaths" (Kristof 2020)—a figure well in excess of the ICL's more tempered policy-mitigation scenarios.

By November 2020, the projection of 2.2 million deaths in the United States was off by an order of magnitude. Ferguson's team had long since shifted their rhetoric to emphasize the more conservative forecasts in their model. Ferguson's early emphasis on the "do nothing" scenario's catastrophic mortality projections, however unlikely they were, clearly affected public perception of the unfolding events. The "do nothing" scenario's death forecasts dominated the press coverage during the imposition of the lockdowns and enjoyed widespread casual repetition by President Donald Trump, Prime Minister Boris Johnson, and public-health officials such as Dr. Anthony Fauci.

Curiously, Ferguson himself was no stranger to stoking public alarmism during pandemics. A longtime disease modeler with a background in computer programming, the ICL scientist had been offering similarly alarmist mortality projections during previous pandemics dating back more than two decades. In 2009, Ferguson predicted that the swine flu outbreak that year would infect "about one-third of the world's population" in a period of only six to nine months, likely accompanied by an atypically severe death toll compared to the toll during normal influenza seasons (as cited in Weaver 2009). Subsequent estimates of global swine flu mortality, however, found it was "no worse than seasonal flu" (NeNoon 2010). In 2006, Ferguson published a model anticipating between 33 million and 102 million cases of infection with the avian flu in the United States (as cited in Borenstein 2006). At the height of the hysteria over avian flu, in media appearances he publicly urged the adoption of aggressive mitigation measures, including NPIs that foreshadowed the COVID-19 lockdown approach. The predicted pandemic fizzled out. In 2002, Ferguson projected up to 150,000 deaths in Britain from a theorized outbreak of "mad lamb" disease (Ferguson, Ghani, et al. 2002; Major 2002). The predicted outbreak never occurred.

Perhaps most notable, Ferguson played a central role in the modeling of Britain's mad cow disease outbreak in 1996. Ferguson's team projected 136,000 deaths at the time—a number that they revised slightly downward over the next five years, suggesting perhaps 100,000 deaths (as cited in Balter 2001). Ferguson became embroiled in a public controversy in 2001 when a different team of modelers put forth a much more conservative estimate of no more than 10,000 deaths, likely spread over the next decade (D'Aignaux, Cousens, and Smith 2003). After the publication of the competing study, Ferguson lambasted its authors in the *New York Times,* calling its lower number "unjustifiably optimistic" and contending that the competing model severely under-reported instances of the disease. He conceded that his team had "since revised [the projection of 136,000 deaths] only very slightly downward" but expressed confidence that his model would prove to be the more accurate of the two (Blakeslee 2001). In the end, the projection of even the more conservative competitor model proved way too high. An estimated 177 deaths resulted from the mad cow outbreak in 1996, with only a small number of additional fatalities accruing over the next two decades.

Ferguson's poor track record of alarmist predictions was not the only complication facing his COVID-19 projections. Unlike swine flu, bird flu, and mad cow disease, COVID-19 presented a severe and certain public-health crisis in the form of an aggressive and widespread outbreak. The ICL study, however, adapted directly from Ferguson's influenza model of 2006, appears to be ill suited for predicting the disease's responsiveness to NPIs. Specifically, that model purports to map the diffusion of a respiratory virus across the general population by using an agent-based computer simulation of its spread, parameterized to the demographic characteristics of a specified country or region. The adoption of specific and increasingly stringent NPIs, it then assumes, will alter and reduce daily interactions within the given population, thereby lowering the opportunity for infectious spread and ultimately controlling the disease.

