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## Clearing the Darkened Air: Regulating Dark Patterns as Air Pollution

Michael Rosenbloom

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# Clearing the Darkened Air: Regulating Dark Patterns as Air Pollution

Michael Rosenbloom\*

## ABSTRACT

*Digital platforms and services use exploitative user interfaces known as dark patterns to extract people’s money, data, and time. Current regulations struggle to preserve user autonomy online or ensure a flourishing digital economy against the probabilistic and collective nature of dark patterns. However, other areas of law contain examples of successful regulation of similarly elusive problems. This article takes inspiration from environmental law to examine how dark patterns present a similar problem to air pollution, and outlines regulation based upon the structure of the Clean Air Act.*

*Dark patterns and air pollution share important characteristics: both harm in a probabilistic manner that individuals lack agency to defend against and take similar roles in profit production. Scholars have written about the use of environmental analogies in the data privacy context, but this article is the first to examine their uses for dark patterns specifically. By learning from the significant successes of the Clean Air Act in mitigating the harms of airborne pollutants, this article provides grounds for addressing similarly challenging digital harms.*

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## INTRODUCTION

When an app's design makes it difficult to unsubscribe from a service, when a toggle's design makes it unclear whether you are giving consent to data collection, when a mobile game obscures the real value of the money you spend on in-app purchases, that is a dark pattern.<sup>1</sup> These malicious interfaces seek to extract our money, our time, and our data for private profit. Current regulations have struggled to address the problem, and even defining it properly is a challenge.

This article looks to environmental law as an inspiration for dark patterns regulation. Dark patterns are similar in many important respects to air pollution: the same incentives lead to their production, they harm in similarly probabilistic means, are produced in similarly varied methods, and are unavoidable along similar lines. As such, this article proposes a framework for dark patterns regulation using the Clean Air Act, one of the oldest and most successful environmental laws in this country.

Part I delineates the harms of dark patterns and explains how those harms are greater than the mere deception-based harms commonly used to characterize dark patterns, how dark patterns harm collectively as well as individually, and how these dark patterns mirror air pollutants.

Part II summarizes why the Clean Air Act is a good model for dark patterns regulation, outlines key elements of the Act that can be emulated in dark patterns regulation, and explains why such an Act is necessary to address the problem.

Part III outlines a Clean Patterns Act based on the Clean Air Act that could properly regulate dark patterns. It also addresses some of the most obvious challenges that would be

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1. Sara Morrison, *Dark Patterns, The Tricks Websites Use to Make You Say Yes, Explained*, VOX (Apr. 1, 2021, 11:20 AM), <https://www.vox.com/recode/22351108/dark-patterns-ui-web-design-privacy>.

faced by such an Act, including speech considerations and recent Supreme Court jurisprudence.

## PART I: DARK PATTERN HARMS MIRROR AIR POLLUTION HARMS

### A. WHAT ARE DARK PATTERNS?

Dark patterns have been a tricky concept to define. When the Federal Trade Commission (FTC) held a workshop on dark patterns in 2021, there appeared to be no solid consensus as to an overarching definition of dark patterns, even though most participants could generally determine whether a given user interface (UI) pattern was “dark.”<sup>2</sup>

This article defines dark patterns as having the following three characteristics:

A dark pattern

- 1) is a digital nudge,
- 2) that acts to extract value from the user for a main purpose of private profit,
- 3) and in violation of that user’s reasonable expectations.

#### 1. A dark pattern is a digital nudge.

Dark patterns in this definition form a subcategory of “nudges,” meaning design choices that alter people’s decisions without explicit forcing. Thaler and Sunstein, in their book popularizing the concept, characterize nudges as:

. . . any aspect of the choice architecture that alters people’s behavior in a predictable way without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid. Nudges are not mandates. Putting the fruit at eye level counts as a nudge. Banning junk food does not.<sup>3</sup>

A nudge does not explicitly remove or require options, but the design goal of a nudge is to influence a percentage of users

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2. *Bringing Dark Patterns to Light: An FTC Workshop*, FED. TRADE COMM’N (Apr. 29, 2021, 10:30 AM), <https://www.ftc.gov/news-events/events/2021/04/bringing-dark-patterns-light-ftc-workshop>.

3. RICHARD H. THALER & CASS R. SUNSTEIN, *NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS* 6 (2008).

to do or not do something.<sup>4</sup> For example, nudges can be stickers disclosing the manufacturer's suggested retail price of a used car for price anchoring,<sup>5</sup> or enrolling people in retirement plans by default to overcome choice paralysis.<sup>6</sup>

2. A dark pattern extracts value from a user for profit.

While a nudge acts to alter people's choices and behavior, dark patterns are not designed to benefit the user. The original conception of nudges was that of "libertarian paternalism;" it was hoped that nudges would make people eat healthier diets, exercise more, or save more for retirement, without forcing them to do so.<sup>7</sup> Companies, not governments, most commonly deploy dark patterns, and not for general social benefits. Instead, dark patterns are deployed to "get consumers to part with their money or data."<sup>8</sup> The underlying goal is "to benefit the company at the cost of the user."<sup>9</sup>

Even when a nudge might extract someone's time or save the nudge-r money, the critical difference is that nudges are deployed to benefit the user and greater society, and dark patterns are deployed to extract value for profit.<sup>10</sup> A sticker encouraging employees to use the stairs instead of the elevator might cause them to spend more time climbing stairs and might save money for the company through lower health insurance costs. But the main goal of this nudge is more altruistic than profit maximizing. Dark patterns, on the other hand, are "often unlikely to consider users' interests as an ultimate goal. Instead, they may concentrate on maximizing the company's benefits, primarily financial (e.g., collecting more information about user

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4. Nudges fit into the boundary between freedom and coercion that researchers have found to be an increasing grey zone. See Sonia M. Goltz, *On Power and Freedom: Extending the Definition of Coercion*, 43 PERSP. BEHAV. SCI. 137, 148 (2020).

5. Arden Rowell, *Once and Future Nudges*, 82 MO. L. REV. 709, 715–16 (2017).

6. THALER & SUNSTEIN, *supra* note 3, at 12.

7. THALER & SUNSTEIN, *supra* note 3, at 236–37.

8. FED. TRADE COMM'N, BRINGING DARK PATTERNS TO LIGHT 1 (2022), <https://www.ftc.gov/reports/bringing-dark-patterns-light>.

9. Canvs Editorial, *Why Are Dark Patterns Still Prevalent?*, UX COLLECTIVE (Aug. 12, 2020), <https://uxdesign.cc/dark-patterns-9893291b5850>.

10. Colin M. Gray et al., *The Dark (Patterns) Side of UX Design*, CHI CONF. HUM. FACTORS IN COMPUTING SYS., Apr. 21, 2018, at 1, 8 (dark patterns can be understood as a "set of strategies that can be used by designers to undermine end user value in favor of shareholder value.").

behavior to sell them additional products or target them with personalized advertising).”<sup>11</sup> Designers may try to justify dark patterns as providing benefits to users, but the difference is that dark patterns only do so incidentally as part of the profit-making process.<sup>12</sup>

3. A dark pattern acts in violation of the user’s reasonable expectations.

A dark pattern requires an element of manipulation or deception, and this article groups these ideas together under the term *reasonable expectations*. Brignull’s original definition required that the pattern “ma[de] you do things that you didn’t mean to”<sup>13</sup> and most definitions similarly require going against the wishes of the user in some manner.<sup>14</sup> Dark patterns are coercive, deceptive, or malicious, and mislead users, subvert user intent, or undermine user autonomy.<sup>15</sup> In all cases there is some requirement that the deployer of the dark pattern is not being 100% honest and above-board.

This article uses *violation of reasonable expectations* to cover all these terms to avoid specific phrasing that hinges on deceptive conduct – as will be demonstrated below, dark patterns include designs that do not rely on deception or trickery. This definition uses *reasonable* to allow for situations where nudge designers might want to violate user expectations. For instance, using an opt-out instead of opt-in for organ donor registration<sup>16</sup> is a nudge that might be against people’s expectations. However, reasonableness in this definition has a

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11. Agnieszka Kitkowska, *The Hows and Whys of Dark Patterns: Categorizations and Privacy*, in HUMAN FACTORS IN PRIVACY RESEARCH 173, 174 (Nina Gerber et al. eds., 2023).

12. See e.g., Nina Mujdzic, *Dark Patterns vs. Nudging in UX Design*, ENVATOTUTS+ (Aug. 23, 2023), <https://webdesign.tutsplus.com/dark-patterns-vs-nudging-in-ux-design—cms-107582a>; Sebnem Ozdemir, *Digital Nudges and Dark Patterns: The Angels and the Archfiends of Digital Communication*, 35 DIGIT. SCHOLARSHIP IN THE HUMAN. 417 (2019).

13. DARK PATTERNS, <https://www.deceptive.design/> (last visited Mar. 21, 2024).

14. Arunesh Mathur et al., *What Makes a Dark Pattern . . . Dark?: Design Attributes, Normative Considerations, and Measurement Methods*, CHI CONF. HUM. FACTORS IN COMPUTING SYS., May 7, 2021, at 3–5.

15. *Id.*

16. See Lee Shepherd et al., *An International Comparison of Deceased and Living Organ Donation/Transplant Rates in Opt-in and Opt-out Systems: A Panel Study*, 12 BMC MED., Sept. 24, 2014, at 1.

limit, because otherwise there is the potential for a race-to-the-bottom, as scholars have discussed in the reasonable expectations of privacy context.<sup>17</sup>

4. Not all dark patterns deceive.

Most definitions of the concept focus on the dark part of dark patterns. “Dark” describes the underhanded nature of the design elements, both in that these elements are often hard to perceive, and that they often trick, deceive, or trap users into doing actions they otherwise would not do of their own volition.<sup>18</sup> This focus on deception and trickery has been important enough that Harry Brignull’s topic-defining website [darkpatterns.org](https://darkpatterns.org) rebranded itself as [deceptive.design](https://deceptive.design) and uses “deceptive design” or “deceptive patterns” rather than “dark patterns” to describe the same design choices.<sup>19</sup>

A focus on the act of trickery is instrumentally useful for regulators and advocates seeking to curb dark patterns. Focusing on conduct that is clearly forbidden by existing regulations against fraud and unfair competition makes it easier to enforce both with existing regulations and new ones with existing authority. Section 5 of the FTC Act authorizes the FTC to go after unfair or deceptive practices used in commerce, but the FTC has historically leaned heavily on the deception prong of its Section 5 authority.<sup>20</sup> Although the FTC under Chair Khan has signaled its willingness to more heavily rely on the

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17. Shaun B. Spencer, *Reasonable Expectations and the Erosion of Privacy*, 39 SAN DIEGO L. REV. 843, 844 (2002) (“Societal expectations of privacy fluctuate in response to changing social practices. For this reason, privacy is susceptible to encroachment at the hands of large institutional actors who can control this marketplace by affecting social practices.”).

18. For example, a user interface element that is a disguised advertisement that links to a third-party website when a user clicks on it, relies on deception. See *Disguised Ads*, DECEPTIVE PATTERNS, <https://www.deceptive.design/types/disguised-ads> (last visited Mar. 22, 2024).

19. DARK PATTERNS, *supra* note 13 (“Deceptive patterns (also known as ‘dark patterns’) are tricks used in websites and apps that make you do things that you didn’t mean to, like buying or signing up for something.”).

20. There’s debate over how much the backlash was organic or by the industries themselves, taking over the FTC. See Luke Herrine, *The Folklore of Unfairness*, 96 N.Y.U. L. REV. 431, 433 (2021).



unfairness prong of Section 5,<sup>21</sup> a focus on deception and fraud still makes for a more straightforward case.<sup>22</sup>

However, not all dark patterns rely on deception, and an exclusive focus on deception will not properly address why dark patterns are used. “Deception is thus an important tool in the manipulator’s toolkit, but it is not the only one. While instilling false beliefs is a blunt way of controlling another person’s decision-making process, there are subtler means of shaping a person’s beliefs.”<sup>23</sup> The reason that companies deploy these tricks, and what differentiates dark patterns from just being persuasive technologies<sup>24</sup> or nudges, is to increase profit for the company by extracting something from the user. When Facebook uses misleading buttons to confuse users<sup>25</sup> into assenting to disclosure of personal data, or Amazon designs its interface to make canceling Amazon Music Unlimited<sup>26</sup> as difficult as possible, those actions are done in the service of those companies’ profits, and are accomplished by extracting things of value from users of those companies’ services.<sup>27</sup> A user manipulated by a

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21. *FTC Restores Rigorous Enforcement of Law Banning Unfair Methods of Competition*, FED. TRADE COMM’N (Nov. 10, 2022), <https://www.ftc.gov/news-events/news/press-releases/2022/11/ftc-restores-rigorous-enforcement-law-banning-unfair-methods-competition>.

22. While the Deception prong of the Section 5 test requires that there be conduct that is “misleading or likely to mislead” the expected consumers of the product or service, and that there was some material harm done (often monetary), the Unfairness prong requires not only that there be “substantial injury” but also that the harm was “unavoidable” and that the harms are not outweighed by any positive-to-competition features of the conduct. 15 U.S.C. § 45(n). See also *A Brief Overview of the Federal Trade Commission’s Investigative, Law Enforcement, and Rulemaking Authority*, FED. TRADE COMM’N (May 2021), <https://www.ftc.gov/about-ftc/mission/enforcement-authority>.

23. Susser et al., *Online Manipulation: Hidden Influences in a Digital World*, 4 GEO. L. TECH. REV. 1, 21 (2019).

24. Persuasive technologies have been explicitly defined as being without coercion or trickery. See Timotheus Kampik et al., *Coercion and Deception in Persuasive Technologies*, PROC. 20TH INT’L TR. WORKSHOP 38, 39 (2018).

25. Mark Di Stefano (@MarkDiStef), X (Jan. 6, 2022, 3:36AM), <https://twitter.com/MarkDiStef/status/1479024021953912833>.

26. Isaih Alonzo, *Amazon Prime ‘Dark Pattern’ of Service Cancellation Explained: Why Consumer Groups Think it’s Unfair and Deceptive*, TECH TIMES (Jan. 14, 2021, 11:01 PM), <https://www.techtimes.com/articles/255977/20210114/amazon-prime-dark-pattern-service-cancellation-explained-why-consumer-groups.htm>.

27. See Shane Goldmacher, *How Trump Steered Supporters Into Unwitting Donations*, N.Y. TIMES (Apr. 7, 2021),

dark pattern spends money they otherwise would not by purchasing the deployer's products and services, or gives up information that is then used by the deployer to make money, or spends more time on the deployer's app, leading to more advertising impressions. Defending against a dark pattern also often requires an individual to spend their time wading through menus to find a desired option that is deliberately difficult to find. For example, companies such as Google and Facebook implemented General Data Protection Regulation (GDPR) decision flows that let users accept personalized advertisements with one click but required several clicks or menu navigation to refuse.<sup>28</sup> Thus a user either wastes their time or accedes to the pattern and increases profit for the deployer.

