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Addictive Technology and Its Implications for Antitrust Enforcement

James Niels Rosenquist

Fiona M. Scott Morton

Samuel N. Weinstein

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ADDICTIVE TECHNOLOGY AND ITS IMPLICATIONS FOR ANTITRUST ENFORCEMENT*

JAMES NIELS ROSENQUIST,** FIONA M. SCOTT MORTON*** & SAMUEL N. WEINSTEIN****

The advent of mobile devices and digital media platforms in the past decade represents the biggest shock to cognition in human history. Robust medical evidence is emerging that digital media platforms are addictive and, when used in excess, harmful to users' mental health. Other types of addictive products, like tobacco and prescription drugs, are heavily regulated to protect consumers. Currently, there is no regulatory structure protecting digital media users from these harms. Antitrust enforcement and regulation that lowers entry barriers could help consumers of social media by increasing competition. Economic theory tells us that more choice in digital media will increase the likelihood that some firms will vie to offer higher-quality and safer platforms. For this reason, evaluating harm to innovation (especially safety innovation) and product variety may be particularly important in social media merger and conduct cases. Another critical element to antitrust enforcement in this space is a correct accounting of social media's addictive qualities. Standard antitrust analysis seeks to prohibit conduct that harms consumer welfare. Economists have taught the antitrust bar that the output of a product or service is a reliable proxy for consumer welfare. However, output and welfare do not have this relationship when a product is addictive. Indeed, in social media markets, increased output is often harmful. We argue that antitrust analysis must reject the output proxy and return to a focus on consumer welfare itself in cases involving addictive social media platforms. In particular, courts should reject defenses that rely only on gross output measures without evidence that any alleged increases in output actually benefit consumers.

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** MD, Ph.D., Instructor in Psychiatry, Massachusetts General Hospital and Harvard Medical School.

*** Theodore Nierenberg Professor of Economics, Yale School of Management.

**** Associate Professor of Law, Benjamin N. Cardozo School of Law. We thank David Dinielli, Christopher Hockett, Gene Kimmelman, and Doug Melamed for helpful comments. We also thank Ariel Hsieh and Laura Song for their excellent research assistance. In the last three years Fiona Scott Morton has engaged in antitrust expert-witness consulting for a variety of corporations, including Amazon and Apple, as well as for government enforcers. No author received support for this work from any source other than his or her home institution.

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INTRODUCTION

In recent years, many lawmakers, researchers, public health officials, and policy experts have expressed concern about the impact of digital interactive technology on individual and societal welfare.[1] This technology, which includes

1. *See, e.g.*, SEBASTIAN BAY & ROLF FREDHEIM, NATO STRATEGIC COMMC'NS CTR. OF EXCELLENCE, FALLING BEHIND: HOW SOCIAL MEDIA COMPANIES ARE FAILING TO COMBAT INAUTHENTIC BEHAVIOUR ONLINE 5 (2019), https://stratcomcoe.org/pdfjs/?file=/publications/download/23dec_falling_behind_stratcom_coe.pdf?zoom=page-fit [https://perma.cc/4CW8-6PWA (staff-uploaded archive)] ("Social media manipulation is the new frontier for antagonists seeking to influence elections, polarise public opinion, and side-track legitimate political discussions."); Press Release, Off. of Comm'r Rohit Chopra, Statement of Commissioner Rohit Chopra Regarding the Report to Congress on Social Media Bots and Deceptive Advertising 1 (July 16, 2020), https://www.ftc.gov/system/files/documents/public_statements/1578231/social_bots_chopra_statement.pdf [https://perma.cc/6DRH-K23X] ("The viral dissemination of disinformation on social media platforms poses serious harms to society. . . . Social media platforms have become a vehicle to sow social divisions within our country through sophisticated disinformation campaigns."); Lien Faelens, Kristof Hoorelbeke, Eiko Fried, Rudi de Raedt & Ernst H.W. Koster, *Negative Influences of Facebook Use Through the Lens of Network Analysis*, 96 COMPUTS. HUM. BEHAV. 13, 13–14 (2019) (reporting results of studies "investigating the relationship between Facebook use, rumination, depressive, anxiety-, and stress-related symptoms"); Isobel Asher Hamilton, Katie Canales & Paige Leskin, *Facebook Hit with Two Massive Antitrust Lawsuits from the FTC and 46 States Seeking To Spin Off Instagram and WhatsApp*, BUS. INSIDER (Dec. 9, 2020, 2:47 PM), https://www.businessinsider.com/facebook-antitrust-suit-instagram-whatsapp-deal-ftc-states-2020-12 [https://perma.cc/86QD-QKV4]. Senator Amy Klobuchar lauded the FTC's and states' recent suits against Facebook: "[Facebook's] acquisitions of Instagram and

both hardware (fixed and mobile devices) and software (most notably social media platforms), has captured an ever-increasing level of human engagement in the United States, in part by leveraging human attentional and affective systems[2] in a manner designed to maximize profit. Persuasive evidence suggests that this precipitous rise in technological engagement in the United States and abroad has had a broad negative effect on human wellbeing in terms of mental health and impaired cognition.[3] These harms occur through disruption of neural systems regulating, among other things, attention and affect.

While digital platforms such as social media websites are, on the surface, somewhat different from addictive products like tobacco and opiate-derived pain medications, they meet the core criteria needed to justify regulation. The stimuli digital platforms produce are not physical substances consumed by the body like recreational and prescription drugs, but their effects on the brain follow the same common pathway of reward through the nucleus accumbens,[4] which in turn regulates pathways of addiction. This nonmolecular substrate is not dissimilar to those found in other regulated behaviors, such as gambling. The commonality between digital platforms and other addictive products is evident in the way platforms seek to utilize principles of variable rewards schedules and content filtering to maximize the disutility of nonuse (i.e., craving) that leads to further use. Furthermore, studies have shown that these platforms are harmful when consumed in excess, particularly by vulnerable populations.[5] Finally, while their negative effects as currently measured are for

WhatsApp have made the social media landscape less competitive and worse for users. Big technology companies like Facebook should not have free reign to impose their will on the market, and they must be held accountable when they attempt to do so." Hamilton et al., *supra*.

2. Attentional and affective systems are structures within the central nervous system, particularly within the brain, that direct human attention and modulate emotional content and arousal, respectively. *See, e.g.*, Tomasz S. Ligeza, Miroslaw Wyczesany, Agnieska D. Tymorek & Maciej Kaminski, *Interactions Between the Prefrontal Cortex and Attentional Systems During Volitional Affective Regulation: An Effective Connectivity Reappraisal Study*, 29 BRAIN TOPOGRAPHY 253, 253 (2016).

3. *See, e.g.*, Jonathan Haidt & Jean M. Twenge, Is There an Increase in Adolescent Mood Disorders, Self-Harm, and Suicide Since 2010 in the USA and UK? A Review 3 (June 2021) (unpublished manuscript) (on file with authors) [hereinafter Haidt & Twenge, Adolescent Mood Disorders, Self-Harm, and Suicide].

4. The nucleus accumbens is the region of the brain that functions as one of its main reward centers. *Cf.* Francesco E. Pontieri, Gianluigi Tanda, Francesco Orzi & Gaetano Di Chiara, *Effects of Nicotine on the Nucleus Accumbens and Similarity to Those of Addictive Drugs*, 382 NATURE 255, 255 (1996) ("The [nucleus accumbens] is thought to be involved in the integration and expression of emotions . . . ."). It has been shown to be involved in the modulation of pleasure signals based on activation from, among other things, addictive drugs. *Id.* Continued activation is a critical component in developing addictive behaviors and sensations such as cravings and withdrawal. *See id.* at 257.

5. *See, e.g.*, Elia Abi-Jaoude, Karline Treurnicht Naylor & Antonio Pignatiello, *Smartphones, Social Media Use and Youth Mental Health*, 192 CANADIAN MED. ASS'N J. 136, 137 (2020) ("[O]bservational studies have linked spending more than 2 hours a day on social networking sites and personal electronic devices with high rates of suicidality and depressive symptoms among adolescent girls, although youth who sustained high levels of face-to-face socializing were relatively protected against the negative consequences of too much time online.").

most users less dramatic than those of cigarettes or opiates when consumed in excess, the scale of consumption by number of users of these goods dwarfs the number of smokers and opiate abusers, thus potentially impacting a far larger population in the aggregate. This is concerning because these products are, in many instances, consumed at a rate of up to twenty and thirty percent of an adolescent's waking hours, a scale scarcely encountered in human history.[6] When combining the enormous user base of these products with the enormous quantity of social media consumed, it would not take a very large "per unit" effect to create substantial harm to users. The fact that researchers both inside and outside the platform companies have found harmful effects from platforms so early in their product life is further evidence that there is cause to be concerned.[7]

In this Article, we develop the analogy between current digital businesses and the way they exploit consumers' behavioral biases—in particular their addictive qualities—and the reasons why prescription drugs and gambling were regulated in years past. Because the evidence that these technologies are harmful is recent (within the last fifteen years), U.S. lawmakers and regulators have not yet limited the actions of digital providers.[8] Many other products that can harm human health, such as prescription drugs and tobacco, have existed for so long that regulation has been in place for decades.[9] Products that can damage consumers economically, like gambling and credit cards, have also been regulated, though more recently.[10] In the absence of regulation, it is likely that

6. Jean M. Twenge, Gabrielle N. Martin & Brian H. Spitzberg, *Trends in U.S. Adolescents' Media Use, 1976–2016: The Rise of Digital Media, the Decline of TV, and the (Near) Demise of Print*, 8 PSYCH. POPULAR MEDIA CULTURE 329, 330 (2019).

7. *See* Derek Thompson, *Social Media Is Attention Alcohol*, ATLANTIC (Sept. 17, 2021), https://www.theatlantic.com/ideas/archive/2021/09/social-media-attention-alcohol-booze-instagram-twitter/620101/ [https://perma.cc/C6HS-C33A (dark archive)] (quoting internal Instagram and Facebook studies finding that many teenage users feel that Instagram is addictive and harmful and citing independent research reaching a similar conclusion about social media products). *But see* Pratiti Raychoudhury, *What Our Research Really Says About Teen Well-Being and Instagram*, FACEBOOK, https://about.fb.com/news/2021/09/research-teen-well-being-and-instagram/ [https://perma.cc/744U-4W54] (Sept. 29, 2021, 4:43 PM) (explaining "Instagram made those difficult times [with loneliness, anxiety, sadness and eating issues] *better* rather than worse").

8. *See* Tim Wu, *Blind Spot: The Attention Economy and the Law*, 82 ANTITRUST L.J. 771, 778 (2019) ("Regulators . . . don't have a paradigm for thinking about consumer harms that are not deceptive or involve physical or financial harm, but rather arise from the seizure of attention and consequential cognitive impairments.").

9. *See, e.g.*, Federal Food, Drug, and Cosmetic Act, ch. 675, 52 Stat. 1040 (1938) (codified as amended at 21 U.S.C. §§ 301–399i) (regulating the sale and distribution of medical devices, drugs, food, and tobacco products).

10. *See, e.g.*, Credit Card Accountability Responsibility and Disclosure Act of 2009, Pub. L. No. 111-24, 123 Stat. 1734 (codified as amended in scattered sections of 15 U.S.C.) (regulating credit card issuers and requiring them to employ "fair and transparent practices"); Unlawful Internet Gambling Enforcement Act of 2006, Pub. L. No. 109-347, 120 Stat. 1952 (codified at 31 U.S.C. §§ 5361–5367) (regulating payments relating to online gambling).

OxyContin, tobacco, and other similar substances would be abused and more generally overused by many consumers, as they are addictive and harmful to health. Likewise, in the absence of regulation, more consumers would enter bankruptcy due to accumulated credit card and gambling debt.[11] In a world with no regulation of these addictive products, an action by a company that caused more consumption of OxyContin or credit card debt by addicted consumers would often harm, rather than benefit, those consumers.

Importantly, the products we consider can both increase and decrease consumer welfare. An OxyContin consumer can be an otherwise healthy seventy-year-old who is postoperative and is using the medication briefly under the direction of a physician.[12] Alternatively, a consumer could be addicted to OxyContin and consume it at harmful levels.[13] Without regulatory intervention, consumers of OxyContin and other addictive drugs would not be protected from excess use and resulting harm by the Food and Drug Administration ("FDA") or a physician, or by limited access to the product at retail. This, we argue, is precisely the situation with a number of popular digital media services in the United States today.

The lack of digital regulation in the United States has a profound consequence for antitrust enforcement against digital platforms. Many scholars believe that the goal of antitrust should be to protect consumers from higher prices, lower-quality products or services, and reduced innovation that results from anticompetitive conduct.[14] And U.S. courts have generally adopted this

11. *See generally* CONSUMER FIN. PROT. BUREAU, CARD ACT REPORT 6 (2013), https://files.consumerfinance.gov/f/201309_cfpb_card-act-report.pdf [https://perma.cc/8XGN-NMXG] (finding that the Credit CARD Act reduced penalty fees and made credit card costs more transparent to consumers).

12. *See* Am. Geriatrics Soc'y Panel on the Pharmacological Mgmt. of Persistent Pain in Older Persons, *Pharmacological Management of Persistent Pain in Older Persons*, 10 PAIN MED. 1062, 1067 (2009) (listing OxyContin as the recommended drug for persistent pain in older adults).

13. *See* Lauretta E. Grau, Nabarun Dasgupta, Alison Phinney Harvey, Kevin Irwin, Anthony Givens, Mark L. Kinzly & Robert Heimer, *Illicit Use of Opioids: Is OxyContin® a "Gateway Drug"?*, 16 AM. J. ADDICTION 166, 166 (2007) (explaining that a "new wave of non-medical opioid use has often been linked to OxyContin").

14. *See, e.g.*, Rebecca Haw Allensworth, *The Commensurability Myth in Antitrust*, 69 VAND. L. REV. 1, 6 (2016) (noting "over three decades of consensus among courts—and most scholars—that antitrust ought to pursue only economic goals in the form of competition"); Donald F. Turner, *The Durability, Relevance, and Future of American Antitrust Policy*, 75 CALIF. L. REV. 797, 798 (1987) (explaining that the goal of antitrust policy is "to promote consumer welfare through the efficient use and allocation of resources, the development of new and improved products, and the introduction of new production, distribution, and organizational techniques for putting economic resources to beneficial use"). However, in recent years, disagreement about the appropriate goals of antitrust has reemerged. *See, e.g.*, Lina Khan, *The New Brandeis Movement: America's Antimonopoly Debate*, 9 J. EUR. COMPETITION L. & PRAC. 131, 132 (2018) (arguing that the "Chicago School focus on 'consumer welfare' . . . has warped America's antimonopoly regime, by leading both enforcers and courts to focus mainly on promoting 'efficiency' on the theory that this will result in low prices for consumers" and that this

perspective.[15] Antitrust case law therefore requires courts to evaluate the impact of potentially anticompetitive conduct on consumer welfare.[16] When products are addictive, platform strategies may be purposefully designed to take advantage of that weakness and the behavioral biases of consumers more generally.[17] Addiction is a strong behavioral bias that has been studied in the economics literature for decades, at least since the pioneering work of Gary Becker.[18] We argue that antitrust analysis of consumer welfare when consumer actions are driven by behavioral biases cannot rely only on old neoclassical tools, but rather requires incorporating insights from behavioral economics.[19] While a standard concept in antitrust, consumer welfare becomes a much more complex

"fixation on efficiency . . . has largely blinded enforcers to many of the harms caused by undue market power, including on workers, suppliers, innovators, and independent entrepreneurs").

15. *See, e.g.*, Town of Concord v. Bos. Edison Co., 915 F.2d 17, 21–22 (1st Cir. 1990) (stating that "a practice is 'anticompetitive' only when it harms the competitive process," which means that "it obstructs the achievement of competition's basic goals—lower prices, better products, and more efficient production methods").

16. *See, e.g.*, Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp., 509 U.S. 209, 221 (1993) (noting "the antitrust laws' traditional concern for consumer welfare and price competition"); Jacobs v. Tempur-Pedic Int'l, Inc., 626 F.3d 1327, 1339 (11th Cir. 2010) ("[C]onsumer welfare, understood in the sense of allocative efficiency, is the animating concern of the Sherman Act.").

17. The UK Competition and Markets Authority has found evidence that platforms' choice architecture "may exacerbate . . . natural consumer biases." COMPETITION & MKTS. AUTH., ONLINE PLATFORMS AND DIGITAL ADVERTISING: MARKET STUDY FINAL REPORT 194–95 (2020) [hereinafter COMPETITION & MKTS. AUTH. FINAL REPORT], https://assets.publishing.service.gov.uk/media/5fa557668fa8f5788db46efc/Final_report_Digital_ALT_TEXT.pdf [https://perma.cc/4B7K-AYR8]; *see also* COMPETITION & MKTS. AUTH., APPENDIX Y: CHOICE ARCHITECTURE AND FAIRNESS BY DESIGN, at Y1–Y2, https://assets.publishing.service.gov.uk/media/5fe36ab9d3bf7f0898e0776c/Appendix_Y_-_choice_architecture_and_Fairness_by_Design_1.7.20.pdf [https://perma.cc/7GJB-RFMH] (focusing on choice architecture (i.e., content presentation) and consumer behaviour).

18. Gary S. Becker & Kevin Murphy, *A Theory of Rational Addiction*, 96 J. POL. ECON. 675, 675–76 (1988).

19. Neoclassical economic models assume that consumers are fully informed, have the time, ability, and incentive to evaluate all options, and always act to maximize their own welfare. *See, e.g.*, Abbey Stemler, *Platform Advocacy and the Threat to Deliberative Democracy*, 78 MD. L. REV. 105, 126 n.122 (2018) ("'Neoclassical economics' is a complex concept but often calls to mind the ideas that individuals are rational actors and make decisions based on what will maximize benefits for them."). Neoclassical economics was for much of the twentieth century the dominant approach to economic theory. *See, e.g.*, Julie A. Nelson, *Does Profit-Seeking Rule Out Love? Evidence (or Not) from Economics and Law*, 35 WASH. U. J.L. & POL'Y 69, 95 (2011) ("With the publication of Alfred Marshall's Principles of Economics in 1890, the mathematical and diagrammatic analysis of maximization behavior became enshrined as the backbone of 'neoclassical' economics, which is the dominant school to this day."). Behavioral economics is the study of how limits on human cognition condition people's behavior. *See, e.g.*, Christine Jolls, Cass R. Sunstein & Richard Thaler, *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471, 1474 (1998). Proponents argue that the "rational consumer" of neoclassical economics—one who always "[1] maximize[s] their utility [2] from a stable set of preferences and [3] accumulates an optimal amount of information and other inputs in a variety of markets"—does not exist. GARY S. BECKER, THE ECONOMIC APPROACH TO HUMAN BEHAVIOR 14 (1976). Christine Jolls, Cass R. Sunstein, and Richard Thaler argue that "[t]he task of behavioral law and economics . . . is to explore the implications of *actual* (not hypothesized) human behavior for the law. How do 'real people' differ from *homo economicus*?" Jolls et al., *supra*, at 1476.

and nuanced object when the market in question includes addictive products. The literature on addiction explains why a consumer may be able to forecast that she will receive net harm from a product, express a clear desire to stop using it going forward, and consume it nonetheless.[20] In standard antitrust analysis, consumer welfare is tied to the "long-run self," whereas in settings involving addiction, choices are often made by the "short-run self" that the consumer later regrets.

