

Spring 4-17-2021

## Pandemic Emotions: The Good, The Bad, and The Unconscious —Implications for Public Health, Financial Economics, Law, and Leadership

Peter H. Huang  
*University of Colorado at Boulder*, [peter.huang@colorado.edu](mailto:peter.huang@colorado.edu)

Follow this and additional works at: <https://scholarlycommons.law.northwestern.edu/njlsp>



Part of the [Civil Rights and Discrimination Commons](#), [Constitutional Law Commons](#), [Health Economics Commons](#), [Health Law and Policy Commons](#), [Law and Economics Commons](#), [Law and Politics Commons](#), [Law and Race Commons](#), [Law and Society Commons](#), [Other Medicine and Health Sciences Commons](#), and the [Other Public Health Commons](#)

---

### Recommended Citation

Peter H. Huang, *Pandemic Emotions: The Good, The Bad, and The Unconscious —Implications for Public Health, Financial Economics, Law, and Leadership*, 16 *Nw. J. L. & Soc. POLY.* 81 (2021).  
<https://scholarlycommons.law.northwestern.edu/njlsp/vol16/iss2/3>

This Article is brought to you for free and open access by Northwestern Pritzker School of Law Scholarly Commons. It has been accepted for inclusion in Northwestern Journal of Law & Social Policy by an authorized editor of Northwestern Pritzker School of Law Scholarly Commons.

# Pandemic Emotions: The Good, The Bad, and The Unconscious —Implications for Public Health, Financial Economics, Law, and Leadership

Peter H. Huang\*

## ABSTRACT

*Pandemics lead to emotions that can be good, bad, and unconscious. This Article offers an interdisciplinary analysis of how emotions during pandemics affect people's responses to pandemics, public health, financial economics, law, and leadership. Pandemics are heart-breaking health crises. Crises produce emotions that impact decision-making. This Article analyzes how fear and anger over COVID-19 fueled anti-Asian and anti-Asian American hatred and racism. COVID-19 caused massive tragic economic, emotional, mental, physical, and psychological suffering. These difficulties are interconnected and lead to vicious cycles. Fear distorts people's decision readiness, deliberation, information acquisition, risk perception, and thinking. Distortions affect people's financial, health, and political decisions, causing additional fears. Emotions have direct health impacts and indirect behavioral impacts, which in turn have their own health impacts. People differ vastly in whether, how much, and when they experience anxiety, complacency, and panic during pandemics. A common path is to feel some anxiety initially, then panic, and finally become complacent. This Article advocates these responses to pandemics:*

- (1) paying people directly monthly pandemic financial assistance,*
- (2) encouraging people to practice mindfulness,*
- (3) gently enforcing Non-Pharmaceutical Interventions,*
- (4) fostering accurate information acquisition about pandemics, and*
- (5) applying psychological game theory to better understand emotions that depend on beliefs about leadership.*

**Keywords:** Pandemic emotions, racism, cognitive economics, information avoidance, monthly pandemic financial assistance, gentle enforcement, mindfulness, information acquisition, psychological games of leadership

---

\* Professor and Laurence W. DeMuth Chair of Business Law, University of Colorado Law School; J.D., Stanford Law School; Ph.D., Harvard University; A.B., Princeton University. Thanks to the University of Colorado Office of the Chancellor and Center for Leadership for a leadership research seed grant. Thanks to the University of Colorado Law School for summer research support. Thanks to Ido Erev for helpful discussions. Thanks to Samuel I. Becher, Emily Gleichert, Paul L. Huang, Alana Paris, and Karl Schellscheidt for helpful suggestions.

**Table of Contents**

<b>I.</b>	<b>INTRODUCTION.....</b>	<b>82</b>
<b>II.</b>	<b>PANDEMIC EMOTIONS.....</b>	<b>86</b>
<b>A.</b>	<i>Positive Emotions and Negative Emotions .....</i>	<b>88</b>
<b>B.</b>	<i>Anger and Health Anxieties .....</i>	<b>89</b>
<b>C.</b>	<i>Seeking Expert Opinions .....</i>	<b>92</b>
<b>D.</b>	<i>Economic and Financial Anxieties .....</i>	<b>94</b>
<b>E.</b>	<i>Irrational Anxieties .....</i>	<b>94</b>
<b>F.</b>	<i>From Anxiety to Panic to Complacency.....</i>	<b>95</b>
<b>G.</b>	<i>Description-Experience Gap.....</i>	<b>96</b>
<b>H.</b>	<i>Fear, Anger, Hate, and Anti-Asian (American) Racism .....</i>	<b>99</b>
<b>III.</b>	<b>ECONOMIC SHOCKS .....</b>	<b>103</b>
<b>A.</b>	<i>Unemployment .....</i>	<b>103</b>
<b>B.</b>	<i>A False Trade-off.....</i>	<b>105</b>
<b>IV.</b>	<b>COVID-19 INFORMATION ACQUISITION OR AVOIDANCE.....</b>	<b>109</b>
<b>V.</b>	<b>POLICY RESPONSES TO PANDEMIC HARMS.....</b>	<b>111</b>
<b>A.</b>	<i>Monthly Pandemic Financial Assistance.....</i>	<b>111</b>
<b>B.</b>	<i>Practicing Mindfulness .....</i>	<b>117</b>
<b>C.</b>	<i>Gentle Enforcement .....</i>	<b>120</b>
<b>D.</b>	<i>Accurate Pandemic Information Acquisition .....</i>	<b>121</b>
	<b>CONCLUSION .....</b>	<b>123</b>
	<b>APPENDIX: PSYCHOLOGICAL GAME MODELS OF LEADERSHIP .....</b>	<b>127</b>

**I. INTRODUCTION**

Pandemics are heart-breaking global biopsychosocial health crises. COVID-19 has caused and continues to cause massive tragic economic, emotional, mental, physical, and psychological suffering. The central theme of this Article is that pandemics such as COVID-19 can lead to emotions that can be good, bad, and unconscious. This Article analyzes how fear and anger over COVID-19 has fueled anti-Asian racism. Emotions or the lack thereof during pandemics, and societal responses to pandemics, have implications

for public health, financial economics, and law. This Article introduces an interdisciplinary analysis of these implications and ultimately advocates addressing COVID-19 and any future pandemics by:

- (1) directly paying people monthly pandemic financial assistance,
- (2) encouraging people to practice mindfulness,
- (3) gently enforcing Non-Pharmaceutical Interventions (NPIs),
- (4) fostering accurate information acquisition about COVID-19, and
- (5) applying psychological game theory to better understand emotions that depend on beliefs about leadership.<sup>1</sup>

On January 30, 2020, the World Health Organization (WHO) declared the novel coronavirus infectious disease (COVID-19) caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) a Public Health Emergency of International Concern (PHEIC).<sup>2</sup> International Health Regulations<sup>3</sup> define a PHEIC to be “an extraordinary event which is determined . . . to constitute a public health risk to other States through the international spread of disease; and to potentially require a coordinated international response.”<sup>4</sup> On March 11, 2020, the WHO declared COVID-19 a pandemic,<sup>5</sup> meaning “the worldwide spread of a new disease.”<sup>6</sup> COVID-19 is the first pandemic the WHO declared since the H1N1 “swine flu” in 2009 and the first pandemic due to a coronavirus.<sup>7</sup>

The American death toll from COVID-19 is and may always be unclear because of the politicization of death statistics.<sup>8</sup> Robert Anderson, chief of the mortality statistics branch of the National Center for Health Statistics Centers for Disease Control and Prevention (CDC), cautioned that “[u]p to 1 in 3 death certificates nationwide were wrong before COVID-19.”<sup>9</sup> Dr. Maria Danilychev, a San Diego physician,<sup>10</sup> utilized

---

<sup>1</sup> See also Peter H. Huang, *Put More Women in Charge and Other Leadership Lessons from COVID-19*, 15 FIU L. REV. (forthcoming) (providing a related companion article focusing on lessons about leadership from COVID-19); Peter H. Huang, *Put Even More Women and Minorities in Charge*, Univ. Colorado Law Legal Studies Research Paper No. 21-6, Feb. 2021, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3778030](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3778030).

<sup>2</sup> WORLD HEALTH ORG., *Rolling Updates on Coronavirus Disease (COVID-19)*, <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen> (last visited Nov. 19, 2020).

<sup>3</sup> WORLD HEALTH ORG., *About IHR*, <https://www.who.int/ihr/about/en/> (last visited Nov. 19, 2020).

<sup>4</sup> WORLD HEALTH ORG., *IHR Procedures Concerning Public Health Emergencies of International Concern (PHEIC)*, <https://www.who.int/ihr/procedures/pheic/en/> (last visited Nov. 19, 2020).

<sup>5</sup> Bill Chappell, *Coronavirus: COVID-19 Is Now Officially a Pandemic, WHO Says*, NPR (Mar. 11, 2020, 12:30 PM ET), <https://www.npr.org/sections/goatsandsoda/2020/03/11/814474930/coronavirus-covid-19-is-now-officially-a-pandemic-who-says>.

<sup>6</sup> WORLD HEALTH ORG., *What is a Pandemic? Emergencies Preparedness, Response* (Feb. 24, 2010), [https://www.who.int/csr/disease/swineflu/frequently\\_asked\\_questions/pandemic/en/](https://www.who.int/csr/disease/swineflu/frequently_asked_questions/pandemic/en/).

<sup>7</sup> Chappell, *supra* note 5.

<sup>8</sup> Matthew Rosenberg & Jim Rutenberg, *Fight Over Virus's Death Toll Opens Grim New Front in Election Battle*, N.Y. TIMES (May 9, 2020), <https://www.nytimes.com/2020/05/09/us/politics/coronavirus-death-toll-presidential-campaign.html>.

<sup>9</sup> Jessica Priest, *One in 3 Death Certificates Were Wrong Before Coronavirus. It's About to Get Even Worse*, USA TODAY (Apr. 25, 2020), <https://www.usatoday.com/story/news/investigations/2020/04/25/coronavirus-death-toll-hard-track-1-3-death-certificates-wrong/3020778001/>.

<sup>10</sup> SCRIPPS, *Physicians*, <https://www.scripps.org/physicians/7542-maria-danilychev?tab=overview> (last visited Nov. 19, 2020).

Worldometer<sup>11</sup> COVID-19 data<sup>12</sup> and extrapolations from the latest CDC data to create a moving bar graph showing how quickly COVID-19 became the leading cause of United States deaths per day.<sup>13</sup> Danilychev also created an infographic showing daily changes in total COVID-19 cases across ten countries visualizing how rapidly and by how much COVID-19 cases in the United States overtook cases in other countries.<sup>14</sup> These numbers are staggering. Because people are unable to process this vast amount of sorrow,<sup>15</sup> seeing such figures daily produced mass compassion fatigue,<sup>16</sup> psychological or psychic numbing,<sup>17</sup> psychophysical numbing,<sup>18</sup> and pseudoinefficacy.<sup>19</sup>

Danilychev's statistics reflect an initial period of substantial compliance with NPIs, such as physical distancing, self-quarantining, and wearing face masks, to flatten the curve of infection and not overwhelm health care system capacity. Differences in compliance rates with NPIs may be related to variations in cultural variations in our fifty United States.<sup>20</sup> The first major study utilizing data from two other coronaviruses, OC43 and HKU1, which cause most cases of the common cold, suggests some form of physical distancing might be necessary until 2022, not factoring vaccines into account.<sup>21</sup> Evolutionary game-theoretic models help explain how NPI compliance norms change over time.<sup>22</sup>

COVID-19 can have unexpected impacts on different cultures based on social norms and traditional behaviors. For example, COVID-19 may spread less in China where people utilize chopsticks and do not share food, whereas Americans use spoons and forks and

<sup>11</sup> WORLDOMETER, *About*, <https://www.worldometers.info/about/> (last visited Nov. 19, 2020).

<sup>12</sup> WORLDOMETER, *Coronavirus*, <https://www.worldometers.info/coronavirus/country/us/> (last visited Nov. 19, 2020).

<sup>13</sup> Pat Cortland, *Daily COVID-19 Deaths in the U.S. vs. Other Leading Causes of Death*, CONSIDERABLE (Apr. 2, 2020), <https://www.considerable.com/health/coronavirus/coronavirus-deaths-vs-leading-causes-death-chart/>; Maria Danilychev, *USA: COVID-19 Daily Deaths vs. Top 15 Causes of Death*, FLOURISH (Apr. 10, 2020), <https://public.flourish.studio/visualisation/1727839/>.

<sup>14</sup> Maria Danilychev, *COVID-19 Total Cases Since March 15, 2020*, FLOURISH, <https://app.flourish.studio/visualisation/1755078/> (last visited Nov. 19, 2020).

<sup>15</sup> Teju Cole, *We Can't Comprehend This Much Sorrow*, N.Y. TIMES (May 22, 2020), <https://www.nytimes.com/interactive/2020/05/18/magazine/covid-quarantine-sorrow.html>.

<sup>16</sup> Jeva Lange, *Compassion Fatigue is About to Set in. Don't Succumb*, WEEK (Apr. 2, 2020), <https://theweek.com/articles/906134/compassion-fatigue-about-set-dont-succumb>.

<sup>17</sup> Paul Slovic, *"If I Look at the Mass I Will Never Act": Psychic Numbing and Genocide*, 2 JUDGMENT & DECISION MAKING 79 (2007).

<sup>18</sup> David Fetherstonhaugh et al., *Insensitivity to the Value of Human Life: A Study of Psychophysical Numbing*, 4 J. RISK & UNCERTAINTY 283 (1997); Paul Slovic, *When (In)Action Speaks Louder Than Words: Confronting the Collapse of Humanitarian Values in Foreign Policy Decisions*, 2015 ILL. L. REV. SLIP OPINIONS 24 (2015), <https://illinoislawreview.org/wp-content/uploads/2015/04/Slovic.pdf>; Deborah Small et al., *Sympathy and Callousness: The Impact of Deliberative Thought on Donations to Identifiable and Statistical Victims*, 102 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 143 (2007).

<sup>19</sup> Daniel Vastfjall et al., *Pseudoinefficacy: Negative Feelings From Children Who Cannot Be Helped Reduce Warm Glow for Children Who Can Be Helped*, 6 FRONTIERS PSYCHOL. 616 (2015).

<sup>20</sup> MICHELE J. GELFAND, RULE MAKERS, RULE BREAKERS: HOW TIGHT AND LOOSE CULTURES WIRE OUR WORLD 79-111 (2018); Jesse R. Harrington & Michele J. Gelfand, *Tightness-Looseness Across the 50 United States*, 111 PROC. NAT'L ACAD. SCI. 7990 (2014).

<sup>21</sup> Stephen M. Kissler et al., *Projecting the Transmission Dynamics of SARS-CoV-2 Through the Postpandemic Period*, 368 SCI. 860 (2020).

<sup>22</sup> Soham De et al., *Understanding Norm Change: An Evolutionary Game-Theoretic Approach*, 1 PROC. OF THE INT'L CONF. ON AUTONOMOUS AGENTS & MULTIAGENT SYS. 1433 (2017).

share food as part of a gesture of affection, love, respect, or magnanimity at family-style meals.<sup>23</sup> COVID-19 also impacts people differently based on gendered parenting roles.<sup>24</sup> For example, more mothers hold themselves, and are held by society, to higher standards than men in the division of parental responsibilities.<sup>25</sup>

Furthermore, many groups are experiencing communication fatigue based on societal changes adapted during COVID-19.<sup>26</sup> COVID-19 impacts the deaf, Deaf (the capital “D” refers to those individuals who are members of the deaf community and active participants in deaf culture),<sup>27</sup> and hard-of-hearing who rely on lip reading or facial expressions in American Sign Language (ASL) because opaque face masks frustrate communication by lip reading.<sup>28</sup> One study<sup>29</sup> found that “interpreters at the United Nations and at European Union institutions [] reported similar feelings of burnout, fogginess and alienation when translating proceedings via video feed.”<sup>30</sup> People teleworking may experience videotelephony fatigue from engaging in unconscious facial mimicry,<sup>31</sup> which is critical to empathy,<sup>32</sup> having to “process non-verbal cues like facial expressions, tone, pitch, and body language,”<sup>33</sup> feeling discomfort over silences,<sup>34</sup> and knowing they are being watched as if they are performing “on stage.”<sup>35</sup> Performance anxiety can also be “nerve-racking and more stressful”<sup>36</sup> over video. Video psychotherapy studies<sup>37</sup> found patients and therapists “also often feel fatigued, disaffected and uncomfortable.”<sup>38</sup> Video chatting is also not

<sup>23</sup> Amy Qin, *Coronavirus Threatens China’s Devotion to Chopsticks and Sharing Food*, N.Y. TIMES (May 25, 2020), <https://www.nytimes.com/2020/05/25/world/asia/china-coronavirus-chopsticks.html>.

<sup>24</sup> RHONA MAHONY, *KIDDING OURSELVES: BREADWINNING, BABIES AND BARGAINING POWER* (1996).

<sup>25</sup> Jennifer Senior, *Camp Is Canceled. Three More Months of Family Time. Help.*, N.Y. TIMES (May 24, 2020), <https://www.nytimes.com/2020/05/24/opinion/coronavirus-parents-work-from-home.html>.

<sup>26</sup> See Kate Murphy, *Why Zoom is Terrible*, N.Y. TIMES (Apr. 29, 2020), <https://www.nytimes.com/2020/04/29/sunday-review/zoom-video-conference.html>.

<sup>27</sup> Peter H. Huang & Kelly J. Poore, *Can You Hear Me Later and Believe Me Now? Behavioral Law and Economics of Chronic Repeated Ambient Acoustic Pollution Causing Noise-Induced (Hidden) Hearing Loss*, 29 S. CA. REV. L. & SOC. JUST. 193, 200 n.29 (2020).

<sup>28</sup> Jessica Flores, *‘I Cannot Read Their Lips’: The Deaf Community Faces Another Communication Hurdle as Face Masks Become the New Normal*, USA TODAY (Apr. 28, 2020), <https://www.usatoday.com/story/news/nation/2020/04/27/coronavirus-face-masks-deaf-communication/3037302001/>.

<sup>29</sup> Panayotis Mouzourakis, *Remote Interpreting: A Technical Perspective on Recent Experiments*, 8 INTERPRETING 45 (2006).

<sup>30</sup> Murphy, *supra* note 26.

<sup>31</sup> Ulf Dimberg et al, *Unconscious Facial Reactions to Emotional Facial Expressions*, 11 PSYCHOL. SCI. 86 (2000).

<sup>32</sup> Marianne Sonnby-Borgstrom et al., *Emotional Empathy as Related to Mimicry Reactions at Different Levels of Information Processing*, 27 J. NONVERBAL BEHAV. 3 (2003).

<sup>33</sup> Manyu Jiang, *The Reason Zoom Calls Drain Your Energy*, BBC (Apr. 22, 2020), <https://www.bbc.com/worklife/article/20200421-why-zoom-video-chats-are-so-exhausting>.

<sup>34</sup> *Id.*; Katrin Schoenenberg et al., *Why Are You So Slow?—Misattribution of Transmission Delay to Attributes of the Conversation Partner at the Far-End*, 72 INT’L J. HUM.-COMPUTER STUD. 477 (2014).

<sup>35</sup> Jiang, *supra* note 33 (quoting Marissa Shuffler, a Clemson University industrial-organizational Psychology associate professor, who conducts research about workplace well-being and teamwork effectiveness).

<sup>36</sup> *Id.*

<sup>37</sup> Sheryl Brahnham, *Comparison of In-Person and Screen-Based Analysis Using Communication Models: A First Step Toward the Psychoanalysis of Telecommunications and Its Noise*, 14 PSYCHOANALYTIC PERSP. 138 (2017).

<sup>38</sup> Murphy, *supra* note 26.

conducive to trust formation.<sup>39</sup> These different impacts demonstrate how the burdens of NPI compliance can be non-obvious and unevenly distributed across populations.

The rest of this Article is organized as follows. Part II analyzes how pandemics cause individuals to feel positive valenced emotions, such as hope; negative valenced emotions, such as anger, health anxieties, economic/financial anxieties, fear, hate, panic; and complacency. Part II explains how pandemic emotions can lead some individuals to seek expert opinions and the corresponding need for experts to portray the scientific and numerical risks of COVID-19 in an accurate way to lessen fear or complacency during the pandemic. Part II also describes how COVID-19-induced emotions fuel racism. Part III considers how pandemics and emotions associated with pandemics create massive global economic and financial shocks by reducing production, consumption, and expectations, leading to recessions and unemployment. Part IV discusses why individuals may seek to acquire or avoid information about pandemics in part due to emotional reasons. Part V offers policy responses to the many pandemic harms that Parts II-IV covered. The proposed policies include paying monthly pandemic financial assistance, encouraging practicing mindfulness, gentle enforcement of NPIs, and fostering acquisition of accurate pandemic information. The conclusion discusses general lessons and insights pandemics offer about human behavior. An appendix advocates formulating psychological game-theoretic models to better understand emotions that depend on beliefs about leadership.

## II. PANDEMIC EMOTIONS

Crises produce emotions that impact decision-making.<sup>40</sup> Pandemics can cause certain emotions, or the lack thereof, which can in turn lead to outcomes with their own emotional consequences. These difficulties are interconnected and can lead to a vicious cycle. Emotions can distort risk estimates,<sup>41</sup> risk perception,<sup>42</sup> decision readiness,<sup>43</sup> decision-making,<sup>44</sup> deliberation,<sup>45</sup> thinking,<sup>46</sup> judgment,<sup>47</sup> and information acquisition.<sup>48</sup> These

<sup>39</sup> David T. Nguyen & John Canny, *Multiview: Improving Trust in Group Video Conferencing Through Spatial Faithfulness*, 146 CHI '07: PROC SIGCHI CONF. HUM. FACTORS COMPUTER SYS. 1465 (2007).

<sup>40</sup> Ian Leslie, *How to Make the Right Decisions Under Pressure*, REMOTE CONTROL, BBC (Apr. 17, 2020), <https://www.bbc.com/worklife/article/20200416-how-to-make-the-right-decisions-under-pressure>.

<sup>41</sup> Jennifer Lerner et al., *Effects of Fear and Anger on Perceived Risks of Terrorism: A National Field Experiment*, 14 PSYCHOL. SCI. 144, 148, 149 tbl.3 (2003).

<sup>42</sup> Joseph Constan, *Worry Propensity and the Perception of Risk*, 39 BEHAV. RES. & THERAPY 721 (2001); Paul Slovic & Ellen Peters, *Risk Perception and Affect*, 15 CURRENT DIR. PSYCHOL. SCI. 322 (2006).

<sup>43</sup> Peter H. Huang, *Can Practicing Mindfulness Improve Lawyer Decision-Making, Ethics, and Leadership?* 55 HOUSTON L. REV. 63, 90-94 (2017) (defining and explaining decision readiness).

<sup>44</sup> Jean-Francois Coget et al., *Anger and Fear in Decision-Making: The Case of Film Directors on Set*, 29 EUR. MGMT. J. 476 (2011); Jennifer S. Lerner et al., *Emotion and Decision Making*, 66 ANN. REV. PSYCHOL. 799 (2015); Jennifer S. Lerner & Larissa Z. Tiedens, *Portrait of The Angry Decision Maker: How Appraisal Tendencies Shape Anger's Influence on Cognition*, 91 J. BEHAV. DECISION MAKING 115 (2006).

<sup>45</sup> George Loewenstein et al., *Modeling the Interplay Between Affect and Deliberation*, 2 DECISION 55 (2015).

<sup>46</sup> David De Steno, *How Fear Distorts Our Thinking About the Coronavirus*, N.Y. TIMES (Feb. 11, 2020), <https://www.nytimes.com/2020/02/11/opinion/international-world/coronavirus-fear.html>.

<sup>47</sup> Paul M. Litvak et al., *Fuel in the Fire: How Anger Impacts Judgment and Decision-Making*, in INTERNATIONAL HANDBOOK OF ANGER 287 (Michael Potegal et al. eds., 2010).

<sup>48</sup> Peter H. Huang, *Boost: Improving Mindfulness, Thinking, and Diversity*, 10 WM. & MARY L. REV. 139, 173-76 (2018).

distortions can lead people to make unfortunate eating,<sup>49</sup> economic,<sup>50</sup> ethical,<sup>51</sup> exercise,<sup>52</sup> financial,<sup>53</sup> interpersonal,<sup>54</sup> health,<sup>55</sup> political,<sup>56</sup> public policy,<sup>57</sup> and sleeping decisions,<sup>58</sup> which can in turn cause additional anxieties. Emotions have direct and indirect health impacts,<sup>59</sup> as well as indirect impacts on economic<sup>60</sup> and financial<sup>61</sup> decision-making<sup>62</sup> and

<sup>49</sup> Anahad O'Connor, *How 'Fast Carbs' May Undermine Your Health*, N.Y. TIMES (Apr. 8, 2020), <https://www.nytimes.com/2020/04/14/well/eat/how-fast-carbs-may-undermine-your-health.html?>; Christine Ro, *Coronavirus: How to Avoid Overeating when Working from Home*, BBC (Apr. 1, 2020), <https://www.bbc.com/worklife/article/20200331-how-to-eat-a-healthy-diet-when-work-from-home-coronavirus>.

<sup>50</sup> Jennifer S Lerner et al., *Heart Strings and Purse Strings: Carryover Effects of Emotions on Economic Decisions*, 15 PSYCHOL. SCI. 337 (2004).

<sup>51</sup> Alice Gaudine & Linda Thorne, *Emotion and Ethical Decision-Making in Organizations*, 31 J. BUS. ETHICS 175 (2001); Cory Higgs et al., *Self-Focused Emotions and Ethical Decision-Making: Comparing the Effects of Regulated and Unregulated Guilt, Shame, and Embarrassment*, 26 SCI. & ENGINEERING ETHICS 27 (2020); Vykinta Kligyte et al., *The Influence of Anger, Fear, and Emotion Regulation on Ethical Decision Making*, 26 HUM. PERFORMANCE 297 (2013); Sukumarakurup Krishnakumar & Doug Rymph, *Uncomfortable Ethical Decisions: The Role of Negative Emotions and Emotional Intelligence in Ethical Decision-Making*, 24 J. MANAGERIAL ISSUES 321 (2012); Laura J. Noval, *On the Misguided Pursuit of Happiness and Ethical Decision Making: The Roles of Focalism and the Impact Bias in Unethical and Selfish Behavior*, 133 ORG. BEHAV. & HUM. DECISION PROCESSES 1 (2016); Nicolette A. Rainone et al., *The Impact of Happy and Sad Affective States on Biases in Ethical Decision-Making*, ETHICS & BEHAV. (2020), <https://doi.org/10.1080/10508422.2020.1754825>; Nina Strohminger et al., *Divergent Effects of Different Positive Emotions on Moral Judgment*, 119 COGNITION 95 (2011).