The significant number and scale of non-deceptive dark patterns missed by a focus on the act of trickery requires a focus on the objectives rather than the acts themselves: "Both marketing experts and consumer advocates have long recognized that even truthful disclosures about product quality and characteristics are easy to manipulate to induce consumers to buy; so too with disclosures about the collection, processing, and use of personal information that induce consumers to consent."<sup>29</sup>

Perhaps the most obvious example of a non-deceptive dark pattern is what Brignull terms the "roach motel": you can check in whenever you like, but you can never leave.<sup>30</sup> For any service with a recurring payment or subscription, the act of subscribing is made easy and painless, but the ability to unsubscribe or stop recurring payments is difficult and cumbersome, often requiring phone calls to limited-hours upsellers or other high-effort tasks, whereas signup can be done just through a few clicks on a webpage.<sup>31</sup> This also applies to closing an account on a website -

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<https://www.nytimes.com/2021/04/03/us/politics/trump-donations.html> (donation forms that sign up donors to monthly recurring charges).

28. See James Vincent, *Google Gives Europe a 'Reject All' Button for Tracking Cookies After Fines from Watchdogs*, THE VERGE (Apr. 21, 2022, 9:26 AM), <https://www.theverge.com/2022/4/21/23035289/google-reject-all-cookie-button-eu-privacy-data-laws>.

29. Julie E. Cohen, *Turning Privacy Inside Out*, 20 THEORETICAL INQUIRIES L. 1, 5 (2019).

30. *Hard to Cancel*, DECEPTIVE PATTERNS, <https://www.deceptive.design/types/hard-to-cancel> (last visited Mar. 22, 2024).

31. See, e.g., Kitkowska, *supra* note 11, at 186 (calling this pattern "immortal accounts"); NORWEGIAN CONSUMER COUNCIL, *DECEIVED BY DESIGN*:

although there is some merit to making it difficult to accidentally close an account when doing so will lose the user something irreplaceable, many websites make it similarly as difficult as possible as the unsubscribe methods above. The FTC sought enforcement against ABCMouse, an educational website that required consumers to “click through several pages of promotions and links that, when clicked, directed consumers away from the cancellation path without warning.”<sup>32</sup> Amazon used this pattern to prevent people from canceling their Amazon Prime subscriptions.<sup>33</sup> Other companies may require users to take steps that they might rather avoid, such as requiring them to blame one of two employees for an unsatisfactory experience before being allowed to delete their account.<sup>34</sup>

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HOW TECH COMPANIES USE DARK PATTERNS TO DISCOURAGE US FROM EXERCISING OUR RIGHTS TO PRIVACY 34—39 (2018).

32. FED. TRADE COMM’N, *supra* note 8, at 13–14.

33. NORWEGIAN CONSUMER COUNCIL, YOU CAN LOG OUT, BUT YOU CAN NEVER LEAVE: HOW AMAZON MANIPULATES CONSUMERS TO KEEP THEM SUBSCRIBED TO AMAZON PRIME 15–27 (2021).

34. Olly Browning (@yourolly), X (Apr. 5, 2022, 7:02 AM), <https://twitter.com/yourolly/status/1511313444871487495?s=20&t=gW7FfewNDILR-tzJyL1Pew>.

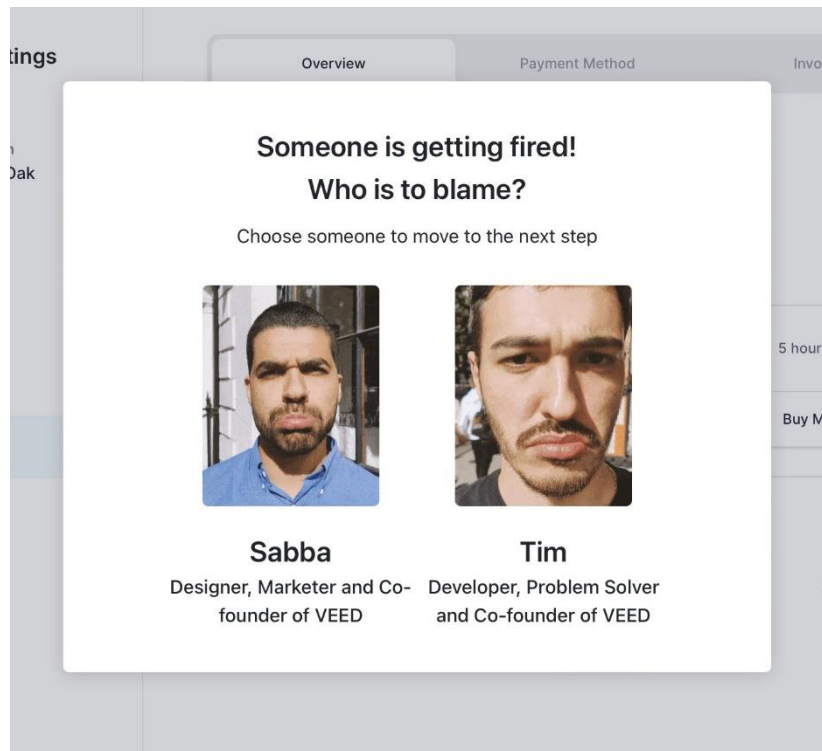


Figure 1: The Blame Pattern.<sup>35</sup>

This pattern has been egregious enough that the FTC has stated a desire to enforce against this, and in their press release they even call it a dark pattern.<sup>36</sup>

Another example of a design decision that can be dark and non-deceptive is reminder notifications. When used as a dark

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35. Image available at *id.*

36. Press Release, Fed. Trade Comm'n, FTC to Ramp Up Enforcement Against Illegal Dark Patterns That Trick or Trap Consumers into Subscriptions (Oct. 29, 2021), <https://www.ftc.gov/news-events/news/press-releases/2021/10/ftc-ramp-enforcement-against-illegal-dark-patterns-trick-or-trap-consumers-subscriptions>. The FTC does not distinguish between unfairness and deception in their enforcement guideline, repeating both that the practice is deceptive and unfair. *Id.* Although the FTC argues that this can be misleading if people are led to assume that it will be easy to unsubscribe, that does not cover the whole issue - that this would be a problem even if companies made it clear that unsubscribing was difficult at the outset. *Id.*

pattern, these fall into a category of nagging<sup>37</sup> and can take the form of abandoned cart notifications, notifications that a user has not opened an app in a while, or updates on what they have missed from social media.<sup>38</sup> These do not necessarily mislead users, yet they absolutely direct them towards further usage, harm their autonomy, and lead to increased profits for the deployers. Although a single reminder may not be significant, in the volumes and concentrations that push notifications appear today, they function as a bombardment against users, guiding them towards the outcomes that the app developers are looking for.<sup>39</sup>

“Sticky” options are another form of dark pattern that does not fall neatly into a deception framework. When users decide on an option that is not the one that the site prefers, the site maintains that option for a limited duration before switching back. One leading example is the ordering of Twitter’s timeline.<sup>40</sup> Twitter moved away from its traditional, reverse-chronological timeline of tweets by those a user follows, and towards a non-chronological timeline with inserted algorithmically recommended tweets. Twitter then took actions to make it more difficult to choose the reverse-chronological timeline instead of the algorithmic timeline.<sup>41</sup> Anything that requires that users take continual action to maintain a user-preferred state, whereas doing nothing draws them along the operator-profitable flow, can wind up as a dark pattern—and

37. *Nagging*, DECEPTIVE PATTERNS, <https://www.deceptive.design/types/nagging> (last visited Mar. 22, 2024).

38. Instagram prompts users to turn on notifications, with users allowed to accept or delay further prompting with a ‘not now’ button. Gray et al., *supra* note 10, at 5. Google shows “don’t show again” in a significantly smaller font, and Uber prompts drivers to hit arbitrary driving goals each day. *Id.*

39. Kunal Rathore, *Push Notification: Dark Patterns*, UX PLANET (Feb. 26, 2021), <https://uxplanet.org/push-notification-dark-patterns-83a599d6598d>.

40. Mitchell Clark, *Twitter Will Stop Forcing You Onto its ‘For You’ Timeline*, THE VERGE (Jan. 20, 2023, 7:03 PM), <https://www.theverge.com/2023/1/20/23564806/twitter-for-you-timeline-update-default-remember-tabs>.

41. Jay Peters, *Twitter Makes it Harder to Choose the Old Reverse-Chronological Feed*, THE VERGE (Mar. 10, 2022, at 3:36 PM), <https://www.theverge.com/2022/3/10/22971307/twitter-home-timeline-algorithmic-reverse-chronological-feed> (“[W]hen I force close and re-open the app when looking at the Latest Tweets column, the Home feed is what Twitter shows first. Twitter spokesperson Shaokyi Amdo said that the Home feed will be pinned first by default ‘for now’ and confirmed there is no way to pin Latest first by default.”).

without necessarily deceiving those users. Default options in general can be dark patterns when they are set in ways that automatically consent to collection of important information.<sup>42</sup>

Digital apps using FOMO (fear of missing out) tactics can also count as non-deceptive dark patterns.<sup>43</sup> Through artificially limiting availability of digital items through flash sales, or even by stating the number of other people watching a physical item in a digital storefront, apps pressure users into impulse purchases far easier than would be possible in an analog



storefront.

Figure 2: Screenshot of mobile game Epic Seven. Upon acquiring a rare character via loot box mechanics, this in-app purchase will become available for six hours, which if purchased would let the player skip some of the lengthy process of leveling up that character.<sup>44</sup>

42. Preselection, DECEPTIVE PATTERNS, <https://www.deceptive.design/types/preselection> (last visited Mar. 23, 2024). See also Goldmacher, *supra* note 27.

43. Fake Urgency, DECEPTIVE PATTERNS, <https://www.deceptive.design/types/fake-urgency> (last visited Mar. 23, 2024).

44. Image available at 2/06 (Thu) Update Content, EPIC SEVEN (Feb. 5, 2020), <https://page.onstove.com/epicseven/global/view/4662182>.

However, the inverse can also be a dark pattern. If an app makes its default user experience extremely tedious, difficult, or otherwise unpleasant, while trumpeting the ease of options that benefit the publisher, that can also count as a non-deceptive dark pattern.<sup>45</sup>

All these user interface design choices and flows can be extremely coercive and exploitative of users, yet do not feature deception or misleading conduct as a necessary component—while many of them will integrate deceptive conduct (other people looking at this item counters are sometimes fabricated),<sup>46</sup> even without such conduct these patterns act in similar ways to the more straightforwardly deceptive conduct and should be considered as part of the same category.

## B. DARK PATTERNS HARM COLLECTIVELY.

Dark patterns harm societies because the constant vigilance necessary to avoid dark patterns is corrosive to human autonomy and conceptions of a flourishing internet.

### 1. Dark Patterns harm human autonomy online.

Dark patterns are terminally corrosive to digital notice-and-choice frameworks, as well as the greater idea of human autonomy on the internet. Believing that people can and should be expected to make individually informed decisions about their online behaviors and that dark patterns should be allowed to proliferate is a massive contradiction, precisely because dark patterns subvert informed consent and reasoned decisions. One of the key weaknesses of notice-and-choice frameworks is indeed that humans do not have infinite capacities to make informed

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45. See *Confirmshaming*, DECEPTIVE DESIGN, <https://www.deceptive.design/types/confirmshaming> (last visited Mar. 23, 2024).

46. *Fake Scarcity*, DECEPTIVE DESIGN, <https://www.deceptive.design/types/fake-scarcity> (last visited Mar. 23, 2024). The UK Competition and Markets Authority has launched enforcement actions against online hotel booking and car rentals. *Online Hotel Booking*, GOV.UK (Sept. 13, 2019), <https://www.gov.uk/cma-cases/online-hotel-booking>; *Car Rental Intermediaries*, GOV.UK (Mar. 29, 2018), <https://www.gov.uk/cma-cases/car-rental-intermediaries> (last visited Mar. 23, 2024). See also Emily Stewart, *The Psychological Traps of Online Shopping, Explained*, VOX (Dec. 15, 2022), <https://www.vox.com/the-goods/23505330/online-shopping-ecommerce-tricks-dark-patterns-deceptive-design>.

decisions.<sup>47</sup> Dark patterns are designed to prey upon human cognitive limitations.

Human autonomy is critical to the current structure of the internet.<sup>48</sup> Laws and norms expect internet users generally to exercise control over their own actions, to gain knowledge about their options as producers and consumers, and to make decisions based on that knowledge.<sup>49</sup> Given those expectations, companies are provided significant leeway as to their allowed actions. The FTC in 1998 argued that notice and choice were two critical components of fair information practices.<sup>50</sup>

One important exception is children. Because children are developing information-gathering and processing skills as they grow, the law often shields them from the consequences of decisions they make as children.<sup>51</sup> Laws like the Children's Online Privacy Protection Act (COPPA) enact additional protections for children beyond those normally granted to adults.<sup>52</sup> If children are unable to properly make decisions, then all the transparency in the world does not protect them,<sup>53</sup> especially when companies deliberately target them with dark patterns.<sup>54</sup>

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47. Notice-and-choice is heavily criticized in the privacy realm, as users have too many privacy policies to read and cannot easily understand those policies that they do read. Joel R. Reidenberg et. al., *Privacy Harms and the Effectiveness of the Notice and Choice Framework*, 11 I/S: J.L. & POL'Y FOR INFO. SOC'Y 485, 491–92 (2015).

48. See Richard Warner & Robert H. Sloan, *Beyond Notice and Choice: Privacy, Norms, and Consent*, 14 J. HIGH TECH. L. 370 (2014).

49. *Id.* at 379.

50. FED. TRADE COMM'N, PRIVACY ONLINE: A REPORT TO CONGRESS ii (1998).

51. In the FTC's words, Congress recognized "that younger children are particularly vulnerable to overreaching by marketers and may not understand the safety and privacy issues created by the online collection of personal information." *Complying With COPPA: Frequently Asked Questions*, FED. TRADE COMM'N, <https://www.ftc.gov/business-guidance/resources/complying-coppa-frequently-asked-questions> (last visited Mar. 23, 2024).

52. *Id.*

53. COPPA requires verifiable parental consent for data collection on children, a more onerous hurdle than standard consent requirements, and provides substantive protections by forbidding conditioning the granting of a benefit on a child's disclosure of unnecessary information. 16 C.F.R. §§ 312.5, 312.7 (2013).

54. The FTC in late 2022 settled with Epic Games, publisher of the popular game Fortnite, for violations of COPPA and for use of dark patterns that resulted in unwanted charges. Press Release, Fed. Trade Comm'n, Fortnite Video Game Maker Epic Games to Pay More Than Half a Billion Dollars over



The issue with dark patterns is that they directly attack the idea of human autonomy.<sup>55</sup> Dark patterns subtly or not-subtly alter the choice architecture of exposed users.<sup>56</sup> Nudges and all forms of persuasive technology are designed so that, on large scales, they meaningfully alter human behavior, and do so in a way that is not easily defended against via additional information-gathering.