U.S. antitrust laws prohibit mergers that tend to lessen competition, unlawful monopoly acquisition or maintenance—which is unilateral conduct that harms competition and does not represent competition on the merits—and agreements that unreasonably restrain trade.[21] These types of conduct are illegal when and because they harm competition and consumers. At a technical level, courts and enforcers evaluate competitive harm by its impact on consumer welfare. This value is measured conceptually as the area under the demand curve (which incorporates quality and innovation) and above price. Because calculating consumer welfare can be difficult, a common shortcut, or summary statistic, that is often used in antitrust enforcement and litigation is the change in output of a good or service.[22] If output in a market rises because of the conduct at issue, then consumer welfare is considered to have risen also.[23] This is because, if nothing else has changed, then an increase in quantity consumed must have occurred either because the price of the good fell or the quality of the good increased; in either case, consumers wanted more. Using output as a

20. Becker & Murphy, *supra* note 18, at 675–76.

21. The Clayton Act governs U.S. merger enforcement. Clayton Antitrust Act of 1914, ch. 323, § 7, 38 Stat. 730, 731–32 (codified as amended at 15 U.S.C. § 18) (prohibiting anticompetitive mergers). The Sherman Act prohibits unlawful monopoly acquisition and maintenance, Sherman Antitrust Act of 1890, ch. 647, § 2, 26 Stat. 209, 209 (codified as amended at 15 U.S.C. § 2) (prohibiting monopolization), as well as unreasonable restraints of trade, *id.* § 1, 26 Stat. at 209 (codified as amended at 15 U.S.C. § 1) (prohibiting agreements "in restraint of trade or commerce").

22. *See, e.g.*, NCAA v. Bd. of Regents of the Univ. of Okla., 468 U.S. 85, 107–08 (1984) (quoting Reiter v. Sonotone Corp., 442 U.S. 330, 343 (1979)) (noting that "Congress designed the Sherman Act as a 'consumer welfare' prescription" and that "[r]estrictions on price and output are the paradigmatic examples of restraints of trade that the Sherman Act was intended to prohibit"); United States v. Visa U.S.A., Inc., 163 F. Supp. 2d 322, 406 (S.D.N.Y. 2001) (concluding that "defendants' exclusionary rules undeniably reduce output and harm consumer welfare").

23. *See, e.g.*, LucasArts Ent. Co. v. Humongous Ent. Co., 870 F. Supp. 285, 289 (N.D. Cal. 1993) ("Limitations imposed by the antitrust laws are thought to improve consumer welfare because they force firms to *increase* output from monopolistic to competitive levels."). Causation is critical, however: the allegedly anticompetitive conduct must *cause* output to increase. For example, in *Ohio v. American Express Co.*, 138 S. Ct. 2274 (2018), the Supreme Court relied on the increasing usage of credit cards over time—a long-standing trend away from cash—to claim an output increase without establishing any relationship to the challenged conduct. *Id.* at 2289 (holding that the plaintiffs had "failed to prove that Amex's anti-steering provisions ha[d] stifled competition among credit-card companies" because "while these agreements have been in place, the credit-card market experienced expanding output and improved quality"). *See id.* at 2302 (Breyer, J., dissenting) ("The fact that credit card use in general has grown over the last decade, as the majority says, . . . says nothing about whether such use would have grown more or less without the nondiscrimination provisions.").

proxy for welfare is a commonly used shortcut in antitrust enforcement.[24] This assumption about the relationship between output and consumer welfare is very powerful, but it is based on premises that are not met in the context of addictive products.

This Article argues that any evidence of increased consumption (this might be measured by minutes of use in the social media context) that digital media defendants might offer to establish an efficiency defense should not be credited, given the strong possibility that more output causes net consumer harm, not benefit. Indeed, arguing that more OxyContin consumption by addicted consumers demonstrates an increase in consumer welfare violates common sense—but this is precisely the result a mechanical application of antitrust analysis would supply. We argue here that standard antitrust arguments must be adjusted and updated to correctly handle addictive products, including social media platforms. A digital business asserting that its conduct is procompetitive would either need to employ a business model that does not rely on addictive or exploitative content, or show that net consumer welfare gains, rather than exploitation, are the consequence of its behavior.

Another way to see how the harms created by unregulated digital content affect policy decisions is to think about them as an aspect of the quality of digital services. In the parlance of antitrust economics, the harms that digital businesses impose on unwitting consumers essentially lower the quality of the product. The consumer may not be able to see the lower quality due to obfuscation by the platform, lack of regulation in the marketplace, or asymmetric information, and is therefore exposed to addictive services. Of course, when a service declines in quality, that is a harm to consumer welfare. When a zero-price service declines in quality due to anticompetitive conduct by a digital business, that is equivalent to an increase in quality-adjusted price, a traditional antitrust harm.[25] Thus, increased "engagement" on a platform with addictive or exploitative content may result in lower-quality (or higher quality-adjusted price) services for some consumers. This is obviously not an efficiency.

The Article proceeds as follows: Part I describes the setting we study and the adoption of digital technology. Part II details current evidence on the psychological harms that digital businesses and social media platforms cause.

24. *See, e.g.*, *Am. Express Co.*, 138 S. Ct. at 2284; Herbert Hovenkamp, *The Rule of Reason*, 70 FLA. L. REV. 81, 84 (2018) ("The consumer welfare standard queries only whether output will be higher or lower (or prices higher or lower) under the restraint.").

25. *See In re* Qualcomm Antitrust Litig., 328 F.R.D. 280, 309 (N.D. Cal. 2018) ("The economic term 'quality-adjusted prices' captures both the nominal price and total quality of a particular product."), *vacated on procedural grounds sub nom.* Stromberg v. Qualcomm Inc., No. 19-15159, 2021 WL 4448713 (9th Cir. Sept. 29, 2021). This court endorsed the theory that a plaintiff could show consumer harm by demonstrating that absent Qualcomm's conduct, phone manufacturers would "develop higher-quality phones with improved features even though" the prices they charged "remain[ed] the same." *Id.*

Part III gives an economic background to regulation and considers broadly why we regulate certain products and markets. This part focuses on advances in behavioral economics and how they have affected regulatory design. We argue that credit cards and cigarettes are useful product parallels to social media platforms. In Part IV, we explain how the dangers of digital media and lack of regulation interact with measurement of consumer welfare. Lastly, we demonstrate how all these elements impact antitrust enforcement against digital businesses.

I. ADOPTION OF DIGITAL TECHNOLOGY

Grouped together, the internet, mobile devices, and social media services have caused the largest shock to cognition in human history. While print, television, and telephones had significant impacts on human thought and communication, the sheer scale and attention capture of the internet, mobile technologies, and platforms dwarfs these previous inventions. For example, American teens went from spending essentially no time on mobile devices and the internet in 1996 to well over six hours daily as of 2016.[26] This increase in mobile device use was driven primarily by the exponential growth of engagement in social networking websites such as Facebook, Twitter, and Instagram.[27] As a result, individual and collective cognition has, in under twenty years (or twenty-five if one wishes to include the rise of the internet through desktop computers) gone from a primarily Cartesian form of engagement and connectedness, where humans engaged with their immediate spatial environment or single individuals through telephones, to a Euclidean form of engagement, where instantaneous access to networks of usually like-minded individuals, friends, and family are ubiquitous not only in the United States but globally.

As with any shock, the welfare implications and long-term impact on human well-being of such rapid change are not entirely clear nor easily measured. For example, the impact of condensed calorie delivery in food products in the mid-twentieth century was first found to reduce certain measures of hunger prevalence in the United States.[28] Only later were some of those changes to human diets found to lead to increased rates of obesity and the various comorbid health conditions closely linked to obesity.[29] Additionally, any estimation we may make today of technology's impact on cognition is further

26. *See* Twenge et al., *supra* note 6, at 330–31.

27. *Id.* at 336.

28. Tomas J. Philipson & Richard A. Posner, *The Long-Run Growth in Obesity as a Function of Technological Change* 2 (Nat'l Bureau of Econ. Rsch., Working Paper No. 7423, 1999).

29. James Niels Rosenquist, Steven F. Lehrer, A. James O'Malley, Alan M. Zaslavsky, Jordan W. Smoller & Nicholas A. Christakis, *Cohort of Birth Modifies Association of FTO Genotype and BMI*, 112 PROC. NAT'L ACAD. SCIS. 354, 354 (2015).

complicated by the fact that the biological and behavioral pathways affected by the hardware and software of today's platforms and devices are usually more complex than those linked to medical conditions like obesity and cancer. The substrates involved are words and symbols as opposed to physical molecules that can be observed *in situ* and *in vivo* impacting physical systems.

A further unusual aspect of the policy debate around digital technology is the relatively short period of time between its emergence and the potential for the imposition of significant regulation. While the potential harms of cigarettes were known to many physicians as early as the nineteenth century, significant public attempts to regulate them based on their dangerous health effects came close to half a century after mass consumption of cigarettes had started.[30] This delay was caused, in part, by tobacco companies concealing their intent to addict customers to nicotine.[31] Because of that delay—and the century of deaths and illness it caused—policy makers had decades of time-series epidemiological data to pair with basic science research that explained both the pathways of addiction and pathology that led to lung cancer and other ailments.[32]

In the case of digital technology, the medical literature has grown exponentially over the last decade, with an emerging consensus that overuse of social media and other platforms can be dangerous to mental health, especially among at-risk groups.[33] For example, there is already a political movement in the United States for significant limitations on technology usage in children.[34] This is the case even though the medical model is very different than for tobacco or prescription drugs; the nature of usage cannot be classified as addictive on

30. U.S. DEP'T OF HEALTH, EDUC. & WELFARE, PUB. NO. 1103, SMOKING AND HEALTH: REPORT OF THE ADVISORY COMMITTEE TO THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE 5–7 (1964).

31. *See* DAVID KESSLER, A QUESTION OF INTENT: A GREAT AMERICAN BATTLE WITH A DEADLY INDUSTRY 119–20, 252 (2001) (describing Brown & Williamson documents stating that the company was "in the business of selling nicotine, an addictive drug" and revealing the company's decision not to disclose to the Surgeon General its knowledge of tobacco's harmful health effects).

32. Ernest L. Wynder & Evarts A. Graham, *Tobacco Smoking as a Possible Etiologic Factor in Bronchiogenic Carcinoma*, 143 J. AM. MED. ASS'N 329, 329–31 (1950).

33. *See, e.g.*, Haidt & Twenge, Adolescent Mood Disorders, Self-Harm, and Suicide, *supra* note 3, at 77 (reviewing studies showing an increase in negative adolescent mental health outcomes, especially for girls, since 2010); Jonathan Haidt & Jean M. Twenge, Social Media Use and Mental Health: A Review 109 (2021) (unpublished manuscript) (on file with authors) (reviewing studies showing a connection between social media use and mental health).

34. *See, e.g.*, Press Release, Ed Markey, U.S. Sen. for Massachusetts, Senators Markey and Blumenthal Introduce First-of-Its-Kind Legislation To Protect Children Online from Harmful Content, Design Features (Mar. 5, 2020), https://www.markey.senate.gov/news/press-releases/senators-markey-and-blumenthal-introduce-first-of-its-kind-legislation-to-protect-children-online-from-harmful-content-design-features_ [https://perma.cc/HE3E-69YC] (quoting Senator Richard Blumenthal (D-Conn.) as stating that "Big Tech has designed their platforms to ensnare and exploit children for more likes, more views, and more purchases . . . . The KIDS Act puts guardrails in place to reign in recklessness of marketers and Big Tech—protecting children and giving parents some peace of mind").

the molecular level, nor can the potential harms to cognition easily be modeled using current knowledge of human neurobiology. Nevertheless, a combination of numerous factors, including concerns over anticompetitive corporate behavior,[35] the breakdown of civil society through foreign interference and disinformation across many platforms,[36] the way platforms can amplify particular speech,[37] and worries about algorithmic discrimination by these and other technologies,[38] have led to a perfect storm where technology regulation

35. *See, e.g.*, James Clayton, *US Tech Giants Accused of 'Monopoly Power*,' BBC NEWS (Oct. 7, 2020), https://www.bbc.com/news/business-54443188 [https://perma.cc/N7MR-Z7EY] (describing a congressional report concluding that Facebook, Google, Amazon, and Apple each exercise some degree of market power in certain markets); Tony Romm, Cat Zakrzewsi & Rachel Lerman, *House Investigation Faults Amazon, Apple, Facebook and Google for Engaging in Anti-Competitive Monopoly Tactics*, WASH. POST (Oct. 6, 2020), https://www.washingtonpost.com/technology/2020/10/06/amazon-apple-facebook-google-congress/ [https://perma.cc/DKS4-6XC5 (dark archive)] (same); Barbara Shecter, *Tech Giants Grilled for Hours over Allegations of Anticompetitive Behaviour*, FIN. POST (July 30, 2020), https://financialpost.com/technology/tech-giants-grilled-for-hours-over-allegations-of-anti-competitive-behaviour [https://perma.cc/6ENG-ZSCT] (describing congressional questioning of chief executive officers from Facebook, Amazon, Google, and Apple about "whether they were abusing their market dominance through anti-competitive behavior").

36. *See, e.g.*, Danielle Cave & Jake Wallis, *Defending Democracies from Disinformation and Cyber-Enabled Foreign Interference*, STRATEGIST (Apr. 22, 2021), https://www.aspistrategist.org.au/defending-democracies-from-disinformation-and-cyber-enabled-foreign-interference/ [https://perma.cc/7GRE-X6RD] (describing the COVID-19 pandemic as a "trying time for democracies" that has "tested the integrity of open information environments," including social media platforms, "and the ability of these environments to deal with the overlapping challenges of disinformation, misinformation, election interference, and cyber-enabled foreign interference"); CHRISTINA NEMR & WILLIAM GANGWARE, PARK ADVISORS, WEAPONS OF MASS DISTRACTION: FOREIGN STATE-SPONSORED DISINFORMATION IN THE DIGITAL AGE 2 (2019), https://www.state.gov/wp-content/uploads/2019/05/Weapons-of-Mass-Distraction-Foreign-State-Sponsored-Disinformation-in-the-Digital-Age.pdf [https://perma.cc/NW4W-8HZW] (asserting that "[t]he proliferation of social media platforms has" created an "environment . . . ripe for exploitation by bad actors" and that "[t]oday, states and individuals can easily spread disinformation at lightning speed and with potentially serious impact"); Miles Parks & Philip Ewing, *Foreign Interference Persists and Techniques Are Evolving, Big Tech Tells Hill*, NPR (June 18, 2020, 3:09 PM), https://www.npr.org/2020/06/18/880349422/foreign-interference-persists-and-techniques-are-evolving-big-tech-tells-hill [https://perma.cc/332V-W4W9] (describing a congressional hearing in which "[l]eaders from Facebook, Twitter and Google" stated that "[f]oreign influence-mongers are altering their tactics in response to changes in the practices of the big social media platforms . . . prompt[ing] hostile nations to make some of their operations less clandestine and more overt than they have in recent years").

37. *See, e.g.*, Dipayan Ghosh, *Are We Entering a New Era of Social Media Regulation?*, HARV. BUS. REV. (Jan. 14, 2021), https://hbr.org/2021/01/are-we-entering-a-new-era-of-social-media-regulation [https://perma.cc/D79Z-PP8K] ("[S]ocial media platforms' broader tendency to promote and amplify conspiracy theories, fringe groups, and other problematic content must . . . be addressed."); Daphne Keller, *Amplification and Its Discontents*, KNIGHT FIRST AMEND. INST. (June 8, 2021), https://knightcolumbia.org/content/amplification-and-its-discontents [https://perma.cc/7SP3-G5TW] (stating that the "major platforms' amplification features have . . . caused or contributed to real damage in the world," including by "spread[ing] misleading political material, to the detriment of democratic governance").

38. *See, e.g.*, *Facebook and Instagram To Examine Racist Algorithms*, BBC NEWS (July 22, 2020), https://www.bbc.com/news/technology-53498685 [https://perma.cc/CD6R-9R8X] (reporting that Instagram's leader "acknowledged it was 'hearing concerns about whether we suppress black voices

has become a major policy issue that engenders (albeit for different reasons) broad bipartisan support in society.[39]

II. THE MEDICAL EVIDENCE ON CONSUMER COGNITIVE AND PSYCHIATRIC HARMS FROM DIGITAL BUSINESSES

A. *Overview*

This section focuses on the harmful impact of digital technology platforms, particularly those in the social media space, on the mental health of youth and adolescents. We argue that the weight of the evidence suggests that material consumed through digital platforms can be harmfully addictive.[40] We further explain that the literature specifically indicates that these platforms are harmfully addictive in youth and adolescents, especially in girls. Finally, for several reasons, we argue that the negative mental health consequences currently observed in youth and adolescents likely are only a fraction of the entirety of the harms to consumers. First, there may be economic harms that flow from the mental health harms described here. Second, there could be mental health harms to adults that the literature has not yet addressed. Third, the time period under study is relatively short due to the recent adoption of the

and whether our products and policies treat everyone equally'"); Emily Badger, *Who's To Blame When Algorithms Discriminate?*, N.Y. TIMES (Aug. 22, 2019), https://www.nytimes.com/2019/08/20/upshot/housing-discrimination-algorithms-hud.html?smid=em-share [https://perma.cc/6H5D-6BT7 (dark archive)] (stating that civil rights groups warn that today's evidence of housing discrimination "is more likely to be seen in algorithms or government data than on a for-rent sign"); Ashlee Marie Preston, *Taking on Tech: Social Media's Anti-Blackness and Algorithmic Aggression in the Absence of Accountability*, FORBES (Aug. 9, 2021, 3:24 PM), https://www.forbes.com/sites/forbestheculture/2021/08/09/taking-on-tech-social-medias-anti-blackness-and-algorithmic-aggression-in-the-absence-of-accountability/?sh=71280373c79c [https://perma.cc/4A2B-U28U (dark archive)] (describing algorithmic racial discrimination on social media platforms); Betsy Anne Williams, Catherine F. Brooks & Yotam Shmargad, *How Algorithms Discriminate Based on Data They Lack: Challenges, Solutions, and Policy Implications*, 8 J. INFO. POL'Y 78, 88 (2018) ("[A]lgorithms can discriminate on the basis of a social category, intentionally and unintentionally, even when they are not explicitly fed social category data.").

39. Senator Josh Hawley (R-Mo.) has proposed several bills to regulate big tech, including the Social Media Addiction Reduction Technology Act. *See* Abigail Clukey, *Lawmaker Aims To Curb Social Media Addiction with New Bill*, NPR (Aug. 3, 2019, 10:00 AM), https://www.npr.org/2019/08/03/747086462/lawmaker-aims-to-curb-social-media-addiction-with-new-bill [https://perma.cc/2QAB-2R27]. On July 30, 2019, Senator Hawley tweeted: "Big Tech has embraced addiction as a business model. Their 'innovation' isn't designed to create better products, but to capture attention by using psychological tricks that make it impossible to look away. Time to expect more & better from Silicon Valley." Josh Hawley (@HawleyMO), TWITTER (July 30, 2019, 10:02 AM), https://twitter.com/HawleyMO/status/1156203526688841728 [https://perma.cc/75A3-2723]. Senator Elizabeth Warren (D-Ma.) announced a plan to "break up big tech" during her 2020 presidential campaign. *See* Elizabeth Warren, *Here's How We Can Break Up Big Tech*, MEDIUM (Mar. 8, 2020), https://medium.com/@teamwarren/heres-how-we-can-break-up-big-tech-9ad9e0da324c [https://perma.cc/75A3-2723].

40. *See generally* Faruk Gul & Wolfgang Pesendorfer, *Harmful Addiction*, 74 REV. ECON. STUD. 147 (2007) (explaining what constitutes "harmful addiction" in economic theory).

technology. There is a long future in which further harmful consequences can occur, and these, of course, cannot be measured today. Lastly, and not the subject of this Article, a full accounting of the other potential disutilities of these technologies would be decidedly large and unwieldy, considering the sheer number of areas (democracy, privacy, etc.) that have been identified as areas of regulatory concern.[41]

We frame the medical evidence on consumer harm using the following criteria:

> 1) The harm we are describing occurs in the context of "harmful addiction." Harmful addiction is a concept from the economics literature. It is defined as compulsive use of a product where past usage is predictive of more compulsive use in the future, conditional upon such compulsive use being harmful in a measurable way.[42]
>
> 2) Harms are limited to those experienced by individual consumers only and exclude externalities on other people and society more generally. Again, we take this approach because cataloguing external effects such as economic losses to society and harms to democracy is a potentially massive undertaking and beyond the scope of our study.
>
> 3) Harms are not considered for which there are already robust regulatory structures in place. There are a variety of bodily harms that have been linked with digital technologies, particularly related to the operation of mobile devices. In this Article, we do not discuss physical harms that result from the usage or operation of the devices themselves, such as accidents caused by distracted driving or potential neoplasms induced by cell phone emissions. There are either clear regulatory solutions to these problems that have already been implemented at the state level[43] or there are ongoing epidemiological studies that can lead to future remedies.[44]

41. *See, e.g.*, STIGLER COMM. ON DIGIT. PLATFORMS, STIGLER CTR. FOR THE STUDY OF ECON. & THE STATE, FINAL REPORT 6–7 (2019), https://www.chicagobooth.edu/-/media/research/stigler/pdfs/digital-platforms---committee-report---stigler-center.pdf [https://perma.cc/56UV-EAKX].