Ferguson's model, however, is suited only to predict viral spread within the general population. The study published in 2006 contains an important but little-noticed caveat indicating that "[l]ack of data prevent[s] us from reliably modelling transmission in the important contexts of residential institutions (for example, care homes, prisons) and health care settings" (Ferguson, Cummings, et al. 2006, 451). The general-population emphasis of its prescriptive NPIs offer little in the way of focused protection for such group residential settings—a recognized deficiency in the modeling approach (Pillemer, Subramanian, and Hupert 2020). Yet early experiences with the 2020 pandemic revealed precisely this vulnerability. Long-term care facilities such as nursing homes experienced acute susceptibility to COVID-19, often resulting in severe mortality rates among their residents compared to a milder outbreak in the general population. In several hard-hit European countries and states in the United States, nursing homes alone accounted for between 40 and 70 percent of all COVID-19 fatalities in the spring, despite the fact that the residents of these facilities compose less than one percent of the population (Centers for Medicare and Medicaid Services n.d.). Indeed, a focused protection strategy aimed at isolating vulnerable populations while allowing normal life to resume among lower-risk segments of the general population remains an unexplored alternative as of this writing (Kulldorff, Gupta, and Battacharya 2020).

One unsettling implication of this figure is that the mortality levels projected by the ICL model follow from an entirely different general population-transmission pattern than the pattern of care-facility outbreaks observed in reality. Even where certain ICL forecast scenarios nominally align with observed deaths, the actual transmission mechanisms still differ from those indicated in the model, implying that any nominal match is a matter of coincidence.

The Failure of the ICL Model

Although the ICL released scenarios and associated forecasts only for the United Kingdom and the United States, their adoption by both governments heavily influenced the wider adaptation of its projections and prescriptive NPIs—mainly lockdowns—in other countries. The performance of the ICL model in practice therefore became an empirically testable proposition. By early June 2020, the ICL team already asserted vindication of its approach by publishing a calibration exercise in the influential journal *Nature* that purported to demonstrate the effectiveness of one of its models across eleven European countries, claiming to show the effectiveness of its prescribed NPIs at reducing transmission (Flaxman et al. 2020).

To reach this conclusion, the ICL authors essentially compared the observed infection and mortality patterns of the pandemic under complete lockdown against a "counterfactual" scenario consisting of one of their own model's projections for less-stringent policy responses. Comparing the two, they then put forth the difference as an estimation of the prescribed NPIs' transmission-reduction effects.

Though widely publicized in the press and subsequent epidemiological literature, this specific ICL approach appears to violate basic principles of causal inference. Its modeled counterfactual scenario under a less-stringent policy response has no mechanism for independently testing the accuracy of the same forecasts—only axiomatic acceptance of its own validity as a point of comparison to observed infection and mortality patterns under lockdowns (on this argument, see Magness, Gulker, and Makovi 2020). As a further complication, the ICL's European model fails basic robustness testing when its parameters are applied to data from its U.S. model. By conducting such checks across the two geographies and a third ICL hybrid model, a separate team of researchers from the University of Sydney, Stanford University, and Northwestern University concluded that "one cannot exclude that the attribution of benefit to complete lockdown is a modelling artefact" of the ICL approach (Chin et al. 2020, 9).

Of equal pertinence is a real-time test of the ICL model design in action using a natural experiment. In early April, a team of researchers at Uppsala University adapted the ICL model of March 16 for Sweden in an attempt to project the effects of the model's recommended NPIs across their own population (Gardner et al. 2020). The Uppsala researchers parameterized their study to reflect Sweden's population and demographics as well as the dates that specific policies were implemented, while adapting the basic model and specific NPI scenarios from Ferguson's original study of the United States and United Kingdom. The Uppsala team accordingly presented an "unmitigated" response (also known as the "do nothing" scenario in the ICL paper), then projected the effects of successively stringent NPIs to reflect increasing stages of lockdown.

Although the Uppsala adaptation of the ICL model was intended to influence the adoption of NPIs that paralleled adoption in the rest of Europe and most of the United States by going into full lockdown, the Swedish government ultimately decided against this course of action. Sweden accordingly provides a natural experiment for observing the actual performance of an epidemiological model based on the ICL/Ferguson framework under a severe COVID-19 outbreak.

The Uppsala model calibrated its projections to a starting date of April 10, placing it relatively early in Sweden's COVID-19 outbreak, although later than the outbreak in most other European countries. According to the most severe projection scenario, under the Swedish government's less-stringent nonlockdown response—if permitted to continue after that date—the number of deaths would surpass 40,000 sometime shortly after May 1, 2020, and continue to rise to 96,000 by approximately June.[1] In its most optimistic scenario, the Uppsala model predicted that the lockdown would reduce total deaths from 96,000 to less than 30,000 by the end of June (Gardner et al. 2020).