Humans do not have infinite rational decision-making abilities.<sup>57</sup> Humans use heuristics and other cognitive shortcuts to make decisions without having to expend an unsustainable amount of brainpower on each decision—to not use heuristics is to not get everything done in a day that needs to be done.<sup>58</sup> Dark patterns prey upon these heuristics.<sup>59</sup> To defend oneself against these patterns, the most common defense is to fully cognitively focus on each decision, but that is unsustainable, and dark patterns often occur before decisions that would not normally trigger such vigilance.<sup>60</sup>

All internet users find themselves in a situation where human autonomy is threatened, and therefore the primary reason for not regulating tech companies more stringently—that a lack of regulation is not harmful on the whole and humans can make good decisions to preserve their autonomy<sup>61</sup>—goes out the

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FTC Allegations of Privacy Violations and Unwanted Charges (Dec. 19, 2022), <https://www.ftc.gov/news-events/news/press-releases/2022/12/fornite-video-game-maker-epic-games-pay-more-half-billion-dollars-over-ftc-allegations>.

55. Susser et al., *supra* note 23, at 35 (“Beyond the direct, material harms that result from manipulation, . . . the deeper harm is infringement of individual autonomy. Since autonomy lies at the normative core of liberal democracies, the harm to autonomy rendered by manipulative practices extends beyond personal lives and relationships, reaching public institutions at a fundamental level.”).

56. Susser et al., *supra* note 23, at 38.

57. See generally Herbert A. Simon, *Theories of Bounded Rationality*, in DECISION AND ORGANIZATION 161 (B. McGuire & Roy Radner eds., 1972).

58. Susser et al., *supra* note 23, at 21.

59. Susser et al., *supra* note 23, at 22.

60. Susser et al., *supra* note 23, at 44.

61. See Elizabeth Banker, Comments of Internet Association in re: Hearings on Competition and Consumer Protection in 21st Century: Consumer Privacy (May 30, 2019), <https://www.regulations.gov/comment/FTC-2018-0098-0089>. See also Tim Day, U.S. Chamber of Commerce Comment re: Hearings on Competition and Consumer Protection in the 21st Century (May 30, 2019), <https://www.regulations.gov/comment/FTC-2018-0098-0083>; Thomas Lenard, Comments filed with the Federal Trade Commission Regarding Hearing on

window.<sup>62</sup> Research has shown that digital forms of manipulation can be significantly more powerful than analog forms.<sup>63</sup> Furthermore, the increased choice and availability of options and information paradoxically favors increased use of heuristics.<sup>64</sup>

Concepts from relational autonomy support the idea that platforms can harm their users even when the platforms only use dark patterns. Relational autonomy views human autonomy as necessarily bound up with the relations that humans have with other people and with the institutions that they interact with.<sup>65</sup> Rather than positing autonomy as the ability for rational individuals to make decisions, relational autonomy situates that ability within social contexts and understands that those decisions are limited and shaped by those contexts.<sup>66</sup> A person does not give up their autonomy when they depend upon an institution for critical needs.<sup>67</sup>

As an example, medical informed consent under traditional notions of autonomy requires only the provision of full and accurate information. Relational autonomy theorists would argue that informed consent would also require positive assistance in the decision-making process to build and supplement the relationship between a patient and their caregivers.<sup>68</sup> In the same way, dark patterns harm human

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“Competition and Consumer Protection in the 21st Century” (Dec. 19, 2018), <https://www.regulations.gov/comment/FTC-2018-0098-0037>.

62. Autonomy as a justification for laws like privacy protections is not without controversy. See Cohen, *supra* note 29, at 3; Christie Dougherty, *Every Breath You Take, Every Move You Make, Facebook’s Watching You: A Behavioral Economic Analysis of the Us California Consumer Privacy Act and EU ePrivacy Regulation*, 12 NE. U. L. REV. 629, 648–52 (2020) (focusing specifically on dark patterns).

63. A study of physical vs digital retail “shelf space” found that moving a product between the most and least favored physical retail store shelves resulted in only a decrease of 39% of sales, whereas moving a result from the top to the bottom of the first page of a Google search reduced traffic by up to 85%. Peter O’Loughlin, *Cognitive Foreclosure*, 38 GA. ST. U. L. REV. 1097, 1128–29 (2022).

64. *Id.* at 1126–27.

65. JENNIFER NEDELSKY, *LAW’S RELATIONS: A RELATIONAL THEORY OF SELF, AUTONOMY, AND LAW* 40 (2011).

66. *Id.* at 40–41.

67. Yael Braudo-Bahat, *Towards A Relational Conceptualization of the Right to Personal Autonomy*, 25 AM. U. J. GENDER SOC. POL’Y & L. 111, 140 (2017).

68. *Id.* at 143.

autonomy even in cases where no clear-cut deception is involved because dark patterns are fundamentally not in the interests of the users.

Therefore, even if one accepts that the styles of informed consent that currently dominate the internet are flawed, dark patterns continue to harm.

## 2. Dark Patterns harm a flourishing internet.

Dark patterns also more concretely harm economic and social activity both by the creation of this atmosphere of vigilance and by the creation of worse interfaces and design.

An economy wherein most parties are hesitant to participate out of a reasonable fear of being nickel-and-dimed is not a healthy one.<sup>69</sup> While nudges are supposed to be nonobvious and nonforcing, that does not mean that users cannot tell when they are getting bamboozled.<sup>70</sup> People cautiously engaging in a digital economy because they need to do so to survive rather than for the benefits that it can provide is not a recipe for a flourishing internet—certainly not the kind of utopian internet promised by the visionaries of the 1990s.<sup>71</sup> A person constantly on the watch for threats is not a person easily able to take advantage of opportunities.<sup>72</sup>

### C. THESE PERSONAL AND COLLECTIVE HARMS MIRROR THOSE OF AIR POLLUTION.

Dark patterns are like anthropogenic air pollution. While obviously not physically alike, they share significant characteristics that can be used for similar regulatory approaches.

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69. When a sector of the economy is rife with fraud, even non-fraudulent companies can suffer reputational harms and financial losses, and in the worst cases, “widespread fraud can result in loss of trust in an industry as a whole.” INT’L PUB. SECTOR FRAUD F., GUIDE TO UNDERSTANDING THE TOTAL IMPACT OF FRAUD 20 (2020).

70. These incentives could lead even to unintentionally created exploitative design. See Lauren E. Willis, *Deception by Design*, 34 HARV. J.L. & TECH. 115, 159 (2020).

71. See, e.g., John Perry Barlow, *Declaration of Independence of Cyberspace*, ELEC. FRONTIER FOUND., <https://www.eff.org/cyberspace-independence/> (last visited Mar. 23, 2024).

72. See Susser et al., *supra* note 23, at 44. Furthermore, privacy harms can also easily cause emotional distress. See Danielle Keats Citron & Daniel J. Solove, *Privacy Harms*, 102 B.U. L. REV. 793, 816 (2022).

First, both air pollution (at least, that which is commonly regulated by the Clean Air Act) and dark patterns are associated with human economic activity, and share similar production incentives.

Human economic activity creates air pollution when factories, mills, plants, vehicles, and other point or mobile sources emit particulates or gases into the atmosphere.<sup>73</sup> These emissions are negative externalities,<sup>74</sup> causes harms to others that the emitters do not directly engage with, and therefore are not accounted for when doing a direct cost-benefit analysis. Much of environmental law focuses on requiring emitters to take the negative externalities into account to ensure that they are incentivized to curb emissions rather than to emit as much as they want.

Similarly, human digital economic activity creates dark patterns when app developers deliberately or accidentally create user interfaces that exploit users to maximize profit. Air pollution is generally a side effect of industrial processes, so as the scale of those processes grows, so does the air pollution, which means that profits and emissions are often correlated. Dark patterns, however, are not side effects in this analogy, because it is the deployment of those patterns that directly increases profits. App owners benefit directly from further dark pattern deployment, more directly than factory owners benefit from increased emissions.

Second, both air pollution and dark patterns harm via probabilistic means and operate with a collective rather than individual character. Any individual person exposed to pollutants may or may not develop a disease or condition because of that exposure, but on a population scale, increased rates of illnesses and deaths are easily visible. In a similar manner, any individual may resist or be exploited by a dark pattern, but on a macro level the increased revenues, engagement, and data-sharing can be analyzed. Like email spam and phishing attacks, dark patterns easily scale—once developers spend the time and resources creating the patterns, deployment happens naturally

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73. The Clean Air Act, 42 U.S.C. §§ 7401(a)(2)–(3).

74. Dennis D. Hirsch, *Is Privacy Regulation the Environmental Law of the Information Age?*, in *PRIVACY AND TECHNOLOGIES OF IDENTITY: A CROSS-DISCIPLINARY CONVERSATION* 239, 243 (Katherine Strandburg & Daniela Stan Raicu eds., 2005) (“Negative externalities are costs of an activity that are borne, not by the actor herself, but by others in society.”).

and largely without cost as users use the service.<sup>75</sup> And like spam and phishing, dark patterns can be profitable to developers even with a very low success rate. A pattern leading to a verifiable 0.01% increase in \$5 in-app purchases may sound small, but across even just ten million users, 0.01% extra is one hundred thousand extra transactions and half a million dollars of extra revenue. Therefore, if it cost less than \$500K to deploy that pattern, the incentive is for companies to do it.<sup>76</sup>

Third, both air pollution and dark patterns are more harmful in higher concentrations, but some types are harmful even at low doses. While there is an argument that a too-high concentration of dark patterns will result in defensive behavior (or numbness as with excessive advertising), that defensive behavior takes effort and concentration, which is not sustainable for users as a constant expenditure. Similarly, while heavily polluted air leads to people wearing masks and not going outside to reduce the harms done, those defensive measures are also costs.<sup>77</sup>

Fourth, the emitters of air pollution and the deployers of dark patterns are multifarious and varied in their character. Sources of air pollution come in all shapes and sizes: from large centralized, capital-intensive factories down to individual suburbanites' gas-powered leaf-blowers.<sup>78</sup> And similarly, apps and services of all sizes and kinds can and do deploy dark patterns, from the largest social networks to even small-userbase and whale-dependent free-to-play mobile games.<sup>79</sup> The solutions which will work to change incentives in centralized, capital-intense emitters/deployers may not be appropriate in other circumstances, and stifling small app development may not be optimal.

Fifth, people at risk of harm cannot, through individual actions, alleviate the harms of either air pollution or dark

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75. See Citron & Solove, *supra* note 72, at 816.

76. See Justin M. Rao & David H. Reiley, *The Economics of Spam*, 26 J. ECON. PERSPS. 87, 99–100 (2012).

77. See generally Citron & Solove, *supra* note 72, at 816.

78. See Tony Dutzik et al., *Lawn Care Goes Electric*, MASSPIRG EDUC. FUND (Oct. 30, 2023), <https://pirg.org/massachusetts/edfund/resources/lawn-care-goes-electric/>; Allyson Chiu, *The Problem with Gas-Powered Leaf Blowers*, WASH. POST (Nov. 5, 2023), <https://www.washingtonpost.com/climate-solutions/2023/11/05/leaf-blowers-fall-environment-health/>.

79. FED. TRADE COMM'N, *supra* note 8, at 3.

patterns. With air pollution, people can wear masks and stay indoors when smog hits, but that does nothing to stop air pollution from harming crops and farm animals and does nothing to increase visibility or change the weather. Similarly, app users can exercise constant vigilance, but cannot do so for their children or elders, and this does nothing to stop the development of more dark patterns. In addition, while dark patterns are technically restricted to the space that the developer controls, this is not a significant restriction. First, the largest tech apps have billions of users, and millions in the United States alone.<sup>80</sup> Second, apps and digital services act outside of their own realms through embedded features and plugins to other services. Embedded tweets, the Facebook tracking pixel, third-party trackers, data brokers—all these show that things created by developers of a single app can have effects on people not currently using the app.<sup>81</sup>

Researchers have already made a connection between privacy law and environmental law in other contexts, finding that environmental law can be a fruitful area of inquiry for regulation of diffuse harms.<sup>82</sup> Furthermore, a focus away from the individuals harmed by dark patterns and towards the general conditions and incentives that produce dark patterns is also mirrored in privacy scholarship.<sup>83</sup> Finally, there is

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80. Stacy J. Dixon, *Most Popular Social Networks Worldwide as of January 2024, Ranked by Number of Monthly Active Users*, STATISTA (Feb. 2, 2024), <https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/>.

81. In the words of Tom Eastman on X, “I’m old enough to remember when the Internet wasn’t a group of five websites, each consisting of screenshots of text from the other four.” Tom Eastman (@tveastman), X (Dec. 3, 2018, 1:28 PM), <https://twitter.com/tveastman/status/1069674780826071040>.

82. See Katrina Fischer Kuh, *Environmental Privacy*, 2015 UTAH L. REV. 1 (2015); Dennis D. Hirsch, *Protecting the Inner Environment: What Privacy Regulation Can Learn from Environmental Law*, 41 GA. L. REV. 1 (2006); A. Michael Froomkin, *Regulating Mass Surveillance As Privacy Pollution: Learning from Environmental Impact Statements*, 2015 U. ILL. L. REV. 1713 (2015); Lauren E. Willis, *Performance-Based Consumer Law*, 82 U. CHI. L. REV. 1309, 1311 (2015), Lauren E. Willis, *Performance-Based Remedies: Ordering Firms to Eradicate Their Own Fraud*, 80 L. & CONTEMP. PROBS. 7 (2017).

83. Cohen, *supra* note 29, at 17 (“Protecting privacy effectively requires willingness to depart more definitively from subject-centered frameworks in favor of condition-centered frameworks—and to refrain from labeling such as offensive because they are ‘paternalistic.’”).

significant research that the remedies for privacy harms can take lessons from environmental law.<sup>84</sup>

That's not to say that air pollution can be wholly analogized to dark patterns—there are of course meaningful differences.

First and probably most important, air pollution is more fungible than dark patterns. One factory's NOx emissions are identical to another factory's NOx emissions because NOx is chemically defined and is a particular thing. While a given emissions source may emit a unique mixture of pollutants, each of those pollutants taken separately are generally fungible with other pollutants of its type.<sup>85</sup>

Second, there are critical differences between physical and digital spaces that make air pollution spread differently than dark patterns. The Bernoulli Equation does not really apply to websites. Air pollution expands outwards from its source and may follow prevailing winds and weather, whereas dark patterns generally appear only where they are deployed. Therefore, physical regionality does not work that well as a measure for characterizing and sectioning dark patterns, and it means that policymakers will need to adapt things like State Implementation Plans<sup>86</sup> and Nonattainment Areas<sup>87</sup> to something more appropriate for dark patterns. In general, the federal-state partnership is going to be less effective in dark patterns than in air pollution.

Third, quantifying the harms are going to be different and sometimes more difficult for dark patterns than for air pollution. Though that is not to say that measuring the concentrations of airborne pollutants is easy, it is a different type of challenge than measuring the presence of dark patterns. The first requires physical science techniques, while the latter requires digital social science techniques. These disciplines operate in different ways, use different tools, and have different paradigms.<sup>88</sup>

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84. JAMES X. DEMPSEY ET AL., *BREAKING THE PRIVACY GRIDLOCK: A BROADER LOOK AT REMEDIES* 19 (2021), <https://www.law.berkeley.edu/wp-content/uploads/2021/04/remedies.pdf>.