42. Gul & Pesendorfer, *supra* note 40, at 147.

43. *See, e.g.*, Michael R. Flaherty, Alexander M. Kim, Michael D. Salt & Lois K. Lee, *Distracted Driving Laws and Motor Vehicle Crash Fatalities*, PEDIATRICS, June 2020, at 1, 7.

44. *See, e.g.*, *Cell Phones and Cancer Risk*, NAT'L CANCER INST., https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet [https://perma.cc/3ATT-HSMX] (describing a European study, known as COSMOS, which tracks the potential health effects of cell phone use on approximately 290,000 people over the age of eighteen for a period of twenty to thirty years).

4) In this Article, we focus specifically on harms caused by social media. Our reasoning for limiting our focus is manifold. First, social media consumption has driven much of the rise in digital technology usage, particularly in at-risk groups such as adolescents.[45] Second, the business model of social media—selling advertising—is directly linked to (over) usage by consumers.[46] Social media platforms have engaged in well-documented attempts to manipulate users to increase platform usage.[47] And lastly, social media is the source of much of the malicious content that is hypothesized to be a key cause of mental health harm.[48]

5) The harms we consider are limited to those that negatively affect consumers' mood and/or thought processes. As many of the potential harms from social media are similar to other stressors that lead to cognitive and affective impairment over long periods of time, we also include findings that are subclinical.[49] The long-term effects of digital

45. VICTORIA RIDEOUT & MICHAEL B. ROBB, COMMON SENSE MEDIA, THE COMMON SENSE CENSUS: MEDIA USE BY TWEENS AND TEENS 39 (2019), https://www.commonsensemedia.org/sites/default/files/uploads/research/2019-census-8-to-18-full-report-updated.pdf [https://perma.cc/D55Z-EQZC] ("The average amount of time 13- to 18-year-olds spend using social media each day has remained nearly exactly the same: [an hour and 11 minutes] a day in 2015, and [an hour and 10 minutes] a day in 2019. On the other hand, the frequency of social media use has increased: The percent of teens who say they use it 'every day' has grown from 45 percent in 2015 to 63 percent in 2019.").

46. NEMR & GANGWARE, *supra* note 36, at 26.

47. *See* COMPETITION & MKTS. AUTH. FINAL REPORT, *supra* note 17, at 143 ("To . . . maintain user attention, platforms determine the most relevant content for a given user and help users to locate this content quickly, using algorithms. For example, platforms may: select and rank the content shown in each user's feed; make recommendations as to what content the user may wish to consume next; or suggest new connections they may wish to make. By providing better recommendation and personalisation functionalities, platforms may become more appealing to consumers and lead them to spend more time on the platform."); *see also* ADAM ALTER, IRRESISTIBLE: THE RISE OF ADDICTIVE TECHNOLOGY AND THE BUSINESS OF KEEPING US HOOKED 153 (2017) ("It's hard to exaggerate how much the 'like' button changed the psychology of Facebook use. What had begun as a passive way to track your friends' lives was now deeply interactive, and with exactly the sort of unpredictable feedback that motivated Zeiler's pigeons. Users were gambling every time they shared a photo, web link, or status update. . . . [Users are] more driven to seek feedback when it isn't guaranteed. Facebook was the first major social networking force to introduce the like button, but others now have similar functions. You can like and repost tweets on Twitter, pictures on Instagram, posts on Google+, columns on LinkedIn, and videos on YouTube.").

48. *See* Rikuya Hosokawa & Toshiki Katsura, *Association Between Mobile Technology Use and Child Adjustment in Early Elementary School Age*, 13 PLOS ONE 1, 10 (2018) ("[R]epeated exposure to media violence is likely to lead to anxiety and fear, aggressive thoughts, and the acceptance of violence as a primary means for solving conflict.").

49. Subclinical findings are those that are not indicative of concurrent illness but are associated with downstream negative health and other outcomes. For example, increased periods of depressed mood and distraction can lead to mood disorders and poor labor market outcomes, respectively.

technology are a particular concern, especially in young children and adolescents.[50]

These constraints should not be interpreted as necessarily exculpatory to other business models, or other potential harms to consumers or society. Rather, we are concerned that this Article be a readable length.

B. *Addiction and Digital Technologies*

Empirical evidence from secular trends in social media uptake reveal consumption patterns that are consistent with addiction. There has been a large, nonlinear rate of growth in time spent on social media platforms since their introduction in the latter half of the 2000s.[51] Such an increase in usage does not, by itself, show that the technology is addictive. However, when paired with survey data that suggests a substantial portion of heavy social media users express a desire to decrease their use to increase their subjective well-being, a picture similar to those seen with other harmful addictions emerges.[52]

Increases in time spent online are consistent with a market in which consumers are using technology at a greater and greater rate, one that is predicted in part by past usage.[53] We should not be surprised by this fact because platforms whose business model is selling advertising are financially incentivized to increase user engagement. User environments that are addictive are profitable because more time spent on the platform allows the platform to display additional ads to the user, which increases revenues. Put differently, because a typical social media site today does not collect revenue directly from users, and platform valuations are based on user growth and engagement, profit-maximizing firms with monopoly power would be expected to drive usage beyond the user's value of that time. There is also early evidence that social media consumers report positive net value to quitting or reducing usage,[54] a

50. *See* Hosokawa & Katsura, *supra* note 48, at 11; Paul Lewis, *Our Minds Can Be Hijacked: The Tech Insiders Who Fear a Smartphone Dystopia*, GUARDIAN (Oct. 6, 2017, 1:00 PM), https://www.theguardian.com/technology/2017/oct/05/smartphone-addiction-silicon-valley-dystopia [https://perma.cc/6JEE-Q8N6].

51. Andrew Perrin, *Social Media Usage: 2005-2015*, PEW RSCH. CTR. (Oct. 8, 2015), https://www.pewresearch.org/internet/2015/10/08/social-networking-usage-2005-2015/ [https://perma.cc/L8CT-ZEQC].

52. *See* Hunt Allcott, Luca Braghieri, Sara Eichmeyer & Matthew Gentzkow, *The Welfare Effects of Social Media*, 110 AM. ECON. REV. 629, 633 (2020).

53. *See* Yolanda (Linda) Reid Chassiakos, Jenny Radesky, Dimitri Christakis, Megan A. Moreno & Corinn Cross, *Children and Adolescents and Digital Media*, PEDIATRICS, Nov. 2016, at 1, 2, 12–13 ("Children today are growing up in an era of highly personalized media use experiences . . . .").

54. *See* Allcott et al., *supra* note 52, at 633.

finding that again is consistent with users of other addictive substances, who will pay to check themselves into rehab and for other costly interventions.[55]

One common criticism of the idea that digital technologies are addictive is that, as opposed to other products that are defined as addictive such as cigarettes and alcohol, digital platforms do not introduce a physical substrate to the human body. Tobacco and alcohol abuse, through modulation of neurochemistry and function, result in what is classically known as a physical addiction. Compulsive behaviors that do not have such a substrate, such as gambling, are referred to as "behavioral addictions"[56] and—until the recent addition of gambling disorder to the DSM-5[57]—traditionally have been excluded from formal psychiatric diagnoses. However, the neural pathways by which behavioral addictions are developed are quite similar to those of users with physical addictions.[58] This leads to an important point we want to make: *In a meaningful sense, visual and/or auditory stimuli, when optimized for human arousal, can be thought of as no different than a substance that is physically consumed*.

Further evidence of these technologies having properties that are equivalent to those of abused substances can be seen in the way technology companies manipulate psychological mechanisms of reward to maximize consumption. Platforms design variable-interval reward schedules to decrease the latency to (and magnitude of) "negative" utility, or withdrawal.[59] This means that nonuse in period t+1 generates negative utility that requires use, swiping, or other stimulus for the user just to break even. Varying the reward interval (think about checking Instagram constantly to see if anyone liked the picture of your cat because you are not sure when someone will) magnifies the intensity of the cravings compared to knowing that you will not hear anything until some distinct, future point.[60]

Another harm from social media relates to the impact of the distractions it imposes upon users. These distractions have two distinct, yet overlapping, components. First, there is the distraction that comes from the withdrawal from

55. *See* David Bishai, Jody Sindelar, E.P. Ricketts, S. Huettner, L. Cornelius, J.J. Lloyd, J.R. Havens, C.A. Latkin & S.A. Strathdee, *Willingness To Pay for Drug Rehabilitation: Implications for Cost Recovery*, 27 J. HEALTH ECON. 959, 968 (2008). *See generally* Becker & Murphy, *supra* note 18, at 692–93 (explaining rational addiction).

56. *See* Yvonne H.C. Yau & Marc N. Potenza, *Gambling Disorder and Other Behavioral Addictions: Recognition and Treatment*, 23 HARV. REV. PSYCHIATRY 134, 134 (2015).

57. Lior Rennert, Cécile Denis, Kyle Peer, Kevin G. Lynch & Joel Gelernter, DSM-5 *Gambling Disorder: Prevalence and Characteristics in a Substance Use Disorder Sample*, 22 EXPERIMENTAL & CLINICAL PSYCHOPHARMACOLOGY 50, 50 (2014).

58. *See* Luke Clark, Isabelle Boileau & Martin Zack, *Neuroimaging of Reward Mechanisms in Gambling Disorder: An Integrative Review*, 24 MOLECULAR PSYCHIATRY 674, 686 (2019).

59. *See* ROGER MCNAMEE, ZUCKED: WAKING UP TO THE FACEBOOK CATASTROPHE 137–38 (2019).

60. SHOSHANA ZUBOFF, THE AGE OF SURVEILLANCE CAPITALISM: THE FIGHT FOR A HUMAN FUTURE AT THE NEW FRONTIER OF POWER 858–60, 871–72 (2019).

use that makes consumers wish to access, or "swipe," their smartphone to consume content from these platforms. Platforms leverage the psychological response to variable reward schedules that comes from actions such as checking for "likes." The design of platforms such as Facebook and Instagram exploit these innate psychological tendencies which distract individuals from what they otherwise would be doing.[61] Second, the nature of these platforms' content is optimized to increase "engagement" and addiction. While a cigarette provides a very specific biological reward, content on social media, which is highly interactive and often quite personal in nature, can distract the user from other tasks of the moment, with such distractions leading to decreased mood states across the board.[62]

Tobacco companies were able to drive rapid growth in smoking by concentrating nicotine and manipulating the delivery device; these product choices increased usage enormously both in terms of number of smokers and amount consumed.[63] The tobacco companies' product design choices regarding nicotine levels are analogous to social media design choices. By increasing nicotine content, cigarette sellers increase addiction and sales. "Swiping" and analogous actions that provide small amounts of immediate gratification are pleasurable online activities for users for the reasons described above. Social media platforms such as YouTube and Facebook can optimize content presentation to maximize this stimulation, which increases overall time spent on these platforms.[64] Any given user almost surely experiences declining marginal utility from platform use and even reaches some point after which increasing time on the platform generates disutility (e.g., the user needs to go to school). The platform does not experience a similar decline since it is unlikely to run out of profitable ads to show the user.

Advertising revenue drives a platform's incentive to make sponsored content popular on websites and in search results. Algorithms set to maximize ad revenue will learn what users click on and how to frame and steer them to click on material that is profitable for the platform. For example, a study of YouTube's algorithmic recommendations shows that it steers users towards

61. David Golumbia, *Social Media Has Hijacked Our Brains and Threatens Global Democracy*, VICE (Jan. 9, 2018, 1:00 AM), https://www.vice.com/en/article/xw44yj/social-media-has-hijacked-our-brains-and-threatens-global-democracy [https://perma.cc/W3NZ-YNJV].

62. *See, e.g.*, N. Berry, R. Emsley, F. Lobban & S. Bucci, *Social Media and Its Relationship with Mood, Self-Esteem and Paranoia in Psychosis*, 138 ACTA PSYCHIATRICA SCANDINAVICA 558, 566 (2018) (finding that social media use predicated reductions in positive affect and elevations in negative affect).

63. *See* KESSLER, *supra* note 31, at 187–96, 262, 278–79.

64. In an interview with Axios, Sean Parker, the former president of Facebook, said: "[T]he thought process that went into building these applications, Facebook being the first of them, . . . was all about: 'How do we consume as much of your time and conscious attention as possible?'" Erica Pandey, *Sean Parker: Facebook Was Designed To Exploit Human "Vulnerability,"* AXIOS (Nov. 9, 2017), https://www.axios.com/sean-parker-facebook-was-designed-to-exploit-human-vulnerability-1513306782-6d18fa32-5438-4e60-af71-13d126b58e41.html [https://perma.cc/HLF5-MM6K].

extreme content;[65] the study does not explain why steering occurs, but the extreme content may be entertaining and may cause a user to spend more time on the platform—where she can see another ad. This selection mechanism represents an economic source of harm—low quality in services—that interacts with the psychiatric harm of distraction because such content more effectively diverts the user's attention from what her long-run self would prefer to be doing.

Eye-tracking studies that measure attention capture at speeds that are often nonvolitional (i.e., the consumer is not making a conscious choice to attend to a specific item)[66] have shown the success of common methods of capturing web attention, such as clickbait and validation of views.[67] Studies like these have demonstrated that our selective attention is not only drawn to content that is more arousing, but also that such content can help drive viral usage to levels that have been linked with harmful mental health outcomes.[68] This kind of cue-conditioning to capture attention and drive consumption is similar to cue-conditioning for off-line addictive substances, where people become unable to stop consuming when exposed to cues related to past consumption.[69] Interestingly, in a well-powered study of Facebook users that measured eye movements in those who scored highly on an established internet addiction scale,[70] users were found to have improved mood within the first few minutes of logging on to Facebook but showed increasingly negative mood over time.[71] This first increasing, then decreasing, picture matches the measured

65. Manoel Horta Ribeiro, Raphael Ottoni, Robert West, Virgílio A.F. Almeida & Wagner Meira Jr., *Auditing Radicalization Pathways on YouTube*, *in* FAT* '20: PROCEEDINGS OF THE 2020 CONFERENCE ON FAIRNESS, ACCOUNTABILITY, AND TRANSPARENCY 131, 140 (2020).

66. *See* Andy J. King, Nadine Bol, R. Glenn Cummins & Kevin K. John, *Improving Visual Behavior Research in Communication Science: An Overview, Review, and Reporting Recommendations for Using Eye-Tracking Methods*, 13 COMMC'N METHODS & MEASURES 149, 150 (2019).

67. Supavich (Fone) Pengnate, *Shocking Secret You Won't Believe! Emotional Arousal in Clickbait Headlines: An Eye-Tracking Analysis*, 43 ONLINE INFO. REV. 1136, 1143 (2019); Michael Sülflow, Svenja Schäfer & Stephan Winter, *Selective Attention in the News Feed: An Eye-Tracking Study on the Perception and Selection of Political News Posts on Facebook*, 21 NEW MEDIA & SOC'Y 168, 183 (2019) ("When it comes to selection, users tend to choose news posts matching their attitudes.").

68. *See, e.g.*, William J. Brady, Julian A. Wills, John T. Jost, Joshua A. Tucker & Jay J. Van Bavel, *Moral Contagion in Social Networks*, 114 PROC. NAT'L ACAD. SCIS. 7313, 7316 (2017) (showing the chance of content virality increases with stronger moral-emotional valence); Igor Pantic, *Online Social Networking and Mental Health*, 17 CYBERPSYCHOLOGY BEHAV. & SOC. NETWORKING 652, 652 (2014) (explaining that social media consumption can exacerbate "depressive predispositions, . . . further negatively impact[ing] mental health").

69. B. Douglas Bernheim & Antonio Rangel, *Addiction and Cue-Triggered Decision Processes*, 94 AM. ECON. REV. 1558, 1560 (2004).

70. Cecilie Schou Andreassen, Torbjorn Torsheim, Geir Scott Brunborg & Stale Pallesen, *Development of a Facebook Addiction Scale*, 110 PSYCH. REPS. 501, 511–12 (2012).

71. Zaheer Hussain, Boban Simonovic, Edward J.N. Stupple & Maggie Austin, *Using Eye Tracking To Explore Facebook Use and Associations with Facebook Addiction, Mental Well-Being, and Personality*, BEHAV. SCIS., Feb. 2019, at 1, 8.

utility of addicted consumers of any number of psychoactive substances, including but not limited to alcohol, opiates, nicotine, and stimulants, and it supports the idea that while modest social media usage could be beneficial, heavy usage may be harmful.

C. *Evidence that Overuse of Digital Technology Causes Psychiatric Harms*

The past decade has seen a rise in studies looking at the impact of digital social media on mental health, particularly in children and adolescents.[72] These studies have shown that children and adolescents are especially vulnerable to addiction and are more likely to suffer long-term negative consequences due to the plasticity of their still-developing minds.[73] Further, there has been a well-documented rise in multiple symptoms of mood disorders in children, especially girls, with a general secular trend over the last decade and a particular jump from 2012 to 2013, which coincided with a commensurate rise in social media usage by that population.[74]

A large body of evidence has further shown links between social media use and mental health symptoms and illness. Large cohort studies and large-scale reviews have found good evidence suggesting a link between heavy usage of social media platforms (usually defined as over three hours per day) and increased depressed mood and anxiety across multiple cohorts of children and adolescents.[75] Additional studies have linked social media with outcomes such as social isolation and sleep interruption.[76] Other studies have identified further negative effects from using multiple social media platforms and network-based negative effects on mood.[77] Finally, a consistent finding across numerous studies that controlled for gender found a significant and strong gender effect showing

72. Abi-Jaoude et al., *supra* note 5, at 136.

73. *See* James Niels Rosenquist & Casey G. Rothschild, Affinity Preferences and Adolescent Addiction (Jan. 24, 2013) (unpublished manuscript) (on file with authors).

74. Ramin Mojtabai, Mark Olfson & Beth Han, *National Trends in the Prevalence and Treatment of Depression in Adolescents and Young Adults*, PEDIATRICS, Dec. 2016, at 1, 4; Haidt & Twenge, Adolescent Mood Disorders, Self-Harm, and Suicide, *supra* note 3, at 3.

75. *See, e.g.*, Abi-Jaoude et al., *supra* note 5, at 136; Elroy Boers, Mohammad H. Afzali, Nicola Newton & Patricia Conrod, *Association of Screen Time and Depression in Adolescence*, 173 JAMA PEDIATRICS 853, 855–56 (2019); Chaelin K. Ra, Junhan Cho & Matthew D. Stone, *Association of Digital Media Use with Subsequent Symptoms of Attention-Deficit/Hyperactivity Disorder Among Adolescents*, 320 JAMA 255, 258 (2018); Jean M. Twenge, *Why Increases in Adolescent Depression May Be Linked to the Technological Environment*, 32 CURRENT OP. PSYCH. 89, 91–92 (2020).

76. Brian A. Primack, Ariel Shensa, Jamie E. Sidani, Erin O. Whaite, Liu yi Lin, Daniel Rosen, Jason B. Colditz, Ana Radovic & Elizabeth Miller, *Social Media Use and Perceived Social Isolation Among Young Adults in the U.S.*, 53 AM. J. PREVENTATIVE MED. 1, 3 (2017); Garrett Hisler, Jean M. Twenge & Zlatan Krizana, *Associations Between Screen Time and Short Sleep Duration Among Adolescents Varies by Media Type: Evidence from a Cohort Study*, 66 SLEEP MED. 92, 95 (2020).