<sup>52</sup> HOW DO EMOTIONS AND FEELINGS REGULATE PHYSICAL ACTIVITY? (Darko Jekauc & Ralf Brand eds., 2015), <https://www.frontiersin.org/research-topics/3791/how-do-emotions-and-feelings-regulate-physical-activity#articles>; Jen A. Miller, *So You Had a Bad Day*, N.Y. TIMES (May 12, 2020), <https://www.nytimes.com/2020/05/12/smarter-living/coronavirus-bad-day.html>.

<sup>53</sup> Dave Wedge, *Try Not to Panic, and 8 Other Practical Financial Tips*, BOS. MAG. (Apr. 8, 2020), <https://www.bostonmagazine.com/news/2020/04/08/coronavirus-money-tips/>.

<sup>54</sup> Evan Polman & Sharon H. Kim, *Effects of Anger, Disgust, and Sadness on Sharing with Others*, 39 PERSONALITY & SOC. PSYCHOL. BULL. 1683 (2013).

<sup>55</sup> Jessica Flores, *You're Not 'Too Busy' to Stay Active During Quarantine: Health Experts Worry about Blood Clots, Weight Gain*, USA TODAY (Apr. 8, 2020), <https://www.usatoday.com/story/news/health/2020/04/08/coronavirus-inactivity-health-experts-tips-self-care-quarantine/2967723001/>.

<sup>56</sup> Filipe R. Campante et al., *The Virus of Fear: The Political Impact of Ebola in the U.S.* (Nat'l Bureau Econ. Rsch., Working Paper No. 26897, 2020), <https://www.nber.org/papers/w26897>.

<sup>57</sup> Jules Lobel & George Loewenstein, *Emote Control The Substitution of Symbol for Substance in Foreign Policy and International Law*, 80 CHI.-KENT L. REV. 1045 (2005); Deborah A. Small & Jennifer S. Lerner, *Emotional Policy: Personal Sadness and Anger Shape Judgments About a Welfare Case*, 29 POL. PSYCHOL. 149 (2008).

<sup>58</sup> Nicole Lyn Pesce, *Losing Sleep Over the Coronavirus? Having Strange Dreams? Here's What to Do*, MARKET WATCH (Mar. 28, 2020), <https://www.marketwatch.com/story/losing-sleep-over-the-coronavirus-having-strange-dreams-heres-what-to-do-2020-03-27>.

<sup>59</sup> Rebecca Ferrer et al., *Emotions and Health Decision Making: Extending the Appraisal Tendency Framework to Improve Health and Healthcare*, in BEHAVIORAL ECONOMICS AND PUBLIC HEALTH 101 (Christina A. Roberto & Ichiro Kawachi eds., 2015); Rebecca A. Ferrer & Wendy Berry Mendes, *Emotion, Health Decision Making, and Health Behavior*, 33 PSYCHOL. & HEALTH 1 (2018).

<sup>60</sup> Scott Rick & George Loewenstein, *The Role of Emotions in Economic Behavior*, in HANDBOOK OF EMOTIONS 138 (Michael Lewis et al. eds., The Guilford Press 3d ed. 2008).

<sup>61</sup> Lucy F. Ackert et al., *Emotion and Financial Markets*, 88 FED. RES. BANK ATLANTA ECON. REV. 33 (2003).

<sup>62</sup> George Loewenstein & Jennifer S. Lerner, *The Role of Affect in Decision Making*, in HANDBOOK OF AFFECTIVE SCIENCE (Richard J. Davidson et al. eds., 2003).



behavior.<sup>63</sup> Societies can and should care about the health and decision-making consequences of emotions.

### A. *Positive Emotions and Negative Emotions*

Positive valence and negative valence emotions are a part of life<sup>64</sup> and, therefore, a part of pandemics. Positive valence emotions due to COVID-19 and NPIs include empathy,<sup>65</sup> compassion,<sup>66</sup> gratitude,<sup>67</sup> hope,<sup>68</sup> and love.<sup>69</sup> These positive emotions enable caring, collaboration, compliance with NPIs, cooperation, kindness, and optimism. Negative valence emotions due to COVID-19 and NPIs include anger, annoyance, fear, hate, and panic.<sup>70</sup> These negative emotions fuel hate crimes, hoarding, protests, violence, and xenophobia.<sup>71</sup>

Exposure to discourse about infectious diseases can increase people's susceptibility to rumors, activate latent xenophobic tendencies, and spur ethnic violence.<sup>72</sup> Contagious diseases trigger contamination concerns eliciting a pair of emotions, namely disgust and fear, which motivate comfort with the familiar, avoidance of the unfamiliar, distrust of and vigilance toward strangers, and perceptions of "others" as mortal threats.<sup>73</sup> Not only can fear be inefficient, but there can also be inequality in the distribution of fear across demographic groups.<sup>74</sup>

Negative emotions can be bad, like anger leading to violence or self-harm. Positive emotions can be good, like love motivating care for others or self. However, anger can also motivate positive reform, while love can also lead to negative acts of jealousy. Moreover,

<sup>63</sup> Peter H. Huang, *Diverse Conceptions of Emotions in Risk Regulation*, 156 U. PA. L. REV. PENNUMBRA 435, 435 (2008).

<sup>64</sup> Courtney E. Ackerman, *What are Positive and Negative Emotions and Do We Need Both?* POSITIVEPSYCHOLOGY.COM (Apr. 29, 2020), <https://positivepsychology.com/positive-negative-emotions/>.

<sup>65</sup> Lisa M. Meeks, *COVID-19 Communication—The Need for Humanity, Empathy, and Grace*, 325 J. AM. MED. ASS'N. 725 (2021).

<sup>66</sup> Jarrett Jackson, *Compassion In The Time Of COVID-19*, FORBES (May 28, 2020), <https://www.forbes.com/sites/jarretjackson/2020/05/28/compassion-in-the-time-of-covid-19/?sh=50aeebe22c7>.

<sup>67</sup> Dr. Francis Collins, *Reasons for Gratitude Amid the COVID-19 Pandemic*, NAT'L INST. HEALTH DIRECTOR'S BLOG (Nov. 24, 2020), <https://directorsblog.nih.gov/2020/11/24/reasons-for-gratitude-amid-the-covid-19-pandemic/>.

<sup>68</sup> Ulrika Modéer & Anna Ryott, *COVID-19: A Reminder of the Power of Hope and Solidarity*, U.N. DEVELOP. PROG. BLOG (May 5, 2020), <https://www.undp.org/content/undp/en/home/blog/2020/covid-19--a-reminder-of-the-power-of-hope-and-solidarity.html>.

<sup>69</sup> Patty Collie & Crystal DePietro, *COVID-19: A Time to Show What LOVE Looks Like*, FAYETTEVILLE OBSERVER (Feb. 27, 2021), <https://www.fayobserver.com/story/opinion/2021/02/27/covid-19-time-show-what-love-looks-like/6837863002/>.

<sup>70</sup> See *infra* Section II.F.

<sup>71</sup> See *infra* Section II.H.

<sup>72</sup> Sunasir Dutta & Hayagreeva Rao, *Infectious Diseases, Contamination Rumors and Ethnic Violence: Regimental Mutinies in the Bengal Native Army in 1857 India*, 129 ORG. BEHAV. & HUM. DECISION PROCESSES 36 (2015).

<sup>73</sup> Chelsea Galoni et al., *Pathogen Fear and the Familiar*, 45 ADV. CONS. RES. 605 (2017).

<sup>74</sup> Sangmin Aum et al., *Inequality of Fear and Self-Quarantine: Is There A Trade-off Between GDP and Public Health?* (Nat'l Bureau Econ. Rsch. Working Paper No. 27100, 2020) <https://www.nber.org/papers/w27100>.

there are cross-cultural differences in how positive and negative valences may co-exist in emotions.<sup>75</sup>

Negative emotions often result from experiencing actual or perceived injustices and violations of accepted social or other norms. For example, romantic couples, non-romantic partnerships, and siblings often involve the dynamics of emotions related to doing one's fair share of work or getting one's fair share of scarce desired items. Essential workers have likely experienced a variety of emotions related to issues of equity or fairness of scarce resources throughout the COVID-19 pandemic. Natural questions that arise for medical professionals include whether they should work on the COVID-19 floors to help fight COVID. But, this raises the concern that they get sick, or that they go home and infect their partners, kids, and other family members. Even if they recover, their loved ones may not. This has led to COVID-19 guilt about not doing enough, or at least a conflict between doing more (for the sake of altruism, or self-image), and doing less (for the sake of self-preservation, or protecting those that they love). If there is a zero-sum conflict, there will always by definition be a winner and a loser. For the person who is weighing these options, it becomes a lose-lose situation. COVID-19 has exacerbated the hazard of health caregiver burnout to crisis levels.<sup>76</sup>

Because COVID-19 unexpectedly overwhelmed hospitals, there was heroic and unprecedented medical improvisation, as well as inevitable, deadly, and ultimately avoidable medical errors and mistakes.<sup>77</sup> COVID-19 forced hospitals to perform massive reallocation of medical resources and personnel in a very short time under intense pressure.<sup>78</sup> Inexperienced, scared, and shocked junior residents were frantically reassigned, sometimes from psychiatry and family medicine to intensive care units, where they often fumbled over unfamiliar ventilators without guidance from overstretched supervisors who had to be putting out fires in another part of the hospital.<sup>79</sup> Societies, including health care sectors, must learn how to do things better for the predicted third wave of COVID-19 and the foreseeable next pandemic. Positive and negative emotions will undoubtedly be recurring features in all future waves of COVID-19 and future pandemics.

### B. Anger and Health Anxieties

Pandemics and NPIs in response to pandemics can fuel anger and anxiety. Psychological research experiments found that people who feel anger are less likely to accept advice compared to people in a neutral emotional state.<sup>80</sup> This finding may explain why some people who are angry about being unable to work (because they are complying with Stay At Home (SAH) orders) will often not heed the advice to comply with other

---

<sup>75</sup> Sieun An et al., *Two Sides of Emotion: Exploring Positivity and Negativity in Six Basic Emotions Across Cultures*, 8 FRONTIERS PSYCHOL. 610 (2017).

<sup>76</sup> Pamela Hartzband & Jerome Groopman, *Physician Burnout, Interrupted*, NEW ENG. J. MED. (May 1, 2020), <https://www.nejm.org/doi/full/10.1056/NEJMp2003149>.

<sup>77</sup> Danielle Ofri, *The Public Has Been Forgiving. But Hospitals Got Some Things Wrong*, N.Y. TIMES (May 22, 2020), <https://www.nytimes.com/2020/05/22/opinion/coronavirus-medical-errors-hospitals.html>.

<sup>78</sup> *Id.*

<sup>79</sup> Khadeeja Safdar et al., *Young Doctors Struggle to Treat Coronavirus Patients: 'We Are Horrified and Scared'*, WALL ST. J. (Apr. 29, 2020), <https://www.wsj.com/articles/young-doctors-struggle-to-treat-coronavirus-patients-we-are-horrified-and-scared-11588171553>.

<sup>80</sup> Francesca Gino & Maurice E. Schweitzer, *Blinded by Anger or Feeling the Love: How Emotions Influence Advice Taking*, 93 J. APPLIED PSYCHOL. 1165 (2008).

NPIs, such as to wear facemasks or physically distance. Other psychological research experiments found that anxious people also seek and take more advice, have impaired information processing and lower self-confidence, fail to differentiate between advisors with and without conflicts of interest, and fail to discern good from bad advice.<sup>81</sup> This finding may also explain why some people who are anxious about having to comply with NPIs (such as orders to stay at home, wear facemasks, or distance) are more primed to heed the bad advice to “liberate” their states from their governors by violating NPIs and protesting in public offices or on government properties with visible displays of firearms.<sup>82</sup>

Anxiety and depression rates skyrocket after viral infections.<sup>83</sup> Pandemics also adversely impact mental health.<sup>84</sup> In just a month, Americans’ fears over COVID-19 exploded.<sup>85</sup> Mental health experts publicly expressed concerns that anxiety over COVID-19 spread faster than COVID-19.<sup>86</sup> Polls during the COVID-19 pandemic found Americans

---

<sup>81</sup> Francesca Gino et al., *Anxiety, Advice, and the Ability to Discern: Feeling Anxious Motivates Individuals to Seek and Use Advice*, 102 J. PERSONALITY & SOC. PSYCHOL. 497 (2012).

<sup>82</sup> Jacey Fortin, *Michigan Governor Reinstates State of Emergency as Protests Ramp Up*, N.Y. TIMES (May 20, 2020), <https://www.nytimes.com/2020/05/01/us/michigan-protests-capitol-virus-armed.html>.

<sup>83</sup> Shawn D. Gale et al., *Association Between Virus Exposure and Depression in US Adults*, 261 PSYCHIATRY REV. 73, 73 (2018); Leigh van den Heuvel et al., *Frequency and Correlates of Anxiety and Mood Disorders Among TB- and HIV-Infected Zambians*, 25 AIDS CARE 1527 (2013).

<sup>84</sup> Giovambattista Presti et al., *The Dynamics of Fear at the Time of Covid-19: A Contextual Behavior Science Perspective*, 17 CLIN. NEUROPSYCHIATRY 65 (2020); Betty Pfefferbaum & Carol S. North, *Mental Health and the Covid-19 Pandemic*, NEW ENG. J. MED.ORG (Apr. 13, 2020), <https://www.nejm.org/doi/full/10.1056/NEJMp2008017>; Piero Porcelli, *Fear, Anxiety and Health-Related Consequences After the Covid-19 Epidemic*, 17 CLIN. NEUROPSYCHIATRY 103 (2020); Jun Shigemura et al., *Public Responses to the Novel 2019 Coronavirus (2019-nCoV) in Japan: Mental Health Consequences and Target Populations*, 74 PSYCHIATRY & CLINICAL NEUROSCI. 277 (2020).

<sup>85</sup> Susan Page, *Exclusive: In Four Devastating Weeks, Americans' Fears of the Coronavirus Have Exploded*, USA TODAY (Apr. 13, 2020), <https://www.usatoday.com/story/news/politics/2020/04/13/poll-americans-fears-covid-19-explode-four-devastating-weeks/2970032001/>.

<sup>86</sup> Eden David, *How to Deal with Fear of Novel Coronavirus in the Face of the Unknown*, ABC NEWS (Mar. 5, 2020), <https://abcnews.go.com/Health/deal-fear-coronavirus-face-unknown/story?id=69266506>; Jacek Debiec, *DISCOVER* (Mar. 25, 2020), <https://www.discovermagazine.com/mind/fear-can-spread-from-person-to-person-faster-than-the-coronavirus-but-there>; Rachel Glaser, *State of Mind: Anxiety Over COVID-19 Spreading Faster Than the Virus*, WWMT (Mar. 16, 2020), <https://wwmt.com/news/state-of-mind/state-of-mind-anxiety-over-covid-19-spreading-faster-than-the-virus>; Bill Miston, *Amid COVID-19, Psychologists Note Stress Can Lead to Illness: 'Fear Spreads Faster Than the Virus,'* FOX6NOW.COM (Mar. 9, 2020), <https://fox6now.com/2020/03/09/amid-covid-19-psychologists-note-stress-can-lead-to-illness-fear-spreads-faster-than-the-virus/>; Davidicus Wong, *Opinion: COVID-19 Panic Is (Sadly) Spreading Faster Than the Virus*, BURNABYNOW (Mar. 2, 2020), <https://www.burnabynow.com/opinion/opinion-covid-19-panic-is-sadly-spreading-faster-than-the-virus-1.24088334>.

concerned about their emotional well-being,<sup>87</sup> health,<sup>88</sup> healthcare,<sup>89</sup> and healthcare costs.<sup>90</sup> Scientists even developed a seven-item Fear of COVID-19 Scale.<sup>91</sup>

Mask anxiety provides a typical manifestation of this COVID-19 anxiety and fear documented by scientists and polls. Some people may experience mask anxiety from feeling unable to breathe due to a snug or tight-fitting face covering, or a pre-existing condition like asthma.<sup>92</sup> Both possibilities may trigger people to remove their masks unsafely and risk COVID-19 transmission.<sup>93</sup> Anxieties that cause people to remove their masks in public may also lead people to remove or store their masks in unsafe ways (there is a safe way to remove a facemask in public,<sup>94</sup> including carrying a brown paper bag to safely store a mask when outside of the home.<sup>95</sup>). It is important for individuals to understand that there are ways to manage anxiety about wearing a mask so that they do not improperly remove or store their masks and risk causing harm to others.<sup>96</sup>

Anxiety about COVID-19 is partly due to people's fear of the uncertain.<sup>97</sup> By definition, pandemics involve the uncertain. The basic human desire for cognitive closure<sup>98</sup> explains why people seek out constant media coverage of and engage in social media discussion about COVID-19. Such a plethora of information and misinformation can trigger anxiousness. For example, constant stalking of COVID-19 statistics may itself fuel

---

<sup>87</sup> Margaret Talev, *Axios-Ipsos Coronavirus Index: Everything's Worse*, AXIOS (Mar. 24, 2020), <https://www.axios.com/coronavirus-index-week-2-everythings-worse-5f0af46b-4b73-4058-86f8-79051b4f7ee7.html>.

<sup>88</sup> *New Poll: COVID-19 Impacting Mental Well-Being: Americans Feeling Anxious, Especially for Loved Ones; Older Adults are Less Anxious*, AM. PSYCHIATRIC ASS'N (Mar. 25, 2020), <https://www.psychiatry.org/newsroom/news-releases/new-poll-covid-19-impacting-mental-well-being-americans-feeling-anxious-especially-for-loved-ones-older-adults-are-less-anxious>.

<sup>89</sup> Sara Burnett & Hannah Fingerhut, *AP-NORC Poll: Americans Increasing Effort to Avoid Infection*, AP (Apr. 6, 2020), <https://apnews.com/d77fc19f5fc596d54ceb9618cd9dc38c>.

<sup>90</sup> David Anderson & Nicholas Bagley, *This Is One Anxiety We Should Eliminate for the Coronavirus Outbreak*, N.Y. TIMES (Mar. 15, 2020), <https://www.nytimes.com/2020/03/15/opinion/surprise-billing-coronavirus-.html>.

<sup>91</sup> Daniel Kwasi Ahorsu et al., *The Fear of COVID-19 Scale: Development and Initial Validation*, INT'L J. MENTAL HEALTH & ADDICTION, 1, 8 (2020).

<sup>92</sup> Ashley Abramson, *How to Safely Take a Mask Off in Public If You're Anxious or Having Trouble Breathing*, ALLURE (May 6, 2020), <https://www.allure.com/story/mask-anxiety-trouble-breathing-remove-mask-cloth-face-covering-in-public>.

<sup>93</sup> *Id.*

<sup>94</sup> *Id.*

<sup>95</sup> Neeltje van Doremalen et al., *Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1*, NEW ENG. J. MED.ORG (Mar. 17, 2020), <https://www.nejm.org/doi/full/10.1056/NEJMc2004973>.

<sup>96</sup> Abramson, *supra* note 92; Kate Mooney, *11 Tips From Therapists on Coping With Anxiety During the Novel Coronavirus Pandemic*, ALLURE (Mar. 23, 2020), <https://www.allure.com/story/therapist-tips-anxiety-coronavirus>.

<sup>97</sup> Julie Beck, *How Uncertainty Fuels Anxiety*, ATLANTIC (Mar. 18, 2015); *see also* Dan Barry, *If Life Is a Movie, It's Called 'Closed Until Further Notice.'* N.Y. TIMES (May 19, 2020), <https://www.nytimes.com/2020/05/19/nyregion/coronavirus-uncertainty.html>; R. Nicholas Carleton et al., *Increasingly Certain About Uncertainty: Intolerance of Uncertainty Across Anxiety and Depression*, 26 J. ANXIETY DISORDERS 468 (2012); Mark H. Freeston et al., *Why Do People Worry?* 17 PERSONALITY & INDIVIDUAL DIFFERENCES 791 (1994); *Coronavirus Anxiety (Parts 1 and 2) with Baruch Fischhoff*. PhD, AM. PSYCHOL. ASS'N (Feb. 2020), <https://www.apa.org/research/action/speaking-of-psychology/coronavirus-anxiety>.

<sup>98</sup> Arie W. Kruglanski & Donna M. Webster, *Motivated Closing of the Mind: "Seizing" and "Freezing"*, 103 PSYCHOL. REV. 263 (1996).

anxiety.<sup>99</sup> While it is crucial for people to be informed, people often seek out and then misuse useless information.<sup>100</sup> People may also avoid information they believe will be negative.<sup>101</sup>

### C. Seeking Expert Opinions

Some people will crave and seek out expert opinion, especially during times of radical uncertainty.<sup>102</sup> In pandemics, humility about our and others' knowledge is worth remembering<sup>103</sup> because "[n]o one can easily predict an unknowable future."<sup>104</sup> There is effectively an inexhaustible demand by the public and media for a non-existent supply of infallible predictions by experts and politicians. Infallible predictions by experts and politicians are impossible because the future course will depend on people's actions and governmental policy.<sup>105</sup>

Because the public turns to media/experts in uncertain times, scientific literacy,<sup>106</sup> numeracy,<sup>107</sup> and risk or statistical literacy<sup>108</sup> among the press, public, and policymakers is important in lessening anxiety, panic, or complacency during the COVID-19 pandemic. Numeracy can be objective (understanding and utilization of mathematical concepts) or subjective (feeling confident and comfortable with numbers).<sup>109</sup> Some people may find it difficult to assess the unfamiliar mortality risks from COVID-19 relative to some more common and familiar risks, such as commuting, skydiving, or being a soldier in wartime.<sup>110</sup> For example, an experiment demonstrated that even mere data framing in terms of whether

<sup>99</sup> Ellen Peters, *Is Obsessing Over Daily Coronavirus Statistics Counterproductive?* N.Y. TIMES (Mar. 12, 2020), <https://www.nytimes.com/2020/03/12/opinion/sunday/coronavirus-statistics.html>.

<sup>100</sup> Anthony Bastardi & Eldar Shafir, *On the Pursuit and Misuse of Useless Information*, 75 J. PERSONALITY & SOC. PSYCHOL. 19 (1998); Justin Kruger & Matt Evans, *The Paradox of Aplyus and the Pursuit of Unwanted Information*, 45 J. EXPERIMENTAL SOC. PSYCHOL. 1173 (2009).

<sup>101</sup> Russell Golman et al., *Information Avoidance*, 55 J. ECON. LIT. 96 (2017); Emily H. Ho et al., *Measuring Information Preferences*, MGMT. SCI. (forthcoming); Niklas Karlsson et al., *The Ostrich Effect: Selective Attention to Information*, 38 J. RISK & UNCERTAINTY 95 (2009); George Loewenstein, *The Pleasures and Pain of Information*, 312 SCI. 704 (2006).

<sup>102</sup> Werner De Bondt, Remarks at the 2020 Academic Research Colloquium for Financial Planning and Related Disciplines (Feb. 21, 2020).

<sup>103</sup> Paul Romer, *The Dismal Kingdom*, FOREIGN AFF. (Mar./Apr. 2020), <https://www.foreignaffairs.com/reviews/review-essay/2020-02-11/dismal-kingdom>.

<sup>104</sup> MERVYN KING, *THE END OF ALCHEMY* 3 (2016).

<sup>105</sup> Mark Lilla, *No One Knows What's Going to Happen*, N.Y. TIMES (May 22, 2020), <https://www.nytimes.com/2020/05/22/opinion/coronavirus-prediction-future.html>.

<sup>106</sup> Sabrina Sholts, *Accurate Science Communication is Key in the Fight Against COVID-19*, WORLD ECON. FORUM (Mar. 19, 2020), <https://www.weforum.org/agenda/2020/03/science-communication-covid-coronavirus/>.

<sup>107</sup> Marshall Shepherd, *Is Poor Math Literacy Making It Harder For People To Understand COVID-19 Coronavirus?* FORBES (Mar. 23, 2020), <https://www.forbes.com/sites/marshallshepherd/2020/03/23/is-the-math-too-hard-for-people-to-understand-covid-19-coronavirus/#7d67521a6a9c>.

<sup>108</sup> Norman Fenton & Martin Neil, *Comparing Risks if Alternative Medical Diagnosis Using Bayesian Arguments*, 43 J. BIOMED. INFORMATICS 485 (2010); Maya Bar-Hillel, *The Base-Rate Fallacy in Probability Judgments*, 44 ACTA PSYCHOLOGICA 211 (1980); Todd Haugh & Suneal Bedi, *Just Because You Test Positive for Antibodies Doesn't Mean You Have Them*, N.Y. TIMES (May 13, 2020), <https://www.nytimes.com/2020/05/13/opinion/antibody-test-accuracy.html>.

<sup>109</sup> Ellen Peters, *INNUMERACY IN THE WILD: MISUNDERSTANDING AND MISUSING NUMBERS* 3 (2020).

<sup>110</sup> David C. Roberts, *Putting the Risk of Covid-19 in Perspective*, N.Y. TIMES (May 22, 2020), <https://www.nytimes.com/2020/05/22/well/live/putting-the-risk-of-covid-19-in-perspective.html>.

the mass media and policymakers choose to present the evolution of COVID-19 deaths on a linear or logarithmic scale affects individuals' understanding of the history of COVID-19 deaths, predictions about likely future time paths of COVID-19 deaths, and policy preferences over NPIs.<sup>111</sup>

In the early stages of COVID-19, some reporters, private individuals, and politicians claimed epidemiological models were flawed because their worst-case scenario predictions failed to materialize.<sup>112</sup> By definition, however, worst-case scenario forecasts often become self-unfulfilling because, “[w]hen an epidemiological model is believed and acted on, it can look like it was false.”<sup>113</sup> When that happens, it is not a mistake in the model. Another way to understand this is to consider counterfactuals and multiple equilibria in a strategic interaction between humans and the coronavirus.<sup>114</sup> If people take sufficient precautions, such as compliance with NPIs, and estimated worst-case outcomes do not come to be, that is a success story about how those precautions prevented a far worse reality. This phenomenon is an example of what is often referred to as a self-defeating prophecy or self-negating prediction, a prophecy or prediction that causes people to choose to behave in ways that produce an outcome that is the opposite of what they expected.<sup>115</sup>

Unfortunately, “democracy amplifies the human bias for visible actions. Voters can’t evaluate what they don’t know. So voters reward the party of the president when it spends after a disaster. But they seem not to know or care at all what government does before disaster.”<sup>116</sup> In the United States, “\$1 spent on preparedness is worth about \$15 in terms of the future damage it mitigates.”<sup>117</sup> In spite of this, our “federal government typically spends five cents on preparedness for every dollar it spends on relief.”<sup>118</sup> Bureaucracy and political manipulation of disaster declarations explain the American federal government’s cost-ineffective underinvestment in disaster preparedness.<sup>119</sup> American voters provide little incentive for presidents and members of Congress to engage in spending on cost-effective preparedness.<sup>120</sup> Instead, our political system incentivizes elected officials to engage in

---

<sup>111</sup> Alessandro Romano et al., *COVID-19 Data: The Logarithmic Scale Misinforms the Public and Affects Policy Preferences*, PSYARXIV (Apr. 29, 2020), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3588511](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3588511).