85. Though hydrocarbon strings of varying lengths might be the exception, there are still similar behaviors.

86. See 42 U.S.C. § 7407.

87. See 42 U.S.C. 7409.

88. This includes standard social science techniques such as surveys, interviews, and ethnographic studies, but also experiments and big data-reliant methods including content and sentiment analysis. See *generally* NIGEL

PART II: THE CLEAN AIR ACT PROVIDES A SUCCESSFUL  
MODEL FOR REGULATING THESE HARMS

A. THE CLEAN AIR ACT IS A SUCCESSFUL PIECE OF  
ENVIRONMENTAL LEGISLATION THAT HAS RESULTED IN  
SIGNIFICANT ABATEMENT OF AERIAL POLLUTANTS.

A major reason to model dark pattern regulation on the Clean Air Act (CAA), rather than on individual tort models or currently theorized privacy legislation is that the CAA has a record of effectiveness. The CAA has been around in some form for more than fifty years,<sup>89</sup> with significant edits in 1970,<sup>90</sup> 1977,<sup>91</sup> and 1990.<sup>92</sup> It is one of the longest-running environmental regulations in the United States, coming into its modern form right after the National Environmental Policy Act (NEPA),<sup>93</sup> alongside the establishment of the Environmental Protection Agency (EPA) and the start of modern environmental protection regulations.<sup>94</sup>

The CAA has indeed been effective. The EPA states that in the first 30 years of the CAA's passage, the combined emissions of six common pollutants dropped by 78% while economic indicators remained strong.<sup>95</sup> That last bit is critical: the heavy drop in emissions did not cause overall damage to the economy.<sup>96</sup> Furthermore, the EPA found that, even before the 1990

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FIELDING ET AL., THE SAGE HANDBOOK OF ONLINE RESEARCH METHODS (2ed ed., 2016).

89. Clean Air Act of 1963, Pub. L. 88-206, 77 Stat. 392 (1963).

90. Clean Air Act Amendments of 1970, Pub. L. 91-604, 84 Stat. 1676 (1970).

91. Clean Air Act Amendments of 1977, Pub. L. 95-95, 91 Stat. 685 (1977).

92. Clean Air Act Amendments of 1990, Pub. L. 101-549, 104 Stat. 2399 (1990).

93. National Environmental Policy Act of 1969, Pub. L. 91-190, 83 Stat. 852 (1970).

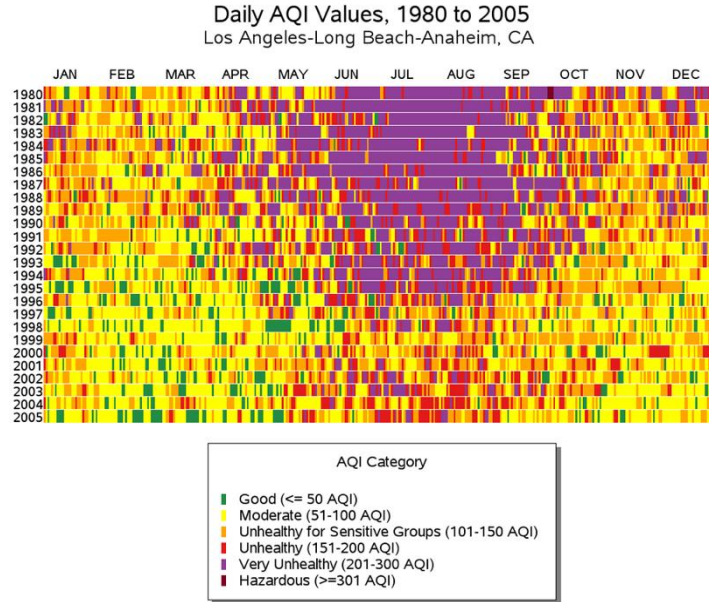
94. *Summary of the Clean Air Act*, EPA (Sept. 6, 2023), <https://www.epa.gov/laws-regulations/summary-clean-air-act>.

95. *Progress Cleaning the Air and Improving People's Health*, EPA (May 1, 2023), <https://www.epa.gov/clean-air-act-overview/progress-cleaning-air-and-improving-peoples-health>.

96. There is an argument that the CAA led to substantial offshoring of emissions via outsourced manufacturing. The literature on this is mixed, but at least some research argues that even though significant manufacturing was offshored, imported goods were also becoming cleaner of pollutants. Arik Levinson, *Offshoring Pollution: Is the United States Increasingly Importing Polluting Goods?*, 4 REV. ENV'T ECON. & POL'Y 63, 63 (2010).



Amendments that strengthened the CAA's provisions, the pollution reductions under the original 1970 Act had prevented 205,000 early deaths in 1990 alone.<sup>97</sup> The CAA's provisions have led to significant increases in air quality, especially in regions that were known to have unhealthy levels of smog.<sup>98</sup>



Source: U.S. EPA AirData <<https://www.epa.gov/air-data>>

Generated: July 13, 2022

Note: The PM2.5 monitoring network was phased in between 1999 and 2001 in most areas. Earlier years in this plot do not include PM2.5 data.

Figure 3: Plot of Daily AQI Values for the Los Angeles/Long Beach/Anaheim metro area from 1980 to 2005. Note the virtual disappearance of the consistently purple “Very Unhealthy” AQI levels during the summer months.<sup>99</sup>

Despite requiring that companies often make significant changes to their operations and obtain approval before creating

97. *Progress Cleaning the Air and Improving People's Health*, *supra* note 95.

98. *Air Data – Multiyear Tile Plot*, EPA (Nov. 24, 2023), <https://www.epa.gov/outdoor-air-quality-data/air-data-multiyear-tile-plot>.

Even for regions with less significant AQI issues like the NYC/Newark/Jersey City area, over the same years the same graph shows a significant improvement in overall air quality, with an increasing number of days with “Good” AQI levels. *Id.*

99. Image available at *id.*

new sources of emissions, and even mandating technology which sometimes did not exist at the time of enactment, the CAA did not ruin any of the sectors of the economy that it regulated. Resources for the Future's Looking Back at Fifty Years of the Clean Air Act Working Paper finds that, while indeed some sectors of employment in energy-intensive firms could have declined due to CAA regulatory programs, none of the sectors collapsed, and overall industries regulated by the CAA are not significantly worse off than they were before the regulation.<sup>100</sup> Although political debates often occur over specific sections of the CAA, and aspects of its authority,<sup>101</sup> the Act has successfully mitigated harmful pollutants while maintaining the economy.

Outside experts share the EPA's view that the CAA—though not without its flaws—has been successful at reducing air pollution without excessively harming economic growth. Medical researchers back the EPA's claims of preventing harms to human health.<sup>102</sup> And while environmental groups push the EPA and Congress to go further, many of them also acknowledge that the CAA has been one of the most successful environmental regulations in the United States.<sup>103</sup> A review found that despite the presence of regional differences, the CAA's passage resulted in reduced pollutants even as United States Gross Domestic Product rapidly increased.<sup>104</sup> Even as challenges from climate change, the Supreme Court, and anti-regulatory administrations threaten those emissions reductions, the CAA

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100. Joseph E. Aldy et al., *Looking Back at Fifty Years of the Clean Air Act 18* (Res. for the Future, Working Paper No. 20-01, 2020), [https://media.rff.org/documents/UpdateFifty\\_Years.pdf](https://media.rff.org/documents/UpdateFifty_Years.pdf).

101. The agency's authority to control greenhouse gas emissions has been challenged. See *West Virginia v. EPA*, 597 U.S. 697 (2022), as well as the ability of Congress to grant private rights of action. See *TransUnion LLC v. Ramirez*, 594 U.S. 413 (2021).

102. Daniel S. Greenbaum, *The Clean Air Act: Substantial Success and the Challenges Ahead*, 15 ANNALS AM. THORACIC SOC' 296, 296 (2018).

103. Beth Gardiner, *This Landmark Law Saved Millions of Lives and Trillions of Dollars*, NAT'L GEOGRAPHIC (Dec. 29, 2020), <https://www.nationalgeographic.com/environment/article/clean-air-act-saved-millions-of-lives-trillions-of-dollars>; Shelia Hu, *The Clean Air Act 101*, NAT'L RES. DEF. COUNCIL (Oct. 21, 2022), <https://www.nrdc.org/stories/clean-air-act-101>.

104. Aldy et al., *supra* note 100.

itself is considered an extremely important triumph in the environmental movement.<sup>105</sup>

If one is looking for a regulatory scheme that has meaningfully contributed to lessening the problems which prompted the scheme's creation, the CAA is a great place to look. Importantly, The CAA regulates pollutants that share meaningful similarities with dark patterns.

B. LESSONS FROM THE CAA: EMPIRICAL AGENCY DETERMINATIONS, NATIONAL HARM-BASED STANDARDS FOR NEW AND EXISTING SOURCES, COST-EFFECTIVE AND CUSTOMIZED REMEDIATION, AND CITIZEN SUITS.

1. Overall Structure of the Clean Air Act

The CAA, at 42 U.S.C. 7401 et seq., with its various amendments, is one of the longest and most complex statutes in United States environmental law.<sup>106</sup> As a general matter, the CAA empowers the EPA with the power to regulate air pollutants, the “emissions of which, in [the EPA’s] judgment, cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare.”<sup>107</sup> Health is the first priority, with welfare second.<sup>108</sup> Under the statute, the EPA determines and defines what counts as a harmful air pollutant and sets appropriate levels and standards for acceptable levels of each pollutant in the atmosphere.<sup>109</sup> The most general of these are called the National Ambient Air Quality Standards (NAAQS), for pollutants which arise from diverse sources.<sup>110</sup> When these standards are in place, each state must create a State Implementation Plan (SIP) to achieve those standards.<sup>111</sup> It is important to note that the EPA does not consider any of the economics of remediation when determining the NAAQS, only the hazards that arise from the pollutant

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105. See Christopher Ingraham, *Latest EPA Data Confirms That Air Quality Progress Has Stalled, and in Some Cases is Reversing*, THE WHY AXIS (June 3, 2022), <https://thewhyaxis.substack.com/p/latest-epa-data-confirms-that-air?s=w>.

106. Clean Air Act, 42 U.S.C. §§ 7408–7671q.

107. 42 U.S.C. § 7408(a)(1)(A).

108. 42 U.S.C. § 7409(b).

109. 42 U.S.C. §§ 7408(a)(1–2).

110. 42 U.S.C. § 7409.

111. 42 U.S.C. § 7410.

itself.<sup>112</sup> Cost-benefit analyses are allowed when states and other entities are deciding how best to achieve those standards.<sup>113</sup> States are allowed wide latitude in how to achieve emissions reductions—efforts can include direct regulatory action, technology standards, or market solutions like cap and trade.<sup>114</sup> However, in areas that do not meet the standards set by the NAAQS (non-attainment areas), significant development restrictions can exist for projects that would not conform to the existing SIP.<sup>115</sup> Areas that do meet the NAAQS are still regulated under requirements for the Prevention of Significant Deterioration.<sup>116</sup>

The CAA also grants the EPA the authority to regulate specific emissions sources in addition to its authority to regulate the levels of pollutants generally.<sup>117</sup> For stationary sources like factories or power plants, the agency is authorized to create New Source Performance Standards, uniform technology standards that must be adhered to by future major sources.<sup>118</sup> These apply to existing facilities when they are modified under the New Source Review regulations (although what counts as a modification is hotly litigated).<sup>119</sup> Many levels of technology standards exist, from Best Available Control Technology to Reasonably Available Control Technology to controls that achieve the Lowest Achievable Emissions Rate.<sup>120</sup> For mobile

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112. *Whitman v. Am. Trucking Ass'n*, 531 U.S. 457 (2001). However, more recent SCOTUS decisions in *Michigan v. EPA*, 576 U.S. 743 (2015) and *West Virginia v. EPA*, 597 U.S. 697 (2022) have clouded this analysis. I will be proceeding under the assumption that no cost-benefit analysis is allowed at this stage.

113. A SIP must “provide (i) necessary assurances that the State . . . will have adequate personnel, funding, and authority under State (and, as appropriate, local) law to carry out such implementation plan . . .” 42 U.S.C. § 7410(a)(2)(E).

114. 42 U.S.C. § 7410(a)(2).

115. RICHARD K. LATTANZIO, CONG. RESCH. SERV., RL 30853, CLEAN AIR ACT: A SUMMARY OF THE ACT AND ITS MAJOR REQUIREMENTS 4 (2022).

116. 42 U.S.C. §§ 7470–92.

117. 42 U.S.C. § 7411.

118. 42 U.S.C. § 7411(b)(1)(B).

119. 42 U.S.C. §§ 7470–92, 7501–15; EPA, FACT SHEET: NEW SOURCE REVIEW (NSR) 1–2 (2015), <https://www.epa.gov/sites/default/files/2015-12/documents/nsrbasicsfactsheet103106.pdf>. See also *Env't Def. v. Duke Energy Corp.*, 549 U.S. 561 (2007).

120. *Technology Transfer Network: Basic Information*, CLEAN AIR TECH. CTR. (Feb. 22, 2016), <https://www3.epa.gov/ttnecat1/rblc/htm/welcome.html>.

sources like vehicles, the EPA is empowered to set efficiency and emissions standards.<sup>121</sup>

While the EPA is the ultimate enforcer of the CAA's regulations, the CAA also authorizes citizen suits against any party that violates the emissions standards, against anyone trying to construct or modify a facility without a required permit, and against the EPA itself for a failure to act when required.<sup>122</sup>

## 2. What elements of the Clean Air Act can be emulated?

The broad parts of the CAA that have the most applicability for dark patterns regulation fall into three categories.

First, like the EPA, Congress should grant an agency broad rulemaking authority and the resources and expertise to make its own empirical determinations.<sup>123</sup> A well-resourced agency will be able to determine both the actual levels of harm to individuals and communities and define dark patterns that go beyond acceptable design interfaces.

Second, that agency should also be granted authority to define technology standards for industry-wide problems, rather than having to take individual action against each emitter, and to create those standards based on harm rather than cost-benefit.<sup>124</sup> Such authority would allow the agency to address the full scope of the problem rather than rule case-by-case.

Third, the agency's enforcement power should be supported by a private right of action, allowing citizens to reinforce the agency's actions if the agency is not aggressive enough with enforcement actions.<sup>125</sup>

## 3. What elements of the Clean Air Act cannot or should not be emulated?

The biggest part of the CAA that does not carry over is the federalist nature of the law. The CAA operates as a partnership where the federal agency defines the goals that states must then figure out how to reach.<sup>126</sup> This works because each state has jurisdiction over its own emitters and deals with its specific air

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121. 42 U.S.C. § 7521-50.

122. 42 U.S.C. § 7604.

123. *See* 42 U.S.C. § 7408.

124. *See* 42 U.S.C. §§ 7409, 7411-12.

125. *See* 42 U.S.C. § 7604.

126. *See* 42 U.S.C. §§ 7401(a)(4), (b)(3), (c).

quality issues (interstate air pollution can and does happen, and is accounted for in the NAAQS).<sup>127</sup> However, because dark patterns are digital rather than physical, they are not local like physical emissions are.<sup>128</sup> State-based powers do not make the same kind of sense in the technology space as in the environmental space. As such, the structure of the SIPs will need to shift.