77. Faelens et al., *supra* note 1, at 13; Primack et al., *supra* note 76, at 3.

that girls in particular are negatively affected by heavy social media use.[78] A number of studies have shown a strong correlation between ADHD symptoms and heavy digital social media platform use.[79] While not a mood disorder, ADHD can lead to anxiety and depression later in life and it also has a major impact on school performance and human capital production in general.[80]

Should there be any remaining doubt about social media's addictive and harmful qualities, the platforms' own internal research demonstrates these negative mental health effects, particularly those on adolescent girls. An internal Instagram study concluded that "[t]hirty-two percent of teen girls said that when they felt bad about their bodies, Instagram made them feel worse."[81] And an internal Facebook presentation stated that "[w]e make body issues worse for one in three teen girls" and "[t]eens who struggle with mental health say Instagram makes it worse."[82] That same presentation noted that "[t]eens blame Instagram for increases in the rate of anxiety and depression" and that "[t]his reaction was unprompted and consistent across all groups."[83] Instagram's research also noted the platform's addictive characteristics: "Teens told us they don't like the amount of time they spend on the app but feel like they have to be present . . . . They often feel 'addicted' and know what they're seeing is bad for their mental health but feel unable to stop themselves."[84]

D. *Future Research and Regulation*

Notably, these findings have been detected in relatively small sample sizes within only the first few years of mass social media use among children and adolescents. While these findings are not universal across all studies, and some cannot cleanly separate correlation from causality, the sheer volume and effect sizes seen in myriad studies have generated a consensus that an effect exists for

78. Yvonne Kelly, Afshin Zilanawala, Cara Booker & Amanda Sacker, *Social Media Use and Adolescent Mental Health: Findings from the UK Millennium Cohort Study*, 6 ECLINICALMEDICINE 59, 66 (2018); Jean M. Twenge & Gabrielle N. Martin, *Gender Differences in Associations Between Digital Media Use and Psychological Well-Being: Evidence from Three Large Datasets*, 79 J. ADOLESCENCE 91, 94 (2020).

79. *See, e.g.*, Ra et al., *supra* note 75, at 258.

80. Timothy E. Wilens & Thomas J. Spencer, *Understanding Attention-Deficit/Hyperactivity Disorder from Childhood to Adulthood*, 122 POSTGRADUATE MED. J. 97, 99 (2010).

81. Georgia Wells, Jeff Horwitz & Deepa Seetharaman, *Facebook Knows Instagram Is Toxic for Teen Girls, Company Documents Show*, WALL ST. J. (Sept. 14, 2021, 7:59 AM), https://www.wsj.com/articles/facebook-knows-instagram-is-toxic-for-teen-girls-company-documents-show-11631620739 [https://perma.cc/UML2-NTHU (dark archive)] (quoting an internal Instagram study).

82. Thompson, *supra* note 7 (quoting an internal Instagram study).

83. Wells et al., *supra* note 81.

84. *Id.* (quoting an internal Instagram study); *see also* Thompson, *supra* note 7 ("So a fair summary of Instagram according to Instagram might go like this: Here is a fun product that millions of people seem to love; that is unwholesome in large doses; that makes a sizable minority feel more anxious, more depressed, and worse about their bodies; and that many people struggle to use in moderation.").

heavy users, particularly girls.[85] Even studies that have not shown significant effects have been acknowledged by their authors to be potentially inconclusive due to current limitations in measurement variables and lack of sufficient longitudinal data to obtain statistical power.[86] As further time-series data is collected on cohorts and further analyses are performed on heavy users—employing approaches like birth cohort models controlling for genetics and other risk factors[87]—main effects for at-risk groups are likely to be larger.

Although it has been only ten years since the introduction and rapid adoption of social media technologies on portable devices, there is already substantial evidence of significant, negative mental health consequences in traditionally higher risk groups such as young girls. These effects appear to be strongest in those who utilize these social media platforms at levels much higher than average users, a usage level that is not only the expected result from product design but is in fact the logical commercial goal of these platforms.

We consider these effects, even when they are modest in magnitude, to be especially concerning and worthy of significant further research in conjunction with near-term regulatory oversight. In terms of research, the sheer level of consumption, particularly among children and adolescents whose brains have not fully developed,[88] makes a deeper understanding of these effects critical in the near term. In the long term, the need for inclusion of data on digital technology and social media use in cohort studies is important for getting a better picture of the effects of heavy technology use over a consumer's lifespan.

These long-term effects of digital technology use also make governmental intervention an important, and possibly critical, option in the near term. The impact on lung cancer and cardiac disease of mass-produced (and enhanced) tobacco products in the early part of the twentieth century was not fully

85. *See* Abi-Jaoude et al., *supra* note 5, at 136 ("Evidence from a variety of cross-sectional, longitudinal and empirical studies implicate smartphone and social media use in the increase of mental distress, self-injurious behaviour and suicidality among youth; there is a dose-response relationship, and the effects appear to be the greatest among girls."); *see also* Haidt & Twenge, Adolescent Mood Disorders, Self-Harm, and Suicide, *supra* note 3, at 7–9 (finding that beginning around 2011, major depressive episodes began to rise, especially in teen girls).

86. *See, e.g.*, Amy Orben & Andrew K. Przybylski, *The Association Between Adolescent Well-Being and Digital Technology Use*, 3 NATURE HUM. BEHAV. 173, 179 (2019) ("As self-report digital technology measures are known to be noisy, this could also have led to the effects of technology on well-being being diminished due to low-quality measurement."); Jean M. Twenge, Jonathan Haidt, Thomas E. Joiner & W. Keith Campbell, *Underestimating Digital Media Harm*, 4 NATURE HUM. BEHAV. 346, 346 (2020) (finding that analytical decisions resulted in an underestimation of digital media harm); Jean M. Twenge & W. Keith Campbell, *Media Use Is Linked to Lower Psychological Well-Being: Evidence from Three Datasets*, 90 PSYCHIATRIC Q. 311, 327–28 (2019).

87. *See, e.g.*, Rosenquist et al., *supra* note 29, at 354 (utilizing a birth cohort model controlling for genetics and other factors to study the association between genotype and BMI).

88. B.J. Casey, Rebecca M. Jones & Todd A. Hare, *The Adolescent Brain*, 1124 ANNALS N.Y. ACAD. SCIS. 111, 114 (2008).

recognized until decades after their introduction.[89] This delay was, in significant part, due to the lag between mass uptake by the population and the long-term health consequences of heavy usage.[90] If there is anything that the COVID-19 pandemic has reminded public policy makers of, it is that policy based on modeling of future outcomes can be critical to maximizing public health, be it in the corporeal or mental health arena. Digital technology is one such place where analysis, and regulatory response to that analysis, is necessary.

III. ECONOMIC SETTING

A. *Regulation*

The field of regulation has been heavily influenced by principles pioneered by economists.[91] Most notably, the discipline teaches that social welfare is maximized when the individual makes her own choices and maximizes expected utility, a setting that does not require any regulation. But of course, the underlying assumptions of that setting are perfectly competitive markets and the absence of externalities. For standard goods in a basic neoclassical model, more choice is (weakly) better and more consumption is (weakly) better, reflecting the reality that many households would indeed consume more of many goods—shoes or ice cream, for example—if their budgets increased, prices fell, or choices expanded.

Regulation can improve outcomes in a setting where a consumer creates what is known as an externality. An externality is a harm or benefit accruing to someone else who did not purchase or use the good or service that produced the harm or benefit.[92] For example, pollution from a car harms others in the neighborhood, region, and globe, while the benefit of transportation services is enjoyed by the car owner. One goal of optimal regulation is to create a market system such that the car owner internalizes the total cost of the pollution they generate.[93] Such regulation causes the car to be used in a way that accounts for everyone's utility, not just the owner's. For example, an optimal carbon tax would lead to a cost of gas that reflected all the pollution harms generated by using the gas.[94] An optimal carbon tax would cause many car owners to drive

89. Otis W. Brawley, Thomas J. Glynn, Fadlo R. Khuri, Richard C. Wender & John R. Seffrin, *The First Surgeon General's Report on Smoking and Health: The 50th Anniversary*, 64 CA 5, 5–6 (2014).

90. *Id.* at 6.

91. *See, e.g.*, Jean-Jacques Laffont & Jean Tirole, *Using Cost Observation To Regulate Firms*, 94 J. POL. ECON. 614, 635–36 (1986).

92. *See* STEPHEN G. BREYER, RICHARD B. STEWART, CASS R. SUNSTEIN, ADRIAN VERMEULE & MICHAEL E. HERZ, ADMINISTRATIVE LAW AND REGULATORY POLICY 5 (8th ed. 2017).

93. *See, e.g.*, SANTOSH RAIKAR & SEABRON ADAMSON, RENEWABLE ENERGY FINANCE: THEORY AND PRACTICE 12 (2020) ("[A] tax to control carbon emissions optimally should set the tax equal to the marginal damages such emissions create . . . .").

94. *See id.* at 84–85.

less, thereby harming others less, but would continue to create an incentive for driving when the value of the trip was above its total cost.

While this Article will focus on governments that attempt to regulate dangerous products for the benefit of society and consumers, we recognize that U.S. governmental institutions are vulnerable to capture by profit-seeking corporations that work against this outcome.[95] If companies can earn more profit without regulation, for example by advertising cigarettes on television to increase consumption by all ages, then they will use a portion of those incremental profits to pay politicians—whether directly or indirectly—to attempt to prevent that regulation. This interplay of politics, corporate interests, and harm to voters explains the long delay in regulating cigarettes and the current lack of regulation of pollutants that contribute to climate change, among other regulatory lapses.[96]

Throughout U.S. history there have been instances where products or services were regulated because society did not view them as having the ordinary "more is better" characteristic. Regulation of alcohol and certain nonprescribed, pharmacologically active agents was periodically enacted throughout the twentieth century, especially during Prohibition and the "war on drugs," when significant restrictions on use were imposed.[97] Alcohol and recreational drugs are products for which the stylized choice and consumption assumptions described above are generally viewed as incorrect. Consumption of alcohol in large amounts can be damaging, as users often become violent or incapacitated and harm people and property.[98] Alcohol can also be addictive. Similarly, illegal drugs like cocaine are addictive. Increased consumption of addictive drugs brings with it the danger of serious health consequences, inability to work, lost relationships, overdoses, and so forth.[99] These risks are qualitatively and quantitatively larger than the risks from increasing consumption of shoes or ice cream.

95. *See, e.g.*, Stacey L. Dogan & Mark A. Lemley, *Antitrust Law and Regulatory Gaming*, 87 TEX. L. REV. 685, 698 (2009) ("Agencies are famously subject to 'capture' by the industries they are supposed to regulate.").

96. *See, e.g.*, CHRISTOPHER LEONARD, KOCHLAND: THE SECRET HISTORY OF KOCH INDUSTRIES AND CORPORATE POWER IN AMERICA 401 (2019) (noting that between 1991 and 2009, Charles Koch and other executives in the fossil fuel industry "spent millions of dollars to support the idea that there was an 'alternative' view about climate change"). Leonard describes how, in 2009, a senior manager at Koch's lobbying office commissioned "a third-party economic report that would undermine support for the Senate's [American Clean Energy and Security Act]" while "Koch Industries took pains to hide its involvement." *Id.* at 447.

97. David T. Courtwright, *A Century of American Narcotic Policy*, *in* 2 INST. OF MED., TREATING DRUG PROBLEMS 1 (Dean R. Gerstein & Henrick J. Harwood eds., 1992).

98. Gregory A. Aarons, Sandra A. Brown, Michael T. Coe, Mark G. Myers, Ann F. Garland, Roxanne Ezzet-Lofstram, Andrea L. Hazen & Richard L. Hough, *Adolescent Alcohol and Drug Abuse and Health*, 24 J. ADOLESCENT HEALTH 412, 412–13 (1999).

99. *Id.*

Other products are dangerous financially, such as mortgages, credit cards, and funeral services.[100] Like prescription drugs, these products can be beneficial in small quantities; just as an appropriate dose of opioids reduces pain, a small mortgage (relative to the ability to repay) allows the purchase of a first house. But these products can also be harmful in quantities that are too large. Some financial products are also addictive, like gambling and credit cards.[101] Excessive credit card debt can destroy a person's credit rating or lead to bankruptcy.[102] Other financial products are simply dangerous if consumed in excess. Obtaining an excessively large mortgage risks foreclosure, homelessness, and other costly consequences if the borrower experiences an adverse shock.[103] Funeral services purchased when the consumer is distraught can be more expensive than the consumer intended.[104] All of these products are regulated more strictly than "conventional" products such as shoes.

These products are regulated in several ways. One is by requiring access through intermediaries who have certain responsibilities established by the state: physicians, banks, and bars, for example.[105] Another regulatory strategy is to make the entire product illegal, like the United States does with cocaine. This

100. *See* Michelle J. White, *Bankruptcy Report and Credit Cards*, 21 J. ECON. PERSPS. 175, 177, 180 (2007) (describing the increase in credit card debt and potentially mortgage debt as the "most convincing explanation" for the increase in personal bankruptcy filings in the United States, from 287,000 in 1980 to over two million by 2005).

101. *See, e.g.*, Howard Tokunaga, *The Use and Abuse of Consumer Credit: Application of Psychological Theory and Research*, 14 J. ECON. PSYCH. 285, 287 (1993); William O. Bearden & Kelly L. Haws, *How Low Spending Control Harms Consumers*, 40 J. ACAD. MKTG. SCI. 181, 191 (2012).

102. *See Consumer Debt: Are Credit Cards Bankrupting Americans?: Hearing Before the Subcomm. on Com. & Admin. L. of the H. Comm. on the Judiciary*, 111th Cong. 12 (2009) (statement of Adam J. Levitin, Professor of Law, Georgetown University Law Center) ("[A]n examination of credit card debt and bankruptcy filings shows that consumer bankruptcy filers are mired in credit card debt.").

103. *See* CONSUMER FIN. PROT. BUREAU, PROTECTING CONSUMERS FROM IRRESPONSIBLE MORTGAGE LENDING 1–2 (2013), https://files.consumIerfinance.gov/f/201301_cfpb_ability-to-repay-factsheet.pdf [https://perma.cc/Q2ZE-ZYHB] (noting that lenders' failure to establish consumers' ability to repay their mortgages and luring consumers to take on loans beyond their means contributed to the collapse of the housing market in 2008).

104. *See* Funeral Industry Practices Rule, 85 Fed. Reg. 8490, 8490 (proposed Feb. 14, 2020) (to be codified at 16 C.F.R. pt. 453) (finding that the combination of emotional stress, lack of experience, lack of information, and tight time constraints results in funeral consumers being very susceptible to influence from funeral directors' advice and counsel); *see also* Robert Benincasa, *You Could Pay Less for a Funeral Just by Crossing the Street*, NPR (Feb. 7, 2017, 4:02 PM), https://www.npr.org/2017/02/07/504020003/a-funeral-may-cost-you-thousands-less-just-by-crossing-the-street [https://perma.cc/VW5K-4EN8] (reporting that funeral-services provider Service Corporation International ("SCI") told investors that "consumers spend an extra $1,900, on average when they buy a package, versus an 'a la carte' funeral" and that SCI's CEO explained "when we deliver these packages, people tend to spend more money because they're buying more products and services").

105. *See, e.g.*, N.Y. PUB. HEALTH LAW § 230 (McKinney 2021) (setting forth guidelines for professional medical conduct); N.Y. EDUC. LAW § 6530 (McKinney 2021) (defining medical misconduct); CAL. CIV. CODE § 1747.05 (Westlaw through urgency legislation through Ch. 770 of 2021 Reg. Sess.) (regulating the issuance of credit cards by banks); N.J. STAT. ANN. § 33:1-11.3 (Westlaw through L.2021, c. 221, J.R. No. 3) (regulating liquor licenses and permits).

extreme approach is utilized when even a small amount of the product may create life-threatening addiction. A third regulatory option is to limit the ages of consumers and the conditions under which the product can be sold: age limits for buying tobacco and alcohol and opening hours for liquor stores are examples.[106] Credit cards likewise are restricted to those over the age of twenty-one (if there is no cosigner or proof of financial independence). Another regulatory tool is a cooling-off period, during which consumers can cancel certain purchases. In the United States, the Federal Trade Commission ("FTC") Cooling Rule gives a consumer three days to "cool down" after agreeing to a contract or purchase from an in-person sale where she faced pressure to buy.[107] The tool we focus on in this Article is regulatory design. This encompasses a regulator's choice of defaults, salience, choice framing, and incentives for intermediaries.

A reason for regulation of risky products could be that the preferences of some consumers are dangerous or unacceptable for society as a whole, either as a moral matter or because of those preferences' externalities on others. In these cases, cultural norms may underlie policy formulation and implementation.[108] Another argument is that regulations designed to limit consumption of certain products by children are justified because children are unable to become fully informed about specific products and to make decisions about their likely benefits and harms. Regulatory design, by contrast, is motivated by the behavioral economics insight that, left to their own devices and faced with an environment designed by sophisticated and profit-maximizing sellers, consumers will fare poorly. They may not want to become exploited or addicted to a product ex ante but may find it difficult to resist. Regulation that helps the consumer control the way and the extent to which they consume a product improves their welfare.

B. *Behavioral Economics*

Recall that in a neoclassical model featuring adult consumers and no externalities, no regulation is necessary because, by assumption, the consumer is capable of doing the best for herself. And, under the assumption that consumers perfectly maximize, choosing poorly is a one-off mistake and there

106. *See, e.g.*, 21 U.S.C. § 387f(d)(5) (prohibiting the sale of tobacco products to anyone under the age of twenty-one years); 23 U.S.C. § 158 (establishing twenty-one as the minimum legal purchase age for alcoholic beverages).

107. *Buyer's Remorse: The FTC's Cooling-Off Rule May Help*, FED. TRADE COMM'N (May 2021), https://www.consumer.ftc.gov/articles/0176-buyers-remorse-when-ftcs-cooling-rule-may-help [https://perma.cc/2E5K-FQUM].

108. *See, e.g.*, Harry G. Levine & Craig Reinarman, *From Prohibition to Regulation: Lessons from Alcohol Policy for Drug Policy*, 69 MILBANK Q. 461, 462 (1991) (explaining that the temperance movement, which "was devoted to convincing people that alcoholic drink in any form was evil, dangerous, and destructive," was a driving force behind Prohibition).

is no scope for regulation to improve their well-being. The regulatory design approach rejects these assumptions. Over the past forty years, research in behavioral economics has demonstrated that, in fact, poor choices by consumers are common and predictable.[109] Guided by theory, and using evidence from lab and field settings, research overwhelmingly shows that consumers often do not follow the neoclassical model and instead harm themselves through their choices.[110] Consumer behavioral biases include present bias,[111] misjudgment of quality and prices,[112] sensitivity to defaults,[113] loss aversion,[114] and subjectively high search costs.[115]

Behavioral models reflect the underlying psychological (and beneath that, biological) factors that cause these departures. Of particular importance is the existence of what are called "internalities." Analogous to externalities, these are benefits that make a consumer happy in the short run and drive short-run decisions, while imposing harms to the long-term welfare of that same consumer.[116] These types of mistakes are extremely common among consumers in many markets (e.g., exercising, dieting, savings, and more).[117] Consumers

109. Jonathan Baron & Tess Wilkinson-Ryan, *Conceptual Foundations: A Bird's Eye View*, *in* RESEARCH HANDBOOK ON BEHAVIORAL LAW AND ECONOMICS 25 (Joshua C. Teitelbaum & Kathryn Zeiler eds., 2018) (asserting that the "list of [human] biases has increased several fold over the much smaller list available when legal scholars started taking this work seriously").

110. *Id.*

111. *See* Ted O'Donoghue & Matthew Rabin, *Doing It Now or Later*, 89 AM. ECON. REV. 103, 103 (1999) ("[Present bias is] the human tendency to grab immediate rewards and to avoid immediate costs in a way that our 'long-run selves' do not appreciate. For example, when presented a choice between doing seven hours of an unpleasant activity on April 1 versus eight hours on April 15, if asked on February 1 virtually everyone would prefer the seven hours on April 1. But come April 1, given the same choice, most of us are apt to put off the work until April 15.").