<sup>112</sup> Zeynep Tufekci, *Don’t Believe the COVID-19 Models*, THE ATLANTIC (Apr. 2, 2020), <https://www.theatlantic.com/technology/archive/2020/04/coronavirus-models-arent-supposed-be-right/609271/>.

<sup>113</sup> *Id.*

<sup>114</sup> Richard Holden, *Vital Signs: A Lesson from Game Theory the Coronavirus Contrarians Ignore*, CONVERSATION (Apr. 8, 2020), <https://theconversation.com/vital-signs-a-lesson-from-game-theory-the-coronavirus-contrarians-ignore-135821>.

<sup>115</sup> Paul Orlando, *The Self-Defeating Prophecy (and How it Works)*, UNINTENDED CONSEQUENCES (Oct. 8, 2018), <https://unintendedconsequenc.es/the-self-defeating-prophecy/>.

<sup>116</sup> Tali Mendelberg, *Why Politicians Are Often One Step Behind Disaster*, N.Y. TIMES (Apr. 28, 2020), <https://www.nytimes.com/2020/04/28/opinion/coronavirus-preparation-politicians.html>.

<sup>117</sup> Andrew Healy & Neil Malhotra, *Myopic Voters and Natural Disaster Policy*, 103 AM. POL. SCI. REV. 387 (2009).

<sup>118</sup> Mendelberg, *supra* note 116.

<sup>119</sup> Russell S. Sobel & Peter T. Leeson, *Government’s Response to Hurricane Katrina: A Public Choice Analysis*, 127 PUB. CHOICE 55 (2006).

<sup>120</sup> CHRISTOPHER H. ACHEN & LARRY M. BARTELS, *DEMOCRACY FOR REALISTS: WHY ELECTIONS DO NOT PRODUCE RESPONSIVE GOVERNMENT* (2017).

visible mass spending for damage control largely after disasters cause visible harms, such as deaths.<sup>121</sup>

#### D. Economic and Financial Anxieties

COVID-19 also caused anxieties about job and income loss.<sup>122</sup> Robert J. Shiller, 2013 economics Nobel laureate,<sup>123</sup> examined the real and psychological effects of anxieties from what Shiller calls the economic pandemic accompanying the COVID-19 pandemic.<sup>124</sup> The economic impacts of public health NPI policies, just like financial regulations themselves, or the lack thereof,<sup>125</sup> may provoke economic and financial anxiety. These dual pandemics and their corresponding anxieties can be decoupled if a government cushions or mitigates the adverse economic and financial consequences of a health pandemic and NPIs in response to a health pandemic.

#### E. Irrational Anxieties

Economists utilizing Google search activity and individual survey data found COVID-19 rapidly increased economic anxiety.<sup>126</sup> People overestimated COVID-19 contagiousness and mortality, yet underestimated the non-linearity of infection spread.<sup>127</sup> Such anxieties can be labeled irrational because they led to misestimation of probabilities about COVID-19. Irrational anxiety<sup>128</sup> is in a sense the psychological opposite of “irrational exuberance,”<sup>129</sup> a phrase Alan Greenspan uttered while he was Federal Reserve Board chair, and which became his most famous quote.<sup>130</sup> Shiller wrote a book titled *Irrational Exuberance* about economic bubbles,<sup>131</sup> in which he defines irrational exuberance as the psychological basis underlying speculative bubbles.<sup>132</sup> Irrational exuberance may also drive unpausing economies too quickly without real-time data from

<sup>121</sup> SUZANNE METTLER, *THE SUBMERGED STATE: HOW INVISIBLE GOVERNMENT POLICIES UNDERMINE AMERICAN DEMOCRACY* (2011).

<sup>122</sup> Scott Keeter, *People Financially Affected by COVID-19 Outbreak are Experiencing More Psychological Distress than Others*, PEW RES. CTR. (Mar. 30, 2020), <https://www.pewresearch.org/fact-tank/2020/03/30/people-financially-affected-by-covid-19-outbreak-are-experiencing-more-psychological-distress-than-others/>.

<sup>123</sup> Robert J. Shiller – Facts, NOBELPRIZE.ORG, <https://www.nobelprize.org/prizes/economic-sciences/2013/shiller/facts/>.

<sup>124</sup> Robert J. Shiller, *The Two Pandemics*, PROJECT SYNDICATE (Mar. 31, 2020), <https://www.project-syndicate.org/commentary/how-covid19-pandemic-affects-financial-market-narratives-by-robert-j-shiller-2020-03?barrier=accesspaylog>.

<sup>125</sup> Peter H. Huang, *How Do Securities Laws Influence Affect, Happiness, and Trust?* 3 J. BUS. & TECH. L. 257, 292-93 (2008).

<sup>126</sup> Thimo Fetzer et al., *Coronavirus Perceptions and Economic Anxiety*, REV. OF ECON. AND STAT. (forthcoming), <https://arxiv.org/pdf/2003.03848.pdf>.

<sup>127</sup> Thimo Fetzer et al., *Coronavirus Perceptions and Economic Anxiety*, VOX (Mar. 20, 2020), <https://voxeu.org/article/coronavirus-perceptions-and-economic-anxiety>.

<sup>128</sup> Peter H. Huang, *Regulating Irrational Exuberance and Anxiety in Securities Markets*, in *THE LAW AND ECONOMICS OF IRRATIONAL BEHAVIOR* 501 (Francesco Parisi & Vernon L. Smith eds., 2005).

<sup>129</sup> Alan Greenspan, *The Challenge of Central Banking in a Democratic Society*, Remarks at the Annual Dinner and Francis Boyer Lecture of the American Enterprise Institute for Public Policy Research (Dec. 5, 1996), <https://www.federalreserve.gov/BOARDDOCS/SPEECHES/19961205.htm>.

<sup>130</sup> Robert J. Shiller, *Definition of Irrational Exuberance*, IRRATIONAL EXUBERANCE, 2ND ED. BY ROBERT J. SHILLER, <http://www.irrationalexuberance.com/definition.htm>.

<sup>131</sup> ROBERT J. SHILLER, *IRRATIONAL EXUBERANCE* (3rd ed., 2015).

<sup>132</sup> *Id.* at 2.

testing and tracing.<sup>133</sup> Irrational anxiety similarly can be the psychological basis underlying financial panics, asset market crashes, and global economic crises in the form of recessions or depressions. Irrational anxiety and irrational exuberance may trigger such well-known cognitive biases as anchoring, availability bias, and confirmation bias.<sup>134</sup>

Like stress,<sup>135</sup> not all anxiety is bad or inappropriate. In other words, the individual and the socially optimal levels of anxiety are not zero, because anxiety may motivate individuals to be more careful. By its definition, “rational” anxiety is a level of anxiety that is appropriate for the situation and instrumentally helpful. It is rational to be anxious about pandemics, and a helpful level of anxiety spurs individuals to take precautions to stay safe.<sup>136</sup> This type of defensive pessimism is a form of rational anxiety.<sup>137</sup>

#### F. From Anxiety to Panic to Complacency

Pandemics can also trigger panics, defined as “sudden extreme anxiety or fear that may cause irrational thoughts or actions.”<sup>138</sup> Panic behavior includes hoarding food and selling of stocks. Ironically, if matters improve or do not worsen over time, pandemics can lead to complacency, defined as “a feeling of contentment or self-satisfaction, especially when coupled with an unawareness of danger, trouble, or controversy.”<sup>139</sup> Complacent behavior includes not following CDC recommendations to wear face coverings, practice physical distancing, self-quarantine, and self-isolate. Degrees of complacency may vary depending on people’s different experiences with COVID-19, as with one’s political affiliation.<sup>140</sup>

If anxiety lies along a continuum, panic lies on the far right of that continuum with an excessive amount of anxiety, while complacency lies on the far left of that continuum with too little or no anxiety. Irrational anxiety is a level of anxiety that is too high, like panic, or too low like complacency. Panic is unhealthy for individuals because of the

<sup>133</sup> Editorial Board, *With Coronavirus Still Rocking, Reopening States Are Rolling Blindly*, USA TODAY (Apr. 30, 2020),

<https://www.usatoday.com/story/opinion/todaysdebate/2020/04/30/coronavirus-still-rocking-reopening-states-rolling-blindly-editorials-debates/3056475001/>.

<sup>134</sup> Ivry Zagury-Orly & Richard M. Schwartzstein, *Covid-19 — A Reminder to Reason*, NEJM.ORG (Apr. 28, 2020), <https://www.nejm.org/doi/full/10.1056/NEJMp2009405?query=RP>.

<sup>135</sup> KELLY MCGONIGAL, *THE UPSIDE OF STRESS: WHY STRESS IS GOOD FOR YOU, AND HOW TO GET GOOD AT IT* (2016); Kelly McGonigal, *How to Make Stress Your Friend*, TED GLOBAL, (June 2013), [https://www.ted.com/talks/kelly\\_mcgonigal\\_how\\_to\\_make\\_stress\\_your\\_friend?language=en](https://www.ted.com/talks/kelly_mcgonigal_how_to_make_stress_your_friend?language=en).

<sup>136</sup> *Worried Sick: Fighting Stress and Anxiety in the Midst of COVID-19*, COLUM. U. IRVING MED. CTR. (Mar. 23, 2020), <https://www.cuimc.columbia.edu/news/worried-sick-fighting-stress-and-anxiety-midst-covid-19>.

<sup>137</sup> Julie K. Norem, *Defensive Pessimism Questionnaire*, WELLESLEY PSYCHOL. DEP’T, <http://academics.wellesley.edu/Psychology/Norem/Quiz/quiz.html>; Julie K. Norem & Nancy Cantor, *Anticipatory and Post Hoc Cushioning Strategies: Optimism and Defensive Pessimism in “Risky” Situations*, 10 COGNITIVE THERAPY & RES. 347 (1986); Jennifer Senior, *In Praise of Pessimism*, N.Y. TIMES (Apr. 26, 2020), <https://www.nytimes.com/2020/04/26/opinion/coronavirus-anxiety-pessimism.html>; see also Peter H. Huang & Corie Rosen Felder, *The Zombie Lawyer Apocalypse*, 42 PEPP. L. REV. 727, 740-41 (2015); Corie Rosen Felder, *The Accidental Optimist*, 21 VA. J. SOC. POL’Y & L. 63 (2014).

<sup>138</sup> National Cancer Institute, *Panic*, DICTIONARY OF CANCER TERMS, <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/panic>.

<sup>139</sup> *Complacency*, AM. HERITAGE DICTIONARY, <https://www.ahdictionary.com/word/search.html?q=complacency>.

<sup>140</sup> Jennifer Medina & Robert Gebeloff, *The Coronavirus Is Deadliest Where Democrats Live*, N.Y. TIMES (May 25, 2020), <https://www.nytimes.com/2020/05/25/us/politics/coronavirus-red-blue-states.html>.



unnecessary stress it causes and is unhelpful for decision-making because, by definition, panic causes overestimation about relevant probabilities. Complacency is unhealthy for individuals because of the recklessness it causes and is unhelpful for decision-making because it leads to underestimation about relevant probabilities.

People differ vastly in how much, when, and even whether they experience anxiety, complacency, and panic in pandemics.<sup>141</sup> Further, the same individual may start by feeling some anxiety, then panic upon seeing empty grocery shelves in-person or on social media, and finally develop complacency upon settling into the routine of a new normal. Decision-making research experiments find the majority of humans display such a pattern of risk overestimation followed by risk underestimation, though a significant minority continue to exhibit risk overestimation and continue to engage in panic behaviors.<sup>142</sup> A cross-cultural study found little consistency of individuals' reactions across different types of rare events.<sup>143</sup> People may differ in whether their anxiety rises to panic or falls to complacency if they rely on small samples of their experiences, and such experiences vary across individuals.

Ido Erev,<sup>144</sup> the President<sup>145</sup> of the European Association for Decision Making;<sup>146</sup> Ori Plonsky;<sup>147</sup> and Yefim Roth<sup>148</sup> analyze how the simultaneity of panic and complacency exacerbates the consequences of pandemics.<sup>149</sup> Erev, Plonsky, and Roth focus on three reasons underlying the coexistence of contradictory emotional reactions and behavioral responses to pandemics: (1) description-experience gap, (2) individual differences, and (3) role of experience on social interactions.<sup>150</sup>

### G. Description-Experience Gap

Ido Erev and Alvin E. Roth, Craig and Susan McCaw Professor of Economics at Stanford University (and Gund Professor of Economics and Business Administration Emeritus at Harvard)<sup>151</sup> and a 2012 economics Nobel laureate,<sup>152</sup> found that humans tend

<sup>141</sup> Benedict Carey, *Complacency, Not Panic, Is the Real Danger*, N.Y. TIMES (Mar. 19, 2020), <https://www.nytimes.com/2020/03/19/health/coronavirus-panic-anxiety.html> (interviewing Ido Erev).

<sup>142</sup> Doron Cohen et al., *On the Impact of Experience on Probability Weighting in Decisions Under Risk*, 7 DECISION 153 (2020); Ido Erev et al., *From Anomalies to Forecasts: Toward a Descriptive Model of Decisions Under Risk, Under Ambiguity, and From Experience*, 124 PSYCHOL. REV. 369 (2017); Ralph Hertwig et al., *Decisions from Experience and the Effect of Rare Events in Risky Choice*, 15 PSYCHOL. SCI. 534 (2004); Amos Schurr et al., *The Effect of Unpleasant Experiences on Evaluation and Behavior*, 106 J. ECON. BEHAV. & ORG. 1 (2014).

<sup>143</sup> Sibilla Di Guida et al., *Cross Cultural Differences in Decisions from Experience: Evidence from Denmark, Israel, and Taiwan*, 49 J. ECON. PSYCHOL. 47 (2015).

<sup>144</sup> Ido Erev, TECHNION ISRAEL INST. OF TECH., <https://web.iem.technion.ac.il/en/people/userprofile/erev.html>.

<sup>145</sup> *Executive Board*, EUR. ASS'N FOR DECISION MAKING, <http://eadm.eu/executive-board/>.

<sup>146</sup> *About EADM*, European Association for Decision Making website, <http://eadm.eu/about-eadm-2/>.

<sup>147</sup> ORI PLONSKY, <http://oriplonsky.com/>.

<sup>148</sup> *Yefim Roth*, RES. GATE, [https://www.researchgate.net/profile/Yefim\\_Roth](https://www.researchgate.net/profile/Yefim_Roth).

<sup>149</sup> Ido Erev et al., *The Impact of Rare Disasters, and the Value of Gentle Rule Enforcement in Addressing Pandemics* (Mar. 31, 2020) (unpublished manuscript) (on file with author).

<sup>150</sup> *Id.* at 2.

<sup>151</sup> ALVIN E. ROTH, <https://web.stanford.edu/~alroth/> (last visited Nov. 28, 2020).

<sup>152</sup> Press Release, *The Royal Swedish Academy of Sciences, The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel for 2012* (Oct. 15, 2012), <https://www.nobelprize.org/prizes/economic-sciences/2012/summary/>.

to underweight rare events when making decisions from experience.<sup>153</sup> Erev, along with Ralph Hertwig, director of the Center for Adaptive Rationality at the Max Planck Institute for Human Development,<sup>154</sup> reviewed a variety of studies to similarly find that decisions based on experience accord rare events less weight than their objective probabilities.<sup>155</sup> These findings across three non-redundant experiential paradigms (sampling, full-feedback, and partial feedback) documented a robust and systematic description-experience gap, meaning that in experience-based decision-making people underweight rare events, while in description-based decision-making people overweight rare events.<sup>156</sup> In other words, what decision an individual makes depends on whether that decision is based on prior experience or is based instead on a description of the decision problem facing that individual. Because people's personal experiences influence their risk perceptions and behaviors, when risks are rare, people mostly experience the event's non-occurrence, and underperceive such risks and behave accordingly.<sup>157</sup> Non-human animals underweight rare events and overweight common ones because they can only make decisions based on experience as they are not able to process symbolic descriptive representations of risky choices.<sup>158</sup>

The description-experience gap explains why people initially overestimate pandemic risks, including death, infection, severe disease, and transmission, when they first learn of a pandemic through descriptions of that pandemic in the media, social media, and by word-of-mouth. The description-experience gap also explains why people subsequently underestimate pandemic risks when they have first-hand experiences with a pandemic that are not immediately and visibly life-threatening. The description-experience gap thus explains the time course of most people's risk perception and behavior during pandemics. Many people's responses to terrorism displayed a similar temporal pattern.<sup>159</sup> There are many behavioral reasons<sup>160</sup> why well-intentioned people, including hard-working physicians, do not wash their hands, and among these reasons is the description-experience gap.<sup>161</sup>

Erev predicts that analogous phenomena will occur for COVID-19 with people self-isolating initially, after which those who don't get sick will feel nothing bad is happening

---

<sup>153</sup> Ido Erev & Alvin E. Roth, *Maximization, Learning, and Economic Behavior*, 111 PROC. NAT'L ACAD. SCI. 10818, 10819 (2014).

<sup>154</sup> *Ralph Hertwig*, MAX PLANCK INST. FOR HUM. DEV., <https://www.mpib-berlin.mpg.de/staff/ralph-hertwig> (last visited Nov. 28, 2020).

<sup>155</sup> Ralph Hertwig & Ido Erev, *The Description-Experience Gap in Risky Choice*, 13 TRENDS COG. SCI. 517, 517 (2009).

<sup>156</sup> *Id.* at 518.

<sup>157</sup> *Id.* at 522.

<sup>158</sup> Hertwig et al., *supra* note 142, at 539; Leslie A. Real, *Animal Choice Behavior and the Evolution of Cognitive Architecture*, 253 SCI. 980, 985 (1991).

<sup>159</sup> Carey, *supra* note 141; Ido Erev, *On the Weighting of Rare Events and the Economics of Small Decisions*, in DEVELOPMENTS ON EXPERIMENTAL ECONOMICS: NEW APPROACHES TO SOLVING REAL-WORLD PROBLEMS 59, 70-71 (Sobei H. Oda ed., 2007); Eldad Yechiam et al., *The Role of Personal Experience in Contributing to Different Patterns of Response to Rare Terrorist Attacks*, 49 J. CONFLICT RESOL. 430, 430 (2005).

<sup>160</sup> Ido Erev et al., *The Value of 'Gentle Reminders' on Safe Medical Behavior*, 24 QUALITY SAFETY HEALTH CARE e49, e49 (2010).

<sup>161</sup> Ido Erev & Ernan Haruvy, *Learning and the Economics of Small Decisions*, in 2 HANDBOOK OF EXPERIMENTAL ECONOMICS 638, 692-93 (John H. Kagel & Alvin E. Roth eds., 2013).

and so return outside.<sup>162</sup> Computer simulations of a simple Panic (hoarding groceries) or Trust (normal buying) game found that individuals relying on a small number of observations leads everyone to panic.<sup>163</sup> Computer simulations of a simple Safe (staying home) or Reckless (running errands) game found individuals relying on a small number of observations leads everyone to recklessness.<sup>164</sup> The simulations show that over time, the same person may undergo oscillations of panic and complacency as they base decisions on descriptions versus experiences. Different people may feel anxiety and complacency at different rates and times. At any one moment in pandemics, most of society will be anxious, with some complacent, and some panicked. Hoarding can be an individually rational response to seeing others have hoarded in the past. If an individual buys responsibly, that individual may find that some necessity in nearby stores and online is temporarily out of stock. So, once that individual sees that necessity in stock again, that individual may buy more than immediately necessary the second time because that individual becomes concerned about future shortages. There is a difference in motivation between irrational panic versus precautionary purchasing, though both can be self-fulfilling in terms of creating the very shortage desired to be avoided.

Any policy that decreases complacency runs the risk of stirring up panic. Reducing complacency without inciting panic is a difficult balancing act. For example, psychologists have found evidence of an identifiable victim effect, whereby people are willing to do more to save the life of an identified than unidentified or statistical victim.<sup>165</sup> Most official government press conferences and media coverage about COVID-19 have been framed in terms of numerical data or statistical visualizations. In contrast, we have not seen a lot of unfiltered photos and videos of the anguish, deaths, and suffering from COVID-19.<sup>166</sup>

Oregon Health & Science University emergency physician Dr. Esther Choo argued for revisiting medical privacy laws to allow the American public to see the hellish conditions in hospital emergency rooms.<sup>167</sup> The New York City police department seized a \$1500 drone of photojournalist George Steinmetz and issued him a misdemeanor summons for violating an aviation law<sup>168</sup> after the drone photographed mass burials of COVID-19 victims on Hart Island, a New York City public cemetery.<sup>169</sup> If people had seen such horrific, unsettling images, they would have been more likely to comply with NPIs.<sup>170</sup> Former Associate Justice of the Supreme Court of the United States Oliver Wendell Holmes Jr. wrote this about photographs of the carnage during the Civil War: “Let him

---

<sup>162</sup> Carey, *supra* note 141.

<sup>163</sup> Erev et al., *supra* note 146, at 3, 4 tbl.1, 10.

<sup>164</sup> *Id.* at 4, 5 tbl.2, 10.

<sup>165</sup> Karen E. Jenni & George Loewenstein, *Explaining the “Identifiable Victim Effect,”* 14 J. RISK & UNCERTAINTY 235, 235 (1997).

<sup>166</sup> Sarah Elizabeth Lewis, *Where Are the Photos of People Dying of Covid?*, N.Y. TIMES (May 1, 2020), <https://www.nytimes.com/2020/05/01/opinion/coronavirus-photography.html>.

<sup>167</sup> Brain Stelter, *Reliable Sources*, CNN BUS. (Mar. 29, 2020, 11:00 AM), <http://transcripts.cnn.com/TRANSCRIPTS/2003/29/rs.01.html>.

<sup>168</sup> N.Y. ADMIN. CODE §§10-126 (1), (6)(c) (2006).

<sup>169</sup> Christopher Robbins, *NYPD Seizes Drone of Photojournalist Documenting Mass Burials on Hart Island*, GOTHAMIST (Apr. 17, 2020), <https://gothamist.com/news/nypd-seizes-drone-photojournalist-documenting-mass-burials-hart-island>.

<sup>170</sup> Nicholas Kristof, *Life and Death in the ‘Hot Zone,’* N.Y. TIMES (Apr. 11, 2020), <https://www.nytimes.com/2020/04/11/opinion/sunday/coronavirus-hospitals-bronx.html>.

who wishes to know what war is look at this series of illustrations.”<sup>171</sup> Harvard University professor Sarah Lewis<sup>172</sup> observed,

Images that emerge as an emblem of sacrifice or consequence have often moved masses to act. Yet without these pictures, the virus is harder to combat.... I will remain focused on the absence of something else—a representative, visual archive of the staggering human toll of the crisis from which might emerge, in time, our emblematic pictures. For society to respond in ways commensurate with the importance of this pandemic, we have to see it. For us to be transformed by it, it has to penetrate our hearts as well as our minds.

Images force us to contend with the unspeakable. They help humanize clinical statistics, to make them comprehensible. They step unto the breach.<sup>173</sup>

Pictures make descriptions more vivid and close the description-experience gap by showing experiences that other individuals have had.

#### *H. Emotions, Anti-Asian Racism, and Anti-Asian American Racism*

During COVID-19, fears about health and finances led to anger over NPIs and life disruptions, which in turn led to hatred<sup>174</sup> and hate crimes against Asian Americans and Asian immigrants.<sup>175</sup> A Pew Research Center survey found about 40% of Asian and Black Americans in addition to 27% of Hispanics had adverse experiences due to their ethnicity since COVID-19.<sup>176</sup> This Part of the Article analyzes how COVID-19-related emotions

<sup>171</sup> OLIVER WENDELL HOLMES, SOUNDINGS FROM THE ATLANTIC 266-67 (1864).

<sup>172</sup> Sarah Lewis, Associate Professor of History of Art and Architecture and African and African American Studies, HARV. U., <https://haa.fas.harvard.edu/people/sarah-lewis>.

<sup>173</sup> Sarah Elizabeth Lewis, *Where Are the Photos of People Dying of Covid?* N.Y. TIMES (May 1, 2020), <https://www.nytimes.com/2020/05/01/opinion/coronavirus-photography.html>.

<sup>174</sup> BETHANY ALBERTSON & SHANA KUSHNER GADARIAN, ANXIOUS POLITICS: DEMOCRATIC CITIZENSHIP IN A THREATENING WORLD (2015); Jane Coaston, *How Anxiety Changes Political Behavior*, VOX (Apr. 28, 2020, 7:00 AM), <https://www.vox.com/2020/4/28/21231869/coronavirus-anxiety-politics-partisanship-research>; Thomas B. Edsall, *Covid-19 Is Twisting 2020 Beyond All Recognition*, N.Y. TIMES (Apr. 1, 2020), <https://www.nytimes.com/2020/04/01/opinion/coronavirus-politics-election.html>.

<sup>175</sup> Anti-Defamation League, *Reports of Anti-Asian Assaults, Harassment and Hate Crimes Rise as Coronavirus Spreads*, ADL BLOG (Apr. 17, 2020), <https://www.adl.org/blog/reports-of-anti-asian-assaults-harassment-and-hate-crimes-rise-as-coronavirus-spreads>; Evan Gerstmann, *Irony: Hate Crimes Surge Against Asian Americans While They Are on the Front Lines Fighting COVID-19*, FORBES (Apr. 4, 2020, 7:13 PM), <https://www.forbes.com/sites/evangerstmann/2020/04/04/irony-hate-crimes-surge-against-asian-americans-while-they-are-on-the-front-lines-fighting-covid-19/#7963c8a03b70>; Cathy Park Hong, *The Slur I Never Expected to Hear in 2020*, N.Y. TIMES (Apr. 16, 2020), <https://www.nytimes.com/2020/04/12/magazine/asian-american-discrimination-coronavirus.html>; *Let's Talk! Supporting Asian and Asian American Students Through COVID-19*, MASS. GEN. HOSP. CTR. FOR CROSS-CULTURAL STUDENT EMOTIONAL WELLNESS <https://www.mghstudentwellness.org/webinars>; Melody Zhang, *Don't Overlook the Virulence of Racism Towards Asian Americans*, SOJOURNERS (Mar. 26, 2020), <https://sojo.net/articles/don-t-overlook-virulence-racism-toward-asian-americans>.