Although the Swedish government opted against altering its lighter-touch mitigation strategy, actual realized COVID-19 deaths in Sweden fell far short of not only the unmitigated-spread scenario but also the most optimistic scenario for the rapid imposition of a full lockdown by mid-April. As of May 1, Sweden's actual death toll was at 2,954. It increased to 4,666 by the beginning of June and stood at just 5,918 as of October 28.

As this real-time test reveals, the Swedish adaptation of the ICL model greatly exaggerated the overall effectiveness of lockdowns as well as the expected mortality of the virus. The model similarly inflated the assumed risks of the milder course of action adopted by the Swedish government. The overall death toll of the baseline "do nothing" scenario proved to be wildly inaccurate. All said, the Swedish adaptation of the ICL approach paints an underwhelming picture of the model's predictive ability and accuracy.

Some forty-three of fifty states in the United States ultimately opted for lockdown-style responses under the advice of the ICL model in the weeks following the model's release on March 16. State-level reopening varied widely, however, taking place over a roughly three-month period between April and July. This variation allows for another natural-experiment comparison of the modeling approach's accuracy, using a subsequent study in which the ICL team projected the rise in cases following state-level reopenings. A paper published by the ICL team on May 24 attempted to model reopening in five states: New York, Massachusetts, California, Washington, and Florida. In all five cases, the ICL researchers predicted an aggressive rebound of COVID-19 fatalities under even the modest relaxation of lockdown policies that were then in place in all five states (Unwin et al. 2020).

The paper presented three scenarios based on the expected change in human mobility (and thus transmission) in each state after the lifting of lockdown restrictions. The first scenario kept the current level of lockdowns in place, assuming that mobility would remain constant at its severely reduced postlockdown rate. Under the other two scenarios, the ICL team assumed a 20 percent and 40 percent increase of mobility corresponding with the reopening process. In both of these reopening scenarios, the ICL model depicted a catastrophic rebound of COVID-19 fatalities over the summer months. As the ICL team claimed at the time, its model "illustrate[s] the potential

1. These figures roughly correspond to the projections of the ICL model of March 16 for the United States and the United Kingdom when adjusted to a country of Sweden's population size, strongly suggesting that the Uppsala team accurately parameterized their iteration of the ICL model.

consequences of increasing mobility across the general population: in almost all cases, after 8 weeks, a 40% return to baseline [mobility] leads to an epidemic larger than the current wave" (Unwin et al. 2020, 15).

Under the "constant mobility" scenario of remaining under lockdown, their model predicted an increase in COVID deaths for every state except New York, which had already peaked in mid-April. Under the reopening scenarios where mobility increased 20 percent and 40 percent, respectively, from the lockdown state, all five states were predicted to surge into severe second outbreaks by the middle of July. Under the 40 percent scenario, this surge entailed upper boundaries of more than 3,000 deaths per day in New York, Florida, and California.[2]

As of July 20, roughly the projected second outbreak date, actual daily death totals for all five states stood well below the ICL model's predictions in every scenario. Florida and California, both of which underwent summer case spikes, showed roughly one-tenth of deaths projected by the ICL modelers. In New York, Washington, and Massachusetts, daily death counts even dropped below the lower confidence-interval band of the ICL projections under its reopening scenarios—even as all five modeled states had reopened to varying degrees. In short, the ICL's model of reopening severely overstated the projected mortality associated with the relaxation of lockdowns in all five states. Actual data do not accurately map onto any of the ICL's scenarios, including the broadest of the three predictions for reopening.

In addition to the robustness problems with the ICL modeling approach, these two natural experiments cast substantial doubt upon the model's performance as a predictive tool for the course of the COVID-19 pandemic. In each case, the ICL team appears to severely overstate the effectiveness of its prescribed NPIs, in particular lockdowns, at reducing viral spread and associated mortality as well as the risks associated with their removal. These findings directly call the underlying assumptions of the global policy response to the COVID-19 pandemic into doubt and raise further questions about the overall effectiveness of the lockdown strategy.