112. *See* Kenan Kalayci & Jan Potters, *Buyer Confusion and Market Prices*, 29 INT'L J. INDUS. ORG. 14, 15 (2011) ("From several markets there is evidence that consumers are not always well informed about price and quality differences of products and do not always make optimal decisions.").

113. *See* RICHARD H. THALER & CASS R. SUNSTEIN, NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS 35 (2008) (explaining that the "yeah, whatever" heuristic that many people adopt make them unlikely to deviate from default options).

114. *Id.* at 34 ("If you are reluctant to give up what you have because you do not want to incur losses, then you will turn down trades you might have otherwise made.").

115. *See generally* Brett Matsumoto & Forrest Spence, *Price Beliefs and Experience: Do Consumers' Beliefs Converge to Empirical Distributions with Repeated Purchases?*, 126 J. ECON. BEHAV. & ORG. 243 (2016) (finding that consumers with more experience with a given marketplace generally have more accurate beliefs about the price distribution, while consumers with no prior experience with a given marketplace tend to expect prices to be higher). For an overview of how these consumer biases impact competition, see STEFFEN HUCK, JIDONG ZHOU & CHARLOTTE DUKE, CONSUMER BEHAVIOURAL BIASES IN COMPETITION 5 (2011), https://londoneconomics.co.uk/wp-content/uploads/2012/06/Consumer-behavioural-biases-in-competition-OFT1.pdf [https://perma.cc/69PY-EDV9].

116. *See* Hunt Allcott & Cass R. Sunstein, *Regulating Internalities*, 34 J. POL'Y ANALYSIS & MGMT. 698, 698 (2015).

117. *See generally* Stefano DellaVigna & Ulrike Malmendier, *Paying Not To Go to the Gym*, 96 AM. ECON. REV. 694, 695 (2006) ("[C]onsumers choose a contract that appears suboptimal given their attendance frequency.").

may be sophisticated about their internality and correctly forecast their future short-term decision-making, which may enable them to design an environment that favors the long run. For example, they may join a nearby gym or sign up for their employer's matching savings plan. Or consumers may believe that they will act according to their long-run preferences—go running, save via their checking account—even when each day they consistently do not. This explicit framing is used to buttress policies that might otherwise be considered paternalistic.

There is empirical evidence that firms exploit behavioral biases. For example, Sharon Oster and Fiona Scott Morton show that magazines choose newsstand (impulse purchase) and subscription (commitment to read in the future) prices in a way that is consistent with taking advantage of the consumer's present bias.[118] There is also strong evidence of behavioral biases in digital platform markets, such as online ticketing. Tom Blake, Sarah Moshary, Kane Sweeney, and Steve Tadelis find that consumers' responsiveness to price is very sensitive to the way in which ticket prices and fees are presented on StubHub.[119] Users who do not see full ticket prices until reaching the checkout page—where the back-end fees are added on—are more likely to buy tickets compared to those who see full prices, with fees included, up front.[120] Though back-end fee users experience search frictions, such as revisiting search pages after seeing the full price, they still buy seats located closer to the stage which are higher in quality and more expensive.[121] Even consumers who have used StubHub more than ten times purchase more, and higher-quality, tickets when fees are added on at the end.[122] In turn, sellers offer more high-quality tickets, which is an offsetting benefit to consumers.[123] Interestingly, this empirical study could be carried out because StubHub moved between the two methods of disclosing fees. The company tried the upfront approach because it is what consumers said they wanted in surveys.[124] Yet, under the simpler and more transparent format, consumers bought fewer and lower-quality tickets.[125] The evidence shows that StubHub gained increased transactions and increased revenue when it tacked

118. Sharon M. Oster & Fiona M. Scott Morton, *Behavioral Biases Meet the Market: The Case of Magazine Subscription Prices*, 5 ADVANCES ECON. ANALYSIS & POL'Y 1, 3 (2005).

119. Tom Blake, Sarah Moshary, Kane Sweeney & Steve Tadelis, *Price Salience and Product Choice* 2–3 (Nat'l Bureau of Econ. Rsch., Working Paper No. 25186, 2018).

120. *Id.*

121. *Id.* at 17–18.

122. *Id.* at 33.

123. *Id.*

124. *Id.* at 2.

125. Hannah Karp, *StubHub Sings the Blues After Shifting Fees*, WALL ST. J. (Mar. 26, 2014, 11:39 AM), https://www.wsj.com/articles/stubhub-sings-the-blues-after-shifting-fees-1395783228 [https://perma.cc/TNG9-YPY2 (dark archive)].

on fees at the very end, an example of digital platforms benefiting from consumers' behavioral limitations.[126]

The literature falling under the categories of behavioral and neuroeconomics is so vast that it would be impossible to adequately summarize, much less cover, here. The point we wish to make in this Article is different. In our view (discussed below), regulatory design based on behavioral economics will eventually be adopted for digital businesses because of their threat to users' mental health. Before that regulation arrives, many digital products will continue to have the characteristics of an unregulated credit card market featuring asymmetric information and behavioral consumers: these products often do harm when consumers increase the quantity of services they consume.

C. *Specific Examples of Behavioral Regulation*

One of the simplest examples of behavioral regulation applies to funeral homes. In addition to the unique economic components of funerals (they are in many cases among the largest one-time expenditures a family will ever face), they occur at a time of tremendous grief for the likely shopper.[127] The decision about how to send off a loved one can be among the most emotionally trying of an economic decision-maker's life. As such, a consumer may not be able to process information as well as they normally do and will potentially make decisions they might otherwise not.[128] In sum, these shoppers can be poor choosers. Additional risk comes from the possibility of an unscrupulous funeral director who purposefully exploits the emotional state of the shopper to sell more expensive goods and services. To limit incentives for funeral homes to take advantage of customers, the FTC developed the Funeral Rule, which prohibits exploitative practices such as requiring families to purchase a casket if they request cremation.[129] These rules should make no difference to a shopper who is behaving in a standard manner; the rules do not change the price or quality of any product, nor do they restrict who can purchase. Yet, they are an explicit recognition that the shopper likely is not in a state to make good

126. *See* Blake et al., *supra* note 119, at 24–25.

127. *See* Funeral Industry Practices, 47 Fed. Reg. 42,260, 42,260 (Sept. 24, 1982) (codified at 16 C.F.R. pt. 453) ("[P]urchase of a funeral is the third largest single expenditure many consumers will ever have to make, after a home and a car."); *see also* Mercedes Bern-Klug, *What Families Know About Funeral-Related Costs: Implications for Social Work Practice*, 24 HEALTH & SOC. WORK 128, 129 (1999) ("[F]inal arrangements are typically the third most expensive consumer purchase of a lifetime, behind the cost of a house and the cost of a car.").

128. Funeral Industry Practices Rule, 85 Fed. Reg. 8490, 8490 (proposed Feb. 14, 2020) (to be codified at 16 C.F.R. pt. 453) ("[F]uneral arrangement decisions must often be made while under the emotional strain of bereavement, and . . . consumers often lack familiarity with the funeral transaction.").

129. FED. TRADE COMM'N, COMPLYING WITH THE FUNERAL RULE 1 (2012), https://www.ftc.gov/tips-advice/business-center/guidance/complying-funeral-rule [https://perma.cc/9U5S-6GXF].

decisions. The rules provide protection for a consumer who is not performing as the neoclassical model would have her do.

A more complicated example is cigarettes. While regulations on tobacco sales have been in place since the early twentieth century,[130] calls for taxation and limits on sales to minors gained tremendous momentum starting with the release of reports on smoking by Reader's Digest and the Surgeon General in the 1950s and 1960s, respectively.[131] In response, the tobacco industry funded symposia and created organizations such as the "Council for Tobacco Research" to generate "evidence" that smoking was not dangerous, while suppressing research that exposed the harmful effects of tobacco.[132] These efforts delayed the arrival of regulation.[133] The reasons that regulation eventually was imposed include: the direct medical consequences of long-term tobacco use; the indirect consequences of long-term exposure on nonsmokers, including infants and children; and efforts on the part of tobacco companies to optimize the addictive potential of cigarettes through manipulation of the tobacco product as well as the delivery device (e.g., the filter).[134]

In 1996, the FDA released a set of regulations to ban the sale of tobacco to minors.[135] However, soon after, major tobacco companies sued to challenge these regulations. In *FDA v. Brown & Williamson Tobacco Corp.*,[136] the Supreme Court ruled that the agency did not have authority to regulate tobacco.[137] It was not until 2009, when President Obama signed the Family Smoking Prevention and Tobacco Control Act,[138] that the FDA was granted authority to regulate a class of tobacco products, including cigarettes and cigarette tobacco.[139] This

130. *See, e.g.*, Federal Food, Drug, and Cosmetic Act, 21 U.S.C. § 331 (regulating the sale and distribution of medical devices, drugs, food, and tobacco products).

131. Brawley et al., *supra* note 89, at 5–6. *See generally* Roy Norr, *Cancer by the Carton*, READER'S DIG., Dec. 1952, at 7–8 (describing the adverse health effects of smoking); U.S. DEP'T OF HEALTH, EDUC. & WELFARE, *supra* note 30 (same).

132. Lisa A. Bero, *Tobacco Industry Manipulation of Research*, 120 PUB. HEALTH CHRON. 200, 202 (2005).

133. *Id.* at 205 (describing how criticism by the tobacco industry "considerably delayed" the EPA's development of a risk assessment, which concluded that "passive smoking is associated with lung cancer in adults and respiratory disease in children").

134. *See, e.g.*, Family Smoking Prevention and Tobacco Control Act, Pub. L. No. 111-31, § 2, 123 Stat. 1776, 1776–81 (2009) (codified as amended at 21 U.S.C. § 387).

135. *See* Regulations Restricting the Sale and Distribution of Cigarettes and Smokeless Tobacco To Protect Children and Adolescents, 61 Fed. Reg. 44,396, 44,396 (Aug. 28, 1996) (codified at 21 C.F.R. pt. 801, 803, 804, 807, 820, 897).

136. 529 U.S. 120 (2000).

137. *Id.* at 126 ("[W]e believe that Congress has clearly precluded the FDA from asserting jurisdiction to regulate tobacco products.").

138. Remarks on Signing the Family Smoking Prevention and Tobacco Control Act of 2009, 2009 DAILY COMP. PRES. DOC. 493 (June 22, 2009), https://www.govinfo.gov/content/pkg/DCPD-200900493/pdf/DCPD-200900493.pdf [https://perma.cc/PK9X-4WKM].

139. Family Smoking Prevention and Tobacco Control Act § 101(b).

legislation allowed the FDA in 2010 to reissue its 1996 regulations.[140] In 2016, the Tobacco Control Act was amended to regulate all tobacco products, including e-cigarettes and future tobacco products.[141] The regulations proposed in 1996 and adopted in 2010 included restrictions prohibiting the sale of tobacco to minors and requiring a photo ID for purchasing tobacco products; the restriction of tobacco vending or self-service machines to places where minors are not present; packaging and ingredient labeling restrictions; restrictions on the type of marketing targeted at minors (black and white, text only); and a ban on tobacco marketing using nontobacco products (e.g., t-shirts, hats, sports team sponsorships).[142]

These regulations are directly related to the harms cigarettes cause. Notice that many of them rely on the behavioral consumer we have described above. For example, the rules are designed to reduce asymmetric information between the company and consumers. Perhaps because tobacco companies hid tobacco's health and addiction risks from consumers for many years, regulation requires the inclusion of warnings about health risks on package labels. Furthermore, the more persuasive kinds of advertising—for example, TV ads showing cool smokers at a fun party—are banned. Children are not considered capable of making the decision about the risk-reward trade-off of cigarettes and therefore are barred from purchasing them. Cigarette companies are additionally barred from designing marketing campaigns that might be attractive to children, such as those using cartoon characters, and advertising through channels accessed by children. This set of regulations demonstrates an appreciation for behavioral features of consumers, such as vulnerabilities to asymmetric information and addiction, especially when facing profit-maximizing firms that understand how to exploit these features.

The case of credit cards is even more interesting. It is easier than ever for consumers to obtain credit cards and use them, thereby accumulating debt if they do not have the funds to immediately pay the balance. While consumers gain from increased convenience, they also, on average, exhibit behavioral biases such as debt illiteracy and present-biased preferences for consumption.[143] Consider a present-biased consumer with a poor understanding of how debt accumulates. She has a credit card from a company that processes payments and

140. VICTORIA R. GREEN & HASSAN Z. SHEIKH, CONG. RSCH. SERV., R45867, FDA REGULATION OF TOBACCO PRODUCTS 21 (2021), https://crsreports.congress.gov/product/pdf/R/R45867 [https://perma.cc/N6JS-7JXJ].

141. *Id.*

142. Regulations Restricting the Sale and Distribution of Cigarettes and Smokeless Tobacco To Protect Children and Adolescents, 61 Fed. Reg. 44,396, 44,396 (Aug. 28, 1996) (codified at 21 C.F.R. pt. 801, 803, 804, 807, 820, 897); Regulations Restricting the Sale and Distribution of Cigarettes and Smokeless Tobacco To Protect Children and Adolescents, 75 Fed. Reg. 13,225, 13,225 (Mar. 19, 2010) (codified at 21 C.F.R. pt. 1140).

143. *See* David Laibson, *Golden Eggs and Hyperbolic Discounting*, 112 Q.J. ECON. 443, 465 (1997).

issues credit. Swiping her card is effectively taking out a short-term loan with a pleasurable immediate payoff: she borrows money that she cannot afford to pay out today. As with other types of loans, the consumer faces penalties for late payments and more severe consequences, such as bankruptcy, if she ultimately cannot pay off her debt.

The profit-maximizing credit card company knows that the consumer will underestimate how much she will borrow in the future and overestimate her ability to pay, and she may also become addicted to the pleasure of spending. The company has an incentive to encourage her to use the card and to pay off just the minimum each month, allowing the card company to profit from late fees and interest payments on debt that carries over. The company also has a financial incentive to design communications with the consumer to hide, or make less salient, the true cost of borrowing. For example, billing statements may not show what happens to the consumer's pay-off period and interest costs if she pays only the minimum amount from month to month. Such a consumer is very profitable to the card company, and therefore the company will advertise low introductory rates, cash-back perks, and other rewards to grow this segment of their customer base.[144]

Consumers are capable of becoming more informed and aware of their own biases; in the terminology of this literature, they become "sophisticated" consumers, rather than "naive" ones.[145] But even a sophisticated consumer has behavioral biases; she is simply aware of them and can attempt to combat them through techniques like committing her future self to a certain path of spending, saving, or other actions. These commitments take the form of automatic paycheck deductions for contributions to a retirement account, regular exercise dates with friends, and the like. But this is only a partial solution even in the best case and often requires financial literacy, which takes effort to attain and is not universal. If consumers have a hard time learning, and even after taking the trouble to learn they still have behavioral biases, and there is no regulation of company conduct, then it is very likely that profit-maximizing companies will exploit them.

To help consumers, the U.S. government enacted the Credit Card Accountability Responsibility and Disclosure Act of 2009[146] ("Credit CARD Act"). The Credit CARD Act is an example of regulatory design that attempts to improve the situation for consumers by restricting who can get a credit card

144. *See, e.g.*, Chris J. Hoofnagle, *Internalizing Identity Theft*, 13 UCLA J.L. & TECH. 2, 21 (2009) ("[T]he 'best customer' from the credit granting perspective could be the consumer who will charge so much that they cannot afford to pay off the balance in full in any given month. These so-called 'credit revolvers' are the most profitable consumers because they pay compounded interest rates on their purchases and fees.").

145. *See* O'Donoghue & Rabin, *supra* note 111, at 108.

146. Pub. L. No. 111-24, 123 Stat. 1734 (codified in scattered sections of 15 U.S.C.).

and how the issuer can communicate with the consumer.[147] For example, the Act's provision for "plain language in plain sight" requires issuers to be transparent in agreement and disclosure statements.[148] After a card is activated, billing statements must periodically display what happens to payment period and interest costs when consumers pay only the minimum.[149] Billing statements also must disclose what happens if debt is paid off in thirty-six months versus making minimum payments indefinitely.[150] This "nudge" helps consumers adopt a payment plan that will save money on interest payments in the long-term.[151]

Another element of the Credit CARD Act requires consumers to affirmatively opt in to transactions that exceed monthly spending limits.[152] The behavioral economics literature tells us that consumers are more likely to accept the default than to opt in, so this design option discourages them from making present-biased decisions that increase their debt.[153] Younger consumers with no experience managing finances are particularly vulnerable to exploitation.[154] Under the Act, consumers under age twenty-one must have a cosigner or proof of independent income to be issued a credit card; issuers may not offer consumers tangible items (t-shirts, etc.); and universities must disclose any contracts with companies about the marketing of cards to students.[155]

The evidence indicates that behavioral regulation is effective. In the case of credit cards, implementing the Credit CARD Act reduced consumer borrowing costs, especially for consumers with poor credit scores.[156] This result was achieved in large part by requiring card companies to prominently display the payment needed to eliminate a debt in thirty-six months. Abundant

147. Press Release, Off. of the Press Sec'y, The White House, Fact Sheet: Reforms To Protect American Credit Card Holders (May 22, 2009) [hereinafter Fact Sheet], https://obamawhitehouse.archives.gov/the-press-office/fact-sheet-reforms-protect-american-credit-card-holders [https://perma.cc/8JDK-SJRC].

148. *Id.*

149. *Id.*

150. *Id.*

151. Sumit Agarwal, Souphala Chomsisengphet, Neale Mahoney & Johannes Stroebel, *Regulating Consumer Financial Products: Evidence from Credit Cards*, 130 Q.J. ECON. 111, 114 (2014).

152. Fact Sheet, *supra* note 147.

153. *See* Brigitte C. Madrian & Dennis F. Shea, *The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior*, 116 Q.J. ECON. 1149, 1180–81 (2001).

154. *See The Importance of Financial Literacy Among College Students: Hearing Before the S. Comm. on Banking, Hous. & Urb. Affs.*, 107th Cong. 14–18 (2002) (statement of Robert D. Manning, Professor of Humanities, Rochester Institute of Technology) (testifying that the lack of financial literacy among college students makes them particularly vulnerable to exploitation on campus).

155. Fact Sheet, *supra* note 147.

156. Agarwal et al., *supra* note 151, at 111.

evidence suggests that these kinds of design-choice "nudges" can change real outcomes.[157]

It is important for regulators to be cognizant when firms have financial incentives to avoid, or work around, regulation. This is a common scenario. Penalties for failure to comply with regulations are critical in these settings, as without them, firms may gain financially from noncompliance. Transparency requirements for issuers are another helpful element in a regulation when issuers profit from consumers' predictable behavioral biases. The Credit CARD Act provides some accountability by requiring issuers to publish agreements and disclosure statements online and increasing penalties for companies that do not comply.

In the examples of mortgages, cigarettes, and credit cards, regulations explicitly address consumers' cognitive limitations and their tendency to exhibit present bias and accept defaults, in addition to more standard reasons for regulation, such as preventing children from harming their future selves. These consumer mistakes are exacerbated when consumption can lead to costly addiction. In that case, regulations that help protect consumers from their own behavioral limitations prove to be even more beneficial.

D. *Digital Platform Regulation*

In the United States, consumer-facing digital businesses are subject to no industry-specific regulation.[158] Platforms can adopt exploitative and addictive business models with no legal restriction. For example, a platform that displays videos can suggest a subsequent video to the viewer without any limit on what that suggestion can be, or whether the sequencing strategy can be designed to be addictive. Further, platforms have no restriction on the ad load they place on their viewers. And a digital platform that serves up news articles to its users faces no legal restrictions on whether the news it chooses to present (and that consumers will read because it is the default option) is entirely false or entirely true. The business therefore might find that it can sell more ads to the consumer if it shows news items from paid operatives of a foreign state or a group that would gain financially from the adoption of a law or election of a candidate.

Without regulation, it is clear that a profit-maximizing ad-supported digital business earns the most by attempting to attract consumers with content

157. *See, e.g.*, THALER & SUNSTEIN, *supra* note 113, at 60, 68 (describing how Texas saw a twenty-nine percent reduction in roadside litter within the first year of launching its "Don't Mess with Texas" slogan, while Montana observed statistically significant decreases in smoking among teens through its educational campaign socializing nonsmoking). Early results from the Committed Action to Reduce and End Smoking ("CARES") savings program, which incentivizes would-be smokers to deposit money otherwise spent on cigarettes into an account, revealed that smokers who want to quit are fifty-three percent more likely to achieve their goal through the program. *Id.* at 232.