<sup>176</sup> Jorge L. Ortiz, *Black and Asian Americans Report Increased Discrimination During Pandemic, Survey Says*, USA TODAY (July 1, 2020, 6:55 PM), <https://www.usatoday.com/story/news/nation/2020/07/01/coronavirus-black-asian-americans-report->

such as fear, anger, and hate have fueled anti-Asian racism and anti-Asian American racism.

Robert P. Jones,<sup>177</sup> CEO and founder of the Public Religion Research Institute,<sup>178</sup> wrote, “If history has a lesson for us here, it is this: Where there is a massive wave of suffering and death, a second wave of racism and xenophobia is typically not far behind. Experiences of mass grief and economic stress easily generate a desire for someone to blame.”<sup>179</sup> Jones recounted, an “outbreak of smallpox in San Francisco in 1876 was blamed on the Chinese population, sentiment that fueled the passage of the Chinese Exclusion Act in 1882.”<sup>180</sup> Jones also cited how “Nazi Germany propaganda associated Jews living in poorer sections of German cities with being disease vectors for the broader population and metaphorically talked of Jews as being themselves a disease that had infected Europe.”<sup>181</sup>

Unfortunately, in crises, people have a strong propensity to crave scapegoats to blame for the failures of their (possibly hapless) leaders, who sometimes are all too willing to provide a never-ending supply of potential scapegoats for their followers to hate. Shared anger amongst an in-group against an out-group, real or imagined, is unifying and psychologically satisfying.<sup>182</sup> Political scientist Steven W. Webster utilizes novel datasets, experiments, and surveys to demonstrate that anger has become the central emotion ruling current American political behavior and public opinion.<sup>183</sup> Webster notes that while anger has the beneficial potential to motivate political interest and involvement, anger also causes the harmful political results of decreased trust in government, reduced commitments to democratic norms and values, and negative partisanship.<sup>184</sup> Webster presents evidence that political elites strategically stoke anger among their supporters because voter anger causes voter loyalty.<sup>185</sup> Political scientist Davin L. Phoenix utilizes experiments, rhetoric analysis, and survey data to demonstrate that Asian Americans, just like African Americans and Hispanic Americans, display significantly less anger than white Americans, and that anger is weaker than pride in mobilizing political participation for these groups.<sup>186</sup>

Psychologists found that college students who watched a video of the 9/11 attacks, compared to those who did not, had significantly more favorable attitudes toward the American president, more positive reactions toward such patriotic symbols as the

---

increased-discrimination/5356563002/; Neil G. Ruiz, Juliana Menasce Horowitz, & Christine Tamir, *Many Black and Asian Americans Say They Have Experienced Discrimination Amid the COVID-19 Outbreak*, PEW RES. CTR. (July 1, 2020), <https://www.pewsocialtrends.org/2020/07/01/many-black-and-asian-americans-say-they-have-experienced-discrimination-amid-the-covid-19-outbreak/>.

<sup>177</sup>Robert P. Jones, *Staff Bios*, PUB. RELIGION RES. INST.,

<https://www.prrri.org/staff/robert-p-jones-ph-d/>.

<sup>178</sup>*About PRRI*, PUB. RELIGION RES. INST., <https://www.prrri.org/about/>.

<sup>179</sup>Robert P. Jones, *Flattening the Curve Of Xenophobia*, SOJOURNERS (Apr. 22, 2020), <https://sojo.net/articles/flattening-curve-xenophobia>.

<sup>180</sup>*Id.*

<sup>181</sup>*Id.*

<sup>182</sup>Susan Krauss Whitbourne, *In-Groups, Out-Groups, and the Psychology of Crowds*, PSYCH. TODAY BLOG (Dec. 7, 2010), <https://www.psychologytoday.com/us/blog/fulfillment-any-age/201012/in-groups-out-groups-and-the-psychology-of-crowds>.

<sup>183</sup>*See generally* STEVEN W. WEBSTER, *AMERICAN RAGE: HOW ANGER SHAPES OUR POLITICS* (2020).

<sup>184</sup>*Id.* at 4-22, 74-121.

<sup>185</sup>*Id.* at 26-27, 28-57, 122-45.

<sup>186</sup>*See generally* DAVIN L. PHOENIX, *THE ANGER GAP: HOW RACE SHAPES EMOTION IN POLITICS* 204-43 (2019).

American flag and the Statue of Liberty, and more pro-conservative political views.<sup>187</sup> Interestingly, the increases were largest among students who felt anger, as opposed to anxiety.<sup>188</sup> This research suggests that anger directed toward a shared enemy may be stronger than fear in unifying followers behind their leaders.

Even early on, COVID-19 led to scrutiny of Asian Americans.<sup>189</sup> As COVID-19 continued, some socially irresponsible political leaders used inflammatory rhetoric about the coronavirus to—perhaps intentionally—instigate racial and ethnic anger, frustration, and hatred towards Asian Americans and Asian immigrants.<sup>190</sup> An on-again and off-again war of words against China by some American politicians during COVID-19 had the effect of inciting harassment toward,<sup>191</sup> hate crimes against,<sup>192</sup> scapegoating of,<sup>193</sup> and slurs about<sup>194</sup> Asian Americans and Asian immigrants. The animus was often even directed at Asian Americans and Asian immigrants who were not Chinese American or Chinese.<sup>195</sup>

Microaggressions can lead to aggressions and even macroaggressions.<sup>196</sup> For example, in April 2020 a man wearing a facemask, gloves, and a black hooded sweater, light colored sweatpants and light colored sneakers can be seen in photos, released by the New York City police department, sitting on a stoop outside a building in Dyker Heights, Brooklyn.<sup>197</sup> This man was apparently waiting for an Asian woman to exit that building to take out her trash, at which point he stood up without any interaction between them, walked up behind her carrying a bottle in his right hand, and proceeded to douse her with some unknown liquid that caused her to suffer chemical burns on her face, back, and neck, before he ran away.

---

<sup>187</sup> Alan J. Lambert, J.P. Schott & Laura Scherer, *Threat, Politics, and Attitudes: Toward a Greater Understanding of Rally- 'Round-the-Flag Effects*, 20 CURRENT DIRS. PSYCH. SCI., no.6, 2011, at 343.

<sup>188</sup> *Id.* at 344.

<sup>189</sup> Julie Bosman, Farah Stockman & Thomas Fuller, 'Are You Sick?' For Asian-Americans, a Sneeze Brings Suspicion, N.Y. TIMES (Feb. 18, 2020), <https://www.nytimes.com/2020/02/16/us/coronavirus-american-mood.html>.

<sup>190</sup> See, e.g., Kimmy Yam, *Trump Can't Claim 'Kung Flu' Doesn't Affect Asian Americans in this Climate, Experts Say*, NBC NEWS (June 22, 2020), <https://www.nbcnews.com/news/asian-america/trump-can-t-claim-kung-flu-doesn-t-affect-asian-n1231812>.

<sup>191</sup> Kristine Phillips, *'We Just Want to be Safe': Hate Crimes, Harassment of Asian Americans Rise Amid Coronavirus Pandemic*, USA TODAY (May 21, 2020, 6:00 AM), <https://www.usatoday.com/story/news/politics/2020/05/20/coronavirus-hate-crimes-against-asian-americans-continue-rise/5212123002/>.

<sup>192</sup> Josh Margolin, *FBI Warns of Potential Surge in Hate Crimes Against Asian Americans Amid Coronavirus*, ABC NEWS (Mar. 27, 2020), <https://abcnews.go.com/US/fbi-warns-potential-surge-hate-crimes-asian-americans/story?id=69831920>.

<sup>193</sup> Brandon Yu, *Daniel Dae Kim on 'Asian-Americans': Ugly History, Relevant Again*, N.Y. TIMES (May 10, 2020), <https://www.nytimes.com/2020/05/10/arts/television/daniel-dae-kim-asian-americans.html>.

<sup>194</sup> Cathy Park Hong, *The Slur I Never Expected to Hear in 2020*, N.Y. TIMES (Apr. 12, 2020), <https://www.nytimes.com/2020/04/12/magazine/asian-american-discrimination-coronavirus.html>.

<sup>195</sup> Euny Hong, *Why I've Stopped Telling People I'm Not Chinese*, N.Y. TIMES (May 15, 2020), <https://www.nytimes.com/2020/05/15/opinion/coronavirus-chinese-asian-racism.html>.

<sup>196</sup> Brittany Wong, *For Asian Americans, There Are Two Pandemics: COVID-19 and Daily Bigotry*, HUFFPOST (May 6, 2020), [https://www.huffpost.com/entry/asian-american-racism-coronavirus\\_1\\_5e790a71c5b63c3b64954eb4](https://www.huffpost.com/entry/asian-american-racism-coronavirus_1_5e790a71c5b63c3b64954eb4).

<sup>197</sup> Clarissa-Jan Lim, BUZZFEED NEWS (Apr. 8, 2020), <https://www.buzzfeednews.com/article/clarissajanlim/asian-woman-chemical-burns-brooklyn-new-york-attack>.

Anxiety over death from pandemics, such as swine flu, have been found to boost patriotic identities and may promote intolerance, greater stereotyping, and prejudice toward foreigners.<sup>198</sup> COVID-19 thus led Asian Americans to suffer anxieties about being victimized by hate crimes and racist incidents.<sup>199</sup> Some Asian-American leaders denounced the hate and violence to little avail.<sup>200</sup> Asian-American actors, advocates, and creatives offered ways to foster compassion, inclusivity, and love during COVID-19.<sup>201</sup>

Despite the dominant, popular narrative about Asian Americans being the so-called model minority (for example, studious, hard-working, and good at mathematics), there is an unfortunate history of anti-Asian American racism in America.<sup>202</sup> Even before COVID-19, many Asian Americans felt that American media portrayed them—and other Americans saw them—as perpetual foreigners.<sup>203</sup> Korean-American actor John Cho wrote an opinion piece about how COVID-19 reminds Asian Americans, like himself, of the conditional nature of their belonging in America.<sup>204</sup> The *Los Angeles Times* produced a thoughtful video titled, *Epidemic of Hate: Anti-Asian Xenophobia Amid Coronavirus*.<sup>205</sup> Ironically, the targets of misplaced Asian-American anger, bigotry, fear, and frustration included some Asian-American physicians assisting COVID-19 patients.<sup>206</sup> Asian Americans represent 6% of the United States population, 10% of nurse practitioners, and 18% of physicians.<sup>207</sup> Some COVID-19 patients have refused being treated by Asian Americans.<sup>208</sup>

---

<sup>198</sup> Jocelyn J. Bélanger et al., *Supersize My Identity: When Thoughts of Contracting Swine Flu Boost One's Patriotic Identity*, 43 J. APPLIED SOC. PSYCHOL. E153 (2013).

<sup>199</sup> Sabrina Tavernise & Richard A. Oppel Jr., *Spit On, Yelled At, Attacked: Chinese-Americans Fear for Their Safety*, N.Y. TIMES (Mar. 23, 2020), <https://www.nytimes.com/2020/03/23/us/chinese-coronavirus-racist-attacks.html>.

<sup>200</sup> Matt Stevens, *How Asian-American Leaders Are Grappling With Xenophobia Amid Coronavirus*, N.Y. TIMES (Mar. 29, 2020), <https://www.nytimes.com/2020/03/29/us/politics/coronavirus-asian-americans.html>.

<sup>201</sup> Sharareh Drury, *"We Can't Be Silent": Asian Americans in Hollywood Denounce "Chinese Virus" and Racist Incidents*, HOLLYWOOD REP. (Mar. 25, 2020), <https://www.hollywoodreporter.com/news/we-cant-be-silent-asian-americans-hollywood-denounce-chinese-virus-racist-incidents-1286292>.

<sup>202</sup> Adrain De Leon, *The Long History of Racism Against Asian Americans in the U.S.*, PBS NEWS HOUR (Apr. 9, 2020), <https://www.pbs.org/newshour/nation/the-long-history-of-racism-against-asian-americans-in-the-u-s>.

<sup>203</sup> Christopher Hoffman, *Perpetual Foreigners: A Reflection on Asian Americans in the American Media*, HUFFPOST (Nov. 1, 2016), [https://www.huffpost.com/entry/perpetual-foreigners-a-reflection-on-asian-americans\\_b\\_5810b616e4b0f14bd28bd19a](https://www.huffpost.com/entry/perpetual-foreigners-a-reflection-on-asian-americans_b_5810b616e4b0f14bd28bd19a).

<sup>204</sup> John Cho, *Coronavirus Reminds Asian Americans like Me that Our Belonging is Conditional*, L.A. TIMES (Apr. 22, 2020), <https://www.latimes.com/opinion/story/2020-04-22/asian-american-discrimination-john-cho-coronavirus>.

<sup>205</sup> Los Angeles Times, *An Epidemic of Hate: Anti-Asian Hate Crimes Amid Coronavirus*, YOUTUBE (Apr. 27, 2020), <https://www.youtube.com/watch?v=7nlenypkMww>.

<sup>206</sup> Jeremy Hobson & Serena McMahon, *Asian American Doctor On Experiencing Racism During The Coronavirus Pandemic, Feeling 'Powerless' In Helping Patients*, WBUR (Apr. 20, 2020), <https://www.wbur.org/hereandnow/2020/04/20/asian-american-doctor-racism-coronavirus>.

<sup>207</sup> George A. Akerlof & William T. Dickens, *The Economic Consequences of Cognitive Dissonance*, 72 AM. ECON. REV. 307 (1982).

<sup>208</sup> Evan Gerstmann, *Irony: Hate Crimes Surge Against Asian Americans While They Are On the Front Lines Fighting COVID-19*, FORBES (Apr. 4, 2020), <https://www.forbes.com/sites/evangerstmann/2020/04/04/irony-hate-crimes-surge-against-asian-americans-while-they-are-on-the-front-lines-fighting-covid-19/?sh=56c6ed9a3b70>.

### III. ECONOMIC SHOCKS

COVID-19 disrupted economies globally through three shocks:<sup>209</sup> (1) medical shocks from the sick and dead neither working nor consuming; (2) economic impacts from medical containment measures, such as pausing economic activities and travel bans; and (3) reduced economic expectations leading businesses and consumers to adopt wait-and-see attitudes and postpone spending.<sup>210</sup> These aggregate supply and demand shocks led to massive, sudden unemployment for many people.<sup>211</sup>

#### A. Unemployment

During three weeks “from March 16 to April 3, 16 million [United States] workers lost their jobs – more losses than the Great Recession produced over two years.”<sup>212</sup> Over one month, United States unemployment applications reached over twenty-two million, “roughly the net number of jobs created in a nine-and-a-half-year stretch that began after the last recession and ended with the pandemic’s arrival.”<sup>213</sup> Over five weeks, the number of United States jobs lost approximated the working populations of twenty-five states.<sup>214</sup> These sobering statistics underestimate the actual jobless numbers, as states are overwhelmed by unemployment claims.<sup>215</sup> Unemployment also creates lingering productivity losses of about 2% per quarter, or equivalently 8% per year.<sup>216</sup>

---

<sup>209</sup> MITIGATING THE COVID ECONOMIC CRISIS: ACT FAST AND DO WHATEVER IT TAKES 9-10 (Richard Baldwin & Beatrice Weder di Mauro eds., 2020), <https://voxeu.org/content/mitigating-covid-economic-crisis-act-fast-and-do-whatever-it-takes>; see also NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE, UNDERSTANDING THE ECONOMICS OF MICROBIAL THREATS: PROCEEDINGS OF A WORKSHOP 1-2 (2018); <https://www.nap.edu/catalog/25224/understanding-the-economics-of-microbial-threats-proceedings-of-a-workshop>.

<sup>210</sup> Scott R. Baker et al., *How Does Household Spending Respond to an Epidemic? Consumption During the 2020 COVID-19 Pandemic* 10-15 (Nat’l Bureau Econ. Res. Working Paper No. 26949, 2020), <https://www.nber.org/papers/w26949.pdf>; see also Lauren Leatherby & David Gelles, *How the Virus Transformed the Way Americans Spend Their Money*, N.Y. TIMES (Apr. 11, 2020), <https://www.nytimes.com/interactive/2020/04/11/business/economy/coronavirus-us-economy-spending.html>.

<sup>211</sup> Stephanie Aaronson & Francisca Alba, *The Unemployment Impacts of COVID-19: Lessons from the Great Recession*, BROOKINGS BLOG UP FRONT (Apr. 15, 2020), <https://www.brookings.edu/blog/up-front/2020/04/15/the-unemployment-impacts-of-covid-19-lessons-from-the-great-recession/>.

<sup>212</sup> Dylan Walsh, *Yes, the Unemployment Numbers Are Bad, but the Pain Might Be Relatively Short*, INSIGHTS STAN. BUS. (Apr. 10, 2020), <https://www.gsb.stanford.edu/insights/yes-unemployment-numbers-are-bad-pain-might-be-relatively-short>.

<sup>213</sup> Nelson D. Schwartz, *‘Nowhere to Hide’ as Unemployment Permeates the Economy*, N.Y. TIMES (Apr. 16, 2020), <https://www.nytimes.com/2020/04/16/business/economy/unemployment-numbers-coronavirus.html>.

<sup>214</sup> These states are Alaska, Arkansas, Connecticut, Delaware, Hawaii, Idaho, Iowa, Kansas, Kentucky, Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Oklahoma, Oregon, Rhode Island, South Dakota, Utah, Vermont, West Virginia, and Wyoming. Editors’ Picks, *The Economic Toll of the Coronavirus*, N.Y. TIMES (Apr. 23, 2020), [https://www.nytimes.com/interactive/2020/04/23/business/coronavirus-unemployment.html?action=click&module=Editors Picks&pgtype=Homepage](https://www.nytimes.com/interactive/2020/04/23/business/coronavirus-unemployment.html?action=click&module=Editors%20Picks&pgtype=Homepage).

<sup>215</sup> Patricia Cohen, *Jobless Numbers Are ‘Eye-Watering’ but Understate the Crisis*, N.Y. TIMES (Apr. 23, 2020), <https://www.nytimes.com/2020/04/23/business/economy/unemployment-claims-coronavirus.html>.

<sup>216</sup> Walsh, *supra* note 212, (interviewing economist Edward Lazear, Davies Family Professor of Economics at Stanford University Graduate School of Business, who served as chief economic advisor to President George W. Bush during the economic crisis of 2007–2008).



Additionally, the distribution of economic hardships and financial suffering from unemployment was unevenly distributed across the population and exacerbated existing economic inequities,<sup>217</sup> gender inequalities,<sup>218</sup> and racial disparities.<sup>219</sup> Around half of lower-income Americans reported job or wage loss;<sup>220</sup> women were the majority of those applying for unemployment insurance claims,<sup>221</sup> and among the most severely impacted by pay and job cuts were African Americans,<sup>222</sup> Hispanic Americans,<sup>223</sup> and Asian Americans.<sup>224</sup>

Survey data from repeated cross-sections of Americans from June 2020 to October 2020 found “evidence of a building ‘second wave’ of negative shocks to household finances and of growing inequality in financial fragility by household income, educational attainment, and gender from August to September/October of 2020.”<sup>225</sup> Even those who remain employed, who are mostly wealthier, white-collar, and predominantly Caucasian, experienced such forms of cognitive taxation<sup>226</sup> as balancing childcare with job tasks,<sup>227</sup> hurriedly designing acoustically separate, functional, and healthy at-home workspaces,<sup>228</sup> and other psychological stressors.<sup>229</sup>

---

<sup>217</sup> Editorial Board, *The America We Need*, N.Y. TIMES (Apr. 9, 2020),

<https://www.nytimes.com/interactive/2020/opinion/america-inequality-coronavirus.html>.

<sup>218</sup> Titan Alon et al., *The Impact of COVID-19 on Gender Equality 2-4* (Nat’l Bureau Econ. Res. Working Paper No. 26947, 2020), <https://www.nber.org/papers/w26947>.

<sup>219</sup> Lauren Aratani & Dominic Rushe, *African Americans Bear the Brunt of Covid-19’s Economic Impact*, THE GUARDIAN (Apr. 28, 2020), <https://www.theguardian.com/us-news/2020/apr/28/african-americans-unemployment-covid-19-economic-impact>.

<sup>220</sup> Kim Parker et al., *About Half of Lower-Income Americans Report Household Job or Wage Loss Due to COVID-19*, PEW RES. CTR. (Apr. 21, 2020), <https://www.pewsocialtrends.org/2020/04/21/about-half-of-lower-income-americans-report-household-job-or-wage-loss-due-to-covid-19/>.

<sup>221</sup> Sarah Ryley & Jessica Washington, *Coronavirus Shutdowns Make Women the Majority of Unemployment Seekers Across U.S.*, FULLER PROJECT INT’L REPORTING (Apr. 22, 2020), <https://fullerproject.org/story/coronavirus-shutdowns-make-women-the-majority-of-unemployment-seekers-in-states-across-u-s/>.

<sup>222</sup> Catherine Powell, *Color of Covid: The Racial Justice Paradox of Our New Stay-at-Home Economy*, CNN (Apr. 18, 2020), <https://www.cnn.com/2020/04/10/opinions/covid-19-people-of-color-labor-market-disparities-powell/index.html>.

<sup>223</sup> Sarah Ryley & Jessica Washington, *U.S. Latinos Among Hardest Hit by Pay Cuts, Job Losses Due to Coronavirus*, PEW RES. CTR. (Apr. 3, 2020), <https://fullerproject.org/story/coronavirus-shutdowns-make-women-the-majority-of-unemployment-seekers-in-states-across-u-s/>.

<sup>224</sup> Dan Burns, *How the Coronavirus Job Cuts Played Out by Sector and Demographics*, REUTERS (Apr. 4, 2020), <https://www.reuters.com/article/us-health-coronavirus-usa-jobs/how-the-coronavirus-job-cuts-played-out-by-sector-and-demographics-idUSKBN21M0EL>.

<sup>225</sup> Daniel Schneider et al., *Household Financial Fragility during COVID-19: Rising Inequality and Unemployment Insurance Benefit Reductions* (Global Fin. Literacy Excellence Ctr. Working Paper No. 2020-4, 2020).

<sup>226</sup> Alan Yuhas, *What Day Is It? You’re Not the Only One Asking*, N.Y. TIMES (Apr. 14, 2020), <https://www.nytimes.com/2020/04/14/us/coronavirus-time-what-day-is-it.html>.

<sup>227</sup> Leah Chernikoff, *8 Ways to Set Boundaries Between Work and Kids*, N.Y. TIMES (Apr. 9, 2020), <https://www.nytimes.com/2020/04/09/parenting/coronavirus-work-family-balance.html>.

<sup>228</sup> John Herrman, *The Buy-Nothing Home Office*, N.Y. TIMES (Apr. 15, 2020), <https://www.nytimes.com/2020/04/15/style/working-from-home-setup.html>.

<sup>229</sup> Emilie Le Beau Lucchesi, *The Stresses of the Way We Work Now*, N.Y. TIMES (May 14, 2020), <https://www.nytimes.com/2020/05/14/well/mind/coronavirus-work-stress-unemployment-depression-anxiety.html>.

### B. A False Trade-off

The severe global economic recession caused by COVID-19 and NPIs in response to COVID-19<sup>230</sup> led to understandable concerns about how societies can and should trade off public health versus economic wealth. The concerns centered on whether the side-effects of NPIs were worse than COVID-19 in terms of some metric, be that dollars, lives lost, quality-adjusted life years, or subjective well-being.<sup>231</sup> A survey asked academic economic experts whether discontinuing severe lockdowns when the likelihood of a resurgence in infections remained high would lead to more total economic harm than maintaining lockdowns to prevent resurgence.<sup>232</sup> All forty-four respondents responded yes.<sup>233</sup> A pair of economists also found states that implemented SAH NPIs did not have greater job losses than states that did not implement SAH NPIs.<sup>234</sup>

Even if businesses open up, many customers are likely to stay away initially.<sup>235</sup> As Betsy Stevenson, University of Michigan professor of economics and public policy,<sup>236</sup> observed, "If we open tomorrow, few are going to be willing to take the risk of engaging fully in the economy. Who wants to be the guinea pig who tests how dangerous going to a crowded restaurant still is?"<sup>237</sup> A field study found restaurant air conditioning ventilation systems can cause air currents and complex patterns of airflow to keep virus particles airborne to spread COVID-19.<sup>238</sup> Other studies suggested the possibility of airborne

---

<sup>230</sup> Peter S. Goodman, *Why the Global Recession Could Last a Long Time*, N.Y. TIMES (Apr. 1, 2020), <https://www.nytimes.com/2020/04/01/business/economy/coronavirus-recession.html>.

<sup>231</sup> Peter Singer & Michael Plant, *When Will the Pandemic Cure Be Worse Than the Disease?* PROJECT SYNDICATE (Apr. 6, 2020), <https://www.project-syndicate.org/commentary/when-will-lockdowns-be-worse-than-covid19-by-peter-singer-and-michael-plant-2020-04>.

<sup>232</sup> Initiative on Global Markets Forum, *Policy for the COVID-19 Crisis*, U. OF CHI. BOOTH SCH. OF BUS. (Mar. 27, 2020), <http://www.igmchicago.org/surveys/policy-for-the-covid-19-crisis/>.

<sup>233</sup> *Id.* at Question B.

<sup>234</sup> Zhixian Lin & Christopher M. Meissner, *Health vs. Wealth? Public Health Policies and the Economy During Covid-19* 9-12 (Nat'l Bureau Econ. Res. Working Paper No. 27099, 2020), <https://www.nber.org/papers/w27099>.

<sup>235</sup> Aaron E. Carroll, *There's Really Only One Way to Reopen the Economy*, N.Y. TIMES (Apr. 26, 2020), <https://www.nytimes.com/2020/04/26/opinion/coronavirus-economy-reopen.html>.

<sup>236</sup> Betsy Stevenson, *Professor of Public Policy, Professor of Economics (by courtesy)*, U. OF MICH. GERALD R. FORD SCH. OF PUB. POL'Y, <http://fordschool.umich.edu/faculty/betsy-stevenson>.

<sup>237</sup> Carroll, *supra* note 235, at 27.