Assessing the Performance of Lockdowns

As discussed in the previous section, the ICL model-driven response to the COVID-19 outbreak has performed poorly under subsequent scrutiny, including an assessment of its projections of the course of the pandemic in the months after the initial outbreak. As a further complication, the associated epidemiological literature on NPIs continues to lack clear evidence of their effectiveness as might otherwise be ascertained from randomized controlled trials or natural experiments (Cristea, Naudet, and Ioannidis 2020). The NPI approach, in particular the stringent lockdowns that gained favor in the

2. Each of these state-level daily death projections individually exceeded the maximum daily death total for the entire United States in mid-April, the peak mortality period in the course of the pandemic as of October 28, 2020.

wake of the ICL recommendations, comes with several unambiguous costs, including widespread social and economic devastation, long-term public-health detriments due to deferred non-COVID medical treatments, increased suicide and substance-abuse rates, a dramatic increase in poverty and food-insecurity rates, and a soaring national debt.

Yet lockdowns, despite their clear socioeconomic harms and ambiguous or even dubious disease-mitigation benefits, remain a favored policy response to the ongoing pandemic. Beginning in October 2020, several European countries reentered full-scale lockdowns in response to rising case numbers, and similar proposals remain on the table in the United States. Epidemiological modelers, including the ICL's Neil Ferguson, resumed their role as outspoken advocates of reinstating lockdowns during the autumn second wave, and in many locales public opinion seems to be in favor of harsh disease-mediation policies.

How then do we explain the mismatch between persistent policy-maker preferences for lockdowns and the sparse evidence for their effectiveness? The theory behind lockdowns is somewhat difficult to discern because it shifted during the early period of the pandemic. The principle originally at work was to "flatten the curve": by temporarily ordering individuals to stay at home, governments would dampen an otherwise skyrocketing rate of infection. As a consequence, the consumption of medical resources would proceed slowly, and medical facilities and personnel would not be overwhelmed.[3] As lockdowns were extended beyond the two-week curve-flattening period, rates of infections and deaths became the primary focus, but with no clear threshold at which business and social life could resume. At this point, public-health officials not only began responding to the COVID-19 case and death counts in their state but also seemed to attempt to compete with one another regarding the comparative severity of their disease-mitigation measures.

To better understand these patterns, we investigated the relationship between public-approval ratings, health outcomes, and lockdown stringency measures under the lockdown approach. Survey data permit the analysis of these variables on the international level for twenty-six nations (twelve in Europe, eleven in the Asia-Pacific, and three in North America), and for all fifty states of the United States. In both cases, as shown in table 1, we find little evidence of a discernible relationship between lockdown stringency and mortality levels through the end of August 2020. In both cases, numerous examples exist of countries or states that enacted heavy-handed lockdowns yet incurred atypically high per capita mortality rates—a finding that suggests the lockdowns are merely reactive measures to already-spiking mortality. At the same time, numerous countries and states with low lockdown-stringency scores incurred below-average mortality levels. In neither case, however, does lockdown stringency appear to be a reliable predictor of mortality.

Public-opinion data similarly show at most very weak relationships with mortality rates. Internationally, the only observed nontrivial relationship is a modest association

3. "Beds" became a key quantitative metric during this period.

Table 1
Regression Results

		Regressions	
Dependent Variable	**Independent Variable**	**Coefficient**	**Adj R-squared**
	International		
Deaths per 100,000	Mean stringency	0.52	0.02
Approval ratings	Deaths per 100,000	−0.42	0.32
	United States		
Deaths per 100,000	Mean stringency	0.89	0.03
Approval ratings	Deaths per 100,000	0.08	0.06

Source: Deaths per 100,000 are from The Covid Tracking Project at *The Alantic*. Approval ratings measure whether respondents approve or disapprove of public officials' handling of the pandemic (see Lazer et al. 2020 for U.S. data and YouGov for international data). Stringency measures are from the University of Oxford Blavatnik School of Government (see Hale et al. 2000).

between high approval ratings and low COVID-19 mortality rate. In state-level data, the association between public approval and mortality actually runs in a counterintuitive direction, with relatively high public-approval ratings corresponding to high per capita death rates. In both cases, the observed relationships are weak, limiting their predictive value.