158. *See* Wu, *supra* note 8, at 778.

that activates reward pathways that—much like those cigarettes and other addictive substances activate—are reflexive and drive usage based upon midbrain induced reward and withdrawal effects. There are two core ways by which these effects are achieved: first, through easy access (via mobile devices, amongst other mechanisms), and second, by promoting arousing and/or inflammatory content that provides the most reward. Through these mechanisms, platforms generate repeat customers who can be shown ads throughout the day and (notably) often in mood states that can lead to spending behavior.[159] Further, these consumers are largely unaware that they are being exploited. This prevents them from reducing their attention or transferring it to a source of safer content in a way they might if they understood the potential mental health harms. Competition occurs on the basis of *perceived* content quality because the consumer cannot see or measure true quality; therefore, they cannot choose between digital businesses on that basis.

While some regulation has been proposed, no federal law has yet passed in the United States that would limit the ways digital businesses choose to attract, entrap, and addict consumers. Proposed legislation includes Senator Josh Hawley's bill that would ban infinite scrolling and autoplay of videos on social media platforms[160] and, regarding user-specific data, Senator John Thune's bill to bar large internet platforms from using search history for algorithms that procure content, unless the user allows access for this specific use.[161] Several other bills aim to regulate the privacy of user-specific data, such as Senator Amy Klobuchar's bill to protect personal health data (e.g., data collected on wearable fitness trackers),[162] and Senator Roger Wicker's bill to safeguard the privacy of consumer health data for tracking COVID-19 cases.[163]

A digital platform that collects data about its users may use that data in any way that is consistent with the user agreement it presented to the consumer and to which the consumer agreed (abstracting from whether the consumer either read or understood the user agreement). This is not true in the European Union, for example, where the General Data Protection Regulation ("GDPR") came into effect in 2018 and strictly limits the use of consumer data.[164]

159. *Cf.* Dena Thometz Saliagas & James J. Kellaris, *The Influence of Mood on Willingness To Spend and Unplanned Purchasing*, *in* PROCEEDINGS OF THE 1986 ACADEMY MARKET SCIENCE (AMS) ANNUAL CONFERENCE 61, 62 (Naresh K. Malhotra & Jon M. Hawes eds., 1986) (explaining that those in high mood are willing to pay more for products).

160. Social Media Addiction Reduction Technology Act, S. 2314, 116th Cong. (2019).

161. Filter Bubble Transparency Act, S. 2024, 117th Cong. (2021).

162. Protecting Personal Health Data Act, S. 24, 117th Cong. (2021).

163. COVID-19 Consumer Data Protection Act of 2020, S. 3663, 116th Cong. (2020).

164. Commission Regulation 2016/679, art. 6, 2016 O.J. (L 119) 36 (limiting the legal processing of user data to situations where: (1) the data subject consented; (2) processing is necessary for performance of a contract to which the data subject is party; (3) processing is necessary for compliance with a legal obligation; (4) processing is necessary to protect the vital interests of the data subject or another person; (5) processing is necessary for the performance of tasks carried out in the public interest

However, the GDPR limits data use so strictly that consumers must give permission for many useful functionalities. Consumers thus become inured to giving permission, potentially eroding the intended protection of the law to some degree.[165] Services and products that cause harm and are subject to no regulation at all are fairly rare in the modern U.S. economy. Over time, political pressure tends to result in regulation to protect consumers from harmful or addictive products. Yet the delay can be long between the time that researchers identify and begin measuring harms and the enactment of regulation that protects consumers, as in the case of cigarettes. The United States is currently in that delay period when it comes to online content.

IV. IMPLICATIONS FOR COMPETITION AND ANTITRUST ENFORCEMENT

Under these conditions, a platform's strategy that best attracts consumers and is most profitable for the platform may well be bad for consumers themselves. But if that strategy is legal, management of digital businesses are likely to feel pressure from their boards and shareholders to engage in it. A company that attempts to offer a higher-quality product likely would sell fewer ads to those customers who are less "engaged"—in other words, less addicted. A company that adopts a different business model—a subscription model for example—would appear to be charging a price for the "same" product that is available for "free" from competitors.[166] Without assistance, consumers may not be able to appreciate the design choices that make the subscription product safer for their mental health, while the barter transaction they engage in to receive "free" services is not salient to them. Consumers who do not understand their own behavioral biases cannot evaluate which model would be better for them. This situation does not represent a well-functioning market that delivers maximal surplus to consumers.

Not only are behavioral problems rife, digital businesses often operate in very concentrated market structures.[167] Concentration in this industry is

or in the exercise of official authority; and (6) processing is necessary for the purposes of the legitimate interests of the controller or a third party, unless the fundamental rights and freedom of the data subject override those interests).

165. *See GDPR & CCPA: Opt-ins, Consumer Control, and the Impact on Competition and Innovation: Hearing Before the S. Comm. on the Judiciary*, 116th Cong. 17 n.69 (2019) (statement of Roslyn Layton, Visiting Scholar, American Enterprise Institute) ("GDPR pop-up disclosures have become so intrusive that Europeans download pop-up blockers on their phones.").

166. Zero-price digital media products are not "free"; consumers pay for them with their data and attention, rather than money. *See* John M. Newman, *Antitrust in Zero-Price Markets: Foundations*, 164 U. PA. L. REV. 149, 172–73 (2015) ("Though no price is attached to products distributed in zero-price markets, they are not 'free' to customers. There are always costs . . . [like] attention and information costs . . . .").

167. *See* Rory Van Loo, *Digital Market Perfection*, 117 U. MICH. L. REV. 815, 828 (2019) (describing "digital media markets' extremely high concentration, in which as few as two or three companies capture the bulk of the market" and stating that "Google drives 89% of internet searches, Facebook

concerning because it leaves few competing providers for consumers to switch to should they learn about the risk of addiction or if a regulator were to make quality more salient. Monopoly positions in this sector may have been attained and maintained on the merits or by anticompetitive conduct.[168] Either way, U.S. and international antitrust enforcers have become increasingly concerned about anticompetitive conduct in these markets. Indeed, U.S. enforcers recently brought antitrust claims against two of the largest digital platforms. The FTC and forty-eight state attorneys general sued Facebook,[169] and the U.S. Department of Justice and several states sued Google for unlawful monopoly maintenance.[170]

A competitive market likely would make more choices available to consumers. Profit-maximization would incentivize each platform to attract consumers through quality and differentiation, which might include the relative addictiveness of a platform. Sophisticated consumers would understand the possibility of addiction in the future and demand a safer product. While a naive consumer might not think they are susceptible to addiction, a safer service would have an incentive to explain its merits to attract demand. Perhaps the least addictive platform would develop quality metrics, promote them, and compete for consumers on the basis of its relatively high quality. Perhaps it would market its platform to parents of young users. Perhaps consumers would take fuller advantage of third-party rating systems to evaluate platforms' content in the way they use Consumer Reports when they buy washing machines.[171] In general, one would expect to see more options for healthy

reaches 95% of young internet users through its various products, Amazon has 75% of book sales, and Microsoft and Apple supply 95% of desktop operating systems").

168. Since 2017, the European Commission has fined Google for violating Article 102 in three separate cases for (1) harming competition in online search by promoting its own comparison shopping service; (2) ensuring dominance of the Google search engine by requiring that Android manufacturers preinstall Google search apps; and (3) preventing competition on the merits for online advertising intermediation through exclusive contracts and other anticompetitive tactics. *See* European Commission Press Release, European Comm'n, Antitrust: Commission Fines Google €1.49 Billion for Abusive Practices in Online Advertising (Mar. 20, 2019), https://ec.europa.eu/commission/presscorner/detail/en/IP_19_1770 [https://perma.cc/M83T-8V87].

169. Complaint for Injunctive and Other Equitable Relief, FTC v. Facebook, Inc., No. 20-cv-03590 (D.D.C. filed Dec. 9, 2020); Complaint, New York v. Facebook, Inc., No. 20-cv-03589 (D.D.C. filed Dec. 9, 2020). On June 28, 2021, the district judge dismissed the FTC's complaint without prejudice on the grounds that it failed to plead sufficiently that Facebook has monopoly power in a relevant market. FTC v. Facebook, Inc., No. 20-3590, 2021 WL 2643627, at *1–2 (D.D.C. June 28, 2021). The court granted the FTC leave to amend its complaint, *id.* at *23, and the FTC filed its First Amended Complaint on August 19, 2021, First Amended Complaint for Injunctive and Other Equitable Relief, FTC v. Facebook, Inc., No. 20-cv-03590 (D.D.C. filed Aug. 19, 2021).

170. Complaint, United States v. Google LLC, No. 20-cv-03010 (D.D.C. filed Oct. 20, 2020); Complaint, Colorado v. Google LLC, No. 20-cv-03715 (D.D.C. filed Dec. 17, 2020); Complaint, Texas v. Google LLC, No. 20-cv-00957 (E.D. Tex. filed Dec. 16, 2020).

171. A number of organizations dedicated to digital safety already exist. These include Common Sense Media, ConnectSafely, and the Family Online Safety Institute. Common Sense Media offers

choices if there were both more choices and more competition, and therefore less concentration and less market power. This is one of many beneficial outcomes to expect from antitrust enforcement in technology markets.

To achieve accurate measures of consumer welfare, standard antitrust procedures must be updated for dangerous and addictive products, including technology platforms. The consumer welfare standard, which courts and enforcers rely on in most antitrust analyses, typically incorporates both current and future price, quality, and innovation effects. But the standard is not generally understood to require an adjustment for addictive goods.[172] There is no discussion in the 2010 Horizontal Merger Guidelines, for example, concerning addictive goods.[173] Why have antitrust practitioners, enforcers, and courts been so slow to adapt the way they measure consumer welfare to account for addictive goods, especially given that many addictive products are old and have seen antitrust enforcement in past decades?

Part of the answer lies in the extent of regulation for many dangerous products. For example, if the merger of two automobile companies caused cars to become faster and more dangerous, governments could employ other tools, such as speed limits and air bags, to protect consumers and give them the benefit of the technology while mitigating its harms.[174] Because regulation intercedes to preserve consumer safety, the antitrust analysis does not need to account for the merger resulting in more dangerous products. Likewise, governments established age limits, advertising restrictions, and taxes on cigarettes as the realization grew of the harm smoking caused. There is no regulator in the United States today that wields any such tool for social media.

extensive age-based app reviews. *App Reviews*, COMMON SENSE MEDIA, https://www.commonsensemedia.org/app-reviews [https://perma.cc/P62G-ADZP]. Consumer Reports also offers a "guide [that] highlights risks, solutions—and easy-to-follow tips to protect you and your family" in terms of privacy. *Guide to Digital Security and Privacy*, CONSUMER REPS., https://www.consumerreports.org/digital-security/online-security-and-privacy-guide/ [https://perma.cc/H23R-BMBZ] (Aug. 24, 2021).

172. *See, e.g.*, Herbert Hovenkamp & Carl Shapiro, *Horizontal Mergers, Market Structure, and Burdens of Proof*, 127 YALE L.J. 1996, 2000 (2018) (noting that the "structural presumption" in merger analysis assumes "that the goal of merger policy is to promote 'consumer welfare' by protecting consumers against high prices or reduced output, product variety, product quality, or innovation"); Diana Moss, *Merger Policy and Rising Concentration: An Active Agenda for Antitrust Enforcement*, 33 ANTITRUST 68, 69 (2018) ("The progressive view is that a merger that reduces consumer welfare through adverse price or non-price (e.g., quality, variety, or innovation) effects should generally be considered potentially harmful.").

173. *See* U.S. DEP'T OF JUST. & FED. TRADE COMM'N, HORIZONTAL MERGER GUIDELINES 1 (2010) [hereinafter MERGER GUIDELINES], https://www.justice.gov/sites/default/files/atr/legacy/2010/08/19/hmg-2010.pdf [https://perma.cc/E8VG-YCBX] (describing the "analytical techniques and the main types of evidence on which the Agencies usually rely to predict whether a horizontal merger may substantially lessen competition" under federal antitrust law).

174. *See* U.S. DEP'T OF TRANSP., FED. HIGHWAY ADMIN. & INST. OF TRANSP. ENG'RS, METHODS AND PRACTICES FOR SETTING SPEED LIMITS 1 (2012), https://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa12004/fhwasa12004.pdf [https://perma.cc/7FS8-6EHS] ("One of the most frequently used methods of managing travel speeds is the posted speed limit.").

A second reason an addictive products analysis has not been used in the past in antitrust enforcement is that the behavioral economics and framing is only a few decades old.[175] While many readers might consider forty years of learning to be both long-established and ample, antitrust is a field that distrusts anything new.[176] Our view is that behavioral economics, now with forty-plus years of research, three Nobel prizes, and many decades of empirical evidence, is firmly in a position to be cited and relied on by antitrust scholars, practitioners, and policy makers.[177]

Behavioral economics and its supporting empirical evidence call into question antitrust precedent that relies on a flawed vision of the "rational" consumer. Consider, for example, Justice Scalia's dissent in *Eastman Kodak v. Image Technical Services*.[178] One of the plaintiffs' claims was that Kodak had illegally tied photocopier service, in which it faced competition from independent service organizations, to replacement parts, over which it had a monopoly.[179] Kodak argued that it could not exercise monopoly power over its parts because it faced competition in the market for original equipment.[180] It asserted that if it raised its prices for parts and service above the competitive level, it would lose consumers to competing equipment manufacturers whose total "lifecycle" prices, including parts and service prices, were lower.[181] This argument depended on the assumption that consumers would know when initially purchasing a copier to factor in the "lifecycle" costs of owning the copier, including what it might cost to buy replacement parts and service.

Plaintiffs countered that Kodak's theory failed to account for information costs that consumers faced when buying copiers that made it difficult and expensive to accurately determine lifecycle pricing.[182] The Court agreed that "[l]ifecycle pricing of complex, durable equipment is difficult and costly" and that "[m]uch of the information" consumers need to accurately lifecycle price "is difficult—some of it impossible—to acquire at the time of purchase."[183]

175. *See, e.g.*, Rebecca Haw Allensworth, *The Influence of the Areeda-Hovenkamp Treatise in the Lower Courts and What It Means for Institutional Reform in Antitrust*, 100 IOWA L. REV. 1919, 1938 (2015) ("The Supreme Court has been slow to adjust competition law in response to advances in economic theory and empirical research, leaving out-of-date precedent on the books for longer than is optimal for antitrust regulation.").

176. *Id.*

177. Herbert A. Simon won the Nobel Memorial Prize in Economic Sciences in 1978, Daniel Kahneman won the prize in 2002, and Richard Thaler won in 2017. *All Prizes in Economic Sciences*, NOBEL PRIZE, https://www.nobelprize.org/prizes/lists/all-prizes-in-economic-sciences/ [https://perma.cc/SGU6-TJJ5].

178. 504 U.S. 451 (1992).

179. *Id.* at 459, 464.

180. *Id.* at 465–66.

181. *Id.*

182. *Id.* at 473–74.

183. *Id.*

Further, the Court reasoned that even if some consumers could acquire and process the "complex body of information" necessary to figure out lifecycle price, that process is time-consuming and expensive, and if service costs are small compared to the original equipment purchase, customers might decide to forego accurate lifecycle pricing.[184] For these and other reasons, the Court concluded that Kodak had failed to show that the plaintiffs' inference that Kodak had market power in the service and parts markets was unreasonable.[185]

In dissent, Justice Scalia dismissed concerns about what he described as "irrational consumers" who did not take into account the cost of parts and service when buying copiers.[186] While conceding that such consumers exist, including, "regrettably," the federal government, Justice Scalia asserted that "we have never before premised the application of antitrust doctrine on the lowest common denominator of consumer."[187] Since *Kodak* was decided in 1992, a growing body of behavioral economic scholarship supports the idea that Justice Scalia's "irrational consumer" is the norm rather than the exception. Even under the *Kodak* facts, where the customer base included relatively sophisticated businesses with purchasing managers and access to price and cost data, the Court correctly concluded that many consumers were not going to be able to accurately calculate lifecycle cost and that other consumers would find the costs of making these calculations to be prohibitively high.[188] Now consider the vast majority of social media consumers: individuals with neither the time, nor the ability, nor the inclination to gather and interpret the information necessary to accurately determine the costs social media imposes on them. Antitrust policy and enforcement should protect these consumers, who are not the "irrational" minority Justice Scalia imagined, but rather the overwhelming majority of perfectly normal social media users.

In this Article we focus primarily on antitrust enforcement involving addictive goods, as the medical science and regulatory landscape of addiction is well-developed. We take the perspective of the long-run self that prefers not to become addicted, and, like the literature, discount the welfare of the short-run self that is attracted to the addictive substance or activity.[189] This idea of

184. *Id.* at 474–75.

185. *Id.* at 477.

186. *Id.* at 495–96 (Scalia, J., dissenting).

187. *Id.*

188. *Id.* at 474–75 (majority opinion) ("Lifecycle pricing of complex, durable equipment is difficult and costly . . . . Moreover, even if consumers were capable of acquiring and processing the complex body of information [necessary to lifecycle price], they may not choose to do so. Acquiring information is expensive. If the costs of service are small relative to the equipment price, or if consumers are more concerned about equipment capabilities than service costs, they may not find it cost efficient to compile the information.").

189. While addiction is a dramatic example of the difference between consumer welfare as calculated by behavioral economics versus neoclassical economics, it might be beneficial for future antitrust research to tackle more complex problems like reforming the consumer welfare calculations

protecting the welfare of the consumer's long-run self is clearly valued by the government in the other settings described above, where some form of regulation—even if imperfect—is designed to implement it. These examples motivate us to argue that this same issue should not be overlooked in an antitrust context.

A. *Measuring Consumer Welfare*

Tech platforms recently have had to face several antitrust suits in federal courts.[190] Because so much of the conduct in question will have occurred in the environment described above—one with addiction-related harms and no regulation—an adjustment in the standard method of evaluating consumer welfare is required. The welfare of the addicted user—who consumes more of the addictive product due to the challenged conduct—has decreased, rather than increased, as in the usual case. Assessing the situation this way is different from past practice. Since the 1970s, antitrust enforcement has relied primarily on economic analysis to understand harm to consumers.[191] The boundaries of economic understanding continually expand and allow for concomitant improvements in enforcement. Further, antitrust bears a larger burden in getting the analysis of addictive products right in the context of digital harms given the lack of any other governmental body standing ready to mitigate those harms.[192]

As discussed above, whether consumer welfare increased or decreased due to the challenged conduct is often an important element of antitrust analysis. Social media platforms operate in at least two markets: the market for end users and the market for advertising dollars.[193] Because our concern is addiction and

for nonaddictive products with strong present bias, such as mortgages, funeral services, sugary drinks, and so forth. These cases are beyond the scope of this Article.

190. *See, e.g.*, Complaint, Utah v. Google LLC, No. 21-cv-05227 (N.D. Cal. filed July 7, 2021); Complaint, Texas v. Google LLC, No. 20-cv-00957 (E.D. Tex. filed Dec. 16, 2020); Complaint for Injunctive and Other Equitable Relief, FTC v. Facebook, Inc., No. 20-cv-03590 (D.D.C. filed Dec. 9, 2020); Complaint, United States v. Google LLC, No. 20-cv-03010 (D.D.C. filed Oct. 20, 2020); Complaint for Injunctive Relief, Epic Games, Inc. v. Apple Inc., No. 20-cv-05671 (N.D. Cal. filed Aug. 13, 2020).

191. *See* Maurice E. Stucke & Ariel Ezrachi, *The Rise, Fall, and Rebirth of the U.S. Antitrust Movement*, HARV. BUS. REV. (Dec. 15, 2017), https://hbr.org/2017/12/the-rise-fall-and-rebirth-of-the-u-s-antitrust-movement [https://perma.cc/5VE5-5MFQ].