Further elements that do not carry over in the same way are distinctions between mobile and stationary sources. In the physical world, the CAA regulates mobile sources of emissions like planes and automobiles differently than stationary sources like factories.<sup>129</sup> Dark patterns do not have this analogous difference. However, inasmuch as these distinctions capture differences between large and small sources, that should be retained. There are significant differences in size between various dark pattern emitters, and similar challenges regulating larger platforms the same way as ones with fewer users.<sup>130</sup>

### C. WHY IS NEW LEGISLATION FOR DARK PATTERNS NECESSARY?

#### 1. Current regulation & market forces struggle to address less-concrete patterns.

While the FTC is empowered to act against companies committing unfair and deceptive acts or practices, thus far their actions have been limited in scope to the most clean-cut examples, and particularly to those that are clearly deceptive. In theory, the Commission has stated that small-but-aggregated harms in the privacy arena may count as substantial enough for enforcement action when enough people are harmed.<sup>131</sup> But although the Commission put out a policy statement in 2021 stating that it would ramp up prosecution against dark patterns that “trick or trap” consumers through making unsubscribe options difficult, that has mostly been restricted to a rationale

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127. 42 U.S.C. § 7410(k)(5).

128. See 42 U.S.C. § 7401(a)(1).

129. Stationary sources are primarily regulated via 42 U.S.C. Subchapter I (§§ 7401–7515), whereas moving sources are regulated under 42 U.S.C. Subchapter II (§§ 7521–7590) via emissions standards.

130. See Eric Goldman & Jess Miers, *Regulating Internet Services by Size*, 2 ANTITRUST CHRON. 24, 25–26 (2021).

131. FTC Policy Statement, Fed. Trade Comm’n, FTC Policy Statement on Unfairness (Dec. 17, 1980) <https://www.ftc.gov/legal-library/browse/ftc-policy-statement-unfairness>.

that consumers expect to be able to unsubscribe from a service as easily as they subscribed, and so are misled when unsubscribing is more difficult than they anticipated.<sup>132</sup>

The FTC in late 2022 stated that it would more vigorously enforce the ban on unfair methods of competition,<sup>133</sup> and has reached high-profile settlements with Vonage<sup>134</sup> and Epic Games<sup>135</sup> over dark patterns; however, both cases show the limitations of the current administrative approach. In both cases, the settlements cover conduct spanning more than five years, and in some cases the conduct ended years before the settlement<sup>136</sup> was released. Enforcement actions that occur significantly after the practices have either changed or become entrenched can be less effective.<sup>137</sup> Furthermore, although some of the dark patterns are non-deceptive, they are mostly very concrete in nature: Vonage's dark patterns included hidden termination fees or charging customers after cancellation, while Epic Games' patterns included charging child users without

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132. See Press Release, Fed. Trade Comm'n, FTC to Ramp up Enforcement Against Illegal Dark Patterns that Trick or Trap Consumers Into Subscriptions (Oct. 21, 2021) <https://www.ftc.gov/news-events/news/press-releases/2021/10/ftc-ramp-enforcement-against-illegal-dark-patterns-trick-or-trap-consumers-subscriptions>.

133. Press Release, Fed. Trade Comm'n, FTC Restores Rigorous Enforcement of Law Banning Unfair Methods of Competition (Nov. 10, 2022) <https://www.ftc.gov/news-events/news/press-releases/2022/11/ftc-restores-rigorous-enforcement-law-banning-unfair-methods-competition>.

134. Press Release, Fed. Trade Comm'n, FTC Action Against Vonage Results in \$100 Million to Customers Trapped by Illegal Dark Patterns and Junk Fees When Trying to Cancel Service (Nov. 3, 2022) <https://www.ftc.gov/news-events/news/press-releases/2022/11/ftc-action-against-vonage-results-100-million-customers-trapped-illegal-dark-patterns-junk-fees-when-trying-cancel-service>.

135. Press Release, Fed. Trade Comm'n, Fortnite Video Game Maker Epic Games to Pay More than Half a Billion Dollars over FTC Allegations of Privacy Violations and Unwanted Charges (Dec. 19, 2022) <https://www.ftc.gov/news-events/news/press-releases/2022/12/fortnite-video-game-maker-epic-games-pay-more-half-billion-dollars-over-ftc-allegations>.

136. *Id.* ("Up until 2018, Epic allowed children to purchase V-Bucks by simply pressing buttons without requiring any parental or card holder action or consent.").

137. CONG. RSCH. SERV., R43013, ADMINISTRATIVE AGENCIES AND CLAIMS OF UNREASONABLE DELAY: ANALYSIS OF COURT TREATMENT 1 (2013) (citing *Potomac Electric Power Co. v. ICC*, 702 F.2d 1026, 1034 (D.C. Cir. 1983) ("excessive delay saps the public confidence in an agency's ability to discharge its responsibilities and creates uncertainty for the parties, who must incorporate the potential effect of possible agency decisionmaking into future plans.")).

obtaining cardholder consent.<sup>138</sup> The ones closest to nudges still relate heavily to the immediate action of purchasing—such as when buttons to purchase and preview items are next to each other on a controller, and no confirmation screen is presented before purchases are made.<sup>139</sup> In short, while the FTC has become much more active in enforcing regulations against dark patterns, the Commission has so far limited itself to relatively straightforward cases.

The Consumer Financial Protection Bureau also issued a complaint against TransUnion for what it characterized as dark patterns, but it limited its complaint to a deception analysis.<sup>140</sup> While Experian stated in its terms of service that it would not use data provided to it by users signing up for a credit report, it did sell that data.<sup>141</sup> The argument here boils down to straightforward fraud.

Other than those areas where companies can be found to be actively lying to users (i.e. a deception frame), these practices are seen throughout the market.<sup>142</sup>

Market forces have not and likely will not curb this; instead, they appear to be encouraging further use.<sup>143</sup> Many types of apps, especially in the mobile gaming space, increasingly rely on microtransactions.<sup>144</sup> There are heavy incentives to use dark

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138. Fed. Trad Comm'n, *supra* note 134; Fed. Trade Comm'n, *supra* note 135.

139. Complaint, Epic Games, Inc., F.T.C. No. 192-3203, at 5–7 (2022).

140. Press Release, Consumer Fin. Prot. Bureau, CFPB Charges TransUnion and Senior Executive John Danaher with Violating Law Enforcement Order (Apr. 12, 2022) <https://www.consumerfinance.gov/about-us/newsroom/cfpb-charges-transunion-and-senior-executive-john-danaher-with-violating-law-enforcement-order/>.

141. *Id.*

142. FRANCISCO LUPIANEZ-VILLANUEVA ET AL., BEHAVIOURAL STUDY ON UNFAIR COMMERCIAL PRACTICES IN THE DIGITAL ENVIRONMENT: DARK PATTERNS AND MANIPULATIVE PERSONALISATION 45 (2022) (“Overall, mystery shoppers detected practices that they perceive as dark patterns in 73 out of the 75 websites and apps explored. Given that 97% of the websites/apps covered presented these practices, it is evident that the use of dark patterns is common across the board.”); Arvind Narayanan, *Dark Patterns: Past, Present, and Future*, 18 QUEUE 67, 68 (showing that researchers “uncovered dark patterns on more than 1,200 shopping websites [and] shown that more than 95% of the popular Android apps contain dark patterns.”).

143. ORG. FOR ECON. COOP. AND DEV., DARK COMMERCIAL PATTERNS 13 (OECD Digit. Econ. Papers, No. 336, 2022).

144. *Online Microtransactions Global Market Report 2024 – By Type*, BUS. RSCH. CO., Jan 2024,



patterns that increase revenue and few to curb their use. Especially on apps that have significant switching costs,<sup>145</sup> the cost of annoying or alienating users needs only to be less than the cost of switching to a competitor, which can be quite high. A user deeply invested in Facebook, or a particular game, will likely not switch solely because dark patterns are used against them. This is furthered by the fact that these patterns are dark—a significant percentage of the time, the user will not consciously realize that they are being pressured or manipulated in this way. Or, in the case of the unsubscribe roach motel, the patterns are there specifically to increase switching costs.<sup>146</sup>

The revival of antitrust enforcement and other competition law may help to reduce some of those costs, but since dark patterns are used industry-wide, there appears to be few options to switch to, and antitrust law may not be the best vehicle for challenging this kind of conduct.<sup>147</sup>

## 2. Why not General Consumer Privacy Legislation?

Will a comprehensive privacy law, absent specific dark patterns regulations, curb the use of dark patterns? It depends on the privacy law in question, and such legislation could certainly prevent some theorized but not currently broadly implemented dark patterns. Specifically, legislation could address patterns customized based on user data and preferences.<sup>148</sup> Assuming that certain people are more susceptible to certain kinds of dark patterns and also assume that their specific susceptibility can be ascertained by companies targeting dark patterns at their users, a comprehensive privacy law banning targeted advertising could in theory prevent these

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<https://www.thebusinessresearchcompany.com/report/online-microtransaction-global-market-report>.

145. Cory Doctorow, *Commentary: Cory Doctorow: Social Quitting*, LOCUS MAGAZINE, Jan. 2, 2023. (describing switching costs as “everything you give up when you change products, services, or habits.”).

146. *Id.* (explaining that social media companies increase switching costs to prevent users from leaving and “giving up on important personal, professional, commercial, and romantic ties.”).

147. See Gregory Day & Abbey Stemler, *Are Dark Patterns Anticompetitive?*, 72 ALA. L. REV. 1, 2 (2020); Peter O’Loughlin, *Cognitive Foreclosure*, 38 GA. ST. U. L. REV. 1097, 1165 (2022).

148. See Maurits Kaptein et al., *Personalizing Persuasive Technologies: Explicit and Implicit Personalization Using Persuasion Profiles*, 77 INT’L J. HUM.-COMPUT. STUD. 38, 49 (2015) (explaining persuasion profiles, including how to design and evaluate them).

kinds of patterns from coming into widespread use. The California Consumer Privacy Act, which took effect in 2023, does include an autonomy-based definition of dark patterns.<sup>149</sup> This is a promising start, but enforcement has yet to commence, and federalism issues abound, as shown by previous privacy legislation.<sup>150</sup>

Part of the issue of dark patterns is that they take advantage of psychological quirks that are present throughout humanity, and in the same manner as spam, do not require high success rates to be profitable. Similarly, microtargeting dark patterns may not be worth the investment of resources<sup>151</sup> and naive uses such as those in use today would continue.<sup>152</sup>

Even proposed legislation that specifically calls out dark patterns, like the DETOUR Act of 2019<sup>153</sup> or the American Data

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149. Jennifer King & Adriana Stephan, *Regulating Privacy Dark Patterns in Practice-Drawing Inspiration from California Privacy Rights Act*, 5 GEO. L. TECH. REV. 250, 271 (2021) (finding both that an agreement obtained through dark patterns doesn't count as consent and that dark patterns undermine human autonomy).

150. See, e.g. Thorin Klosowski, *The State of Consumer Data Privacy Laws in the US (And Why It Matters)*, N.Y. TIMES: WIRECUTTER (Sept. 6, 2021), <https://www.nytimes.com/wirecutter/blog/state-of-privacy-laws-in-us/> (“There’s also a risk of too many state laws generating confusion, both operationally for companies and practically for consumers.”); Karen Schuler, *Federal Data Privacy Regulation Is on the Way – That’s a Good Thing*, INT’L ASS’N PRIV. PROS. (Jan 22, 2021), <https://iapp.org/news/afederal-data-privacy-regulation-is-on-the-way-thats-a-good-thing/> (“Instead of a hodgepodge of disparate state laws, federal privacy legislation would give consumers across the nation a clearer understanding of their rights . . .”).

151. Using big data or AI techniques requires a non-negligible amount of computing power and energy. The economics of spam rely on near-zero costs per message. Sarah Wells, *Generative AI’s Energy Problem Today Is Foundational*, IEEE SPECTRUM (Oct. 29, 2023), <https://spectrum.ieee.org/ai-energy-consumption>; Saul Hansell, *Totaling up the Bill for Spam*, N. Y. TIMES (July 28, 2003), <https://www.nytimes.com/2003/07/28/business/totaling-up-the-bill-for-spam.html> (“Spammers these days pay as little as 0.025 cent to send an e-mail message.”); ALISTAIR McDONALD & BRIAN FITZPATRICK, SPAMASSASSIN: A PRACTICAL GUIDE TO INTEGRATION AND CONFIGURATION CH. 1 (2004) (“A report by Tom Geller, Executive Director of SpamCon Foundation, estimated that the cost to send a single spam email was as little as one thousandth of a cent . . .”).

152. The literature so far finds that personalized dark patterns have not yet been widely deployed. Mark Leiser & Cristiana Santos, *Dark Patterns, Enforcement, and the Emerging Digital Design Acquis — Manipulation Beneath the Interface* 26 (Apr. 27, 2023) (unpublished manuscript) (on file with Social Science Research Network).

153. DETOUR Act, S. 1084, 116th Cong. (2019).

Privacy and Protection Act (ADPPA),<sup>154</sup> don't quite go far enough. ADPPA defines dark patterns as "any user interface with the purpose or substantial effect of obscuring, subverting, or impairing a reasonable individual's autonomy, decision making, or choice to provide such consent or any covered data,"<sup>155</sup> is much closer to this article's definition than one based on deception. These laws are restricted to privacy and data collection.<sup>156</sup> The restrictions these laws would create would not cover any patterns that involve directly influencing the target to purchase something, patterns preventing unsubscribing, or patterns that cause a target to further expose themselves to advertising inputs. Outside of the US, the EU's Digital Markets Act and Digital Services Act both contain some restrictions targeting dark patterns, but those restrictions are mostly limited to gatekeeper companies rather than those directly offering services, and target only limited types of patterns.<sup>157</sup>

### 3. Why not Advertising or Spam Regulation?

While a general analogy to advertising works at a high level, there are several critical differences between most advertising and dark patterns. First, even though dark patterns are tools used to persuade people exposed to them to perform commercial courses of action that benefit the advertiser, they are interactive in a way that advertising is not. While advertisements are content traditionally consumed passively via reading text or watching television, dark patterns are user interfaces, designed for users to interact with them.<sup>158</sup> Dark patterns are more unavoidable than advertising, in part because of that interactivity. While advertising is ever present, people out in the world are not required to actively interact with the advertising

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154. American Data Privacy and Protect Act, H.R. 8152, 117th Cong. (2022).

155. *Id.* at § 2(1)(D)(ii).

156. ADPPA's Affirmative Express Consent requirement applies only in privacy or data collection contexts. *See, e.g., id.* at §§ 102(3)(A), 202(e)(1), and 204(a).

157. Eli Mackinnon & Jennifer King, *Do the DSA and DMA Have What It Takes to Take on Dark Patterns?*, TECH POL'Y PRESS (June 22, 2022), <https://techpolicy.press/do-the-dsa-and-dma-have-what-it-takes-to-take-on-dark-patterns/>.

158. *Cf. Zauderer v. Off. of Disciplinary Couns. of Sup. Ct.*, 471 U.S. 626, 642 (1985) (explaining that printed advertising is less high pressure than in-person solicitation, and therefore is less prone to privacy invasion, overreaching, or undue influence).

as part of their daily lives. On the other hand, dark patterns are deployed on apps that people can and generally must interact with as prerequisites for being a part of modern society.<sup>159</sup> People can avoid dark patterns by not using those apps, but asking people to cut themselves off from basically most modern communications tools is not really what is generally meant by avoidability.<sup>160</sup> Dark patterns exploit psychological weaknesses of humans through their interactivity in ways that advertising cannot.