<sup>238</sup> Kenneth Chang, *How Coronavirus Infected Some, but Not All, in a Restaurant*, N.Y. TIMES (Apr. 20, 2020), <https://www.nytimes.com/2020/04/20/health/airflow-coronavirus-restaurants.html>; Jianyun Lu et al., *COVID-19 Outbreak Associated with Air Conditioning in Restaurant, Guangzhou, China, 2020*, 26 EMERGING INFECTIOUS DISEASES 1628 (2020), [https://wwwnc.cdc.gov/eid/article/26/7/20-0764\\_article](https://wwwnc.cdc.gov/eid/article/26/7/20-0764_article).

transmission of COVID-19 in hospitals,<sup>239</sup> medical centers,<sup>240</sup> air pollution,<sup>241</sup> and from loud speech.<sup>242</sup>

Dr. David L. Katz,<sup>243</sup> who has “expertise in nutrition, health promotion, and the prevention of chronic disease,”<sup>244</sup> wrote an opinion piece arguing that Americans, except for the most vulnerable to COVID-19, should return to their pre-COVID-19 lives in order for the United States to develop natural herd immunity<sup>245</sup> and preserve the American economy.<sup>246</sup> Katz’s editorial generated controversy among public health experts.<sup>247</sup> Dr. Sten H. Vermund, infectious disease epidemiologist,<sup>248</sup> and three epidemiology professors

---

<sup>239</sup> Kenneth Chang, *How Coronavirus Infected Some, but Not All, in a Restaurant*, N.Y. TIMES (Apr. 20, 2020), <https://www.nytimes.com/2020/04/20/health/airflow-coronavirus-restaurants.html>; Lu et al., *supra* note 238.

<sup>240</sup> Doyle Rice, *How Far Does Coronavirus Travel in the Air? Preliminary Study Finds Virus on Tiny Particles of Air Pollution*, USA TODAY (Apr. 27, 2020), <https://www.usatoday.com/story/news/health/2020/04/27/coronavirus-found-air-pollution-particles-preliminary-study-finds/3033646001/>; Joshua L. Santarpia et al., *Transmission Potential of SARS-CoV-2 in Viral Shedding Observed at the University of Nebraska Medical Center*, MEDRXIV (Mar. 26, 2020), <https://www.medrxiv.org/content/10.1101/2020.03.23.20039446v2.full.pdf>.

<sup>241</sup> Leonardo Setti et al., *SARS-Cov-2 RNA Found on Particulate Matter of Bergamo in Northern Italy: First Preliminary Evidence*, MEDRXIV (Apr. 24, 2020), <https://www.medrxiv.org/content/10.1101/2020.04.15.20065995v2>.

<sup>242</sup> Sima Asadi et al., *The Coronavirus Pandemic and Aerosols: Does COVID-19 Transmit Via Expiratory Particles?* 54 AEROSOL SCI. & TECH. 635 (2020); Yuliya Parshina-Kottas et al., *This 3-D Simulation Shows Why Social Distancing Is So Important*, N.Y. TIMES (Apr. 14, 2020), <https://www.nytimes.com/interactive/2020/04/14/science/coronavirus-transmission-cough-6-feet-ar-ul.html>; Knuvl Sheikh, *Talking Can Generate Coronavirus Droplets That Linger Up to 14 Minutes*, N.Y. TIMES (May 14, 2020), <https://www.nytimes.com/2020/05/14/health/coronavirus-infections.html>; Valentyn Standnytski et al., *The Airborne Lifetime of Small Speech Droplets and Their Potential Importance in SARS-CoV-2 Transmission*, 117 PROC. NAT’L ACAD. SCI. 11875 (2020), <https://doi.org/10.1073/pnas.2006874117>.

<sup>243</sup> DAVID L. KATZ, <https://davidkatzmd.com/>.

<sup>244</sup> *David L. Katz MD Biography*, DAVID L. KATZ, <https://davidkatzmd.com/david-katz-md-biography/> (last visited Nov. 21, 2020).

<sup>245</sup> Noreen Iftikhar, *What Is Herd Immunity, and Could It Help Prevent COVID-19?*, HEALTHLINE (Apr. 2, 2020), <https://www.healthline.com/health/herd-immunity>.

<sup>246</sup> David L. Katz, *Is Our Fight Against Coronavirus Worse Than the Disease?* N.Y. TIMES (Mar. 20, 2020), <https://www.nytimes.com/2020/03/20/opinion/coronavirus-pandemic-social-distancing.html>; *see also* Thomas L. Friedman, *A Plan to Get America Back to Work*, N.Y. TIMES (Mar. 22, 2020), <https://www.nytimes.com/2020/03/22/opinion/coronavirus-economy.html>; *see also* Charles Creitz, *Dr. David Katz: Coronavirus Vaccine or Herd Immunity Are Only Ways Life Can Fully Return to Normal*, FOX NEWS (Apr. 20, 2020), <https://www.foxnews.com/media/david-katz-coronavirus-vaccine-herd-immunity>; *see also* *National Response to the COVID-19 Pandemic for #TotalHarmMinimization*, TRUE HEALTH INITIATIVE, <https://www.truehealthinitiative.org/wp-content/uploads/2020/04/TotalHarmMinimization-2020-04-07.pdf> (last visited Nov. 21, 2020).

<sup>247</sup> Rose Horowitch & Meera Shoaib, *Former Instructor’s Op-ed Controversial Among Health Experts*, YALE DAILY NEWS (Mar. 30, 2020), <https://yaledailynews.com/blog/2020/03/30/former-professors-op-ed-controversial-among-health-experts/>.

<sup>248</sup> *Sten H. Vermund, MD, PhD, Dean and Anna M.R. Lauder Professor of Public Health, Professor of Pediatrics, Yale School of Medicine, YALE SCH. OF PUB. HEALTH*, [https://publichealth.yale.edu/profile/sten\\_vermund/](https://publichealth.yale.edu/profile/sten_vermund/).

at the Yale School of Medicine, Dr. Gregg Gonsalves,<sup>249</sup> Dr. Becca Levy,<sup>250</sup> and Dr. Saad Omer;<sup>251</sup> took issue with Katz's editorial and responded with their own,<sup>252</sup> noting that who is most vulnerable to COVID-19 is currently unknown. Two physicians, Dr. David S. Ludwig<sup>253</sup> and Dr. Richard Malley,<sup>254</sup> wrote another opinion piece,<sup>255</sup> stating that Katz offers a false choice because many Americans live with such chronic health issues as cardiovascular disease, diabetes, and obesity, making them vulnerable to COVID-19.

The CDC considered people with severe obesity, defined to be a body mass index (BMI) over 40, to be at risk of developing serious conditions from COVID-19.<sup>256</sup> Preliminary data suggests obesity, defined as BMI over 30, is a risk factor for COVID-19.<sup>257</sup> Roughly 42% of Americans, or about 80 million people, are obese.<sup>258</sup> Around 88%

---

<sup>249</sup> Gregg Gonsalves, PhD, Assistant Professor of Epidemiology (Microbial Diseases); Associate (Adjunct) Professor of Law, Yale Law School; Co-Director, Global Health Justice Partnership; Co-Director, Collaboration for Research Integrity and Transparency, YALE SCH. OF MED., [https://medicine.yale.edu/profile/gregg\\_gonsalves/](https://medicine.yale.edu/profile/gregg_gonsalves/).

<sup>250</sup> Becca Levy, PhD, Professor of Public Health (Social and Behavioral Sciences) and Psychology, YALE SCH. OF MED., [https://medicine.yale.edu/profile/becca\\_levy/](https://medicine.yale.edu/profile/becca_levy/).

<sup>251</sup> Saad Omer, Director, Yale Institute for Global Health; Associate Dean (Global Health Research), Yale School of Medicine; Professor of Medicine (Infectious Diseases), Yale School of Medicine; Susan Dwight Bliss Professor of Epidemiology of Microbial Diseases, Yale School of Public Health YALE SCH. OF MED., [https://medicine.yale.edu/profile/saad\\_omer/](https://medicine.yale.edu/profile/saad_omer/).

<sup>252</sup> Sten H. Vermund et al., *The Wrong Way to Fight Coronavirus*, N.Y. TIMES (Mar. 23, 2020), <https://www.nytimes.com/2020/03/23/opinion/letters/coronavirus-quarantine.html>.

<sup>253</sup> David S. Ludwig, MD, PhD, Co-director, New Balance Foundation Obesity Prevention Center; Attending Physician, Division of Endocrinology Professor of Nutrition, Harvard School of Public Health; Professor of Pediatrics, Harvard Medical School Professor of Nutrition, Harvard T.H. Chan School of Public Health, and Professor of Pediatrics, BOS. CHILD. HOSP., <http://www.childrenshospital.org/research/researchers/david-ludwig>.

<sup>254</sup> Richard Malley, Senior Physician in Pediatrics, Division of Infectious Diseases, Professor of Pediatrics, Harvard Medical School, BOS. CHILD. HOSP., <http://www.childrenshospital.org/directory/physicians/m/richard-malley>.

<sup>255</sup> David S. Ludwig & Richard Malley, *Americans Are Already Too Diseased to Go Back to Work Right Now*, N.Y. TIMES (Mar. 30, 2020), <https://www.nytimes.com/2020/03/30/opinion/obesity-us-health-coronavirus.html>.

<sup>256</sup> *People Who Need Extra Precautions, Groups at Higher Risk for Severe Illness*, CENTERS FOR DISEASE CONTROL AND PREVENTION, <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/groups-at-higher-risk.html> (Nov. 2, 2020).

<sup>257</sup> Brad Brooks, *Why is New Orleans' Coronavirus Death Rate Twice New York's? Obesity Is A Factor*, THOMSON REUTERS (Apr. 2, 2020), <https://www.reuters.com/article/us-health-coronavirus-new-orleans/why-is-new-orleans-coronavirus-death-rate-twice-new-yorks-obesity-is-a-factor-idUSKBN21K1B0>; Radwan Kassir, *Risks of COVID-19 for Patients with Obesity*, OBESITY REV. (2020); Jennifer Lighter et al., *Obesity in Patients Younger Than 60 Years is A Risk Factor for Covid-19 Hospital Admission*, CLIN. INFECTIOUS DISEASES (2020); Christopher M. Petrilli et al., *Factors Associated with Hospitalization and Critical Illness Among 4,103 Patients with Covid-19 Disease in New York City*, MEDRXIV (Apr. 11, 2020) <https://www.medrxiv.org/content/10.1101/2020.04.08.20057794v1.full.pdf>; Qingxian Cai et al., *Obesity and COVID-19 Severity in a Designated Hospital in Shenzhen, China*, LANCET (Apr. 1, 2020), <https://ssrn.com/abstract=3556658>; Norbert Stefan et al., *Obesity and Impaired Metabolic Health in Patients with COVID-19*, 16 NATURE REV. ENDOCRINOLOGY 341 (2020), <https://www.nature.com/articles/s41574-020-0364-6.pdf>.

<sup>258</sup> Roni Caryn Rabin, *Obesity Linked to Severe Coronavirus Disease, Especially for Younger Patients*, N.Y. TIMES (Apr. 16, 2020), <https://www.nytimes.com/2020/04/16/health/coronavirus-obesity-higher-risk.html>.

of Americans live with high blood pressure, high cholesterol, diabetes or pre-diabetes, which are all big risk factors for COVID-19 illness and death.<sup>259</sup>

Economist Joshua Gans integrates a canonical epidemiological model<sup>260</sup> and the basic economic notion of a set of production possibilities.<sup>261</sup> Gans' analysis provides two reasons why a government's optimal response to a pandemic should be to prioritize public health over economic wealth.<sup>262</sup> First, considering small trade-offs between public health and economic wealth does not work in pandemics.<sup>263</sup> Second, prioritizing economic wealth is an irreversible decision because doing so fails to preserve valuable public health options.<sup>264</sup>

Economists also modified the canonical epidemiological model to incorporate household economic activity.<sup>265</sup> Economic models demonstrate people's mitigation incentives are not socially optimal because consumption and work choices not only have infection rate and health care congestion, those choices also exhibit fatalism about future infection.<sup>266</sup> A calibrated model that assumes people mitigate by working from home and improve their productivity by learning by doing,<sup>267</sup> generates quantitatively meaningful reductions in disease spread and economic costs.<sup>268</sup> Economists analyzed NPIs in response to the 1918 flu pandemic and found United States cities that enacted NPIs sooner and more aggressively reduced mortality and better mitigated adverse economic consequences.<sup>269</sup> Behavioral and social science research provide insights on how to achieve large-scale behavior changes that NPIs aspire to accomplish.<sup>270</sup> Reducing anxiety is one way to do this.

Irrational anxiety is anxiety that leads to misestimation of probabilities about risks.<sup>271</sup> For example, non-COVID-19 patients may delay or even refuse critical care such as organ transplants during COVID-19 due to irrational anxiety.<sup>272</sup> Similar to many cognitive

<sup>259</sup> Jane E. Brody, *How Poor Diet Contributes to Coronavirus Risk*, N.Y. TIMES (Apr. 20, 2020), <https://www.nytimes.com/2020/04/20/well/eat/coronavirus-diet-metabolic-health.html>.

<sup>260</sup> William Ogilvy Kermack & Anderson G. McKendrick, *A Contribution to the Mathematical Theory of Epidemics*, 115 PROC. ROYAL SOC. LONDON 700 (1927).

<sup>261</sup> JOSHUA GANS, *ECONOMICS IN THE AGE OF COVID-19* (2020).

<sup>262</sup> *Id.* at 4, 11, 23 fig.1-3.

<sup>263</sup> *Id.* at 11, n.10. See also Tiberiu Harko et al., *Exact Analytical Solutions of the Susceptible-Infected-Recovered (SIR) Epidemic Model and of the SIR Model with Equal Death and Birth Rates*, 236 APPLIED MATHEMATICS & COMPUTATION 184 (2014).

<sup>264</sup> GANS, *supra* note 261, at 5-6, 12, 25 fig.1-4.

<sup>265</sup> Callum J. Jones et al., *Optimal Mitigation Policies in a Pandemic: Social Distancing and Working from Home* (19 Nat'l Bureau Econ. Res. Working Paper No. 26984, 2020).

<sup>266</sup> *Id.*

<sup>267</sup> Kenneth J. Arrow, *The Implications of Learning by Doing*, 29 REV. ECON. STUD. 159, 159 (1962). See also ROBERT M. SOLOW, *LEARNING FROM 'LEARNING BY DOING': LESSONS FOR ECONOMIC GROWTH* (1997).

<sup>268</sup> When "a private agent knows that she is likely to be infected in the future, this reduces her incentives to be careful today." Jones et al., *supra* note 265, at 3.

<sup>269</sup> Sergio Correia et al., *Pandemics Depress the Economy, Public Health Interventions Do Not: Evidence from the 1918 Flu* (June 11, 2020) (unpublished manuscript), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3561560](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3561560).

<sup>270</sup> Jay Van Bavel et al., *Using Social and Behavioral Science to Support COVID-19 Pandemic Response*, NATURE HUM. BEHAV. (forthcoming).

<sup>271</sup> See generally Huang, *supra* note 128.

<sup>272</sup> Katie Hafner, *Fear of Covid Leads Other Patients to Decline Critical Treatment*, N.Y. TIMES (May 20, 2020), <https://www.nytimes.com/2020/05/25/health/coronavirus-cancer-heart-treatment.html>; Denise Lu, *There Has Been an Increase in Other Causes of Deaths, Not Just Coronavirus*, N.Y. TIMES (June 1, 2020),

biases,<sup>273</sup> irrational anxiety reflects a particular type of inattention that inhibits rational estimates of relevant probabilities. In this sense, irrational anxiety is a form of mindlessness. Not surprisingly then, practicing mindfulness is one way to lessen anxiety.

Part III demonstrates the COVID-19 pandemic was not just a health crisis. COVID-19 precipitated economic and financial crises in terms of massive unemployment and global recessions. Unfortunately, COVID-19 also led to belief in a false tradeoff between public health versus economic wealth.

#### IV. COVID-19 INFORMATION ACQUISITION OR AVOIDANCE

Why do some people, including some leaders, actively seek information about COVID-19, while others just as actively avoid information about COVID-19? This question is an important, timely, and special case of the more general question as to how people decide what information to acquire and what information to avoid. These epistemological questions exemplify the field of cognitive economics,<sup>274</sup> which has been defined as “the economics of what’s in people’s minds.”<sup>275</sup>

A traditional perspective towards information is that people value and therefore demand information to improve their decision-making processes.<sup>276</sup> This conventional viewpoint about information underlies policies of mandatory disclosure in many areas of law, including consumer credit, health, and securities regulation. Another source of information demand rests on the motivation of satisfying curiosity, interpreted as a type of cognitively induced deprivation due to a perceived gap about knowledge or understanding.<sup>277</sup>

Recent research addresses the related issues of information acquisition and avoidance.<sup>278</sup> Behavioral economists Russell Golman and George Loewenstein introduce a novel theory about preferences for acquiring or avoiding information.<sup>279</sup> Their theory builds on Loewenstein’s notion of information gaps,<sup>280</sup> defined as questions a person is aware of, yet remains uncertain of the correct answers.<sup>281</sup> Their information preference theory simultaneously explains why people seek to acquire decision-irrelevant information (e.g., answers to trivia questions) and seek to avoid possibly decision-relevant information (e.g., medical diagnostic test results).<sup>282</sup> This theory also accounts for people seeking

---

<https://www.nytimes.com/interactive/2020/06/01/us/coronavirus-deaths-new-york-new-jersey.html>;  
Tomislav Mihaljevic & Gianrico Farrugia, *How Many More Will Die From Fear of the Coronavirus?* N.Y. TIMES (June 9, 2020), <https://www.nytimes.com/2020/06/09/opinion/coronavirus-hospitals-deaths.html>.

<sup>273</sup> Xavier Gabaix, *A Sparsity-Based Model of Bounded Rationality*, 129 Q.J. ECON. 1661, 1695 (2014);  
Xavier Gabaix, *Behavioral Inattention*, in 2 HANDBOOK OF BEHAVIORAL ECONOMICS: FOUNDATIONS AND APPLICATIONS 261, 269-77 (B. Douglas Berheim et al. eds., 2019).

<sup>274</sup> Miles Kimball, *Cognitive Economics*, 66 JAPANESE ECON. REV. 167, 167 (2015).

<sup>275</sup> *Id.* at 168.

<sup>276</sup> *See, e.g.*, George J. Stigler, *The Economics of Information*, 69 J. POL. ECON. 213, 213 (1961).

<sup>277</sup> George Loewenstein, *The Psychology of Curiosity: A Review and Reinterpretation*, 116 PSYCHOL. BULL. 75 (1994).

<sup>278</sup> Golman et al., *supra* note 101.

<sup>279</sup> Russell Golman & George Loewenstein, *Information Gaps: A Theory of Preferences Regarding the Presence and Absence of Information*, 5 DECISION 143 (2018).

<sup>280</sup> Loewenstein, *supra* note 277, at 87.

<sup>281</sup> Golman & Loewenstein, *supra* note 279, at 143.

<sup>282</sup> *Id.* at 143.

information they enjoy thinking about (“savoring effect”) and avoiding information they do not enjoy thinking about (“ostrich effect”).<sup>283</sup>

This information preference theory rests on an economic model where people’s utilities depend on their beliefs, weighted by how much attention people devote to those beliefs.<sup>284</sup> Information can improve decision-making and affect utilities directly by changing beliefs and redirecting upon which beliefs people focus attention.<sup>285</sup> Experimental evidence supports the three principal hypotheses of this theory, namely that people are willing to spend more resources (effort and time) to acquire information that (1) seems more important, (2) is more salient, and (3) is more pleasurable.<sup>286</sup>

The three principal hypotheses of this theory imply people are more willing to acquire information about COVID-19 if they believe such information is more important, salient, and pleasurable. Because most information about COVID-19 is not pleasurable but highly salient, the remaining factor that effectively determines whether people seek to acquire or avoid information about COVID-19 is whether people believe the information is important. People who believe that COVID-19 is a serious public health threat likely believe information about COVID-19 is important. People who believe that COVID-19 is a hoax presumably believe that information about COVID-19 is not important. This information preference theory also implies that some people’s avoidance of information about COVID-19 is intensified by such non-instrumental motivations as expected negative valence of emotional reactions to certain information.

In the United States, political affiliations also motivate the avoidance or seeking of information about COVID-19. Relatedly, people who hold one set of beliefs, for example concerning the incompetency or competency of American presidential leadership, often dislike people holding different beliefs.<sup>287</sup> The United States is unfortunately exceptional in having its individual and leadership responses to COVID-19 become highly partisan and politicized.<sup>288</sup> For example, whether K-12 schools,<sup>289</sup> as well as colleges and universities,<sup>290</sup> should open in fall 2020 became politically contentious topics of debate.<sup>291</sup> A question that COVID-19 raises is how to motivate people to acquire, instead of avoid, scientifically accurate information.

---

<sup>283</sup> Russell Golman et al., *The Demand for, and Avoidance of, Information*, COGNITIVE SOCIAL SCIENCE EJOURNAL (2015),

[https://www.cmu.edu/dietrich/sds/docs/golman/Demand%20for%20Information%20Golman\\_Loewenstein%20October%202015.pdf](https://www.cmu.edu/dietrich/sds/docs/golman/Demand%20for%20Information%20Golman_Loewenstein%20October%202015.pdf).

<sup>284</sup> *Id.*

<sup>285</sup> *Id.*

<sup>286</sup> *Id.*

<sup>287</sup> Russell Golman et al., *The Preference for Belief Consonance*, J. ECON. PERSP. 165 (2016).

<sup>288</sup> Joshua Clinton et al., *Partisan Pandemic: How Partisanship and Public Health Concerns Affect Individuals’ Social Distancing During COVID-19* (July 9, 2020) (unpublished manuscript), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3633934](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3633934).

<sup>289</sup> Dana Goldstein & Eliza Shapiro, *‘I Don’t Want to Go Back’: Many Teachers Are Fearful and Angry Over Pressure to Return*, N.Y. TIMES (July 11, 2020), <https://www.nytimes.com/2020/07/11/us/virus-teachers-classrooms.html>.

<sup>290</sup> Miriam Jordan et al., *Trump Visa Rules Seen as Way to Pressure Colleges on Reopening*, N.Y. TIMES (July 10, 2020), <https://www.nytimes.com/2020/07/07/us/student-visas-coronavirus.html>.

<sup>291</sup> Peter H. Huang & Debra S. Austin, *Unsafe at Any Campus: Don’t Let Colleges Become the Next Cruise Ships, Nursing Homes, and Food Processing Plants*, 96 IND. L.J. SUPPLEMENT 25 (2020).

## V. POLICY RESPONSES TO PANDEMIC HARMS

Pandemics cause massive tragic economic, emotional, mental, physical, and psychological suffering. These harms are interconnected and lead to vicious cycles. Fear distorts people's decision readiness, deliberation, information acquisition, risk perception, and thinking. Distortions affect people's financial, health, and political decisions, causing additional fears. Emotions have direct health impacts and indirect behavioral impacts, which in turn have their own health impacts. This Article advocates policy responses to pandemics: directly paying people monthly financial assistance, encouraging people to practice mindfulness, and gentle enforcement of NPIs.

### A. *Monthly Pandemic Financial Assistance*

American voters supported a financial stimulus package of money paid directly to people, instead of to large corporations, by a 94% margin.<sup>292</sup> Yet, the United States Congress and President chose the indirect and cumbersome route of requiring small businesses to apply through banks for loans that will be forgiven if: the proceeds are used to cover payroll costs, and most mortgage interest, rent, and utility costs over the two month period after the loan is made, and if the small business maintains employee and compensation levels.<sup>293</sup> The first round of the Paycheck Protection Program (PPP) of the United States Coronavirus Aid, Relief, and Economic Security (CARES) Act<sup>294</sup> authorized \$349 billion dollars for loans. The PPP ran out of money within only two weeks,<sup>295</sup> in addition to experiencing access problems, technological delays, and loopholes permitting large corporate chains<sup>296</sup> and companies with accounting problems or legal troubles with the federal government<sup>297</sup> to benefit over small businesses.<sup>298</sup> Small business owners filed class action lawsuits alleging JPMorgan Chase, Wells Fargo, Bank of America, and US Bank engaged in unfair lending practices in order to earn higher commissions from the federal government.<sup>299</sup> The second round of the PPP authorized an additional \$310 billion for loans and an additional \$10 billion for administrative costs.<sup>300</sup>

If the goal of the PPP is to protect people's paychecks, involving banks is unnecessary, and the government should instead pay people directly the amount of their

<sup>292</sup> Natalie Foster & Collin McDonough, *Voters Support A Robust Monthly Cash Payment*, DATA FOR PROGRESS (Mar. 21, 2020), <https://www.dataforprogress.org/blog/3/21/voters-support-a-robust-cash-payment>.

<sup>293</sup> U.S. DEP'T OF THE TREASURY, PAYCHECK PROTECTION PROGRAM (PPP) INFORMATION SHEET.

<sup>294</sup> CARES Act, S. 3548, 116th Cong. (2020).

<sup>295</sup> Li Zhou, *The Paycheck Protection Program Has Already Run Out of Money*, VOX (Apr. 16, 2020), <https://www.vox.com/2020/4/16/21223637/paycheck-protection-program-funding>.

<sup>296</sup> Editorial Board, *Failing to Help Those Who Need It Most*, N.Y. TIMES (Apr. 24, 2020), <https://www.nytimes.com/2020/04/24/opinion/coronavirus-stimulus-failure.html>.

<sup>297</sup> Jessica Silver-Greenberg et al, *Large, Troubled Companies Got Bailout Money in Small-Business Loan Program*, N.Y. TIMES (Apr. 26, 2020), <https://www.nytimes.com/2020/04/26/business/coronavirus-small-business-loans-large-companies.html?auth=login-email&login=email>.

<sup>298</sup> Editorial Board, *supra* note 296.

<sup>299</sup> Rachel Green, *Several Major US Banks Are Being Sued for Unfair PPP Lending Practices*, BUS. INSIDER (Apr. 21, 2020), <https://www.businessinsider.com/major-banks-being-sued-for-unfair-ppp-loan-processing-practices-2020-4>.

<sup>300</sup> Li Zhou, *What the New Stimulus Money Means for Small Business Loan Programs*, VOX (Apr. 23, 2020), <https://www.vox.com/2020/4/23/21232549/paycheck-protection-program-new-stimulus>.



paychecks as reported on their monthly pay stubs. Many countries, like Denmark<sup>301</sup> and Germany,<sup>302</sup> paid employers to continue paying employees<sup>303</sup> and preserve jobs.<sup>304</sup> Such policies are economically sensible. The already burdensome United States' policy requiring people to apply for unemployment insurance was more cumbersome as the United States' technologically antiquated unemployment system was overwhelmed.<sup>305</sup> Further, for most individuals, health insurance is an employment fringe benefit, so unemployment means no employer-subsidized health insurance.<sup>306</sup>

Policies that make economic sense are also psychologically sound because unemployment has long-term psychological effects.<sup>307</sup> Conversely, employment provides people with many psychological benefits.<sup>308</sup> At its best, work offers people identity, meaning, and structure to life.<sup>309</sup> Work provides people financial benefits (such as money and livelihoods) and psychological benefits (such as meaning and purpose).<sup>310</sup> Paying employers to pay employees throughout the pandemic maintains financial and psychological benefits by preserving work in addition to income.