192. *See, e.g.*, Verizon Commc'ns Inc. v. Law Offs. of Curtis V. Trinko, LLP, 540 U.S. 398, 411 (2004) ("Antitrust analysis must always be attuned to the particular structure and circumstances of the industry at issue. Part of that attention to economic context is an awareness of the significance of regulation.").

193. *See* Spencer Weber Waller, *Antitrust and Social Networking*, 90 N.C. L. REV., 1771, 1772–73, 1785 (2012) (describing social networking sites as two-sided markets that do not charge consumers a monetary fee but do charge advertisers).

mental health, our analysis focuses on the consumer welfare of end users.[194] A common shortcut, or summary statistic, that is often used in enforcement is to use change in output as a proxy for consumer welfare.[195] *However, the foregoing analysis demonstrates that this shortcut cannot be applied in digital markets given the strong possibility that more output causes consumer harm, not benefit.* Rather, we argue that antitrust analysis in the context of addictive products must return to the root concept of interest: consumer welfare.

B. *Net and Marginal Harm Products*

Daniel Crane has analyzed the challenges antitrust enforcement faces in markets for harmful products, a slightly broader category than addictive products.[196] His work focused on the tobacco industry, where there is a long history of government regulation attempting to limit consumption. In this type of market, Crane asserted that the standard antitrust enforcement paradigm—which is geared toward removing barriers to competition to increase output and lower price—is likely inconsistent with the consumer's best interests.[197] This conclusion requires several assumptions that we discuss below. To identify industries for which standard antitrust analysis might be counterproductive, Crane introduced the concept of "net-harm markets."[198] These are markets where either "[t]he consumption of the good at any level of output produces greater total internal and external costs" than benefits or, "[a]t the output level determined by a competitive market, consumption of the good produces greater total costs than total benefits."[199]

194. In *Ohio v. American Express Co.*, the Supreme Court addressed antitrust analysis in the context of credit-card networks, which the Court described as "two-sided transaction platform[s]." 138 S. Ct. 2274, 2287 (2018). The Court stated that "[e]valuating both sides of a two-sided transaction platform is also necessary to accurately assess competition." *Id.* While social media platforms involve at least two different markets, it is not clear that the *Amex* decision applies directly to our analysis. First, *Amex* involved a claim under Section 1 of the Sherman Act, *id.* at 2277, while this Article addresses merger analysis and Section 2 claims. Second, it is not obvious that social media platforms are "transaction platforms" where every interaction between end users and the platform is also a transaction between end users and advertisers. *Id.* at 2280 ("The key feature of transaction platforms is that they cannot make a sale to one side of the platform without simultaneously making a sale to the other.").

195. *See id.* at 2284; Hovenkamp, *supra* note 24, at 84.

196. Daniel A. Crane, *Harmful Output in the Antitrust Domain: Lessons from the Tobacco Industry*, 39 GA. L. REV. 321, 325–26 (2005).

197. *Id.* at 344 ("Output maximization remains the dominant goal of antitrust enforcement in the tobacco industry. . . . [T]he antitrust establishment simply ignores the harmful nature of tobacco when an antitrust issue regarding the tobacco industry is presented . . . .").

198. *Id.* at 346.

199. *Id.*

Crane conceded that for most products, even tobacco, it would be difficult, if not impossible, to quantitatively demonstrate net harm.[200] With this in mind, Crane proposed relying on a proxy variable: political consensus that output of a particular product is harmful.[201] He found plentiful evidence of a political consensus at both the state and federal level in the United States that tobacco use "impose[s] far greater social costs . . . than social benefits."[202] The markets for tobacco products, therefore, are net-harm markets in Crane's paradigm. This conclusion led Crane to recommend that antitrust enforcers focus their efforts in these markets on harm reduction rather than output maximization.[203] However, precisely because the government is active in these markets, his policy conclusion does not follow. If enforcement action prevented the increase of market power and thus lowered prices (relative to no enforcement), the price change could be counteracted by a tax. In this way, the price increase that would have accrued to the manufacturer can be collected instead by the government without consumption increasing. Alternatively, the government can reduce usage through tools such as restrictions on advertising and sales locations. Thus, no consumption increase need occur from antitrust enforcement in regulated net-harm markets if government responds appropriately.

Social media products are different than tobacco products in an important respect: we assume that tobacco consumption is rarely beneficial, no matter the amount consumed (similar to many illegal drugs).[204] By contrast, products such as social media, while addictive, likely have some consumption level for each user that results in net positive utility. This level will be lower than the addictive level of consumption. In this way, social media is more like OxyContin and credit cards than it is like tobacco. Under the supervision of a physician and in limited amounts, OxyContin can be very beneficial to a patient in pain, but its overuse will lead to addiction and severe harm. Credit cards too offer consumers significant utility, by granting them a convenient short-term loan and method of payment. But credit card use quickly becomes harmful if consumers charge more than they can afford to pay back on time. Likewise,

200. *Id.* at 356 ("The empirical model is too fraught with controverted methodologies, wide ranges of value estimates, and normative assumptions to form the basis of a compelling argument that a particular industry causes more harms than benefits . . . .").

201. *Id.* at 357 ("[I]t may be possible to identify net-harm markets inductively based on expressed public policy rather than deductively based on economic principles.").

202. *Id.* at 358. This evidence includes "government expenditures on anti-tobacco advertising, frequent government warnings on the dangers of tobacco consumption, numerous federal and state statutory schemes, federal and state regulations, and federal and state anti-tobacco litigation." *Id.* at 357–58.

203. *Id.* at 367 (arguing that in net-harm markets, enforcers and courts "should apply the antitrust laws to pursue a goal of harm-reduction rather than one of output maximization").

204. *See No Safe Level of Smoking: Even Low-Intensity Smokers Are at Increased Risk of Earlier Death*, NAT'L CANCER INST. (Dec. 5, 2016), https://www.cancer.gov/news-events/press-releases/2016/low-intensity-smoking-risk [https://perma.cc/LKX4-YQQL].

limited exposure to social media may benefit users by connecting them to friends and family and informing them of events and content. But, as discussed above, those benefits begin to erode the longer the user engages with a social media platform.[205]

The "conventional" paradox of antitrust enforcement for addictive products is this: because we expect a firm with market power to reduce output and raise price, acquisition of market power might lead to desirable public health outcomes (e.g., less smoking, reduced opiate abuse).[206] In social media markets, however, the almost universal business model is a zero-price service paid for by advertising.[207] The platform earns more revenue the longer its users stay engaged and the more ads it can show them.[208] Therefore, dominant firms have an incentive to exercise any market power on the advertising side by increasing price, and on the user side by degrading quality and making the product more addictive.

The social media business model we describe here features a monopolist that has the incentive and ability to exercise its market power by making design choices that are addictive, shifting out the willingness of consumers to supply attention. A more addictive design causes the consumer to stay and watch additional ads without realizing what is happening. The platform aims to drive advertising revenues by collecting more data and showing more ads to both new users and current users who stay longer on the platform. Both the addictive content and the additional advertising lower the quality of the product. Consumers who would prefer a higher-quality, less harmful product have few other options because of the platform's market power. Thus, in the social media setting, the paradox of antitrust enforcement is that *lack* of enforcement can both increase minutes of use and decrease consumer welfare.

205. Another distinction between social media and tobacco products is that there is not yet in the United States a political consensus of the sort Crane describes that social media is harmful. There are no federal or state regulations, agency actions, or executive orders restricting social media output. On Crane's terms, social media would not qualify as a net-harm market.

206. Peter J. Hammer, *Antitrust Beyond Competition: Market Failures, Total Welfare, and the Challenge of Intramarket Second-Best Tradeoffs*, 98 MICH. L. REV. 849, 862–63 (2000) (arguing that a competitive market for cigarettes "would lead to the overproduction and overconsumption of cigarettes" whereas the "exercise of private market power (either through merger or cartelization) would lead to an increase in price and a reduction in consumption" that "might well increase social welfare").

207. Ethan Zuckerman, *The Internet's Original Sin*, ATLANTIC (Aug. 14, 2014), https://www.theatlantic.com/technology/archive/2014/08/advertising-is-the-internets-original-sin/376041/ [https://perma.cc/8DLE-KYFJ (dark archive)] ("[W]e've been taught that this is simply how the Internet works: If we open ourselves to ever-increasing surveillance—whether from corporations or governments—the tools and content we want will remain free of cost.").

208. *See id.* ("[A]dvertising is the default model to support the Internet . . . .").

C. *Output Measures Are Insufficient*

Because social media presents a complex mixture of harms and benefits, its antitrust treatment requires a more precise approach to evaluating consumer welfare than courts typically employ. Sufficient medical evidence exists that social media is addictive and harmful to conclude that simply measuring "output" is not a reliable method of evaluating consumer welfare.[209] An output-focused method for social media is akin to allowing the manufacturer of OxyContin to identify the addicts it created and count the additional pills they consumed during an addicted spell as consumer surplus. Clearly this is not correct. Courts should eschew this (common) "output" analytical shortcut in favor of a more accurate approach to measuring consumer welfare, one that takes account of social media's addictive characteristics.[210]

This analysis generates two conclusions about antitrust enforcement in social media markets. First, enforcers and courts evaluating anticompetitive conduct in the social media space must focus on the very real cost of reduced innovation, particularly safety innovation, and lessened product variety in determining whether to challenge or prohibit a transaction or course of conduct.[211] Innovation is key because the more innovative firms there are in a market, the more likely one or more will compete on safety and create a less addictive social media offering that increases consumer welfare. Courts therefore should prohibit mergers and conduct that would unreasonably decrease innovation and product variety in social media markets.

Second, defendants should not be able to overcome plaintiffs' prima facie case merely by offering evidence that a merger or particular conduct will increase (or not decrease) a generalized output measure. As we have demonstrated, output changes—where output is measured by total user engagement or total advertising volume—are unlikely to provide a reliable measure of consumer welfare when a product is addictive. Courts (and enforcers

209. *See* Crane, *supra* note 196, at 408 ("Even if the public policy of consumption reduction is less clear-cut as to other products, the harm-reduction approach may shed some light on optimal antitrust enforcement in close case industries. If an industry imposes considerable harms but also produces some positive utility, the case for an output-maximization antitrust paradigm may be weaker than the case for a harm-reduction paradigm . . . .").

210. Addictive products likely are not the only setting in which output is a poor proxy for consumer welfare. John Newman argues that the conflation of output and consumer welfare is a fallacy that lies "[a]t the core of modern U.S. antitrust law." John M. Newman, *The Output-Welfare Fallacy: An Antitrust Paradox*, 107 IOWA L. REV. (forthcoming 2022) (manuscript at 1) (on file with author). Newman presents several examples of scenarios beyond addictive products where increased output leads to decreased consumer welfare, including markets featuring information asymmetries, deceptive and misleading conduct, and certain vertical restraints. *Id.* (manuscript at 17–32).

211. *See* Crane, *supra* note 196, at 389 ("[T]he failure to produce a less harmful form of tobacco consumption may be a failure of antitrust more than anything else. If antitrust enforcement had focused on competition for innovation instead of output maximization, then perhaps smokers would be less harmed by tobacco consumption today.").

considering bringing cases) must account for the disutility of additional time spent on addictive social media platforms when evaluating defenses based on claims of enhanced output. Because output is a "shortcut," or proxy, for consumer welfare, it does not give an accurate assessment when some consumption creates disutility. The burden should be on the defendant to show that any increased output will actually enhance consumer welfare. Indeed, the defendant normally has the burden of showing efficiencies or procompetitive justifications in an antitrust case.[212] Furthermore, the defendant has the data and analytical tools to measure usage and determine the welfare of its consumers. For example, the challenged conduct may have engaged new users for short amounts of time, which a court might determine is unlikely to represent addictive behavior that harms users. Or, perhaps the conduct extended the amount of time teenagers spent on the social media platform late at night, behavior that the literature indicates is more likely to be addictive and result in user harm.[213] Merely providing evidence of more output, in the form of total minutes consumers spend using an app, is unlikely to answer the question of whether consumer welfare has increased or decreased.

D. *Specific Antitrust Settings*

Technology giants, including social media platforms, have acquired and maintained their market power through a variety of means: acquisitions, exclusionary conduct, and, often, a combination of the two.[214] Our more precise approach to consumer welfare analysis in social media markets should alter how courts evaluate such cases. We next discuss merger challenges, exclusionary conduct cases, and claims alleging a pattern of both anticompetitive acquisitions and exclusionary conduct.

We begin with mergers. The U.S. merger review regime is governed by Section 7 of the Clayton Act, which bars transactions the effect of which "may

212. *See, e.g.*, Ohio v. Am. Express Co., 138 S. Ct. 2274, 2284 (2018) (under the rule of reason, once a plaintiff satisfies their initial burden to show that a restraint has a substantial anticompetitive effect that harms consumers, "the burden shifts to the defendant to show a procompetitive rationale for the restraint"); FTC v. Actavis, Inc., 570 U.S. 136, 156 (2013) ("An antitrust defendant may show in the antitrust proceeding that legitimate justifications are present [for a challenged restraint] . . . ."); Saint Alphonsus Med. Ctr.-Nampa Inc. v. St. Luke's Health Sys., Ltd., 778 F.3d 775, 790 (9th Cir. 2015) ("Courts recognizing the [efficiencies] defense [in merger cases] have made clear that a Clayton Act defendant must 'clearly demonstrate' that 'the proposed merger enhances rather than hinders competition because of the increased efficiencies.'" (quoting United States v. Long Island Jewish Med. Ctr., 983 F. Supp. 121, 137 (E.D.N.Y. 1997))).

213. *See supra* notes 72–84 and accompanying text.

214. *See, e.g.*, FIONA M. SCOTT MORTON & DAVID C. DINIELLI, ROADMAP FOR AN ANTITRUST CASE AGAINST FACEBOOK 20–29 (2020), https://www.omidyar.com/wp-content/uploads/2020/06/Roadmap-for-an-Antitrust-Case-Against-Facebook.pdf [https://perma.cc/8DLE-KYFJ] (arguing that Facebook has used a variety of means to maintain its monopoly, including acquiring a series of nascent or potential rivals and depriving certain rivals of access to its Application Programming Interfaces).

be substantially to lessen competition, or to tend to create a monopoly."[215] This incipiency standard grants the antitrust enforcement agencies authority to sue to block a merger before it is consummated, nipping in the bud any competitive problems a proposed transaction might cause.[216] It also allows agencies to challenge and seek to unwind consummated mergers.[217] To establish a prima facie case in a Clayton Act Section 7 action to block a merger, the enforcement agencies must define relevant product and geographic markets and demonstrate probable harm to competition in those markets based on market concentration and competitive overlap between the merging parties.[218] If the agencies establish their prima facie case, the defendants have an opportunity to rebut the presumption that the merger is likely to lessen competition by proving that the typical effects of market concentration are not applicable, that entry is likely, or that the merger's procompetitive benefits outweigh its anticompetitive effects.[219] Social media's addictive and harmful characteristics should affect the courts' analysis of both plaintiffs' prima facie case and defendants' procompetitive justifications.

Mergers are common in the social media sector. Facebook's acquisitions of Instagram (2012) and WhatsApp (2014) are perhaps the best-known of these deals, but Facebook alone acquired seventy-two companies in the period between 2005 and 2019.[220] The U.S. antitrust enforcement agencies did not challenge any of these transactions at the time, though the FTC and state enforcers have recently sued Facebook, seeking to unwind the Instagram and

215. Clayton Act, ch. 323, § 7, 38 Stat. 730, 731–32 (1914) (codified as amended at 15 U.S.C. § 18).

216. *See* Herbert Hovenkamp, *Prophylactic Merger Policy*, 70 HASTINGS L.J. 45, 46 (2018) ("An important purpose of antitrust merger law is to arrest certain practices in their 'incipiency,' by preventing business firm acquisitions that are likely to facilitate them.").

217. *See* 15 U.S.C. § 18a(i)(1) ("Any action taken by the Federal Trade Commission or the Assistant Attorney General or any failure of the Federal Trade Commission or the Assistant Attorney General to take any action under this section shall not bar any proceeding or any action with respect to such acquisition at any time under any other section of this Act or any other provision of law."); Menesh S. Patel, *Merger Breakups*, 2020 WIS. L. REV. 975, 986 ("[T]he agencies also may challenge a reported merger after the merger has been reviewed and cleared.").

218. FTC v. Swedish Match, 131 F. Supp. 2d 151, 166 (D.D.C. 2000) ("The Commission can generally establish a prima facie case by showing that the merged entity will have a significant percentage of the relevant market. . . . In addition to market share, courts examine market concentration and its increase as a result of the proposed acquisition.").

219. *Id.* at 167 ("[D]efendants must show that the market-share statistics 'give an inaccurate prediction of the proposed acquisition's probable effect on competition.'" (quoting FTC v. Staples, Inc., 970 F. Supp. 1066, 1083 (D.D.C. 1997))); FTC v. CCC Holdings Inc., 605 F. Supp. 2d 26, 46 (D.D.C. 2009) ("Upon the showing of a prima facie case, the burden shifts to Defendants to show that traditional economic theories of the competitive effects of market concentration are not an accurate indicator of the merger's probable effect on competition in these markets or that the procompetitive effects of the merger are likely to outweigh any potential anticompetitive effects.").

220. Ramzeen A V, *Facebook Acquisitions – The Complete List (2021)! [Infographic]*, TECHWYSE (Aug. 12, 2021), https://www.techwyse.com/blog/infographics/facebook-acquisitions-the-complete-list-infographic/ [https://perma.cc/LKV7-48EB].

WhatsApp deals.[221] The FTC's initial decisions not to challenge the Instagram and WhatsApp acquisitions have been widely criticized.[222] Documents recently made public have sharpened this criticism by showing that Mark Zuckerberg's strategic reasoning for pursuing the former deal included preventing Instagram from posing a competitive threat to Facebook.[223] Further documentary evidence in the FTC's Facebook complaint demonstrates that the company had similar motives for acquiring WhatsApp.[224] As a result of its serial acquisitions, Facebook now owns three of the top four and four of the top six social networks, measured by worldwide users.[225]

As Facebook's acquisitions illustrate, mergers in the technology space, including those involving social media companies, often feature a platform purchasing an innovative, nascent competitor: Facebook's Instagram acquisition is a prime example.[226] These nascent competitors will have a strategy of differentiation from the incumbent that allows them to attract consumers away from the larger competitor. In a healthy social media market, we would expect to see firms competing on a variety of dimensions, including by creating safer, less addictive products. The Supreme Court long ago recognized that in addition to higher output and lower prices, competition provides incentives to produce safer and higher-quality goods.[227] The Court has observed that "all elements of a bargain—quality, service, safety, and durability—and not just the immediate cost, are favorably affected by the free opportunity to select among alternative offers."[228]

221. *See supra* note 169 and accompanying text.

222. SCOTT MORTON & DINIELLI, *supra* note 214, at 2.

223. *See, e.g.*, E-mail from Mark Zuckerberg to Employee (Apr. 9, 2021, 10:51 PDT), https://judiciary.house.gov/uploadedfiles/0006334000063341.pdf [https://perma.cc/QX2J-RJ4C]. The House Committee on the Judiciary published email threads between Mark Zuckerberg and employees as part of its antitrust probe into online platforms. *See Online Platforms and Market Power*, HOUSE COMM. ON THE JUDICIARY, https://judiciary.house.gov/online-platforms-and-market-power/ [https://perma.cc/U53T-2X9G].

224. *See* Complaint for Injunctive and Other Equitable Relief at 32–39, FTC v. Facebook, Inc., No. 20-cv-03590 (D.D.C. filed Dec. 9, 2020).

225. *Most Popular Social Networks Worldwide as of July 2021, Ranked by Number of Active Users*, STATISA, https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/ [https://perma.cc/DA55-CNND]; *see also* Lina M. Khan, *The Separation of Platforms and Commerce*, 119 COLUM. L. REV. 973, 1001 (2019) ("Through having purchased Instagram and WhatsApp, Facebook now owns the top three, and four of the top eight, social media apps.").