Second, whereas advertising is content-heavy, dark patterns are content-light. Advertising conveys its message via what it says to people exposed to the advertising,<sup>161</sup> whereas dark patterns are part of the interfaces that users interact with. This means that, on a conceptual level, dark patterns affect users differently than advertising, and on a regulatory level, the challenges to speech are different.<sup>162</sup>

And finally, advertising regulation is most commonly concerned with false claims in advertising,<sup>163</sup> which, as established, is too limited to fully understand dark patterns.<sup>164</sup>

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159. See *Carpenter v. U.S.*, 585 U.S. 296, 315 (2018) (citing *Riley v. California*, 573 U.S. 373, 385 (2014)) (“[C]ell phones and the services they provide are ‘such a pervasive and insistent part of daily life’ that carrying on is indispensable to participation in modern society.”).

160. Self-defense tactics that require fully disconnecting from modern digital services are frowned upon both from a practical and a doctrinal perspective. *Online Privacy: Are We Worried About the Wrong Things?*, CONSUMER NZ (Sept. 1, 2020), <https://www.consumer.org.nz/articles/online-privacy> (“I’m not going to tell people to stop using social media, move to a cabin in the mountains and throw their phone in the sea.”); *Cf.* *Carpenter*, *supra* note 159, at 297 (because phones are indispensable for modern life, people do not voluntarily assume the risk of turning over their location history just by using a phone).

161. Of course, keeping in mind McLuhan’s comment that “the medium is the message.” MARSHALL MCLUHAN, *UNDERSTANDING MEDIA: THE EXTENSIONS OF MAN* 19 (1964).

162. See *Zauderer*, *supra* note 158, at 642 (explaining differences between in-person and written solicitations).

163. The Lanham Act contains a private right of action for false advertising claims. 15 U.S.C. § 1125(a)(1).

164. On a tactical level, the FTC’s efforts to regulate advertising under its unfairness authority in the 1980s, and the political reprisals that ensued, mean that using advertising as a guiding metaphor for dark patterns specifically with the FTC is fraught with uncertainty. See Cobun Keegan & Calli Schroeder, *Unpacking Unfairness: The FTC’s Evolving Measures of Privacy Harms*, 15 J.L. ECON. & POL’Y 19, 25–26 (2019).

Spam is also a useful analogy for what dark patterns are, but spam regulation also has critical differences. Both regulation and filtering work because they operate on a carefully selected media—the electronic or telephonic message, and the trick is determining which messages are wanted or unwanted. Dark patterns deal with interfaces, which aren’t as easily cordoned off for categorization. CAN-SPAM, for instance, applies mostly to messages, and the same with most spam filters.<sup>165</sup> Developing a spam filter to detect dark patterns would require the ability to categorize parts of interfaces and block just those parts. While this can work for some ads because of their third-party nature, it doesn’t work because dark patterns are not content in the same way that ads are.<sup>166</sup> Dark patterns share characteristics of spam and general internet advertising, but the patterns are closer to the “medium is the message” rather than the message itself.<sup>167</sup>

#### 4. Common law solutions have also failed to address the problem.

The existing common law doctrines have also not been successful at curbing the use of dark patterns because the nature and characteristics of the harms done by dark patterns do not neatly line up with successful common law claims.

Standard individualized tort or products liability claims have a low chance of success because there are significant causation problems as well as questions of whether those user interface aspects would count as being defective.

Causation would be one of the main obstacles for any common law lawsuit on these grounds because the harms that dark patterns do are so probabilistic in nature.<sup>168</sup> Although tort

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165. CAN-SPAM’s requirements mostly apply to email. FED. TRADE COMM’N, CAN-SPAM ACT: A COMPLIANCE GUIDE FOR BUSINESS (2023); Christopher Brown & Lesley Fair, *Candid Answers to CAN-SPAM Questions*, FED. TRADE COMM’N BUS. BLOG (Aug. 18, 2015), <https://www.ftc.gov/business-guidance/blog/2015/08/candid-answers-can-spam-questions>.

166. Dark patterns are features of user interfaces and design rather than of content. See, e.g., Tim Kollmer & Andreas Eckhardt, *Dark Patterns: Conceptualization and Future Research Directions*, 65 BUS. INFO. SYS. ENG’G 201, 201 (2023) (“Dark patterns refer to user interface design elements . . . .”); FTC, *supra* note 8 at 21 (“Digital Dark Patterns are design practices . . .”).

167. MCLUHAN, *supra* note 161, at 19.

168. See Brent Bihr, *Dark Patterns, Warcraft, and Cybersex: The Addictive Face of Predatory Online Platforms and Pioneering Policies to Protect*

law and products liability law incorporates elements of probability into its calculus,<sup>169</sup> the diffuse nature of dark pattern harm would tend against individualized success, and in most cases the harms themselves will be too small individually to make lawsuits worth pursuing. Another issue for products liability includes information asymmetries;<sup>170</sup> as the point of nudges is to be under the radar, consumers face difficulties in detecting their use.<sup>171</sup>

Furthermore, products liability is mostly the realm of state law; although individual state laws can offer remedies, courts may hesitate to grant personal jurisdiction.<sup>172</sup> For products liability to police dark patterns, there needs to be a strong products liability law federally that makes provisions for these kinds of harms, and then enforcement would generally require significant class action litigation. Regulators should want to implement measures that avoid decades-long litigation for each dark pattern and each platform that deploys it.<sup>173</sup>

On a similar note, toxic torts alone don't work well for dark patterns because they're difficult for plaintiffs to recover even for physical toxins,<sup>174</sup> meaning recovery will likely be more difficult

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*Consumers*, 60 JURIMETRICS J. 431, 443–445 (2020) (referring to *Modisette v. Apple Inc.*, 241 Cal. Rptr. 3d 209, 213–217 (2018) and *Meador v. Apple, Inc.*, 911 F.3d 260, 267 (2018), which both found that device manufacturer was not the proximate cause of a crash from distracted driving).

169. Plaintiffs in tort cases must show causation by a standard of more probable than not. See *Modisette*, *supra* note 168, at 224.

170. Christie Dougherty, *Every Breath You Take, Every Move You Make, Facebook's Watching You: A Behavioral Economic Analysis of the US California Consumer Privacy Act and EU ePrivacy Regulation*, 12 NE. U. L. REV. 629, 650–652 (2020).

171. The information fiduciary paradigm offers some hope because it can create a duty on the part of the companies; however, causation problems remain. See generally Dennis D. Hirsch, *From Individual Control to Social Protection: New Paradigms for Privacy Law in the Age of Predictive Analytics*, 79 MD. L. REV. 439 (2020).

172. See Robert S. Peck, *The Coming Connected-Products Liability Revolution*, 73 HASTINGS L.J. 1305, 1324–25 (2022) (stating that a website alone is often not enough for personal jurisdiction, although the marketing of products in a state may grant jurisdiction).

173. Another possible common law doctrine, the implied covenant of good faith and fair dealing, could theoretically serve as a cause of action, but such covenants are relatively limited in scope and likely would not succeed.

174. Anthony Roisman, Martha L. Judy & Daniel Stein, *Preserving Justice: Defending Toxic Tort Litigation*, 15 FORDHAM ENV'T L. REV. 191, 203 (2004) (outlining impediments to successful toxic tort litigation).

for the diffuse harms of dark patterns.<sup>175</sup> Toxic tort class actions have the same problems that regular tort law has with these kinds of issues, and furthermore are best aimed at dealing with practices by individual companies, rather than things that happen commonly as industry practice.

Why not nuisance theory? Public nuisance theory has been used as a tool to combat environmental harms.<sup>176</sup> However, this comes with its own problems. Since public nuisance requires an interference with a public right, one first must define which right is being interfered with, and one that courts are willing to recognize. Would courts be willing to recognize a right to human autonomy on the internet, in this legal climate?<sup>177</sup>

Tort law and standard harm doctrine have not been effective at dealing with dark patterns.<sup>178</sup> This is because, as established, the harms of dark patterns are diffuse, probabilistic in nature, nor obviously causal, leading to difficulty in starting and winning a lawsuit.

### PART III: WHAT CAN BE DONE?

#### A. A CLEAN PATTERNS ACT

The proposed solution is an act that incorporates the following elements:

1. Empowering an agency to perform empirical research, which it will use to determine the precise harms and threats to user autonomy arising from dark patterns.

2. Create implementation plans that remediate the harms of dark patterns while still allowing leeway for companies to innovate in the UI design space.

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175. See Citron & Solove, *supra* note 72, at 816–19.

176. Kevin Dothager, *When the Clean Air Act Fails a Public Nuisance May Help. North Carolina ex rel. Cooper v. Tennessee Valley Authority*, 16 MO. ENV'T. L. & POL'Y REV. 690, 698 (2009).

177. Other sources have also brought up nuisance law as a possible remedy. See Rebecca Eschen, *A Fracking Nuisance: How States Can Compel Their Neighbors to Regulate Hydraulic Fracturing with Judicial Equitable Relief*, 30 GEO. ENV'T L. REV. 149, 161 (2017), Bihl, *supra* note 168, at 445.

178. If customized dark patterns become widely deployed, individual suits will see additional difficulties proving even deceptive conduct. Willis, *supra* note 70, at 158.

3. Enforce those implementation plans via agency or private action.

#### 1. Empower an Agency to Perform Empirical Research & Create Endangerment Findings

At its base, this Act empowers and resources an agency with enforcing and creating rules on dark patterns. This could be a subdivision of the Federal Trade Commission, or it could be a new entity. Putting this regulator under the auspices of the FTC is reasonable because the FTC is already involved with similar regulations.<sup>179</sup> However, this potentially generates political issues by mirroring the reception of dark pattern regulation with political reception of a strong Commission.<sup>180</sup> Standing up a separate agency would likely require more resources than creating a new division within an existing one, but even a separate agency would likely work closely with the FTC, as the Consumer Financial Protection Bureau does when their missions overlap.<sup>181</sup> Ultimately such a decision is likely to be left to the political process and is out of the scope of this article.

Next, using the definition of dark patterns defined above, the agency will begin a process of categorization. In this, the agency will delineate specific user interface design areas that logically hold together and generate useful clusters of dark patterns. For instance, many dark patterns surround virtual shopping carts, from abandoned cart notifications to sneaking additional items into the cart. Creating a shopping cart UI category can lead to better understanding of the precise effects that dark patterns are having on human behaviors in that area.

Another possible method for creating these categories is to define the types of decisions that users make on websites, because whenever a user decides, consciously or unconsciously, that is a point that a dark pattern can be employed to alter that decision. One way to categorize areas is shopping carts, privacy options, closing an account, or asking for refunds. Another method is to go through the very specific types of decisions users

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179. 15 U.S.C § 45 (empowering the FTC to prevent unfair methods of competition and deceptive acts).

180. See Luke Herrine, *The Folklore of Unfairness*, 96 N.Y.U L. REV. 431, 433 (2020) (discussing the political issues that hindered the FTC's enforcement of unfairness regulation).

181. See MEMORANDUM OF UNDERSTANDING BETWEEN THE CFPB AND THE FTC 3 (2019).



make: spend more time on this page or go to another page, purchase now or delay, disclose information or not.

Within those categories however defined, the agency will do empirical research to determine which interface patterns act as dark patterns and the effectiveness of each one compared to interfaces that do not include those patterns. This research can include funding direct experimental studies, evaluating existing academic research, and requesting data directly from companies themselves, in a manner similar to the FTC's Section 6(b) orders.<sup>182</sup>

The empirical research will generate data on the effectiveness of various interfaces on user behavior and the harms that they generate. From that research, the agency creates a standard that sets forth acceptable levels of effectiveness and harm for those interfaces.

There are two important takeaways from the Clean Air Act for this stage. First, costs of remediation should not be accounted for at this stage. Second, a certain amount of empirical uncertainty should be allowed when justifying the findings.

Cost should not be taken into consideration when determining which dark patterns are harmful. It is important that at this early stage the agency gains a clear view of both the value that is extracted from users and the value gained by deployers. While deployers' profits will no doubt decrease after enforcement, their concerns should be left for the mitigation stage.

There will be uncertainty in these empirical studies—as much or even more uncertainty than there is in harms from pollutants—but once the amount of the harms is known, uncertainty about the precise levels of harm shouldn't obstruct the actual process of determination.<sup>183</sup>

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182. 15 U.S.C. § 46(b). For an example 6(b) order, see Press Release, Fed. Trade Comm'n, FTC Issues Orders to Social Media and Video Streaming Platforms Regarding Efforts to Address Surge in Advertising for Fraudulent Products and Scams (March 16, 2023), <https://ftc.gov/news-events/news/press-releases/2023/03/ftc-issues-orders-social-media-video-streaming-platforms-regarding-efforts-address-surge-advertising>.

183. See *Lead Industries v. EPA*, 647 F.2d 1130, 1163 (D.C. Cir. 1980) (ruling against plaintiffs who argued that a range of air lead/blood ratios were arbitrary or capricious).

While there is uncertainty since social science is about often uncertain and indeterminate human behavior,<sup>184</sup> it is possible to quantitatively analyze the behaviors of users in response to different types of interfaces.<sup>185</sup> In fact, within the field of Human-Computer Interaction, both Interaction Design<sup>186</sup> and User Research<sup>187</sup> seek to measure the effectiveness of interfaces. Most companies don't publicize their findings, but they absolutely do heavy alpha-beta testing to determine the most effective interfaces for various functions.<sup>188</sup> In a related area, many platforms, from social media<sup>189</sup> to video games,<sup>190</sup> experiment with content moderation strategies and publicize at least some of their results. Research by Jamie Luguri and Lior Strahilevitz directly shows that dark patterns can be categorized by their effectiveness relative to control interfaces.<sup>191</sup>

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184. Nate Breznau et al., *Observing Many Researchers Using the Same Data and Hypothesis Reveals a Hidden Universe of Uncertainty*, 199 PNAS 1 (2022), (finding that seventy-three research teams examining the same social science question arrive at widely divergent findings and conclusions even with identical starting conditions and controlling for researcher expertise, prior beliefs, and expectations).

185. See generally BILL ALBERT & TOM TULLIS, *MEASURING THE USER EXPERIENCE* (3rd ed. 2022).

186. See generally JONAS LÖWGREN & ERIK STOLTERMAN, *THOUGHTFUL INTERACTION DESIGN* (2007).

187. See generally JEFF SAURO & JAMES LEWIS, *QUANTIFYING THE USER EXPERIENCE* (2d ed. 2016).

188. This testing occurred in the mid 2000s, and was used in politics during Barack Obama's 2008 campaign. See Jack Virag, *A/B Testing and Experimentation in the Obama 2008 and 2012 Campaigns*, *STATSIG* (Oct. 25, 2022), <https://www.statsig.com/blog/data-experimentation-testing-obama-election-campaigns>.

189. Kathy Yang & Lauren Fratamico, *Reconsidering Tweets*, *X* (June 9, 2022), [https://blog.twitter.com/engineering/en\\_us/topics/insights/2022/reconsidering-tweets](https://blog.twitter.com/engineering/en_us/topics/insights/2022/reconsidering-tweets).