To reduce financial anxieties and cushion economic hardships caused by pandemics and NPIs, governments can and should pay people pandemic monthly financial assistance until unemployment figures fall back to their pre-COVID-19 levels. Continuing pandemic monthly financial assistance as long as unemployment remains high is an example of what

---

<sup>301</sup> Derek Thompson, 'Do More—Fast. Don't Wait,' ATLANTIC (Mar. 24, 2020), <https://www.theatlantic.com/ideas/archive/2020/03/denmark-has-a-message-for-america-do-more-fast/608629/>; Derek Thompson, *Denmark's Idea Could Help the World Avoid a Great Depression*, ATLANTIC (Mar. 21, 2020), <https://www.theatlantic.com/ideas/archive/2020/03/denmark-freezing-its-economy-should-us/608533/>.

<sup>302</sup> Peter S. Rashish, *A German Import to Fight the Economic Impact of the Coronavirus*, HILL (Mar. 19, 2020), <https://thehill.com/opinion/international/488484-a-german-import-to-fight-the-economic-impact-of-the-coronavirus>.

<sup>303</sup> Matt Apuzzo & Monika Pronczuk, *Covid-19's Economic Pain Is Universal. But Relief? Depends on Where You Live*, N.Y. TIMES (Apr. 5, 2020), <https://www.nytimes.com/2020/03/23/world/europe/coronavirus-economic-relief-wages.html>.

<sup>304</sup> Editorial Board, *Why Is America Choosing Mass Unemployment?*, N.Y. TIMES (Mar. 26, 2020), <https://www.nytimes.com/2020/03/26/opinion/covid-economy-unemployment-europe.html>.

<sup>305</sup> Emmanuel Saez & Gabriel Zucman, *Jobs Aren't Being Destroyed This Fast Elsewhere. Why Is That?* N.Y. TIMES (Mar. 30, 2020), <https://www.nytimes.com/2020/03/30/opinion/coronavirus-economy-saez-zucman.html>.

<sup>306</sup> *Id.*

<sup>307</sup> Andrew E. Clark et al., *Scarring: The Psychological Impact of Past Unemployment*, 68 *ECONOMICA* 221 (2001); M. Daly & L. Delaney, *The Scarring Effect of Unemployment Throughout Adulthood on Psychological Distress at Age 50: Estimates Controlling for Early Adulthood Distress and Childhood Psychological Factors*, 80 *SOC. SCI. & MED.* 19 (2013); Andreas Knabe & Steffen Ratzel, *Scarring or Scaring? The Psychological Impact of Past Unemployment and Future Unemployment Risk*, 78 *ECONOMICA* 283 (2011); Victoria Moustieri et al., *The Scarring Effect of Unemployment on Psychological Well-Being Across Europe*, 72 *SOC. SCI. RSCH.* 146 (2018); Mattias Strandh et al., *Unemployment and Mental Health Scarring During the Life Course*, 24 *EUR. J. PUB. HEALTH* 440 (2014).

<sup>308</sup> Lucchesi, *supra* note 229.

<sup>309</sup> DAVID L. BLUSTEIN, *THE IMPORTANCE OF WORK IN AN AGE OF UNCERTAINTY: THE ERODING WORK EXPERIENCE IN AMERICA* (2019).

<sup>310</sup> *See generally*, BARRY SCHWARTZ, *WHY WE WORK* (2015); Jennifer Senior, *Dump on Your Office All You Like. You'll Miss It When It's Gone*. N.Y. TIMES (May 17, 2020), <https://www.nytimes.com/2020/05/17/opinion/coronavirus-office-telecommuting.html>.

macroeconomists call an automatic stabilizer,<sup>311</sup> a fiscal policy that automatically stabilizes incomes, consumption, and business spending.<sup>312</sup> This stabilizer is automatic because it does not require any explicit further government action.

United States congresswoman Tulsi Gabbard proposed pandemic financial assistance of \$1000 per month.<sup>313</sup> Representatives Ro Khanna (California) and Tim Ryan (Ohio) proposed the Emergency Money for the People Act to provide income-qualified Americans at least sixteen years of age with a \$2,000 monthly check guaranteed for six months or until “employment returns to pre-COVID-19 levels.”<sup>314</sup> Numerous political leaders proposed similar monthly payments<sup>315</sup> to cover workers’ lost salaries.<sup>316</sup>

Such payments are essentially an income-qualified, interim form of universal basic income (UBI).<sup>317</sup> Andrew Yang wrote a book advocating a UBI to mitigate great structural job displacement due to automation, financialization, globalization, and technological change,<sup>318</sup> and made UBI, in the form of a freedom dividend,<sup>319</sup> a centerpiece of his 2020 Democratic presidential campaign.<sup>320</sup> A recent symposium considered theoretical aspects of UBI<sup>321</sup> and the potential role of UBI in the United States, other developed countries,<sup>322</sup> and developing countries.<sup>323</sup> There is enough evidence to suggest UBI can help reduce

---

<sup>311</sup> Alisdair McKay & Ricardo Reis, *The Role of Automatic Stabilizers in the U.S. Business Cycle*, 84 *ECONOMETRICA* 141 (2016).

<sup>312</sup> Neil Irwin, *Economists Want to Put Stimulus on Autopilot. Congress Has Other Ideas*, N.Y. TIMES (May 15, 2020), <https://www.nytimes.com/2020/05/15/upshot/virus-economic-response-stabilizers.html>.

<sup>313</sup> Press Release, Tulsi Gabbard, Rep. Tulsi Gabbard Introduces Resolution Calling for Emergency Universal Basic Payment as Direct Coronavirus Pandemic Relief, (Mar. 12, 2020), <https://gabbard.house.gov/news/press-releases/rep-tulsi-gabbard-introduces-resolution-calling-emergency-universal-basic>.

<sup>314</sup> Kelly Anne Smith, *Are More Stimulus Payments On The Way? 4 Things To Know About New Stimulus Proposal*, FORBES (Apr. 20, 2020), <https://www.forbes.com/sites/advisor/2020/04/20/are-more-stimulus-payments-on-the-way-4-things-to-know-about-houses-new-stimulus-proposal/?sh=6ead0d087a77>.

<sup>315</sup> Economic Security Project, *CARES 2: Fixes Needed to Get More Money to More People, More Quickly*, COST-OF-LIVING REFUND (Apr. 7, 2020), <https://costoflivingrefund.org/blog/cares2>.

<sup>316</sup> Catie Edmondson, *As Unemployment Soars, Lawmakers Push to Cover Workers’ Wages*, N.Y. TIMES (May 14, 2020), <https://www.nytimes.com/2020/05/14/us/politics/coronavirus-workers-income-lawmakers.html>.

<sup>317</sup> Ellen Brown, *A Universal Basic Income is Essential and Will Work*, COUNTERPUNCH (Apr. 20, 2020), <https://www.counterpunch.org/2020/04/20/a-universal-basic-income-is-essential-and-will-work/>; Emilio Caja & Leonie Hoffman, *A Basic Income is a Lifeline in This Crisis – But Can’t Solve Everything*, JACOBIN (Apr. 20, 2020), <https://www.jacobinmag.com/2020/04/unconditional-basic-income-coronavirus-pandemic-crisis>.

<sup>318</sup> ANDREW YANG, *THE WAR ON NORMAL PEOPLE* (2019).

<sup>319</sup> *How We’ll Pay for the Freedom Dividend*, FREEDOM DIVIDEND MATH (Dec. 1, 2019), <https://freedom-dividend.com/>.

<sup>320</sup> Intelligencer Staff, *‘It’s an Emergency Version of UBI’: Andrew Yang on Those \$1,000 Monthly Checks Becoming a Reality*, N.Y. MAG.: INTELLIGENCER (Mar. 19, 2020), <https://nymag.com/intelligencer/2020/03/andrew-yang-discusses-universal-basic-income-and-coronavirus.html>.

<sup>321</sup> Maitreesh Ghatak & François Maniquet, *Universal Basic Income: Some Theoretical Aspects*, 11 *ANN. REV. ECON.* 895 (2019).

<sup>322</sup> Hilary Hoynes & Jesse Rothstein, *Universal Basic Income in the United States and Advanced Countries*, 11 *ANN. REV. ECON.* 929 (2019).

<sup>323</sup> Abhijit Banerjee et al., *Universal Basic Income in the Developing World*, 11 *ANN. REV. ECON.* 959 (2019).

health inequities around the world.<sup>324</sup> Chris Hughes, a co-founder of the Economic Security Project,<sup>325</sup> argues for a UBI to address fundamental economic inequality, injustice, and precariousness by making the American economy resilient in facing adversity, change, and disruption.<sup>326</sup>

Law professors Miranda Perry Fleischer<sup>327</sup> and Daniel Hemel<sup>328</sup> have made a libertarian case for UBI<sup>329</sup> and identified practical building blocks of a UBI.<sup>330</sup> As Fleischer and Hemel note, the notion of a UBI dates back to sixteenth century English Catholic thinker Thomas More, and UBI supporters included English-born American revolutionary writer Thomas Paine, civil rights leader Martin Luther King Jr., conservative economist Milton Friedman, and President Richard Nixon.<sup>331</sup> Hemel and Fleischer advocated in response to COVID-19 that “A program of monthly payments to all Americans—with the same amount per child and per adult, and without unnecessarily complicated eligibility cutoffs—is the best way to get cash out the door and to sustain support throughout a crisis with no end in sight.”<sup>332</sup>

To justify equal payments to adults and children, Fleischer and Hemel cited three studies suggesting that increasing a family’s income can generate positive long-run consequences for children.<sup>333</sup> Paying uniform monthly financial assistance to everyone in the United States without income or other qualifications eliminates administrative

---

<sup>324</sup> Anne Ruckert et al., *Reducing Health Inequities: Is Universal Basic Income the Way Forward?* 40 J. PUB. HEALTH 3 (2017).

<sup>325</sup> *Who We Are*, ECONOMIC SECURITY PROJECT (Oct. 20, 2020), <https://www.economicsecurityproject.org/team/>.

<sup>326</sup> Chris Hughes, *Why Americans Need a Guaranteed Income*, N.Y. TIMES (May 1, 2020), <https://www.nytimes.com/2020/05/01/opinion/universal-basic-income-coronavirus.html>.

<sup>327</sup> *Miranda Perry Fleischer*, U. OF SAN DIEGO L. SCH., [https://www.sandiego.edu/law/about/directory/biography.php?profile\\_id=3333](https://www.sandiego.edu/law/about/directory/biography.php?profile_id=3333).

<sup>328</sup> *Daniel Hemel*, U. OF CHI. L. SCH., <https://www.law.uchicago.edu/faculty/hemel>.

<sup>329</sup> Miranda Perry Fleischer & Daniel Hemel, *Atlas Nods: The Libertarian Case for A Basic Income*, 2017 WISC. L. REV. 1189 (2017).

<sup>330</sup> Miranda Perry Fleischer & Daniel Hemel, *The Architecture of A Basic Income*, 86 U. CHI. L. REV. 625 (2020).

<sup>331</sup> Daniel Hemel & Miranda Perry Fleischer, *Here’s How to Get Cash to Americans — Quickly and Fairly*, MEDIUM (Mar. 19, 2020), <https://medium.com/whatever-source-derived/heres-how-to-get-cash-to-americans-quickly-and-fairly-9b0e4809ded8>.

<sup>332</sup> *Id.*

<sup>333</sup> *Id.*; Randall K.Q. Akee et al., *Parents’ Incomes and Children’s Outcomes: A Quasi-Experiment*, 2 AM. ECON. J. APPLIED ECON. 86 (2010); Kristin F. Butcher, *Assessing the Long-Run Benefits of Transfer to Low Income Families* (Hutchins Ctr. on Fiscal and Monetary Pol’y at Brookings Institution Working Paper No. 26, 2017), [https://www.brookings.edu/wp-content/uploads/2017/01/wp26\\_butcher\\_transfers\\_final.pdf](https://www.brookings.edu/wp-content/uploads/2017/01/wp26_butcher_transfers_final.pdf); Lauren E. Jones et al., *Child Cash Benefits and Family Expenditures: Evidence from the National Child Benefit*, 52 CAN. J. ECON. 1433 (2019). Many other research studies provide additional support. See Anna Aizer et al., *The Long-Run Impact of Cash Transfers to Poor Families*, 106 AM. ECON. REV. 935 (2016); Randall Akke et al., *How Does Household Income Affect Child Personality Traits and Behaviors?* 108 AM. ECON. REV. 775 (2018); William N. Evans & Craig L. Garthwaite, *Giving Mom a Break: The Impact of Higher EITC Payments on Maternal Health*, 6 AM. ECON. J.: ECON. POL’Y 258 (2014); Michelle Maxfield, *The Effects of the Earned Income Tax Credit on Child Achievement and Long-Term Educational Attainment*, INST. FOR CHILD SUCCESS (2015); Arloc Sherman & Tazra Mitchell, *Economic Security Programs Help Low-Income Children Succeed Over Long Term, Many Studies Find*, CTR. ON BUDGET AND POL’Y PRIORITIES (July 17, 2017), <https://www.cbpp.org/research/poverty-and-inequality/economic-security-programs-help-low-income-children-succeed-over> (providing additional references).

complexities, removes incentives to earn below the income-eligibility threshold, and addresses moral worthiness debates and outrage.<sup>334</sup>

The Stanford Basic Income Lab,<sup>335</sup> an initiative of the McCoy Family Center for Ethics in Society,<sup>336</sup> asked six partners in its research community whether and why cash transfers should be targeted or universal in responding to pandemics, financial crises, or natural disasters.<sup>337</sup> All respondents provided reasons for universal cash transfers, including access, efficiency, equity, reduction of administrative error, and inclusivity.<sup>338</sup>

Research about the psychology of scarcity provides additional support for paying monthly financial assistance.<sup>339</sup> Princeton University psychology and public affairs professor Eldar Shafir,<sup>340</sup> and University of Chicago professor of computation and behavioral science Sendhil Mullainathan,<sup>341</sup> wrote a book drawing on psychology of scarcity research to explain how a scarcity mindset imposes cognitive loads and reduces cognitive bandwidth and capacity, leading to compromised decision-making in domains including finance and health.<sup>342</sup> Shafir marshals psychology of scarcity research to support<sup>343</sup> President Franklin Delano Roosevelt's aspiration of a society with "freedom from want."<sup>344</sup> Poverty, of finances, time, and social companionship, has adverse mental health and behavioral consequences. Paying monthly financial assistance addresses financial poverty.

To encourage immediate consumer spending, the government could pay financial assistance in the form of a universally accepted debit card that expires after some time. Lower income people would likely spend their monthly financial assistance on such necessities as groceries, rent, utilities, and other essential bills. Because money is fungible,

<sup>334</sup> Neil Irwin, *How Bailout Backlash and Moral Hazard Outrage Could Endanger the Economy*, N.Y. TIMES (May 4, 2020), <https://www.nytimes.com/2020/05/04/upshot/bailout-backlash-moral-hazard.html>.

<sup>335</sup> STAN. BASIC INCOME LAB, <https://basicincome.stanford.edu/>.

<sup>336</sup> MCCOY FAM. CTR. FOR ETHICS IN SOCIETY STAN. U., <https://ethicsinsociety.stanford.edu/>.

<sup>337</sup> Sarah Berger Gonzalez, *Should Cash Transfers Used as an Emergency Response Be Universal or Targeted?*, STAN. BASIC INCOME LAB (Apr. 24, 2020), <https://basicincome.stanford.edu/emergency-cash-targeted-or-universal/>.

<sup>338</sup> *Id.*

<sup>339</sup> See, e.g., Crystal C. Hall et al., *Self-Affirmation Among the Poor: Cognitive and Behavioral Implications*, 25 PSYCHOL. SCI. 619 (2014); Anandi Mani et al., *Poverty Impedes Cognitive Function*, 341 SCI. 976 (2013); Sendhil Mullainathan & Eldar Shafir, *Freeing Up Intelligence*, 25 SCI. AM. MIND 58 (2014); Anuj K. Shah et al., *Money in the Mental Lives of the Poor*, 36 SOC. COGNITION 4 (2018); Anuj K. Shah et al., *Scarcity Frames Value*, 26 PSYCHOL. SCI. 402 (2015); Anuj K. Shah et al., *Some Consequences of Having Too Little*, 338 SCI. 682 (2012); Abigail Sussman & Eldar Shafir, *On Assets and Debt in the Psychology of Perceived Wealth*, 23 PSYCHOL. SCI. 101 (2012).

<sup>340</sup> Eldar Shafir, PRINCETON U., <https://psych.princeton.edu/person/eldar-shafir/>; *Eldar Shafir, Class of 1987 Professor of Behavioral Science and Public Policy; Inaugural Director, Kahneman-Treisman Center for Behavioral Science & Public Policy*, PRINCETON SCH. OF PUB. AND INT'L AFF., <https://www.princeton.edu/faculty-research/faculty/shafir>.

<sup>341</sup> Sendhil Mullainathan, *Roman Family University Professor of Computation and Behavioral Science*, U. OF CHI. BOOTH SCH. OF BUS., <https://www.chicagobooth.edu/faculty/directory/m/sendhil-mullainathan>.

<sup>342</sup> SENDHIL MULLAINATHAN & ELДАР SHAFIR, SCARCITY: WHY HAVING TOO LITTLE MEANS SO MUCH (2013).

<sup>343</sup> Eldar Shafir, *Poverty and Civil Rights: A Behavioral Economics Perspective*, 2014 U. ILL. L. REV. 205 (2014).

<sup>344</sup> Franklin Delano Roosevelt, 32d President of the U.S., State of the Union Address (Jan. 6, 1941), <https://millercenter.org/the-presidency/presidential-speeches/january-6-1941-state-union-four-freedoms>.

it is an open empirical question whether monthly financial assistance would merely crowd out other spending by wealthier people.

How could the federal government afford to pay for such monthly financial assistance? Concerns about large United States federal government deficits burdening future generations are economically flawed because real interest rates are negative,<sup>345</sup> and large deficits can be and have been financed by economic growth.<sup>346</sup> The new consensus among many economists, including some economists concerned about running a budget deficit, is that the federal government is not spending nearly enough to help Americans financially.<sup>347</sup> Stephanie Kelton,<sup>348</sup> professor of economics and public policy at Stony Brook University,<sup>349</sup> is a leading proponent of modern monetary theory,<sup>350</sup> which discredits federal deficit myths and explains “the monetary power of a currency-issuing government.”<sup>351</sup>

Central banks can fund monthly financial assistance to individuals by simply printing money.<sup>352</sup> This would be an example of what economists and some journalists refer to as “helicopter money,”<sup>353</sup> a concept made famous by then Federal Reserve Board Governor Ben Bernanke in a speech.<sup>354</sup> In discussing the CARES Act, former businessperson Wolf Richter pointed out, “If the Fed had sent that \$1.77 [t]rillion to the 130 million households in the US, each household would have received \$13,600. But no, this was helicopter money exclusively for Wall Street and for asset holders.”<sup>355</sup> The CARES Act also embedded \$174 billion of temporary tax breaks primarily for large corporations and rich people.<sup>356</sup> Tax law professor Victor Fleischer<sup>357</sup> observed that many tax benefits in the CARES Act amount to “shoveling money to rich people.”<sup>358</sup>

<sup>345</sup> Paul Krugman, *Peacocks and Vultures Are Circling the Deficit*, N.Y. TIMES (Apr. 27, 2020), <https://www.nytimes.com/2020/04/27/opinion/republicans-deficits-coronavirus.html>.

<sup>346</sup> Morgan Housel, *Who Pays for This?* COLLABORATIVE FUND (Apr. 17, 2020), <https://www.collaborativefund.com/blog/who-pays-for-this/>.

<sup>347</sup> Jim Tankersley, *How Washington Learned to Embrace the Budget Deficit*, N.Y. TIMES (May 16, 2020), <https://www.nytimes.com/2020/05/16/business/deficits-virus-economists-trump.html>

<sup>348</sup> Stephanie Kelton, *A Paradigm Shift in Macroeconomic Finance*, <https://stephaniekelton.com>.

<sup>349</sup> Stony Brook Experts, *Stephanie Kelton*, <https://www.stonybrook.edu/experts/profile/stephanie-kelton>.

<sup>350</sup> STEPHANIE KELTON, *THE DEFICIT MYTH: MODERN MONETARY THEORY AND THE BIRTH OF THE PEOPLE'S ECONOMY* (2020).

<sup>351</sup> Stephanie Kelton, *Learn To Love Trillion-Dollar Deficits*, N.Y. TIMES (June 9, 2020), <https://www.nytimes.com/2020/06/09/opinion/us-deficit-coronavirus.html>.

<sup>352</sup> Jordi Gali, *Helicopter Money: The Time is Now*, VOX (Mar. 17, 2020), <https://voxeu.org/article/helicopter-money-time-now>; Philip Marey & Wim Boonstra, *US Helicopter Money*, RABORESEARCH—ECON. RES. (Mar. 26, 2020), <https://economics.rabobank.com/publications/2020/march/us-helicopter-money/>.

<sup>353</sup> Willem H. Buiter, *The Simple Analytics of Helicopter Money: Why It Works - Always*, 8 ECON. (2014).

<sup>354</sup> Ben Bernanke, Governor, Fed. Reserve Sys., *Deflation: Making Sure ‘It’ Doesn’t Happen Here*, Remarks to the National Economists Club (Nov. 21, 2002), <https://www.federalreserve.gov/boarddocs/speeches/2002/20021121/>.

<sup>355</sup> Wolf Richter, *QE-4 Cut in Half this Week. Fed’s Helicopter Money for Wall Street & the Wealthy Hits \$1.8 Trillion in 4 Weeks*, WOLF STREET (Apr. 9, 2020), <https://wolfstreet.com/2020/04/09/qe-4-cut-in-half-this-week-but-still-1-8-tn-helicopter-money-for-wall-street-and-wealthy-in-4-weeks-of-federal-reserve-balance-sheet-money-printing-and-bailouts/>.

<sup>356</sup> Jesse Drucker, *The Tax-Break Bonanza Inside the Economic Rescue Package*, N.Y. TIMES (Apr. 24, 2020), <https://www.nytimes.com/2020/04/24/business/tax-breaks-wealthy-virus.html>.

<sup>357</sup> Victor Fleischer, U. OF CAL., IRVINE SCH. OF L., <https://www.law.uci.edu/faculty/full-time/fleischer/>.

<sup>358</sup> Drucker, *supra* note 356.

### B. Practicing Mindfulness

Prolonged physical distancing, self-isolation, and self-quarantine can cause loneliness, which is linked to adverse mental health, morbidity, and mortality.<sup>359</sup> Loneliness is a palpable, uncomfortable emotion<sup>360</sup> with adverse physical health consequences, distressing mental health impacts, and potential for harmful substance abuse as a self-coping mechanism.<sup>361</sup> A related paper analyzes loneliness during COVID-19 and evidence-based interventions to mitigate loneliness, including practicing mindfulness, talk therapy (cognitive behavioral therapy) and inclusion.<sup>362</sup> Reducing anxiety produces important health benefits.<sup>363</sup> It also generates positive externalities, such as improving ethical decision-making<sup>364</sup> and reducing loneliness<sup>365</sup> produced by self-quarantining or self-isolation.

It is well-documented that practicing mindfulness can reduce anxiety.<sup>366</sup> An app-delivered awareness training reduced physician anxiety by 57% in one study.<sup>367</sup> There are many free, online guided mindfulness exercises.<sup>368</sup> Mindfulness practice also directly helps

---

<sup>359</sup> Julianne Holt-Lunstad et al., *Loneliness and Social Isolation as Risk Factors for Mortality: A Meta-Analytic Review*, 10 PERSP. PSYCHOL. SCI. 227 (2015); Julianne Holt-Lunstad et al., *Social Relationships and Mortality Risk: A Meta-Analytic Review*, 7 PLOS ONE MED. e1000316 (2010).

<sup>360</sup> Tim Adams, *John Cacioppo: 'Loneliness Is Like an Iceberg – It Goes Deeper Than We Can See,'* THE GUARDIAN (Feb. 28, 2016), <https://www.theguardian.com/science/2016/feb/28/loneliness-is-like-an-iceberg-john-cacioppo-social-neuroscience-interview> (interviewing social neuroscientist John Cacioppo).

<sup>361</sup> Olivia Ash, *The Prevalence and Effects of Loneliness in the General Population, Lawyer Well-Being, and a Survey of Law Students* (May 17, 2019) (unpublished manuscript), <https://ssrn.com/abstract=3390457>.

<sup>362</sup> Olivia Ash & Peter H. Huang, *Loneliness in COVID-19, Life, and the Law* (Feb. 26, 2021) (unpublished manuscript), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3793900](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3793900).

<sup>363</sup> Jane E. Brody, *Managing Coronavirus Fears*, N.Y. TIMES (Apr. 13, 2020), <https://www.nytimes.com/2020/04/13/well/mind/coronavirus-fear-anxiety-health.html>.

<sup>364</sup> Peter H. Huang, *How Improving Decision-Making and Mindfulness Can Improve Legal Ethics and Professionalism*, 21 J.L. BUS. & ETHICS 35 (2015).

<sup>365</sup> Emily K. Lindsay et al., *Mindfulness Training Reduces Loneliness and Increases Social Contact in a Randomized Controlled Trial*, 116 PROC. NAT'L ACAD. SCI. 3488 (2019).

<sup>366</sup> See, e.g., Craig Polizzi et al., *Stress and Coping in the Time of COVID-19: Pathways to Resilience and Recovery*, 17 CLIN. NEUROPSYCHIATRY 59 (2020); Madhav Goyal et al., *Meditation Programs for Psychological Stress and Well-Being: A Systematic Review and Meta-Analysis*, 174 JAMA INTERNAL MED. 357 (2014); Ronald Siegel, *The Mindfulness Solution*, <https://mindfulness-solution.com/>.

<sup>367</sup> Judson A. Brewer, *A Brain Hack to Break the Coronavirus Anxiety Cycle*, N.Y. TIMES (Apr. 1, 2020) <https://www.nytimes.com/2020/03/13/well/mind/a-brain-hack-to-break-the-coronavirus-anxiety-cycle.html>; Alexandra Roy et al., *Physician Anxiety and Burnout: Symptom Correlates and a Prospective Pilot Study of App-Delivered Mindfulness Training*, 8 JMIR MHEALTH UHEALTH e15608 (2020).