226. C. Scott Hemphill & Tim Wu, *Nascent Competitors*, 168 U. PA. L. REV. 1879, 1880 (2020) ("Government enforcers have expressed interest in protecting nascent competition, particularly in the context of acquisitions made by leading online platforms. However, enforcers face a dilemma. While nascent competitors often pose a uniquely potent threat to an entrenched incumbent, the firm's eventual significance is uncertain . . . .").

227. Nat'l Soc'y Pro. Eng'rs v. United States, 435 U.S. 679, 695 (1978) ("The Sherman Act reflects a legislative judgment that ultimately competition will produce not only lower prices, but also better goods and services.").

228. *Id.*

Indeed, competition based on safety innovation is a familiar aspect of many markets. For years, Volvo's competitive advantage in the automobile industry was its reputation for safety.[229] Apple trumpets its security and privacy protections, which it claims make its products safer to use than those of rivals.[230] The Disney Channel positions itself as offering more wholesome child-friendly content than many competing services.[231] There is even a history of safety competition in the tobacco markets, with firms innovating to produce less harmful cigarettes and other, safer types of tobacco products.[232] The popularity of Consumer Reports and other product review services is fueled in part by consumer demand for comparative safety ratings.[233]

The Horizontal Merger Guidelines recognize the importance of innovation and product variety. They explain that while enhanced market power often results in higher prices, it can also lead to nonprice consumer harms, "including reduced product quality, reduced product variety, reduced service, or diminished innovation."[234] The Guidelines specifically state that the enforcement agencies "may consider" whether a proposed transaction will "diminish innovation competition."[235] Nonetheless, in many merger cases, the enforcement agencies rely primarily on claims that the transaction will result in higher prices and lower output, with reduced innovation mentioned only as a

229. *See Volvo Safety Vision – Zero Accidents*, VOLVO, https://www.volvogroup.com/en-en/about-us/traffic-safety/safety-vision.html [https://perma.cc/7NH3-PRWQ].

230. *Privacy*, APPLE, https://www.apple.com/privacy/ [https://perma.cc/58E6-YW66] ("Privacy is a fundamental human right. At Apple, it's also one of our core values."). Apple states that it designs its products "to protect your privacy and give you control over your information." *Id.* ("It's not always easy. But that's the kind of innovation we believe in.").

231. *See, e.g.*, Reece Rogers & Sunny Chanel, *All the New Kids' Shows You Can Watch on Disney Plus—from 'Monsters at Work' to 'Mickey Mouse Clubhouse*,' BUS. INSIDER (July 7, 2021, 4:49 PM), https://www.businessinsider.com/kids-shows-disney-plus [https://perma.cc/X5WB-K9HW] (noting that the Disney Plus streaming service offers a "huge amount of children-friendly programming").

232. Crane, *supra* note 196, at 390 ("All of the major tobacco companies are reportedly working [on] or test marketing products that could reduce different harms of tobacco consumption."). In 2019, the FDA for the first time categorized eight smokeless tobacco products as presenting "modified risk." Press Release, U.S. Food & Drug Admin., FDA Grants First-Ever Modified Risk Orders to Eight Smokeless Tobacco Products (Oct. 22, 2019), https://www.fda.gov/news-events/press-announcements/fda-grants-first-ever-modified-risk-orders-eight-smokeless-tobacco-products [https://perma.cc/53V6-S8W8]. This order allowed Swedish Match to market its smokeless tobacco products with the claim that using them "instead of cigarettes puts you at lower risk" of cancer, heart disease, and other serious ailments. *Id.*

233. *See What We Do*, CONSUMER REPS., https://www.consumerreports.org/cro/about-us/what-we-do/index.html [https://perma.cc/2AZM-MNDN] ("[C]onsumers continue to rely on us to shine a trusted light on the shifting landscape of the marketplace—and ensure that rapid innovation and consumer safety go hand in hand.").

234. MERGER GUIDELINES, *supra* note 173, at 2.

235. *Id.* at 23.

secondary effect or neglected altogether.[236] In digital markets, this approach would be a mistake given the extremely important role of innovation and quality in consumer welfare. Anticompetitive innovation effects are often critical, and they should play a central role in merger litigation.

These points are particularly relevant in social media markets. With the knowledge that social media is addictive and can cause significant mental health harms, especially in children, consumers are likely to want offerings that are less addictive and less harmful than current social media platforms. In a competitive market, some firms likely would vie for that demand by offering safer social media experiences. This might mean innovating by designing a user interface that promotes mental health. For example, a platform could offer features that limit the amount of social media a user can consume in a given session or day. Alerts notifying users (or users' parents) of the amount of time they have spent on a platform and interfaces that eliminate infinitely scrolling pages that continually direct the user to new content are examples of safety improvements that would increase users' wellbeing. Firms also might compete to make their products less harmful by eliminating "likes" and content that tends to harm users' mental health.[237]

One innovative social media company, TikTok, is already competing on consumer safety by taking steps to make its platform less addictive and less harmful. In February 2019, TikTok added a Screentime Management tool to help users limit the amount of time they spend on the platform each day,[238] and in 2020, it introduced additional safety measures: "Family Safety Mode" and "Screentime Management in Feed."[239] Family Safety Mode allows parents to manage their children's "Digital Wellbeing" by limiting the amount of time they can use TikTok each day and restricting inappropriate content.[240] With Screentime Management in Feed, TikTok partnered with popular "creators" to produce videos that appear in users' feeds reminding them to "be aware of the time they spend on TikTok and encouraging them to consider taking some time

236. Richard J. Gilbert & Steven C. Sunshine, *Incorporating Dynamic Efficiency Concerns in Merger Analysis: The Use of Innovation Markets*, 63 ANTITRUST L.J. 569, 572 (1995) ("Antitrust analysis typically does not dwell on the nonprice aspects of competition.").

237. *See* Jamie Leventhal, *How Removing 'Likes' from Instagram Could Affect Our Mental Health*, PBS NEWS HOUR (Nov. 25, 2019, 4:38 PM), https://www.pbs.org/newshour/science/how-removing-likes-from-instagram-could-affect-our-mental-health [https://perma.cc/WCY6-SG2D] (noting that Instagram's pilot program "to remove visible likes from the platform . . . might improve mental well-being").

238. *See* Cormac Keenan, *Introducing Family Safety Mode and Screentime Management in Feed*, TIKTOK (Feb. 19, 2020), https://newsroom.tiktok.com/en-gb/family-safety-mode-and-screentime-management-in-feed [https://perma.cc/WCY6-SG2D] ("In April 2019 we introduced Screen Time Management to help people set limits for how long they spend on TikTok each day . . . .").

239. *Id.*

240. *See id.*

out."[241] In announcing these features, TikTok stated that, "[a]s part of our commitment to safety, the wellbeing of our consumers is incredibly important to us."[242] Industry analysts noted that these initiatives "could help set the company apart from the competition."[243] Perhaps due to this increased safety competition or public and governmental pressure, Facebook and Instagram recently have taken certain similar measures to protect their users, including by offering them the option to remove "like" counts from their feeds.[244]

In addition to adding in-app safety features, firms could employ business models that change incentives to protect users' mental health. Employing a subscription model to generate revenue rather than relying on advertising would eliminate the financial incentive to keep users on the platform for more time while sharpening the incentive to provide a high-quality user experience. In general, in a market where consumers have choices, companies would expend resources to innovate in ways that attract them, one of which is likely to be platform safety.

In short, a more interventionist merger regime in the social media markets (combined with aggressive Section 2 enforcement, discussed below[245]) would give new competitors space to develop. Competition holds out the possibility that some firms will choose to differentiate by creating less addictive, safer offerings, as we have seen with Volvo, Apple, and the Disney Channel. We recognize that it is possible that increased competition could spark a "race to the bottom" instead. In this scenario, rivals would vie to keep users on their sites as long as possible to increase advertising revenue. Rather than competing on safety and quality, firms would compete on quantity and would lower quality (by offering a more addictive, more harmful product). Output of harmful social media would rise as the market became more competitive, and no competitor would choose to differentiate into the safety segment. While this is certainly a risk of increased merger enforcement in markets for addictive products, a dominant firm also has an incentive to create addiction to drive advertising revenue. We contend that increased competition will make it much more likely than the status quo that some firms will pursue a safety-based business model.

241. *Id.*

242. *Id.*

243. Daniel Golightly, *TikTok Family Safety, Digital Wellbeing Features Go Global*, ANDROID HEADLINES (Apr. 17, 2020), https://www.androidheadlines.com/2020/04/tiktok-expands-family-safety-digital-wellbeing-features-global.html [https://perma.cc/B35T-NHRU].

244. *See* Tom Warren, *You Can Now Hide Like Counts on Instagram and Facebook*, VERGE (May 26, 2021), https://www.theverge.com/2021/5/26/22454428/facebook-instagram-hide-like-counts-feature-now-available [https://perma.cc/A24C-Y4QY] (quoting an Instagram spokesperson as stating that "[w]e tested hiding like counts to see if it might depressurize people's experience on Instagram . . . . What we heard from people and experts was that not seeing like counts was beneficial for some, and annoying to others, particularly because people use like counts to get a sense for what's trending or popular, so we're giving you the choice").

245. *See infra* notes 250–59 and accompanying text.

The nuts and bolts of a Section 7 case would change under our proposed approach, but not dramatically. Plaintiffs would still offer evidence of market shares and market concentration, and enforcement would be appropriate only if the relevant market is concentrated. But rather than focusing primarily on potential output effects, plaintiffs' theory of harm (and the court's attention) should be on innovation and product-variety effects as well as on consumer surplus, taking into account the addictive nature of the product. Scott Hemphill and Tim Wu contend that despite the uncertainty that often surrounds nascent, innovative competitors, the "risk of lost innovation strongly tips the balance in favor" of merger enforcement.[246] The potential public health consequences of social media mergers raise the stakes and strengthen the argument for intervening in transactions that might eliminate an innovative competitor. Therefore, if the enforcement agencies can demonstrate that the target is an innovator that competes on quality—one dimension of which may currently, or in the future, be protecting mental health—that should be sufficient to establish their theory of competitive harm. Defendants should be able to overcome this showing only if they can provide compelling evidence of an increase in consumer welfare. This could arise from specific beneficial changes in usage, merger-specific safety improvements, or other like benefits. Evidence that a merger will simply increase total user engagement does not show that consumer welfare will increase—indeed perhaps the opposite—so it should not be sufficient to overcome the prima facie case in the social media space.

Merging parties often will attempt to counter the government's prima facie case by arguing that entry of new rivals is likely to occur and will be sufficient to overcome the merger's potential anticompetitive effects.[247] Social media's addictive qualities should affect this analysis as well. Digital monopolists tend to operate in markets featuring high barriers to entry.[248] These

246. Hemphill & Wu, *supra* note 226, at 1890.

247. *See, e.g.*, United States v. Waste Mgmt., Inc., 743 F.2d 976, 981 (2d Cir. 1984) (recounting defendants' argument that the presumption of competitive harm from a merger resulting in a nearly fifty percent share of a relevant market "is rebutted by the fact that competitors can enter the [relevant market] with such ease that the finding of a 48.8% market share does not accurately reflect market power"). Defendants prevailed on this argument. *Id.* at 983 ("[W]e believe that entry into the relevant product and geographic market by new firms or by existing firms in the Fort Worth area is so easy that any anti-competitive impact of the merger before us would be eliminated more quickly by such competition than by litigation."); *see also* MERGER GUIDELINES, *supra* note 173, at 28 ("As part of their full assessment of competitive effects, the Agencies consider entry into the relevant market. The prospect of entry into the relevant market will alleviate concerns about adverse competitive effects only if such entry will deter or counteract any competitive effects of concern so the merger will not substantially harm customers.").

248. *See* Nikolas Guggenberger, *Essential Platforms*, 24 STAN. TECH. L. REV. 237, 243–44 (2021) ("[E]normous barriers to entry for nascent competitors isolates incumbent platforms from competitive forces that normally constrain market power.").

barriers to entry are often the result of a platform's network effects.[249] The more users Facebook has, the more valuable the network is to them. The same is true for Google search, Uber, and other digital businesses. Addiction is likely to compound these network effects. Addicted consumers are even less likely to switch to a new competitor because they do not want to lose the pleasure and rewards of the incumbent. Courts therefore should be especially wary of arguments that entry in social media markets will be sufficient to cancel out a merger's anticompetitive impact.

Should rivals emerge offering attractive (perhaps less addictive and safer) social media products, they would pose a serious threat to the dominant social media business model. If the incumbent is unable to acquire the nascent competitive threat, it may attempt to protect its market power by trying to exclude its smaller competitors. Or—in a familiar scenario—incumbent firms will engage in a combination of serial acquisitions and anticompetitive conduct designed to maintain their market power.[250] Enforcers can reach this pattern of conduct under Section 2 of the Sherman Act.[251]

Section 2 prohibits the unlawful acquisition or maintenance of a monopoly.[252] While the typical Section 2 case involves business conduct such as refusals to deal or exclusive dealing, Section 2 also applies to individual acquisitions, serial acquisitions, and any combination of acquisitions and other conduct that leads to unlawful monopoly acquisition or maintenance.[253]

In the technology markets, dominant firms have used a variety of strategies to maintain their market power. The government's case against Microsoft in the 1990s provides a leading example of this mixture of conduct,

249. *See* John M. Newman, *Antitrust in Digital Markets*, 72 VAND. L. REV. 1497, 1514 (2019) ("Network effects often constitute a particularly salient barrier to entering digital markets.").

250. *See* SCOTT MORTON & DINIELLI, *supra* note 214, at 20–27 (describing Facebook's anticompetitive acquisitions and conduct).

251. *See, e.g.*, BRFHH Shreveport, LLC v. Willis Knighton Med. Ctr., 176 F. Supp. 3d 606, 619 (W.D. La. 2016) ("Courts continue to hold that acquisitions can give rise to anticompetitive conduct for the purposes of a section 2 claim."); First Amended Complaint for Injunctive and Other Equitable Relief, FTC v. Facebook, Inc., No. 20-cv-03590 (D.D.C. filed Aug. 19, 2021) (alleging that Facebook, "through its course of conduct that includes both anticompetitive acquisitions and its anticompetitive conditional dealing practices," violated Section 2 of the Sherman Act).

252. *See* United States v. Grinnell Corp., 384 U.S. 563, 570–71 (1966) ("The offense of monopoly under § 2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.").

253. *See id.* at 576 (describing "unlawful and exclusionary practices" with which defendant achieved its monopoly, including a series of acquisitions, restrictive agreements, and certain pricing practices); *see also* Caribbean Broad. Sys., Ltd. v. Cable & Wireless PLC, 148 F.3d 1080, 1087 (D.C. Cir. 1998) ("'Anticompetitive conduct' can come in too many different forms, and is too dependent upon context, for any court or commentator ever to have enumerated all the varieties.").

designed in that instance to protect Microsoft's operating system monopoly.[254] Lina Khan has argued that Amazon has engaged in a pattern of exclusionary conduct and strategic acquisitions to establish and then maintain its dominance in various e-commerce markets.[255] Facebook also has employed a pattern of strategic acquisitions and exclusionary conduct.[256]

A Section 2 plaintiff must prove that the defendant has monopoly power in a relevant market and has engaged in exclusionary conduct that harmed competition.[257] By successfully carrying this burden, the plaintiff establishes a prima facie case, at which point the defendant will have the opportunity to offer procompetitive justifications for its conduct.[258] If the defendant offers such justifications, the plaintiff either must rebut them or show that the anticompetitive harm stemming from the defendant's conduct outweighs any procompetitive effect.[259]

The two points made above on the impact of social media's addictive qualities on merger analysis apply also in the monopolization context. Because enhanced innovation and product variety increase the chances that consumers will be able to choose safer social media offerings, enforcers and courts should focus their attention on exclusionary conduct that would eliminate innovative firms, whether those innovators are current or potential future competitors of the dominant incumbent. A pattern of strategic acquisitions and exclusionary conduct against nascent, innovative rivals should be sufficient to establish a prima facie Section 2 case.

Further, a Section 2 defendant in the social media space should not be able to overcome a prima facie case of competitive harm by offering evidence of efficiencies that result only in higher output, without showing that the output change increases consumer welfare. As in the merger setting, evidence that some general measure of user engagement has increased does not prove that consumer welfare has gone up. Such increased user engagement might come

254. *See* United States v. Microsoft Corp., 253 F.3d 34, 58 (D.C. Cir. 2001) ("[T]he District Court held that Microsoft had violated § 2 by engaging in a variety of exclusionary acts . . . to maintain its monopoly.").

255. Lina M. Khan, *Amazon's Antitrust Paradox*, 126 YALE L.J. 710, 755–83 (2017).

256. *See* SCOTT MORTON & DINIELLI, *supra* note 214, at 24; First Amended Complaint for Injunctive and Other Equitable Relief at 4, FTC v. Facebook, Inc., No. 20-cv-03590 (D.D.C. filed Aug. 19, 2021) ("Facebook developed a plan to maintain its dominant position by acquiring companies that could emerge as or aid competitive threats . . . . Facebook buttressed its acquisition strategy by implementing and enforcing a series of anticompetitive conditional dealing policies that pulled the rug out from under firms perceived as competitive threats.").

257. *Grinnell Corp.*, 384 U.S. at 570–71; *Microsoft Corp.*, 253 F.3d at 58 ("[T]o be condemned as exclusionary, a monopolist's act must have an 'anticompetitive effect.' That is, it must harm the competitive process and thereby harm consumers. In contrast, harm to one or more *competitors* will not suffice.").

258. *Microsoft Corp.*, 253 F.3d at 59.

259. *Id.*

from already addicted users spending even more time on a platform, rendering them worse off. So, when weighing harm to a nascent innovator against increased output from a social media monopolist, courts should find that the balance favors liability unless the defendant can show that its conduct actually increased consumer welfare.

CONCLUSION

Social media's addictive and harm-producing characteristics pose special analytical challenges for antitrust courts and enforcers. In both the merger and Section 2 settings, antitrust enforcement must both move forward by utilizing modern behavioral economics and return to its roots by directly weighing consumer welfare, not relying on a proxy for it. Because increased consumption of social media may simply reflect low quality and addiction, it need not increase consumer welfare. Just as more OxyContin consumption by addicted users harms consumers, so too does addicts' increased social media consumption. We contend that this insight requires a sharpening of antitrust analysis for social media that focuses on innovation effects and more carefully defines consumer welfare to account for social media's addictive and harmful user impact.

The assumption that more consumption of addictive digital products leads to increased utility is not justifiable based on the medical and economics literature. Therefore, the common "short cut" of using a generalized measure of output as a proxy for consumer welfare fails as a matter of economics. It is not reliable for these goods. In an antitrust enforcement context, the impact of specific conduct on consumer welfare is the ultimate measure of interest. If the government has carried its prima facie case, the social media defendant must demonstrate procompetitive efficiencies—efficiencies that increase long-run consumer welfare. Such a defendant might attempt to show that its user interface is not designed to be addictive. Or, it might try to show that its business model does not create any incentive for addiction. A platform could use its own data to demonstrate its conduct's impact on users' behavior, showing changes by type of consumer in different kinds of usage and in amounts of time spent on the platform. This type of analysis would help a court understand the impact of the conduct on consumer welfare.

For many consumers, digital engagement is addictive, and their long-run selves wish to do less of it. For many consumers, digital engagement causes them to purchase products or watch content that they later regret or which causes harm. For many consumers, the online content that digital businesses present to them causes negative emotions such as hate and anxiety that are harmful in and of themselves, but also may be carried into relationships with others. These are harms, not benefits, to increased consumption of social media. In the parlance of antitrust economics, the harms that digital businesses impose

on unwitting consumers lower the quality of the product. When a service declines in quality, that is a harm to consumer welfare. When a "free" service declines in quality due to anticompetitive conduct by a digital business, that is equivalent to an increase in quality-adjusted price, a traditional antitrust harm. Therefore, increased engagement driven by addiction is equivalent to a higher quality-adjusted price for that consumer.

Because courts and enforcers have relatively little experience with enforcement in social media markets, more research and learning about the welfare impact of increased consumption of these kinds of addictive and exploitative products is needed. But we know enough already to conclude that social media's addictive and harmful characteristics should change the way courts and enforcers analyze antitrust claims in these markets.