These findings strongly suggest that other factors aside from popularity or public-health outcomes must be considered when explaining the persistence of lockdown measures.

Why the Lockdowns Persist

In light of both the lack of clear evidence that lockdowns prevent both case and fatality rates of COVID-19 and the at least comparative, if not better, performance in states and nations adopting less-stringent NPIs, the obvious question is: Why do these policies continue? In most cases, the retraction of lockdowns and other such measures would be as simple as a gubernatorial order or statement, yet, if anything, the tendency since the onset of the pandemic has been to redouble the disease-suppression efforts and to extend their length well beyond the initial emergency period in the spring (although there have been a handful of exceptions, with seven out of fifty states declining to go into lockdown). Although there are idiosyncratic reasons for taking stringent measures among the various states, potential explanations include political actors' susceptibility to the sunk-cost fallacy, incentives informed by action biases, and the policy constriction engendered by Tullockian transitional gains traps.

Path Dependency and Sunk Costs

Path dependence describes a phenomenon whereby choices or outcomes are over time increasingly predicated upon past events or decisions: history matters (see David 1994). Although the term has been applied to occurrences in the physical sciences, in the social sciences it refers to a state of affairs in which decisions over time or successive increments constrain subsequent choices. In economics specifically, path dependence is frequently cited as a factor in the attainment of equilibrium.

Future costs and benefits weigh heavily on present decisions. Sunk costs—incurred, unreclaimable costs associated with past decisions—tend to play a decisive role in selecting present options and often foster path-dependent outcomes. When costs associated with changing a course of action are deemed higher than the benefit of changing to another course (switching costs), individuals often respond inertially. Sunk costs may objectively influence path dependence by affecting budget constraints that alter the set of options available, but they may derive from subjective judgments as well. The sunk-cost fallacy describes the irrational allocation of resources (effort, time, finances) toward an undertaking that is demonstrably wasteful.

Within the context of policy, the interaction of sunk costs and path dependence may take the form of staying the course on demonstrably ineffectual or even counterproductive measures. Conceding error poses a reputational risk, which puts approval ratings, reelection chances, and other aspects of political careers at risk. As the political science professors Lior Sheffer and Peter John Lowen point out, politicians "make choices within political institutions which . . . incentivize specific preferences and behaviors" (2019, 32). Because competence is seen as a core attribute of political leadership, public officials are reticent to reverse the direction of previous policy choices.

In the case of the pandemic of the novel coronavirus (SARS-CoV-2) in 2020, we have seen the invoking of expert opinion—in epidemiology mostly—by politicians in support of the initiation and then continuation of public-health measures known as nonpharmaceutical interventions. Mandates including lockdowns, social distancing, school closures, and mandatory masking have been imposed, citing the predictions of simulations run by medical and scientific elites. Yet where dire predictions have not panned out (which has been the case almost uniformly), the political response has generally been not to dial back, so to speak, but either to continue or to "double down" on said measures. The political instinct to "save face" even as costs escalate is all the more facile while leaning on the prognostication of experts, and the sunk-cost fallacy figures prominently into officials and bureaucrats' hidebound response.

Action Biases

Action biases manifest when incentives associated with acting overpower those favoring restraint. Anthony Patt and Richard Zeckhauser (2000) formulated the concept in the course of their research on policy makers and the crafting of environmental policy, wherein they discovered a high degree of inclination to create action-oriented, reactive policy measures as opposed to preventative, anticipatory policies (in the context of preventing environmental damage). Political figures aim to appear effective and action oriented to justify their governance mandate, and the American polity overwhelmingly views action as preferential to inaction. Not only does this action bias fuel a propensity to act, but it also encourages policy crafting and implementation even before the full scope of a crisis or challenge has materialized. Even at this early stage of retrospection, the COVID-19 lockdowns provide ample evidence of such an action bias playing out in practice (Brennan, Surprenant, and Winsberg 2020).

Although Patt and Zeckhauser (2000) explain that action biases are a result of nonrational behavior, they provide three rational reasons for the bias, in particular among citizens, toward government action over inaction. They suggest that (1) people believe that creating value in their lives necessarily requires action, (2) agents who act on behalf of others seek to show their action and be rewarded, and (3) a large percentage of learning takes place through active engagement. There also exists a causal argument for action bias as individuals frequently assign or associate purposeful actions with outcomes. People tend to take responsibility for positive outcomes and take action so as to control the outcome.