190. Dennis Scimeca, *Using Science to Reform Toxic Player Behavior in League of Legends*, *ARS TECHNICA* (May 16, 2013), <https://arstechnica.com/gaming/2013/05/using-science-to-reform-toxic-player-behavior-in-league-of-legends>.

191. Jamie Luguri & Lior Jacob Strahilevitz, *Shining a Light on Dark Patterns*, 13 *J. LEGAL ANALYSIS* 43 (2021).

Most critically, while research on dark patterns has been relatively new to legal academia, researchers in other disciplines have done work on related subjects.<sup>192</sup>

Research on nudges, the core method of the dark pattern, and research on persuasive technology, a core objective of a dark pattern, have existed for many years.<sup>193</sup>

Research on persuasive technology, technology designed to change how humans behave due to their interactions with the technology,<sup>194</sup> is also common. Design decisions can and do affect human behavior and it is possible to measure the magnitude of that effect.<sup>195</sup> Persuasive technologies can and do commonly succeed in persuading users.<sup>196</sup> Customizing persuasive technologies to individuals based on information known about them increases the effectiveness of both explicit and implicitly persuasive technologies. Persuasive technologies are less effective when trying to change ingrained and chemically-dependent habits like smoking.<sup>197</sup> Timotheus Kampik and colleagues have studied the links between persuasion and coercion in persuasive technologies.<sup>198</sup>

Outside of persuasive technologies, significant research has been done in the advertising space to determine the effectiveness

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192. See generally Arunesh Mathur, Jonathan Mayer & Mihir Kshirsagar, *What Makes a Dark Pattern . . . Dark?* CONF. HUM. FACTORS COMPUTING SYS. (2021).

193. Research has been done specifically on the effects of nudges on GDPR consent flows. Christine Utz et al., *(Un)informed Consent: Studying GDPR Consent Notices in the Field*, CONF. COMPUT. & COMM'NS SEC. (2019); Midas Nouwens et al., *Dark Patterns After the GDPR: Scraping Consent Pop-ups and Demonstrating Their Influence*, CONF. HUM. FACTORS COMPUTING SYS. (2020).

194. See Monica Rozenfeld, *How Persuasive Technology Can Change Your Habits*, IEED SPECTURM (Jan. 1, 2018) <https://spectrum.ieee.org/how-persuasive-technology-can-change-your-habits>.

195. Juho Hamari, Tuomas Pakkanen, & Jonna Koivisto, *Do Persuasive Technologies Persuade? A Review of Empirical Studies*, in PERSUASIVE TECHNOLOGY 118, 126 (2014).

196. Kaptein et al., *supra* note 148.

197. See BJ Fogg, *Creating Persuasive Technologies: An Eight-Step Design Process*, 4TH INT'L CONF. PERSUASIVE TECHS. (2009).

198. Timotheus Kampik, Juan Carlos Nieves, & Helena Lindgren, *Coercion and Deception in Persuasive Technologies*, in PROCEEDINGS OF THE 20TH INTERNATIONAL TRUST WORKSHOP (Robin Cohen, Murat Sensoy, & Timony J. Norman eds., 2018).

of different kinds and presentations of advertising, including the effects of frequency.<sup>199</sup>

Although it may not be trivial for an administrative agency to determine how effective each dark pattern is on users, it is also by no means an impossible task. With resources, experts, and authority to investigate companies that use these patterns, it's possible for the agency to create a body of knowledge for itself on the known effectiveness of dark patterns on given demographics of people, and to update that knowledge as patterns shift over time.<sup>200</sup>

The overall process follows the general steps taken for Clean Air Act determinations.<sup>201</sup> First, the agency monitors the quality of the environment to determine what pollutants exist in that environment and the harms being done.<sup>202</sup> Second, the agency creates source categories and inventories which figure out which types of entities are most responsible for the emissions.<sup>203</sup> Third, the agency models how various implementation plans would affect the overall landscape.<sup>204</sup> And fourth, the agency formalizes those plans and enforces them.<sup>205</sup>

One of the potential problems with determining harm to user autonomy is once the divergence from proper decision making is known, what is an appropriate level of divergence that warrants enforcement actions? In other words, how much of a zone is covered by reasonable user expectations and when does a given dark pattern leave those expectations behind? All interfaces shape human decision-making to some degree,<sup>206</sup> so

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199. See generally Susanne Schmidt & Martin Eisend, *Advertising Repetition: A Meta-Analysis on Effective Frequency in Advertising*, 44 J. ADVERT. 415 (using meta-analytic techniques to examine the number of exposures that maximize consumer response to an ad).

200. For instance, if hard skeptics of nudges' effectiveness are correct, it would be good to empirically determine that. See Maximilian Maier et al., *No Evidence for Nudging After Adjusting for Publication Bias*, 119 PNAS 1,1 (2022).

201. Clean Air Act of 1963, 42 U.S.C. §§ 7401–7675.

202. 42 U.S.C. § 7404(a)(3).

203. 42 U.S.C. § 7412(c)(1).

204. 42 U.S.C. § 7410(a)(1).

205. *Id.*

206. Cass R. Sunstein, *The Ethics of Nudging*, 32 YALE J. REGUL. 413, 415 (2014) (“[B]oth nudges and choice architecture are inevitable . . .”); but see Tom Goodwin, *Why We Should Reject ‘Nudge’*, 32 POL 85, 86 (“In short, my contention is that nudge and the notion of libertarian paternalism are deeply troubling.”).

there may be no null result. Existing social science research, research done by the companies themselves, and general design thinking can determine what an acceptable level of divergence from a baseline would be.<sup>207</sup>

For instance, although an interface that presents two options with equal prominence by presenting two identically sized and colored buttons horizontally next to each other still alters human behavior,<sup>208</sup> it's relatively certain to be less effective at pushing one of those options than interfaces that emphasize the desired option and de-emphasize the undesired option.

## 2. Remediation Implementation Plans

Once the categorization, research, and determinations have been made, the agency will then work to create plans for each area and pattern from the determination.

While there are going to be many strategies for how to structure these plans, one method follows. For each logical area of decision-making, an implementation plan states what the objectives are for that particular decision (i.e. a buy or not decision, or a spectrum of how much information to disclose) and outlines the desired safe level of user autonomy in that decision space. It then goes through each of the dark patterns observed to affect that decision space, and for each of those dark patterns it proposes mitigation measures tailored to the types of deployers by size and capability to help reach that desired level.<sup>209</sup>

Much of this will by necessity be speculative, as the objective is to discover the best methods for remediation. However, basic remediation strategies could include creating approved flows for certain actions like online shopping carts that have been determined to not be dark patterns, and development timelines for appropriate changes.<sup>210</sup>

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207. See *supra* text accompanying notes 185–195.

208. Behavior is altered by a combination of bias towards the first option reading left to right, as well as the equating of two options which a user might not want to be equated.

209. Goldman & Miers, *supra* note 130, at 26.

210. See LUPIANEZ-VILLANUEVA ET AL. *supra* note 142, at 113. (“[A]nother remedy, suggested by an expert during the third CGE workshop, is the development of a repository of legally compliant website design features that

### 3. Enforcement

As with the Clean Air Act,<sup>211</sup> the agency should be given authority to issue its own rules, as well as to seek court orders, to ensure compliance with the regulations. The agency's authority to seek data from companies for the purposes of creating endangerment findings and implementation plans should also extend to the enforcement area. However, unlike the Clean Air Act, primary enforcement should be done at the federal level rather than the state level. This matches the federal focus of this proposed legislation; and as with the Clean Air Act, there will be a private right of action. Dark patterns deployers are large and small,<sup>212</sup> so private actors would supplement enforcement if the agency is reticent.<sup>213</sup>

## B. ADDRESSING LEGAL CHALLENGES

### 1. Speech Regulation

This article proposes a comprehensive regulatory scheme that will, at the very least, require that an administrative agency conduct approvals of changes made to the designs of commonly used apps. This structure should become a dedicated part of the administrative state, learning from the Clean Air Act, both of which requires these kinds of measures.

Most digital objects, and objects on the internet in general, are considered speech.<sup>214</sup> Therefore, this proposed regulation could be seen as a prior restraint and licensing scheme for speech. To exacerbate this, this article's definition of dark patterns does not require deceptive or fraudulent activity. This matters because the First Amendment does not protect commercial speech that is fraudulent, or even deceptive or

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could be used by designers. As opposed to having a list of what is unfair, this would give designers access to fair code that they can use.”).

211. Clean Air Act of 1963, 42 U.S.C. §§ 7401–7675.

212. FTC, *supra* note 2, at 3.

213. See generally Roger Greenbaum & Anne S. Peterson, *The Clean Air Act Amendments of 1990: Citizen Suits and How they Work*, 2 FORDHAM ENV'T. L. REP. 79, 80 (1991); see also Cameron F. Kerry, *Senate Hearing Opens the Door to Individual Lawsuits in Privacy Legislation*, BROOKINGS (Oct 8, 2021), <https://www.brookings.edu/articles/senate-hearing-opens-the-door-to-individual-lawsuits-in-privacy-legislation/> (discussing proposed private right of action for privacy law).

214. See *Packingham v. North Carolina*, 582 U.S. 98, 104–05 (2017).

misleading,<sup>215</sup> but non-deceptive dark patterns likely cannot fully avail itself of that definition.<sup>216</sup> In *FTC v. AMG Capital Mgmt*, the 9<sup>th</sup> Circuit found liability for “technically correct” but misleading disclosures, but not all dark patterns fall into this category either.<sup>217</sup>

A full examination of free speech doctrine for non-deceptive dark patterns is out of scope of this article. However, there is a strong argument that regulation of non-deceptive dark patterns is constitutional under the commercial speech doctrine. Laid out in *Central Hudson*, speech is commercial speech if it is “related solely to the economic interests of the speaker and its audience.”<sup>218</sup> If the speech is commercial, as well as being fraudulent or illegal, there are no first amendment protections.<sup>219</sup> If not, then by the substantial interest test, the state must assert a substantial interest in its proposed regulation, and must regulate in proportion to that interest.<sup>220</sup> The restriction must directly advance the substantial interest, and must be the least restrictive restriction that will serve the interest.<sup>221</sup>

Most, if not all, dark patterns under this article’s definition should be considered commercial speech, because dark patterns by definition work to increase value for the deployer and do not advance more expressive messages.<sup>222</sup> The court in *Central Hudson* defined commercial speech as “expression related solely

215. *Va. State Bd. of Pharmacy v. Va. Citizens Consumer Council, Inc.*, 425 U.S. 748, 771–72 (1976) (“Obviously, much commercial speech is not provably false, or even wholly false, but only deceptive or misleading. We foresee no obstacle to a State’s dealing effectively with this problem. The First Amendment, as we construe it today does not prohibit the State from insuring that the stream of commercial information flow cleanly as well as freely.”).

216. Scholars have argued that digital manipulation is unprotected speech because it is designed to mislead, but other non-deceptive dark patterns should be included as “manipulative” commercial speech. Helen Norton, *Manipulation and the First Amendment*, 30 WM. & MARY BILL RTS. J. 221, 233 (2021).

217. *Fed. Trade Comm’n v. AMG Cap. Mgmt., LLC*, 910 F.3d 417, 424 (9th Cir. 2018), rev’d and remanded sub nom. *AMG Cap. Mgmt. LLC, v. Fed. Trade Comm’n*, 593 U.S. 67 (2021), rev’d and remanded sub nom. *Fed. Trade Comm’n v. AMG Cap. Mgmt., LLC*, 998 F.3d 897 (9th Cir. 2021).

218. *Cent. Hudson Gas & Elec. Corp. v. Pub. Serv. Comm’n of New York*, 447 U.S. 557, 561 (1980) (citing *Va. State Bd. of Pharmacy v. Va. Citizens Consumer Council*, 425 U.S. 748 (1976)).

219. *Virginia State Bd. of Pharmacy*, 425 U.S. at 772.

220. *Cent. Hudson Gas & Elec. Corp.*, 447 U.S. at 568.

221. *Id.*

222. *See supra* Part 1, Dark Patterns definition.

to the economic interests of the speaker and its audience.”<sup>223</sup> In *Bates v. State Bar of Arizona*, the Supreme Court described commercial speech as “not wish[ing] to report any particularly newsworthy fact or to comment on any cultural, philosophical, or political subject.”<sup>224</sup> Commercial speech is granted some protection because society has an interest in the free flow of commercial information through the speech’s ability to inform and result in efficient allocation of resources.<sup>225</sup> Dark Patterns are directly related to economic interests—by this article’s definition they gain value for the deployer. Furthermore, there is a lack of expressive nature in dark patterns.<sup>226</sup> Felix Wu argues that laws regulating how information is framed to consumers (which some dark pattern would count as) do not merit heightened scrutiny because they do not prevent consumers from discovering information.<sup>227</sup> He furthermore argues that governments should be allowed to regulate nudges because nudges are an inevitable part of designing around consumer decisions.<sup>228</sup> At the most expressive level, dark patterns remain in the realm of advertising, or native advertising, because their objectives, design decisions, and landscape are similar.<sup>229</sup>

A substantial interest in regulating dark patterns should be evident from Part I.<sup>230</sup> Courts have upheld compelled commercial speech under informational interests, holding that people can make better decisions with more complete information.<sup>231</sup> Preventing threats to autonomy that reduce the

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223. Cent. Hudson Gas & Elec. Corp., 447 U.S. at 561.

224. *Bates v. State Bar of Arizona*, 433 U.S. 350, 363 (1977).

225. *Friedman v. Rogers*, 440 U.S. 1, \*8–\*9 (1979).

226. *But see Reed v. Town of Gilbert, Ariz.*, 576 U.S. 155 (2015) (finding that town’s sign code was content-based restriction, based on facts about religious or political events, not commercial conduct).

227. Felix T. Wu, *Commercial Speech Protection as Consumer Protection*, 90 U. COLO. L. REV. 631, 645 (2019).

228. *Id.* at 649.

229. Bans on activities that could conceivably have some expressive content, like smoking, have been upheld under the First Amendment. *See Lehman v. City of Shaker Heights*, 418 U.S. 298 (1974), *NYC C.L.A.S.H., Inc. v. City of New York*, 315 F. Supp. 2d 461, 479 (S.D.N.Y. 2004).

230. *See supra* Part 1.

231. *See Am. Meat Inst. v. Dept. of Agric.*, 760 F.3d 18, 23 (D.C. Cir. 2014) (holding that country of origin labeling for food is commercial speech); *Nat’l Elec. Mfrs. Ass’n v. Sorrell*, 272 F.3d 104, 113–14 (2d Cir. 2001) (holding that labeling of mercury-containing lightbulbs is commercial speech); *Pharm. Care*



information users have available is substantial in these cases. While the Supreme Court rejected a substantial interest in regulating print in non-deceptive print advertising, the court specifically did so because print advertisements were less threatening to undue influence or pressure, the same things that dark patterns use.<sup>232</sup> Harms to individuals from extractive practices, harms to society from a diminishing of human autonomy, and harms to the internet as a public good, together create a substantial interest.