<sup>368</sup> Anna Goldfarb, *How to Meditate Outdoors with Us Right Now*, N.Y. TIMES (Apr. 3, 2020) <https://www.nytimes.com/interactive/2020/04/03/style/self-care/coronavirus-guided-meditation-nature.html?referringSource=articleShare>; Janie Haseman & Ramon Padilla, *Coronavirus Anxiety Has Upended Our Lives, but Take a Moment to Breathe*, USA TODAY (Apr. 16, 2020), <https://www.usatoday.com/in-depth/graphics/2020/04/01/coronavirus-anxiety-real-if-you-feel-stressed-out-and-overwhelmed-page-how-to-calm-down-relax/5107942002/>.

people make better decisions<sup>369</sup> about eating,<sup>370</sup> financial literacy,<sup>371</sup> health,<sup>372</sup> politics,<sup>373</sup> and sleep.<sup>374</sup> Mindfulness can mitigate implicit racial bias.<sup>375</sup> Because implicit bias is not the same as discrimination,<sup>376</sup> mindfulness importantly also reduces racially discriminative behavior.<sup>377</sup> Rhonda V. Magee, University of San Francisco School of Law professor,<sup>378</sup> offers practical research-grounded mindfulness-based contemplative practices to enhance what she calls color insight: an understanding of race and its pervasive operation in our lives and in the law.<sup>379</sup>

Dr. Donald A. Redelmeier, University of Toronto internist and researcher,<sup>380</sup> and Eldar Shafir analyze eight behavioral pitfalls about judgment under uncertainty posing challenges to compliance with NPIs in response to COVID-19: fear of the unknown, personal embarrassment, lack of clear and timely feedback, neglect of competing risk, hindsight bias, ingrained social norms, invisible diseases, and status quo bias.<sup>381</sup> They conclude their analysis by noting practicing mindfulness helps to develop awareness.<sup>382</sup>

Mindfulness also increases compassion and empathy.<sup>383</sup> Practicing a specific form of meditation, known as “loving kindness” mindfulness meditation, can foster compassion,

---

<sup>369</sup> Leslie A. Loubier & Gisela M. Munoz, *Mindfulness: Tapping Into Its Power to Achieve Professional and Personal Success and Wellness*, THE ABSTRACT 31 (2017),

<https://www.stearnsweaver.com/files/2017%20Gisela%20Munoz%20ACMA%20Mindfulness.pdf>.

<sup>370</sup> *8 Steps to Mindful Eating*, HARV. HEALTH PUB. (Jan. 2016), <https://www.health.harvard.edu/staying-healthy/8-steps-to-mindful-eating>.

<sup>371</sup> Thomas E. Smith et al., *Mindfulness in Financial Literacy*, 26 J. HUM. BEHAV. SOC. ENV'T 154 (2016).

<sup>372</sup> Quinn A. Conklin et al., *Meditation, Stress Processes, and Telomere Biology*, 28 CURRENT OPINION PSYCHOL. 92 (2019); Jeffrey M. Greeson & Gabrielle R. Chin, *Mindfulness and Physical Disease: A Concise Review*, 28 CURRENT OPINION PSYCHOL. 204 (2019).

<sup>373</sup> Jamie Bristow, *Mindfulness in Politics and Public Policy*, 28 CURRENT OPINION PSYCHOL. 87 (2019).

<sup>374</sup> Amanda J. Shallcross et al., *Waking Up to the Problem of Sleep: Can Mindfulness Help? A Review of Theory and Evidence for the Effects of Mindfulness for Sleep*, 28 CURRENT OPINION PSYCHOL. 37 (2019).

<sup>375</sup> Adam Lueke & Bryan Gibson, *Mindfulness Meditation Reduces Implicit Age and Race Bias: The Role of Reduced Automaticity of Responding*, 6 SOC. PSYCHOL. & PERSONALITY SCI. 284, 287-89 (2015).

<sup>376</sup> Adam Lamparello, *The Flaws of Implicit Bias – and the Need for Empirical Research in Legal Scholarship and in Legal Education* (Mar. 19, 2020)

[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3557041](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3557041); Michael Selmi, *The Paradox of Implicit Bias and a Plea for a New Narrative*, 50 ARIZ. ST. L. J. 193 (2018).

<sup>377</sup> Adam Lueke & Bryan Gibson, *Brief Mindfulness Meditation Reduces Discrimination*, 3 PSYCHOL. CONSCIOUSNESS: THEORY, RES. & PRAC. 34, 39 (2016).

<sup>378</sup> Rhonda Magee, U. OF S.F. SCH. OF L., <https://www.usfca.edu/law/faculty/rhonda-magee>.

<sup>379</sup> Rhonda V. Magee, *The Way of ColorInsight: Understanding Race and Law Effectively Through Mindfulness-Based ColorInsight Practices*, 8 GEO L.J. & MOD. CRIT. RACE PERSP. 251 (2016); see also generally RHONDA V. MAGEE, THE INNER WORK OF RACIAL JUSTICE: HEALING OURSELVES AND TRANSFORMING OUR COMMUNITIES THROUGH MINDFULNESS (2019).

<sup>380</sup> Donald Redelmeier, INST. OF HEALTH POL'Y, MGMT. AND EVALUATION, U. OF TORONTO, <http://ihpme.utoronto.ca/faculty/donald-redelmeier/>; Katie Hafner, *Think the Answer's Clear? Look Again*, N.Y. TIMES (Aug. 30, 2010) <https://www.nytimes.com/2010/08/31/science/31profile.html> (profiling Redelmeier).

<sup>381</sup> Donald Redelmeier & Eldar Shafir, *Pitfalls of Judgment During the COVID-19 Pandemic*, LANCET PUB. HEALTH (Apr. 23, 2020), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7180015/pdf/main.pdf>.

<sup>382</sup> *Id.* at 2.

<sup>383</sup> Shauna Shapiro, *Does Mindfulness Make You More Compassionate?*, GREATER GOOD (Feb. 27, 2013) [https://greatergood.berkeley.edu/article/item/does\\_mindfulness\\_make\\_you\\_compassionate](https://greatergood.berkeley.edu/article/item/does_mindfulness_make_you_compassionate).

empathy, and gray brain matter, while decreasing implicit intergroup bias, negative symptoms of schizophrenia spectrum disorders, posttraumatic stress disorder, self-criticism, and even the aging process.<sup>384</sup> Practicing gratitude can increase pro-social behavior,<sup>385</sup> reduce competitive behavior in threatening interactions,<sup>386</sup> and promote risk-aversion.<sup>387</sup> Gratitude also reduces economic impatience,<sup>388</sup> which can result from sadness.<sup>389</sup>

People's emotions may also be implicit, occurring without attention or intention<sup>390</sup> and if not unconscious, occurring below awareness.<sup>391</sup> Practicing mindfulness helps people become more aware of the underlying sources of their emotions.<sup>392</sup> Awareness of the sources of emotions can help individuals regulate their emotions and reduce the duration and impact of negative emotions.<sup>393</sup>

This Article advocates encouraging people to practice mindfulness. Leaders and the government can encourage mindfulness in many forms including verbal suggestions, subsidizing those mindfulness apps that are currently not free, and role modelling. Similarly, there are numerous ways to engage in mindfulness, including being aware and focusing while washing one's hands.<sup>394</sup> A crucial NPI can thus be reformulated as merely an exercise in mindfulness.

This Article is not suggesting that society mandate practicing mindfulness because that is neither possible nor desirable. Mindfulness can have negative effects for some people.<sup>395</sup> It also is an open question whether practicing mindfulness is more effective for

---

<sup>384</sup> Huang & Poore *supra* note 27, at 263-65.

<sup>385</sup> Monica Y. Bartlett & David DeSteno, *Gratitude and Prosocial Behavior: Helping When It Costs You*, 17 PSYCHOL. SCI. 319 (2006).

<sup>386</sup> Eri Sasaki et al., *Gratitude Inhibits Competitive Behavior in Threatening Interactions*, COGNITION & EMOTION (forthcoming).

<sup>387</sup> Yufeng Zhang et al., *The Security of Being Grateful: Gratitude Promotes Risk Aversion in Decision-Making*, 15 J. POSITIVE PSYCHOL. 285 (2020).

<sup>388</sup> David DeSteno et al., *Gratitude: A Tool for Reducing Economic Impatience*, 25 PSYCHOL. SCI. 1262 (2014).

<sup>389</sup> Jennifer S Lerner et al., *The Financial Costs of Sadness*, 24 PSYCHOL. SCI. 72 (2013).

<sup>390</sup> Piotr Winkielman & Kent C. Berridge, *Unconscious Emotions*, 13 CURRENT DIR. PSYCHOL. SCI. 120 (2004).

<sup>391</sup> Ryan Smith & Richard D. Lane, *Unconscious Emotion: A Cognitive Neuroscientific Perspective*, 69 NEUROSCI. & BIOBEHAV. REV. 216 (2016).

<sup>392</sup> Leonard L. Riskin & Rachel Anne Wohl, *Mindfulness in the Heat of Conflict: Taking STOCK*, 20 HARV. NEGOT. L. REV. 121, 141 fig.2 (2015) (depicting triangle of awareness).

<sup>393</sup> See generally TIMOTHY D. WILSON, STRANGERS TO OURSELVES: DISCOVERING THE ADAPTIVE UNCONSCIOUS (2004).

<sup>394</sup> Thanks to Mary Mulligan for this timely suggestion!

<sup>395</sup> Huang, *supra* note 43, at 144-45 (discussing the follow references: David Brendel, *There Are Risks to Mindfulness at Work*, HARV. BUS. REV., Feb. 11, 2015, <https://hbr.org/2015/02/there-are-risks-to-mindfulness-at-work>; Patricia L. Dobkin et al., *For Whom May Participation in Mindfulness-Based Stress Reduction Program be Contraindicated?* 3 MINDFULNESS 44, 47 (2012); MIGUEL FARIAS & CATHERINE WIKHOLM, THE BUDDHA PILL: CAN MEDITATION CHANGE YOU? (2015); Dawn Foster, *Is Mindfulness Making Us Ill?* GUARDIAN (Jan. 23, 2016), <https://www.theguardian.com/lifeandstyle/2016/jan/23/is-mindfulness-making-us-ill>; Andrew C. Hafenbrack, *Mindfulness Meditation as an On-The-Spot Workplace Intervention*, 75 J. BUS. RES. 118, 119-20, 125-26 (2017); Johannes Grapendorf et al., *Mindfulness is Detrimental to Performance in Computer-Mediated Interdependent Tasks*, 74 COMPUTERS HUM. BEHAV. 1 (2017); Kathleen B. Lustyk et al., *Mindfulness Meditation Research: Issues of Participant Screening, Safety Procedures, and Researcher Training*, 24 ADVANCES MIND-BODY, MED. 20, 21-26, 22-23 tbl. 1 (2009); Anna Ridderinkhof et al., *Does*



reducing anxiety or complacency than engaging in aerobic physical activity,<sup>396</sup> practicing gratitude,<sup>397</sup> or minimizing solitude<sup>398</sup> and social isolation.<sup>399</sup> The United States already has a President's Council on Sports, Fitness & Nutrition, which aims to encourage sports participation and foster active, healthy lifestyles.<sup>400</sup> Because physical health, mental health, and spiritual health are interdependent, it stands to reason that the federal government should also encourage mental health and spiritual health through mindfulness exercise.

### C. Gentle Enforcement

Erev, Plonsky, and Roth propose achieving physical distancing and self-quarantining during COVID-19 through gentle rule enforcement involving high probability detection and prosecution of violations of rules that are clear and easy to follow.<sup>401</sup> Erev and co-authors believe high probability warnings would deter most people, reserving less gentle enforcement for repeated violators who are easier to detect when most people comply.<sup>402</sup> Gentle enforcement causes people relying on small samples to behave socially optimally by changing their probabilities of regret.<sup>403</sup> Erev sums up gentle enforcement as steady enforcement with small penalties.<sup>404</sup> For example, gentle continuous punishment by proctors, like direct glances, moving suspected cheaters to the front row, or verbal warnings, decreased students' perceptions of cheating.<sup>405</sup> Gentle reminders by physicians and nurses increased adherence to sterile procedure during blood sample withdrawals and insertion of intravenous lines from approximately 55% to 95%.<sup>406</sup> And, gentle enforcement

---

*Mindfulness Meditation Increase Empathy? An Experiment*, 16 SELF & IDENTITY 251, 260, 264 (2017); Eyal Rosenstreich, *Mindfulness and False-Memories: The Impact of Mindfulness Practice on the DRM Paradigm*, 150 J. PSYCHOL. 58 (2016); Deane H. Shapiro, Jr., *Adverse Effects of Meditation*, 39 INT'L J. PSYCHOSOMATICS 62 (1992); Deane H. Shapiro, Jr., *Examining the Content and Context of Meditation: A Challenge for Psychology in the Areas of Stress Management, Psychotherapy, and Religion/Values*, 34 J. HUMANISTIC PSYCHOL. 101 (1994); Deane H. Shapiro, Jr., *A Preliminary Study of Long-Term Meditators: Goals, Effects, Religious Orientations, Cognitions*, 24 TRANSPERSONAL PSYCHOL. 23 (1992); Brent M. Wilson et al., *Increased False-Memory Susceptibility After Mindfulness Meditation*, 26 PSYCHOL. SCI. 1567 (2016)).

<sup>396</sup> Gretchen Reynolds, *3 Hours of Exercise a Week May Lower Your Depression Risk*, N.Y. TIMES (Nov. 21, 2019), <https://www.nytimes.com/2019/11/20/well/move/3-hours-of-exercise-a-week-may-lower-your-depression-risk.html>.

<sup>397</sup> Karmel W. Choi et al., *Physical Activity Offsets Genetic Risk for Incident Depression Assessed Via Electronic Health Records in a Biobank Cohort Study*, 37 DEPRESSION & ANXIETY 106 (2019); Tara Parker-Pope, *Gratitude in the Face of Crisis*, N.Y. TIMES (Mar. 19, 2020), <https://www.nytimes.com/2020/03/19/well/live/virus-well-newsletter-gratitude.html>.

<sup>398</sup> Olivia Laing, *How to Be Lonely*, N.Y. TIMES (Mar. 19, 2020), <https://www.nytimes.com/2020/03/19/opinion/coronavirus-loneliness.html>.

<sup>399</sup> Julie Halpert, *How to Manage Your Loneliness*, N.Y. TIMES (Apr. 20, 2020), <https://www.nytimes.com/2020/04/20/smarter-living/how-to-manage-your-loneliness.html>.

<sup>400</sup> President's Council on Sports, Fitness & Nutrition, U.S. Department of Health & Human Services, <https://www.hhs.gov/fitness/index.html>.

<sup>401</sup> Erev et al., *supra* note 149, at 2.

<sup>402</sup> *Id.* at 6.

<sup>403</sup> *Id.* at 5; Erev & Roth, *supra* note 153, at 10822.

<sup>404</sup> Carey, *supra* note 141.

<sup>405</sup> Erev, *supra* note 159, at 69-70; Erev & Roth, *supra* note 153, at 108; Ido Erev et al., *Continuous Punishment and the Potential of Gentle Rule Enforcement*, 84 BEHAV. PROCESSES 366, 370 (2010); Erev & Haruvy, *supra* note 161, at 691.

<sup>406</sup> Ido Erev et al., *The Value of 'Gentle Reminder' on Safe Medical Behavior*, 19 QUALITY & SAFETY IN HEALTH CARE 1, 1-2 (2010); Ido Erev & Dotan Rodensky, *Gentle Rule Enforcement*, in AROUND THE

of safety rules increased utilization of protective gear such as ear plugs, gloves, and safety goggles from about 60% to over 90% in factories.<sup>407</sup>

Erev, Plonsky, and Roth suggest employing such technology as drones and cellular signal tracking to facilitate gentle enforcement of NPIs.<sup>408</sup> China employed tracking software to estimate in real time people's contagion risk<sup>409</sup> and enforce NPIs through a social credit system.<sup>410</sup> Cell-phone based location tracking would facilitate contact tracing and monitoring of self-isolating and self-quarantining.<sup>411</sup> However, digital data tracing also raises fundamental and serious civil liberty and privacy concerns.<sup>412</sup> An anonymized and voluntary app-based system offers a potential compromise that balances concerns about public health versus civil liberties and privacy.<sup>413</sup> Many people understandably fear when governments expand their powers to gain more access to information about people during a crisis because that expansion becomes a precedent and new norm.<sup>414</sup>

#### D. Accurate Pandemic Information Acquisition

A novel framework about information acquisition and avoidance rests on the observation that information can positively and negatively change people's action, affect, and cognition.<sup>415</sup> This theory involves an assessment of three impacts of information: (1) decision-making, instrumental, or usefulness; (2) affective, emotional, or hedonic; and (3)

---

PATIENT BED: HUMAN FACTORS AND SAFETY IN HEALTH CARE 271, 271-76 (Yoel Donchin & Daniel Gopher eds., 2010).

<sup>407</sup> Erev et al., *supra* note 149, at 5; Amos Schurr et al., *The Effect of Unpleasant Experiences on Evaluation and Behavior*, 106 J. ECON. BEHAV. & ORG. 1, 1, 7-8 (2014); Amos Schurr et al., *The Peak and Freq Effects*, <http://fbm.bgu.ac.il/amos/Peak.html>.

<sup>408</sup> Carey, *supra* note 141, at 5-6.

<sup>409</sup> Paul Mozur et al., *In Coronavirus Fight, China Gives Citizens a Color Code, With Red Flags*, N.Y. TIMES (Mar. 1, 2020), <https://www.nytimes.com/2020/03/01/business/china-coronavirus-surveillance.html>.

<sup>410</sup> *Coronavirus: Chinese Authorities Leverage Social Credit in the Fight Against COVID-19*, TRIVIUM SOC. CREDIT (Feb. 21, 2020), <http://socialcredit.triviumchina.com/2020/02/coronavirus-chinese-authorities-leverage-social-credit-in-the-fight-against-covid-19/>.

<sup>411</sup> Associated Press, *Hawaii Enlists Web Program to Help Enforce Travel Quarantine as Hundreds Continue to Arrive*, USA TODAY (Apr. 10, 2020), <https://www.usatoday.com/story/travel/2020/04/10/covid-19-hawaii-enlists-web-program-help-enforce-travel-quarantine/2975208001/>; Jack Nicas & Daisuke Wakabayashi, *Apple and Google Team Up to 'Contact Trace' the Coronavirus*, N.Y. TIMES (Apr. 10, 2020), <https://www.nytimes.com/2020/04/10/technology/apple-google-coronavirus-contact-tracing.html>; Shira Ovide, *Can Our Phones Stop A Pandemic?* N.Y. TIMES (Apr. 10, 2020), <https://www.nytimes.com/2020/04/10/technology/coronavirus-smartphones-surveillance.html>.

<sup>412</sup> Matt Reynolds, *Contact-Tracing Apps Could Help Contain COVID-19 But Raise Thorny Legal and Privacy Issues*, ABA J. (Apr. 23, 2020), <https://www.abajournal.com/web/article/contact-tracing-apps-and-spread-of-covid-19>; Lawrence H. Tribe, *Digital Coronavirus Data Tracing Would Barter Away American Liberties*, USA TODAY (Apr. 22, 2020), <https://www.usatoday.com/story/opinion/todaysdebate/2020/04/21/coronavirus-data-tracing-barter-away-liberties-laurence-tribe-editorials-debates/3000576001/>.

<sup>413</sup> Editorial Board, *Coronavirus Phone Tracing by Apple and Google Could Help America Reopen*, USA TODAY (Apr. 21, 2020), <https://www.usatoday.com/story/opinion/todaysdebate/2020/04/21/coronavirus-tracing-app-apple-google-help-america-reopen-editorials-debates/5152292002/>.

<sup>414</sup> Jenny B. Davis, *Pandemic Power Plays: Civil Liberties in the Time of COVID-19*, ABA J. (Apr. 21, 2020), <https://www.abajournal.com/web/article/pandemic-power-plays-civil-liberties-in-the-time-of-covid-19>.

<sup>415</sup> Tali Sharot & Cass R. Sunstein, *How People Decide What They Want to Know*, 4 NATURE HUM. BEHAV. 14 (2020).

cognitive, mental model, or sense-making.<sup>416</sup> After making these component assessments, the theory requires combining or integrating them by forming a weighted sum of the three individual assessments, and, based on the sign of that weighted sum, to decide whether to acquire positive, avoid negative, or show indifference to neutral information.<sup>417</sup> People place different weights on these three consequences of information, reflecting how much they care about each of the categories of informational impacts. This theory assumes people form a weighted average of these three influences in choosing to acquire or avoid information.<sup>418</sup> This theory suggests that sometimes, people seek too little or too much information.<sup>419</sup>

Related neuroscience experiments further suggest that mesolimbic reward circuitry in human brains values information based on its valence, while the orbitofrontal cortex values information independent of its valence.<sup>420</sup> A clever experimental design found that people were willing to pay more to learn their stock portfolio value during bull markets and pay more to remain ignorant of their stock portfolio value during bear markets.<sup>421</sup> This study replicates the real-world phenomenon of American and Scandinavian investors monitoring their portfolios more when stock markets are rising than when they are falling or flat.<sup>422</sup> Because people sometimes place non-zero weight on hedonic and cognitive aspects of information value, this theory also implies that sometimes people will seek qualities or types of information that are suboptimal from the perspective of instrumental decision-making. In the case of information about COVID-19 and NPIs, people will consider whether that information would help them decide to comply with NPIs, be pleasant, and have meaning consistent with their understanding of reality. Each of these three component influences can be positive, negative, or zero. Each can also be large or small. This theory suggests that leaders should consider increasing the positive valence of information about COVID-19 and NPIs, perhaps learning from airlines that utilize humor, music, or pleasurable vacation destination images.<sup>423</sup> This theory also suggests framing information about such values as personal autonomy, choice, and freedom.<sup>424</sup> Instead of emphasizing what people cannot do and triggering the psychological phenomenon of reactance,<sup>425</sup> leaders should focus on what compliance with NPIs allows people to do in the future when they help flatten the curve of COVID-19. As Lawrence Durrell, the celebrated British novelist, wrote, “prohibitions create the desire they were intended to cure.”<sup>426</sup> Perhaps, in lieu of contemplating being temporarily unable to watch in person

---

<sup>416</sup> *Id.*

<sup>417</sup> *Id.* at 14.

<sup>418</sup> *Id.*

<sup>419</sup> Tali Sharot, *Would You Want to Know?*, NATURE HUM. BEHAV. BLOG, Jan. 19, 2020, <https://socialsciences.nature.com/posts/58487-would-you-want-to-know>.

<sup>420</sup> Caroline J. Charpentier et al., *Valuation of Knowledge and Ignorance in Mesolimbic Reward Circuitry*, 115 PROC. NAT'L ACAD. SCI. E7255 (2018). See also Ifat Levy, *Information Utility in the Human Brain*, 115 PROC. NAT'L ACAD. SCI. 7846(2018).

<sup>421</sup> *Id.* at E7263-E7264.

<sup>422</sup> Niklas Karisson et al., *The Ostrich Effect: Selective Attention to Information*, 38 J. RISK & UNCERTAINTY 95 (2009).

<sup>423</sup> Sharot & Sunstein, *supra* note 415, at 18.

<sup>424</sup> *Id.* at 18.

<sup>425</sup> Niels Boissonnet, *Psychological Reactance, Menu-Dependence, and Reference Menus*, Presentation at Cognitive Economics Virtual Conference (July 10, 2020), <https://cognitiveeconomics.org/events/>.

<sup>426</sup> LAWRENCE DURRELL, *THE ALEXANDRIA QUARTET* 85 (1968).

professional or college sports, people can redirect their attention to how NPIs can hasten the return of being able to spectate in person at sports and other fun pastimes.<sup>427</sup>

## CONCLUSION

Economist Brigitte Madrian<sup>428</sup> discussed the fundamentals of behavior change by posing a series of thought-provoking and foundational questions about whether people and organizations want to change their behavior.<sup>429</sup> If yes, why don't they?<sup>430</sup> What are the barriers?<sup>431</sup> If no, then can we change what people want, through financial incentives, information, or behavioral interventions?<sup>432</sup> Is there one barrier for everybody?<sup>433</sup> Are there multiple barriers for everybody?<sup>434</sup> Are there different barriers for different people?<sup>435</sup> What barriers can we address through cost-effective interventions?<sup>436</sup> Is there one intervention or many interventions?<sup>437</sup> Should there be targeted interventions or one blanket intervention?<sup>438</sup> What types of interventions generalize across multiple decision-making domains?<sup>439</sup> Which interventions are more context-specific?<sup>440</sup> These questions are helpful in thinking about how to achieve compliance with NPIs.

Lessening anger, anxiety, frustration, panic, and complacency in pandemics improves mental health and affects the social outcomes and time paths of pandemics by influencing the critical individual decisions of whether people choose to comply with NPIs. People may not comply with NPIs because they (1) cannot, (2) do not want to, or (3) want to and can, yet do not.<sup>441</sup>

Policies, such as ensuring people have face masks,<sup>442</sup> enough money,<sup>443</sup> jobs to return to,<sup>444</sup> and enough space to physical distance,<sup>445</sup> lessen anxiety and address individuals'

<sup>427</sup> Travis Waldron, *America Isn't Prepared to Bring Back Sports*, HUFFPOST (July 11, 2020), [https://www.huffpost.com/entry/major-league-baseball-coronavirus-sports-leagues\\_n\\_5f07676dc5b67a80bc04bcaf](https://www.huffpost.com/entry/major-league-baseball-coronavirus-sports-leagues_n_5f07676dc5b67a80bc04bcaf).

<sup>428</sup> Brigitte C. Madrian, BRIGHAM YOUNG U. MARRIOTT SCH. OF BUS., <https://marriottschool.byu.edu/directory/details?id=63227>.

<sup>429</sup> Brigitte Madrian, *Nudges: What Works and for Whom?*, Boulder Summer Conference on Financial Decision-Making (May 21, 2019), [https://www.colorado.edu/business/sites/default/files/attached-files/2019\\_short\\_program\\_5-6\\_update\\_cfdm.pdf](https://www.colorado.edu/business/sites/default/files/attached-files/2019_short_program_5-6_update_cfdm.pdf).

<sup>430</sup> *Id.*

<sup>431</sup> *Id.*

<sup>432</sup> *Id.*

<sup>433</sup> *Id.*

<sup>434</sup> *Id.*

<sup>435</sup> *Id.*

<sup>436</sup> *Id.*

<sup>437</sup> *Id.*

<sup>438</sup> *Id.*

<sup>439</sup> *Id.*

<sup>440</sup> *Id.*

<sup>441</sup> Erev et al., *supra* note 406 (introducing this trichotomy of sources of noncompliance with safe medical practices).