Confidence fosters an inclination to act: when individuals assess the state of their knowledge as sufficient to predict outcomes, they tend to be more prepared to act in anticipation of them. This, of course, does not evince the soundness or scientific basis behind an action. Since the COVID-19 pandemic began, although many of the NPIs were initiated owing to certain epidemiological precedents, others were clearly political Kabuki theater. The imposition of curfews, for example, is a particularly glaring example of action bias: unlike episodes featuring escalating crime, civil unrest, or other settings where such orders are typically put into effect, viral infections are wholly independent of time of day.

In light of the negligible susceptibility of children to death from COVID-19, widespread school closures are similarly insensate. If shutting down schools serves any purpose, it is to assuage the concerns of parents and to foster the appearance of vigilance on the part of town and county departments of education and school boards.

Transitional Gains Traps

Gordon Tullock (1975) introduced the term *transitional gains trap* with the purpose of explaining the long-term stability of certain ineffective government programs. Transitional gains traps occur, for example, when a government initiative is introduced to support a specific group by erecting barriers to entry (of new members) within the group's industry (protectionism). Those barriers tend to limit supply, thus raising prices and subsequently boosting the income of the protected group's members. Once barriers are in place, however, new members must devote significant time and resources to surmount the barriers to entry into the protected group and thus do not reap the same benefits as the original members. Moreover, removing the program altogether would disadvantage the group because it would generate immense losses for those who have already invested heavily with the expectation of enjoying artificially high incomes.

As an example, Tullock cites the institution of the New York City taxi medallion system in 1937. In response to public concern, the government restricted the supply of taxis in the city, thus raising the price of fares for consumers. All existing taxis were grandfathered in (automatically granted medallions), but new market entrants were required to purchase a medallion to legally conduct business in the city's cab market. The increased cost of driving a taxi reduced the equilibrium supply of taxi services, thus raising wages and benefiting market incumbents. Yet new entrants did not enjoy these supernormal wages because participating in the marketplace required their purchase of a medallion at substantial cost.

Further complicating the matter, removing the medallion scheme would create massive transaction costs in terms of approval and implementation as well as losses for those drivers who had already purchased medallions. Thus, removing the taxi medallion program would create appreciable losses for existing taxi drivers, while maintaining it would raise costs for consumers.

There are social costs as well: owing to the rationing effect of taxi medallions on supply, less taxis are available, leading to increased wait times and higher prices. Social costs crop up among the special-interest group as well because individuals become overqualified for the positions they hold and have expended resources and time to overcome market barriers.

The unprecedented political response to the outbreak and spread of the novel coronavirus has led to the expansion of the public-health establishment. From the municipal and county levels up the federal level, a windfall of new resources has been directed toward funding increases in staffing; public-outreach programs; expanded testing, tracking, and data-gathering capabilities; enforcement measures; and a wide variety of other new outlays. In most cases, the broadened capabilities were lobbied for by the existing, pre-pandemic departments; entrenchment will likely follow. Once inflated, budgets rarely retrace the path of their expansion. The perennial nature of viral epidemics virtually ensures that when COVID-19 is a distant memory, subsequent outbreaks will be cited as a need for continued (if not further expanded) public funding of the health bureaucracy.

Transitional gains traps, Tullock warns, are difficult to extricate from once they are established, so the best option may be to "try to avoid getting into th[em] in the future. Our predecessors have made bad mistakes and we are stuck with them, but we can at least make efforts to prevent our descendants from having even more such dead-weight losses inflicted upon them" (1975, 678). Disasters frequently permit a form of controlled experiment with respect to gauging the effectiveness of centrally planned (government) versus market-based (private) responses.