As to the narrowly tailored regulation, because the problem of dark patterns is diffuse and like air pollution, the easiest way to tackle and reduce the problem without blanket bans or other bright line rules is via a methodology similar to the one proposed in this article. Coming down hard on a few violators to set an example to others doesn't go far enough to solve the problem because it only deals with violators large enough to be worth the investment of limited litigation resources. Whereas, a scheme of administrative regulation of specifically non-expressive, commercial design decisions is more narrowly tailored than a blanket ban. A less-restrictive version of this regulation does not exist because it would not actually effectively address the problem.

To compare, CAN-SPAM is constitutional, even though it compels some speech: it identifies messages as advertisements, tells recipients where the sender is located, tells recipients how to opt out, and mandates that the sender honors opt-out requests.<sup>233</sup>

While CAN-SPAM applies much less to transaction or relationship content than to commercial content, dark patterns are basically commercial in nature rather than transactional. The purpose is to get a target to spend more money, rather than merely facilitating an already agreed upon transaction. CAN-SPAM can absolutely require certain things from speakers of commercial speech. Dark patterns regulation like the proposed Act goes further than CAN-SPAM, but the problem is more complex than that of spam, and CAN-SPAM also doesn't fully address the problem. Some state spam protections have been

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Mgmt. Ass'n v. Rowe, 429 F.3d 294, 310 (1st Cir. 2005) (holding disclosures for pharmaceuticals are commercial speech).

232. *Zauderer v. Off. of Disciplinary Couns. of Sup. Ct.*, 471 U.S. 626, 642 (1985).

233. FED. TRADE COMM'N, *supra* note 165.

challenged under free speech grounds, with some success; however, those challenges are distinguishable from the situation here.<sup>234</sup> Georgia's statute was struck down in part because the statute was broader than the state's objective to combat fraud.<sup>235</sup> If the law's goal is more than combatting fraud, then constitutionality is not an issue.<sup>236</sup> The Fifth Circuit also found in 2005 that a university's spam policy was permissible under commercial speech jurisprudence.<sup>237</sup>

Furthermore, a different analogy can also support regulation: captive audience meetings. Captive audience meetings are a form of compelled listening, where audiences (typically employees of a company) are compelled to listen to anti-union messages delivered by representatives of their employer.<sup>238</sup> While captive anti-union employee meetings are currently not regulated because the National Labor Relations Board's (NLRB) opinion is that they are legal, that was not always the opinion of the NLRB. There is substantial legal scholarship and current legislation that seeks to regulate these meetings.<sup>239</sup> Furthermore, a pending case before the NLRB in October 2023 seeks regulation of these meetings.<sup>240</sup> Regulators could frame dark patterns regulation as empowering consumers to resist coercive speech<sup>241</sup> in the same manner as captive

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234. Jasmine E. McNealy, *Spam and the First Amendment Redux: Free Speech Issues in State Regulation of Unsolicited Email*, 22 COMM. L. & POL'Y 351, 361, 374 (2017).

235. *Id.* at 361.

236. *Id.*

237. *White Buffalo Ventures, LLC v. Univ. of Tex.*, 420 F.3d 366 (5th Cir. 2005).

238. Elizabeth J. Masson, "Captive Audience" Meetings in Union Organizing Campaigns: Free Speech or Unfair Advantage?, 56 HASTINGS L.J. 169, 170 (2004).

239. See Roger C. Hartley, *Freedom Not to Listen: A Constitutional Analysis of Compulsory Indoctrination Through Workplace Captive Audience Meetings*, 31 BERKELEY J. EMP. & LAB. L. 65, 70–71 (2010); Allie Robbins, *Captive Audience Meetings: Employer Speech vs. Employee Choice*, 36 OHIO N.U. L. REV. 591, 595 (2010).

240. Allen Smith, *Case Headed to NLRB Might Prohibit Employers from Holding 'Captive Audience' Meetings*, SHRM (Oct. 10, 2023), <https://www.shrm.org/topics-tools/employment-law-compliance/case-headed-to-nlr-captive-audience-meetings>.

241. See Comment, *Coercion, Blackmail, and the Limits of Protected Speech*, 131 U. PA. L. REV. 1469, 1470 (1983); Adam Hill, *Why Nudges Coerce: Experimental Evidence on the Architecture of Regulation*, 24 SCI. & ENG'G ETHICS 1279, 1282 (2018).

audience meetings, and require that consumers be able to avoid this speech. The FTC's unfairness standard already incorporates avoidability into its definition.<sup>242</sup> Dark patterns under this article's definition are not easily or at all avoidable. Once a user is in a particular venue for dark patterns, it's hard to escape, and even if one does escape to another venue, most venues are using dark patterns.

Although a full analysis of the speech considerations of dark patterns regulation is out of the scope of this article, there are reasonable arguments that CAA-style regulation that does not constitute an outright ban would be constitutional under First Amendment doctrine.

## 2. Major Questions Doctrine

An article that draws from the Clean Air Act to solve a regulatory problem would be remiss not to mention *West Virginia v. EPA*, which restricted the Environmental Protection Agency's ability to regulate carbon emissions under the Clean Air Act.<sup>243</sup> However, although this case implicates the Clean Air Act, it does not directly implicate any analogy to dark patterns regulation. The court in the case used the major questions doctrine to determine that EPA was exceeding its authority under the CAA.<sup>244</sup> Under that doctrine, when an agency makes actions that strike at critical sectors of the economy,<sup>245</sup> there must be some kind of extraordinary support in the statute for the grant of authority to do so. Assuming that there in fact exists some language that Congress may invoke to grant this authority, there is no necessary statutory problem with legislation going forward.<sup>246</sup> However, the doctrine is developing and questions remain about how the doctrine would be applied.<sup>247</sup> There is not yet enough precedent to properly

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242. FTC Policy Statement, *supra* note 131 (finding unfairness needs “[an] injury that consumers themselves could not reasonably have avoided.”).

243. *West Virginia v. EPA* 597 U.S. 697 (2022).

244. The debate over the major questions doctrine is out of scope for this article.

245. See KATE BOWERS & DANIEL J. SHEFFNER, CONG. RSCH. SERV., LSB10745, THE SUPREME COURT'S “MAJOR QUESTIONS” DOCTRINE: BACKGROUND AND RECENT DEVELOPMENTS 1 (2022).

246. This legislation would likely have major political impacts, but this is also beyond the scope of this article.

247. See Chad Squitieri, *Who Determines Majorness*, 44 HARV. J.L. & PUB. POL'Y 463 (2021); Thomas B. Griffith & Haley N. Proctor, *Deference, Delegation*,

determine whether dark patterns regulation would be considered a major question, nor is there clear guidance on what counts as a clear delegation of authority from Congress. However, the prominent major questions cases have arisen out of assertions of administrative authority that the court alleges is greater than it historically used.<sup>248</sup> New laws would therefore tend to avoid this issue of an administrative agency claiming greater powers because there is no history of the statute's use. Therefore, assuming that such language to grant this authority exists, and that Congress in fact uses that language<sup>249</sup> in the dark patterns statute, whatever administrative agency is charged with regulating dark patterns may do so.

### 3. Intangible Harms Doctrine

Another Supreme Court case, *Transunion v. Ramirez*<sup>250</sup> threatens dark patterns regulation and other regulations seeking to remedy intangible harms. In *Transunion*, the Supreme Court found that intangible harms will not generate standing unless they bear a close relationship to harms traditionally recognized in common law, even if such harms are defined in statute.<sup>251</sup> *Transunion* is a threat to any dark patterns regulation, as it is a threat to any regulation of less obviously

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*and Divination: Justice Breyer and the Future of the Major Questions Doctrine*, 132 YALE L.J. F. 693 (2022).

248. *West Virginia v. EPA*, 597 U.S. 697, 724 (2022) (“In arguing that Section 111(d) empowers it to substantially restructure the American energy market, EPA ‘claim[ed] to discover in a long-extant statute an unheralded power’ representing a ‘transformative expansion in [its] regulatory authority.’”); *Biden v. Nebraska*, 143 S. Ct. 2355, 2372, (2023) (“The Secretary has never previously claimed powers of this magnitude under the HEROES Act. As we have already noted, past waivers and modifications issued under the Act have been extremely modest and narrow in scope.”).

249. Suggested language would include words that are not modest, vague, or subtle. *West Virginia v. EPA*, 597 U.S. at 723 (Extraordinary grants of regulatory authority are rarely accomplished through ‘modest words,’ ‘vague terms,’ or ‘subtle device[s].’ Nor does Congress typically use oblique or elliptical language to empower an agency to make a ‘radical or fundamental change’ to a statutory scheme. [internal citations omitted]).

250. *TransUnion LLC v. Ramirez*, 594 U.S. 413 (2021).

251. *Id.*

tangible harms.<sup>252</sup> The test for intangibility is vague<sup>253</sup> however, dark patterns regulation should be able to avoid being struck down if the logic of *Transunion* is not further extended. In most cases the harms of dark patterns can be characterized as concrete, or bear close relationships to harms traditionally recognized in common law. With dark patterns, the harms are varied - but this article's definition requires that some kind of value be extracted from the user. If that value is monetary (i.e., microtransactions) then the harm is relatively concrete. If the value is their data or personal information, while that is less obviously tangible, common law privacy torts have sought to remedy harms that bear significant relationship to any of the privacy harms that dark patterns cause.<sup>254</sup> If the value extracted is the user's time, that too can be concrete—a person's time is quantifiable and can be wasted by doing or not doing something.

### C. ADDRESSING REGULATORY CHALLENGES

#### 1. User-Generated Interfaces

While user-generated content is common with contemporary digital services, user interfaces are much less common. More may exist in the near future if things like Roblox or similar user-generated revenue sharing platforms become more commonly used.

Roblox is a platform for user-generated games.<sup>255</sup> The developers of Roblox provide tools and structures to allow its users to create games or other interactive experiences for people to play. These structures include microtransactions, the proceeds of which are split between Roblox and the individual

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252. Daniel Solove & Danielle Keats Citron, *Standing and Privacy Harms: A Critique of TransUnion v. Ramirez*, 101 B.U. L. REV. ONLINE 62 (2021).

253. *Id.* at 66 (“Instead of a clear test, we get a horseshoe test—close counts. But close to *what* and how close is close enough? The test appears to be one that only Justice Potter Stewart would love—the “I know it when I see it” test.”).

254. See Citron & Solove, *supra* note 72 (“However, when it comes to private litigation, for each individual, bringing a lawsuit for a small harm is not worth the time or resources. Class actions are the predominant way to address this problem.”).

255. Ana Diaz, *Why Is Everyone Talking About Roblox?*, POLYGON (Mar. 11, 2021, 6:07 PM) <https://www.polygon.com/22326123/what-is-roblox-explainer-public-offering>.

game developers.<sup>256</sup> As such, the developers of games on the Roblox platform are individually incentivized to deploy dark patterns to raise microtransaction purchase rates.

Regulation of user-generated content is challenging due to the limitations of 47 U.S.C. 230. Enforcement against online user-generated content generally cannot go through the platform but must go against the content creators themselves.<sup>257</sup> However, direct regulation against developers on Roblox under a Clean Patterns Act could be logistically easier than under current regulations because the act should include regulations tailored to small scale emitters. In this way, Roblox developers can simply be treated as game developers in their own right, and are therefore no more challenging to regulate than other small game developers.

## 2. Why Not Transparency?

Some might argue that a law focused more on transparency would be narrower and still effective at curbing the problem, which would make this legislation fail the *Central Hudson* test.<sup>258</sup> However, transparency as a regime doesn't address the harms of dark patterns because it focuses on trickery and deception as the harms rather than their extractive and social harms.

First, transparency as a remedy—pointing out that a dark pattern exists—doesn't work against most of the non-misleading dark patterns. What is the use of a reminder that a user is not required to give up their data when the objective of the user interface is to route the user towards giving it up? Early research has shown that awareness of deceptive designs doesn't mitigate against undue influence.<sup>259</sup> And there is a “rapidly amassing body” of evidence that transparency does not work as a privacy

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256. *Platform Overview*, ROBLOX, <https://create.roblox.com/docs/platform> (last visited May 1, 2024); *Earning on Roblox*, ROBLOX, <https://create.roblox.com/docs/production/earning-on-roblox> (last visited May 1, 2024).

257. 47 U.S.C. § 230(c)(1).

258. *Cent. Hudson Gas & Elec. Corp. v. Pub. Serv. Comm'n of New York*, 447 U.S. 557, 561 (1980) (holding that if a less speech-restrictive regulation existed that still met the government's interest, then the regulation at issue would no longer be the least restrictive and would therefore be unconstitutional).

259. Kitkowska, *supra* note 11, at 194.

protection.<sup>260</sup> An emphasis on full disclosure in terms of service is already problematic because most people do not read through all of the terms of service that they are expected to read.<sup>261</sup> Trying to prevent companies from abusing people's heuristics for dealing with information overload by increasing their information overload is fighting fire with gasoline.<sup>262</sup> Without any substantive protections in this area, the remedy is incomplete.<sup>263</sup>

Transparency is acceptable as a first step, but it will likely not be the whole solution. It's not the solution in environmental law, and it's not the solution here.

### 3. Economic Impacts

There are expected to be some economic impacts from this legislation, but they are not expected to be major. Profits made by companies that deploy dark patterns are expected to decrease, because an inability to deploy dark patterns should result in those companies not making the extra profit.<sup>264</sup> Furthermore, there will be both immediate and ongoing software development costs, as companies will need to spend resources to transition away from dark patterns as well as be diligent in not creating them in the first place. There will also be legal costs for dealing with compliance: from companies, the federal government, and private lawsuits. However just as the Clean Air Act's emissions restrictions and technology requirements did not

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260. Alessandro Acquisti, Idris Adjerid, & Laura Brandimarte, *Gone in 15 Seconds: The Limits of Privacy Transparency and Control*, 11 IEEE SEC. & PRIV. 72, 72 (2013).

261. Reidenberg et al. *supra* note 47, at 491; Warner & Sloan, *supra* note 48, at 390.

262. See Woodrow Hartzog & Neil Richards, *Privacy's Constitutional Moment and the Limits of Data Protection*, 61 B.C. L. REV. 1687, 1735 (2020) (writing that notice and choice regimes "do not scale because they conceive of control as transparency as something people can never get enough of.").

263. See Froomkin, *supra* note 82.

264. There are few public statements of the revenues directly attributable to dark patterns. The FTC settlement with Epic Games for its use of Dark Patterns in Fortnite was for \$245 million to be used to refund users that had made unwanted purchases. Press Release, Fed. Trade Comm'n, FTC Finalizes Order Requiring Fortnite Maker Epic Games to Pay \$245 Million for Tricking Users Into Making Unwanted Charges (Mar. 14, 2023) <https://www.ftc.gov/news-events/news/press-releases/2023/03/ftc-finalizes-order-requiring-fortnite-maker-epic-games-pay-245-million-tricking-users-making>.

destroy regulated industries, dark patterns regulation modeled after the Clean Air Act should not result in the wholesale destruction of industries, except perhaps those that depend wholly on dark patterns to survive.<sup>265</sup>

### CONCLUSION

Understanding dark patterns as an intersection of perverse economic incentives, limited human rationality, and environmentally analogous harms will lead to more significant and more effective methods of regulation. This article will spur further discussion and analysis of the harms of manipulative interfaces, as well as ways to mitigate those harms.

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265. *See supra* Part II.



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