<sup>442</sup> James Gorman, *Are Face Masks the New Condoms?* N.Y. TIMES (Apr. 18, 2020), <https://www.nytimes.com/2020/04/18/health/coronavirus-mask-condom.html>.

<sup>443</sup> Apuzzo & Pronczuk, *supra* note 303.

<sup>444</sup> Editorial Board, *supra* note 304; Saez & Zucman, *supra* note 305.

<sup>445</sup> Amina Khan, *Coronavirus Tips: The Do's and Don'ts of Social Distancing*, L.A. TIMES (Mar. 18, 2020), <https://www.latimes.com/science/story/2020-03-18/coronavirus-tips-the-dos-and-donts-of-social-distancing>.

inability to comply with NPIs. Monthly financial assistance is a policy that mitigates financial anger, frustration, anxiety, and panic. Policies changing people's preferences, such as practicing mindfulness and the social media campaign #IStayHomeFor challenge,<sup>446</sup> remind people viscerally and vividly how their individual, private actions have social and public health consequences in terms of infection and healthcare congestion externalities, and in so doing, lessen anger, frustration, and anxiety and address individuals not wanting to comply with NPIs. Leadership that is effective lessens anger, frustration, anxiety, outrage, panic, and complacency and addresses individuals who can and want to, yet do not comply with NPIs.

For many of us, COVID-19 will be the most stressful event we face and must overcome in our lifetimes. How we choose to adapt and respond to COVID-19 determines not only our individual well-being, but also society's future. We can grow to become better versions of ourselves, developing greater levels of compassion, empathy, humanity, kindness, and resilience.<sup>447</sup> Or, we can react mindlessly to COVID-19 and shrink to become worse versions of ourselves. For better or worse, our feelings, thoughts, and behaviors in response to COVID-19 may define our legacies in the history of our species.

For our own sake and those of future generations, we must learn to be more caring, mindful, and thoughtful in our individual and social decision-making. COVID-19 is unlikely to eradicate humanity, the inevitable next pandemic may. Besides pandemics, our species faces the challenges of global climate change<sup>448</sup> and many other important crises.<sup>449</sup> Pandemics provide valuable lessons about why some people underestimate the climate change crisis.<sup>450</sup> Unfortunately, pressures for speedy economic growth to help societies financially recover from COVID-19 may exacerbate climate change.<sup>451</sup> The coronavirus offers an opportunity to spark the resurgence of public interest and government financial support of STEM (Science, Technology, Engineering, and Mathematics), much as Sputnik

---

<sup>446</sup> Lisa Respers France, *Kevin Bacon and Others Want You Six Degrees for #IStayHomeFor Challenge*, CNN (Mar. 20, 2020), <https://www.cnn.com/2020/03/20/entertainment/i-stay-home-for-celebs-trnd/index.html>.

<sup>447</sup> Gang Wu et al., *Understanding Resilience*, 7 BEHAV. NEUROSCIENCE Art. 10 (2013).

<sup>448</sup> YORAM BAUMAN & GRADY KLEIN, *THE CARTOON INTRODUCTION TO CLIMATE CHANGE* (2014); Editors of the Books and Climate Desks, *The Year You Finally Read a Book About Climate Change*, N.Y. TIMES (Apr. 19, 2020), <https://www.nytimes.com/interactive/2020/climate/climate-change-books.html>; Henry Fountain, *How Bad Is Climate Change Now?* N.Y. TIMES (Apr. 19, 2020), <https://www.nytimes.com/interactive/2020/04/19/climate/climate-crash-course-1.html>; Dave Itzkoff, *On Track for the Apocalypse, 'Snowpiercer' Comes to Television*, N.Y. TIMES (May 14, 2020), <https://www.nytimes.com/2020/05/14/arts/television/snowpiercer-tnt.html>.

<sup>449</sup> James Gamble, *The Most Important Problem in the World*, MEDIUM (Mar. 13, 2019), <https://medium.com/@jgg4553542/the-most-important-problem-in-the-world-ad22ade0ccfe>.

<sup>450</sup> Howard Kunreuther & Paul Slovic, *What the Coronavirus Curve Teaches Us About Climate Change*, POLITICO (Mar. 26, 2020), <https://www.politico.com/news/magazine/2020/03/26/what-the-coronavirus-curve-teaches-us-about-climate-change-148318>; Robert Redford & James Redford, *Trump's Coronavirus Failures Offer Warnings and Lessons About Future Climate Change Challenges*, NBC NEWS (Apr. 30, 2020), <https://www.nbcnews.com/think/opinion/trump-s-coronavirus-failures-offer-warnings-lessons-about-future-climate-ncna1195931>.

<sup>451</sup> Steven Erlanger, *Will the Coronavirus Crisis Trump the Climate Crisis?*, N.Y. TIMES, (May 9, 2020), <https://www.nytimes.com/2020/05/09/world/europe/will-the-coronavirus-crisis-trump-the-climate-crisis.html>.

did.<sup>452</sup> COVID-19 may also prove to be a watershed moment for achieving a carbon neutral world.<sup>453</sup>

To survive these existential challenges, individuals must come to appreciate our mutual social interdependence and become willing to learn to become more caring and responsible towards each other. As a society, we must learn to practice intelligent kindness.<sup>454</sup> I conclude this Article on a personal note,<sup>455</sup> and with the sincere hope that its readers will find some part of this Article helpful in a small way.

Postscript: This Article was completed before the hurried introduction of COVID-19 vaccines and the resurgence of the hope that COVID-19 will be mostly controlled sometime in late 2021. But, many of the same pandemic emotions this Article analyzes are also relevant for vaccines. In particular, anxiety over the accelerated development and testing of COVID-19 vaccines has led some individuals to distrust the efficacy and safety of COVID-19 vaccines.<sup>456</sup> The novel messenger ribonucleic acid (mRNA) technology that made the rapid production of some COVID-19 vaccines possible has unique and unknown long-run risks.<sup>457</sup> Additionally, vaccinated individuals will still have to wear face masks.<sup>458</sup>

---

<sup>452</sup> Editorial Board, *Coronavirus Crisis is a Sputnik Opportunity to Reverse the Anti-Science Pandemic*, USA TODAY (Apr. 13, 2020), <https://www.usatoday.com/story/opinion/todaysdebate/2020/04/13/coronavirus-sputnik-opportunity-reverse-anti-science-pandemic-editorials-debates/5103665002/>; Samuel Bowles & Wendy Carlin, *The Coming Battle for the COVID-19 Narrative*, VOX (Apr. 10, 2020), <https://voxeu.org/article/coming-battle-covid-19-narrative>; Jean Pisani-Ferry, *Building a Post-Pandemic World Will Not Be Easy*, PROJECT SYNDICATE (Apr. 30, 2020), <https://www.project-syndicate.org/commentary/environmental-and-economic-tradeoffs-in-covid19-recovery-by-jean-pisani-ferry-2020-04>.

<sup>454</sup> John Ballat, Penelope Campling, & Chris Maloney, *Intelligent Kindness: Rehabilitating the Welfare State* (2d ed., 2020).

<sup>455</sup> I live with obesity, insomnia, sleep apnea, and clinical diagnoses of prediabetes, Generalized Anxiety Disorder (GAD), Obsessive Compulsive Disorder (OCD), and Circadian Rhythm Sleep Disorder, Delayed Sleep-wake Phase (DSP) disorder. Luckily, neither my GAD nor OCD got more severe from COVID-19 (to my therapist's surprise). My DSP and insomnia did worsen quite a bit due partly to ruminating about COVID-19. Such an epidemic of insomnia occurred because of COVID-19 that Dr. Alon Y. Avidan, a professor and vice chair in the department of neurology at the David Geffen School of Medicine at the University of California, Los Angeles, and director of the U.C.L.A. Sleep Disorders Center, called it "Covid-somnia." Writing this Article helped me to stay busy, engaged, and focused during COVID-19. A daily regimen of aerobic physical exercising, watching Cuomo press briefings live, practicing mindfulness meditation, teaching or preparing for two classes, and working on this Article in a large study with windows that overlook nature in the form of a rolling grass hill and majestic tall green trees helped me to mitigate and reduce negative emotions and foster positive emotions.

<sup>456</sup> *Dealing with COVID-19 Vaccine Anxiety*, MENTAL HEALTH AMERICA, <https://mhanational.org/dealing-covid-19-vaccine-anxiety>.

<sup>457</sup> Maayan Jaffe-Hoffman, *Could mRNA COVID-19 Vaccines be Dangerous in the Long-Term?*, JERUSALEM POST, (Nov. 17, 2020), <https://www.jpost.com/health-science/could-an-mrna-vaccine-be-dangerous-in-the-long-term-649253>. See also Mike Adams, *mRNA Vaccines Might Prove Catastrophic in a Rushed Coronavirus Response*, NEWSWARS (May 26, 2020), <https://www.newswars.com/mrna-vaccines-might-prove-catastrophic-in-a-rushed-coronavirus-response/>. But see Lindsey R. Baden et al., *Efficacy and Safety of the mRNA-1273 SARS-CoV-2 Vaccine*, NEW ENG. J. MED., (Dec. 30, 2020), <https://www.nejm.org/doi/full/10.1056/NEJMoa2035389>; *Understanding and Explaining mRNA COVID-19 Vaccines*, CENTERS FOR DISEASE PREVENTION AND CONTROL, <https://www.cdc.gov/vaccines/covid-19/hcp/mrna-vaccine-basics.html>; James Shea, *mRNA Technology used in COVID-19 Vaccines Deemed Safe, has been Studied for Decades, Expert Says*, MEDXPRESS (Dec. 17, 2020), <https://medicalxpress.com/news/2020-12-mrna-technology-covid-vaccines-deemed.html>.

<sup>458</sup> Apoorva Mandavilli, *Here's Why Vaccinated People Still Need to Wear a Mask*, N.Y. TIMES (Dec. 8, 2020), <https://www.nytimes.com/2020/12/08/health/covid-vaccine-mask.html>; Claire Cain Miller et al.,

The understandable desire many individuals have for COVID-19 to be gone and for life to return to pre-COVID-19 normal is unrealistic. Many individuals find change hard, especially when that change is bothersome, imposed, and involuntary. Most individuals are creatures of habit, who therefore fear the unknown and unknowable. When and whether COVID-19 will be mostly managed in 2021 depends partly on whether, when, how many, and which individuals get vaccinated.<sup>459</sup> If America's historical experience with vaccination is a reliable guide,<sup>460</sup> many adults are unlikely to voluntarily get vaccinated or let their children get vaccinated.<sup>461</sup> If enough people refuse vaccination,<sup>462</sup> herd immunity will not be achieved.<sup>463</sup> Additionally, several new, more contagious, and more deadly mutated variants of COVID-19<sup>464</sup> are appearing across the globe, including the United States,<sup>465</sup> complicating predictions<sup>466</sup> about how life will unfold in 2021.<sup>467</sup> COVID-19 has definitively hastened technological innovations transforming legal practice and increasing access to justice,<sup>468</sup> to become more remote, self-assisted, and virtual.<sup>469</sup>

What is certain is the pandemic and pandemic vaccine uncertainty will be parts of life for the foreseeable future. All five responses to pandemics this Article advocates also apply to pandemic vaccines, appropriately modified; namely, directly paying people financial assistance, encouraging people to practice mindfulness, gently enforcing NPIs, fostering acquisition of accurate scientific evidence-based information about pandemic vaccines, and applying psychological game theory to better understand emotions that depend on beliefs about leadership regarding pandemic vaccines.

---

*What You Can Do Post-Vaccine, and When*, N.Y. TIMES (Dec. 23, 2020),

<https://www.nytimes.com/2020/12/21/upshot/after-vaccine-recommendations-experts.html>.

<sup>459</sup> Lucy Tompkins, *As the Virus Spikes, Vaccine Distribution Is One More Hurdle for States*, N.Y. TIMES (Jan. 4, 2020), <https://www.nytimes.com/2021/01/03/us/coronavirus-vaccine-.html>.

<sup>460</sup> Sara Novak, *The Long History of America's Anti-Vaccination Movement*, DISCOVER (Nov. 26, 2018), <https://www.discovermagazine.com/health/the-long-history-of-americas-anti-vaccination-movement>.

<sup>461</sup> Perry Bacon Jr., *Why A Big Bloc of Americans Is Wary Of The COVID-19 Vaccine — Even As Experts Hope To See Widespread Immunization*, FIFTYTHREE, ABC NEWS (Dec. 11, 2020), <https://fivethirtyeight.com/features/many-black-americans-republicans-women-arent-sure-about-taking-a-covid-19-vaccine/>.

<sup>462</sup> Yoko Ibuka et al., *Free-Riding Behavior in Vaccination Decisions: An Experimental Study*, 9 PLOS ONE e87164 (2014).

<sup>463</sup> Donald G. McNeil, Jr., *How Much Herd Immunity Is Enough?* N.Y. TIMES (Dec. 24, 2020), <https://www.nytimes.com/2020/12/24/health/herd-immunity-covid-coronavirus.html>.

<sup>464</sup> Apoorva Mandavilli, *How Does the Coronavirus Variant Spread? Here's What Scientists Knows*, N.Y. TIMES (Dec. 31, 2020), <https://www.nytimes.com/2020/12/31/health/coronavirus-variant-transmission.html>.

<sup>465</sup> Apoorva Mandavilli, *Discovery of Virus Variant in Colorado and California Alarms Scientists*, N.Y. TIMES (Dec. 30, 2020), <https://www.nytimes.com/2020/12/30/health/coronavirus-mutant-colorado.html>.

<sup>466</sup> *What's Ahead in the Second Year of COVID-19?*, KNOWLEDGE@WHARTON (Mar. 08, 2021), <https://knowledge.wharton.upenn.edu/article/whats-ahead-second-year-covid-19/>.

<sup>467</sup> Joshua S. Weitz et al., *Awareness-Driven Behavior Changes Can Shift the Shape of Epidemics away from Peaks and Toward Plateaus, Shoulders, and Oscillations*, 117 PROC. NAT'L ACAD. SCI. 32764 (2020), <https://www.pnas.org/content/117/51/32764>.

<sup>468</sup> Bridget McCormack, *The Disruption We Needed: COVID-19, Technology and Access to Justice*, Presentation at Stanford Law School Conference: Legal Tech and the Future of Civil Justice (Feb. 24, 2021), <https://conferences.law.stanford.edu/legal-tech-and-the-future-of-civil-justice/>.

<sup>469</sup> Bridget Mary McCormack, Michigan Supreme Court Chief Justice, *Courts and Computation: Opening Doors to Equality, Access, Transparency, and Efficiency*, Keynote Address at Northwestern Law and Technology Initiative and the Northwestern Journal of Technology and Intellectual Property Symposium: Law + Computation: An Algorithm for the Rule of Law and Justice? (Feb. 5, 2021), <https://jtip Symposium northwestern.com/>.

## APPENDIX: PSYCHOLOGICAL GAME MODELS OF LEADERSHIP

Due to differences in assumptions, central variables, methodologies, theories, and topics of interest, “mainstream leadership and economics have rarely conversed.”<sup>470</sup> The appendix of this Article advocates building formal, rigorous, theoretical economic models to analyze how leaders and leadership communications in pandemics can reduce anger, anxiety, and frustration, prevent panic, inhibit complacency, and foster compliance with NPIs. Such models can build on economic models of decision-making impacts of anticipatory emotions,<sup>471</sup> anxiety,<sup>472</sup> depression,<sup>473</sup> positive affect,<sup>474</sup> and skewness preferences.<sup>475</sup>

Andrew Caplin<sup>476</sup> and John Leahy<sup>477</sup> developed psychological expected utility theory to model situations where people experience feelings of anticipation before uncertainty resolves.<sup>478</sup> They analyzed how anxiety impacts a number of important areas, including AIDS testing,<sup>479</sup> asset pricing,<sup>480</sup> genetic testing,<sup>481</sup> supplying information about stressful medical procedures,<sup>482</sup> and wishful thinking.<sup>483</sup> Caplin analyzed fear appeals in health communications.<sup>484</sup> Koszegi<sup>485</sup> studied how anxiety can influence patient behavior<sup>486</sup> and choices over intimidating decisions.<sup>487</sup> The research in this area thus proves that fear and

---

<sup>470</sup> Nathan J. Hiller et al., *Economic Assumptions and Economic Context: Implications for the Study of Leadership*, LEADERSHIP Q. (June 2020), <https://doi.org/10.1016/j.leaqua.2019.101352>.

<sup>471</sup> Martin G. Kocher et al., ‘Let Me Dream on!’ *Anticipatory Emotions and Preference for Timing in Lotteries*, 98 J. ECON. BEHAV. & ORG. 29 (2014).

<sup>472</sup> Michael T. Rauh & Giulio Seccia, *Anxiety and Performance: An Endogenous Learning-by-Doing Model*, 47 INT’L ECON. REV. 583 (2006).

<sup>473</sup> Jonathan de Quidt & Johannes Haushofer, *Depression through the Lens of Economics: A Research Agenda*, in THE ECONOMICS OF POVERTY TRAPS 127, 136-39 (Christopher B. Barrett eds., 2019).

<sup>474</sup> Benjamin E. Hermalin & Alice M. Isen, *A Model of the Effect of Affect on Economic Decision Making*, 6 QUANTITATIVE MARKETING & ECON. 17, 19 (2008).

<sup>475</sup> Markus Dertwinkel-Kalt & Mats Koster, *Salience and Skewness Preferences*, J. EUR. ECON. ASS’N (2019), <https://doi.org/10.1093/jeea/jvz035>.

<sup>476</sup> ANDREW CAPLIN, <https://wp.nyu.edu/andrewcaplin/>.

<sup>477</sup> John Leahy, *Allen Sinai Professor of Macroeconomics and Public Policy*, C. OF LITERATURE, SCI. AND THE ARTS, U. OF MICH., <https://lsa.umich.edu/econ/people/faculty/jvleahy.html>.

<sup>478</sup> Andrew Caplin & John Leahy, *Psychological Expected Utility Theory and Anticipatory Feelings*, 116 Q.J. ECON. 55 (2001).

<sup>479</sup> Andrew Caplin & Kfir Eliaz, *AIDS Policy and Psychology: A Mechanism-Design Approach*, 34 RAND J. ECON. 631 (2003).

<sup>480</sup> Caplin & Leahy, *supra* note 478, at 67-69.

<sup>481</sup> Andrew Caplin & John Leahy, *Behavioral Policy*, in 1 THE PSYCHOL. OF ECON. DECISIONS: RATIONALITY & WELL-BEING 73 (Isabelle Brocas & Juan Carrillo eds., 2003).

<sup>482</sup> Andrew Caplin & John Leahy, *The Supply of Information by a Concerned Expert*, 114 ECON. J. 487 (2004).

<sup>483</sup> Andrew Caplin & John V. Leahy, *Wishful Thinking* (Nat’l Bureau Econ. Res. Working Paper No. 25707, 2019), <https://www.nber.org/papers/w25707>.

<sup>484</sup> Andrew Caplin, *Fear as a Policy Instrument*, in TIME AND DECISION: ECONOMIC AND PSYCHOLOGICAL PERSPECTIVES ON INTERTEMPORAL CHOICE 441 (George Lowenstein et al. eds., 2003).

<sup>485</sup> Botond Koszegi, CENT. EUR. U., <https://economics.ceu.edu/people/botond-koszegi>.

<sup>486</sup> Botond Koszegi, *Health Anxiety and Patient Behavior*, 22 J. HEALTH ECON. 1073 (2003).

<sup>487</sup> Botond Koszegi, *Utility from Anticipation and Personal Equilibrium*, 44 ECON. THEORY 415, 434-35 (2010).



anxiety can influence individual decision-making processes and the choices that individuals make.

This Article recommends applying the research methodologies of psychological game theory to model emotions that depend on beliefs about leadership. Chris Smith wrote that New York State Governor Andrew Cuomo was playing a psychological game when Cuomo used his daily press conferences to “create an image of reassuring leadership,” in contrast with the chaotic volatility of Trump’s dueling press briefings.<sup>488</sup> People form beliefs about leaders and feel emotions that depend on those beliefs. To succeed at leadership entails understanding people’s belief-dependent emotions about leaders.

John Geanakoplos,<sup>489</sup> David Pearce,<sup>490</sup> and Ennio Stacchetti<sup>491</sup> developed what they termed psychological game theory (PGT) to incorporate emotions that depend on beliefs about actions and beliefs into strategic analysis.<sup>492</sup> PGT can model belief-dependent anger and surprise.<sup>493</sup> PGT models are an actively growing area of applied economics research.<sup>494</sup> There are PGT models of belief-dependent emotions in these important areas: decisions about filing a lawsuit, settlement, and going to trial;<sup>495</sup> belief-dependent embarrassment, guilt, and remorse in maintaining informal social norms;<sup>496</sup> individuals cooperating in a one-shot PGT prisoner’s dilemma being sustained by sufficiently averse guilt from violating compliance norms;<sup>497</sup> expressive voting;<sup>498</sup> reciprocity in social interactions;<sup>499</sup> and the notion of sequential reciprocity.<sup>500</sup> Experimental play in one-shot public goods games supports PGT models of guilt aversion and reciprocity.<sup>501</sup> Experimental play in sequential public goods games supports PGT models of leaders not free riding to avoid guilt from not living up to expectations of being a “good leader,” and followers not free riding to avoid guilt from not living up to expectations of being a “good follower.”<sup>502</sup>

---

<sup>488</sup> Chris Smith, “*He’s Walking the Line*”: Inside Andrew Cuomo’s Psychological Game With Trump, VANITY FAIR (Apr. 2, 2020), <https://www.vanityfair.com/news/2020/04/inside-andrew-cuomos-psychological-game-with-trump>.

<sup>489</sup> John Geanakoplos, James Tobin Professor of Economics, YALE U. ECON. DEP’T, <https://economics.yale.edu/people/faculty/john-geanakoplos>.

<sup>490</sup> David Pearce, Professor of Economics, N.Y.U., <https://as.nyu.edu/content/nyu-as/as/faculty/david-g-pearce.html>.

<sup>491</sup> Ennio Stacchetti, Professor of Economics, N.Y.U., <https://as.nyu.edu/content/nyu-as/as/faculty/ennio-stacchetti.html>.

<sup>492</sup> John Geanakoplos et al., *Psychological Games and Sequential Rationality*, 1 GAMES & ECON. BEHAV. 60 (1989).

<sup>493</sup> *Id.* at 60, 62.

<sup>494</sup> Ofer H. Azar, *The Influence of Psychological Game Theory*, 167 GAMES & ECON. BEHAV. 459 (2019).

<sup>495</sup> Peter H. Huang & Ho-Mou Wu, *Emotional Responses in Litigation*, 12 INT’L REV. L. & ECON. 31 (1992).

<sup>496</sup> Peter H. Huang & Ho-Mou Wu, *More Order without More Law: A Theory of Social Norms and Organizational Cultures*, 10 J.L. ECON. & ORG. 390, 394 fig. 2, 396 fig. 3, 399 fig. 7 (1992).

<sup>497</sup> Gregory DeAngelo & Bryan C. McCannon, *Psychological Game Theory in Public Choice*, 182 PUB. CHOICE 159, 162-63 (2020); Bryan C. McCannon, *Social Norms and Cooperation*, 14 SCOT. INT’L J. ECON. THEORY 303 (2018).

<sup>498</sup> DeAngelo & McCannon, *supra* note 497, at 172-73.

<sup>499</sup> Armin Falk & Urs Fischbacher, *A Theory of Reciprocity*, 54 GAMES & ECON. BEHAV. 293 (2006).

<sup>500</sup> Martin Dufwenberg & Georg Kirchsteiger, *A Theory of Sequential Reciprocity*, 47 GAMES & ECON. BEHAV. 268 (2004).

<sup>501</sup> Martin Dufwenberg et al., *The Framing of Games and the Psychology of Play*, 73 GAMES & ECON. BEHAV. 459, 470 (2011).

<sup>502</sup> Bryan C. McCannon, *Leadership and Motivation for Public Goods Contributions*, 65 SCOT. J. POL. ECON. 68 (2018).

Extending PGT to allow emotions to depend on beliefs about actions, others' beliefs, and states of nature,<sup>503</sup> permits development of these theories: a general theory of guilt aversion;<sup>504</sup> incomplete information models of guilt aversion in "the trust game;"<sup>505</sup> incorporation of image concerns and self-esteem in economic analysis;<sup>506</sup> models of how anger and frustration through aggression and blame influence outcomes in leader-follower games;<sup>507</sup> the study of public administration corruption due to collusion between a bureaucrat and lobbyist;<sup>508</sup> examination of embezzlement by intermediaries between donors and recipients;<sup>509</sup> and analysis of kindness.<sup>510</sup> This list of important economic, policy, and social areas that extensions of PGT models have been able to successfully address suggests how PGT can provide insights about leadership, particularly during such crises as COVID-19 and future pandemics.

---

<sup>503</sup> Pierpaolo Battigalli & Martin Dufwenberg, *Dynamic Psychological Games*, 144 J. ECON. THEORY 1 (2009); Pierpaolo Battigalli et al., *Incorporating Belief-Dependent Motivation in Games*, 167 J. ECON. BEHAV. & ORG. 185 (2019).

<sup>504</sup> Pierpaolo Battigalli & Martin Dufwenberg, *Guilt in Games*, 97 AM. ECON. REV. 170 (2007).

<sup>505</sup> Giuseppe Attanasi et al., *Incomplete Information Models of Guilt Aversion in the Trust Game*, 62 MGMT. SCI. 648 (2016).

<sup>506</sup> Pierpaolo Battigalli & Martin Dufwenberg, *Belief-Dependent Motivations and Psychological Game Theory* (Apr. 26, 2020) (unpublished manuscript) (on file with author).

<sup>507</sup> Pierpaolo Battigalli et al., *Frustration, Aggression, and Anger in Leader-Follower Games*, 117 GAMES & ECON. BEHAV. 15 (2019).

<sup>508</sup> Loukas Balafoutas, *Public Beliefs and Corruption in a Repeated Psychological Game*, 78 J. ECON. BEHAV. & ORG. 51 (2011).

<sup>509</sup> Giuseppe Attanasi et al., *Embezzlement and Guilt Aversion*, 167 J. ECON. BEHAV. & ECON. ORG. 409 (2019).

<sup>510</sup> Martin Dufwenberg & Georg Kirchsteiger, *Modelling Kindness*, 167 J. ECON. BEHAV. & ORG. 228 (2019).