Rarely has this been better demonstrated, at least recently, than in the responses of a number of large, "big box" retailing firms (Walmart, Home Depot, and others) compared with that of the Federal Emergency Management Agency (FEMA) after the historic landfall of Hurricane Katrina in August 2005. Where private entities not only demonstrated the flexibility to quickly respond to rapidly changing circumstances by sourcing local information and leveraging forward-deployed personnel (employees and contractors) and resources, the federal government's response was not only slow but muddled. Another particularly fascinating example of private, bottom-up use of information involves the Waffle House franchise. In its assessment of likely storm paths for planning disaster prepositioning, FEMA has taken to tracking the preparations made by and closures of specific Waffle House locations clustered in the southern and midwestern United States along numerous hurricane and tornado tracks.

Where government lockdowns have been imposed—resulting in sudden, entirely unanticipated unemployment for tens of millions—the actions of private firms have served to either mitigate or partially offset some of those effects. Many small businesses chose not to undertake layoffs despite plummeting revenue. Larger firms, of lenders in particular, offered abatements or moratoria to installment payments to assist customers facing reduced incomes. Retailers and grocery stores launched or expanded the operating hours of delivery services.

Behavioral Symmetry

Although often viewed and represented in noble, unimpeachable terms, science is a fundamentally social activity, and scientists are subject to the same failings as other individuals (Thomas and Thomas 2020). Self-interest, ambition, expectations, and biases of the scientific community as well as institutional requirements may foster the assumption of positions less in a spirit of pursuing truth or generating experimental evidence than of following political or philosophical considerations. Scientists, like public officials, are guided by incentives and by the unique strictures that rise from their professional activities. Not only are politicians "no different than the rest of us," but scientists are as well (Brennan and Lomasky 1993). The degree to which previously mundane and fundamental medical approaches to disease mitigation (e.g., sheltering the elderly and the vulnerable while permitting the young and healthy to go about their lives) have become politically factionalized, with the resignations of dissenters being called for and professional standings being called into question, demonstrates this clearly.[4] The scientific task of interrogating reality has become secondary to the rigid orthodoxies associated with specific political alignments. Behavioral symmetry in this context is made all the more pernicious when, as in the case of the COVID-19 pandemic, one political-scientific bloc takes ownership of the mantle of "real science," suggesting that its ideological opponents are either uninformed or acting with intentional malice.

4. For an example of an ongoing attempt to regulate scientific dissent during the COVID-19 pandemic, see Bartlett 2020.

Conclusion

The heavy (and arguably singular) reliance upon epidemiological simulations to guide NPI policies in the early portion of the COVID-19 outbreak came despite the simulations' poor performances and unproven track records in previous public-health crises involving pandemic spread. Model-driven projections of disease outbreaks—including Neil Ferguson's attempts to forecast mad cow, mad sheep, and several influenza outbreaks—predicted rates of infection and death orders of magnitude greater than actually occurred in their original deployment. Yet during the COVID-19 pandemic, these same models continue to exert a disproportionate influence on government disease-mitigation policies. The Imperial College London model represents an abdication of basic causal inference in that it compares infection and mortality rates under a full lockdown scenario with rates of internally generated counterfactuals, thus requiring apodictic acceptance of the ICL team's specific parameters.

Our basic empirical analysis finds no readily discernible relationship between lockdowns and deaths due to COVID-19 in the United States or in nations around the world. Nor do we find any clear relationships between COVID-19 death rates and political-approval ratings, suggesting an element of randomness between the public perception of political measures to ameliorate the pandemic and realized NPI outcomes.

Given the lack of evidence for their effectiveness, why do lockdowns persist? There are several potential explanations. The unwillingness among public officials to concede error and the requirement to appear decisive and proactive in the face of uncertainty[5] introduce the sunk-cost fallacy and action-bias tendencies. Among politicians, "goal posts" and narratives are shifted more easily than fault is admitted. The dependence on epidemiological officials at high levels of government as opposed to on medical and health professionals has led and will likely continue to lead to transitional gains traps. And the same factors that in other disasters have led to more efficacious responses by private actors than by public bureaucracies—information sourcing on a local, "bottom-up" basis; high degrees of flexibility; and efficient marshalling of resources—have been decisive toward reducing infection rates and permitting a semblance of social and economic life to continue in spite of disastrous, demonstrably ineffective NPIs.

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5. And, it bears mentioning, in the midst of a contentious election season.

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