

MISSOURI LAW REVIEW

VOLUME 82

FALL 2017

NUMBER 4

The Hacking of Employment Law

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ABSTRACT

Employers can use software in ways that erode employment law, through noncompliance and avoidance. The software exploits outdated regulations that do not anticipate the scale and precision with which employers can manage and manipulate the work relationship. Consequently, employers can implement systems that are largely consistent with existing laws but violate legal rules on the margin. Employers can also use software to engage in lawful workaround tactics that avoid triggering some or all of the costs of complying with employment law. However, such tactics can cause harm to workers beyond the loss of the specific workers' rights or protections being avoided. Avoidance can create new norms that can degrade wages and working conditions across the labor market. Finally, when employers use software to avoid the employer-employee relationship entirely, employment law is weakened as more workers operate in spaces beyond the law's reach. The result is an employment law regime where legal rules struggle to keep up with employers' software-enabled innovations in noncompliance or are rendered irrelevant as employers innovate in spaces that regulation simply does not reach. We conclude by suggesting ways that regulators can better adapt to workplaces where employers implement their decisions and define the structure of work through software.

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Technology is neither good nor bad; nor is it neutral. – Melvin Kranzberg

I. INTRODUCTION

The workplace is increasingly mediated, governed, and constrained by software.¹ Companies use software in hiring and making work assignments, setting workers' schedules and tracking their hours, assessing performance, and managing payroll. Software allows firms to automate and routinize management tasks, scale those operations across an entire workforce, and track, monitor, and mine data to make predictions and informed decisions. In doing so, software holds the promise of increasing efficiency, decreasing waste, and even guarding against biases inherent in human judgment.²

However, software's gradual accession in the workplace is not all positive. Using software, firms can implement systems that are largely consistent with existing laws but avoid or evade rules on the margin. For example, timekeeping programs can be set to "round" hourly employees' timecards to the nearest quarter-hour.³ Though any given employee might lose only a few minutes per day, software's ability to automate this function and apply it across an entire workforce can result in significant losses – and wage and hour law violations – in the aggregate.⁴ Software can also create information asymmetries. Employees who lose pay as a result of rounding may not know about the software functionality or their lost wages, unless they keep meticulous parallel time records of their own (an unlikely assumption). Moreover, even when an employee discovers the employer's practices, outdated or ill-fitting regulations can provide employers with some measure of cover. Software's newness allows employers to convince courts that they have engaged in something other than old-fashioned noncompliance. As a result, employment law erodes.

In other situations, firms use software lawfully to avoid, rather than violate, legal rules. Here, firms structure their relationship with workers to avoid triggering some or all of the costs of complying with employment law. Such

1. Throughout this Article, we use the term "software," which we define as the "set of programs, procedures, and related documentation associated with . . . a computer system." *Software*, MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY (11th ed. 2003). Occasionally, we also refer to "code," i.e., the language with which software is written; "algorithms," or the rules that structure the way that software processes information and accomplishes tasks; "platforms," or the virtual "spaces" that software creates through which people interact; and "apps," which is another name for a software program primarily developed for use on a mobile device.

2. Jennifer Taylor Arnold, *Reining in Overtime Costs*, HR MAGAZINE (Apr. 1, 2009), <https://www.shrm.org/hr-today/news/hr-magazine/Pages/0409tech.aspx> (quoting a representative from timekeeping company Kronos as saying, "An automated system has a 'standard application of rules, with no favoritism'").

3. Timekeeping programs are discussed in greater detail in Part II, *infra*.

4. *See infra* Part II.

tactics can cause harm beyond the loss of the specific workers' rights or protections being avoided. In particular, software-enabled avoidance can create new norms that cause harms not contemplated by employment law as written.

Scheduling software is a case in point.⁵ Employers use scheduling algorithms to identify the employees whose hours are nearing some cost-triggering threshold – forty hours per week and the overtime entitlement, for instance. Those workers are sent home and replaced by others at the last minute. Affected workers lose overtime pay, but neither overtime pay nor any specific number of work hours is guaranteed by the law. This avoidance strategy creates a new set of harms to the workers who are called in as replacements. Though these workers may appreciate extra hours, last-minute call-ins create significant instability, requiring workers to find dependent care on a moment's notice, disrupting family routines, and interfering with workers' ability to attend school or hold a second job. In addition, employers sometimes demand that employees remain available for unexpected call-ins. If they refuse, employers deny them access to future shifts. Employers' use of software to reduce overtime costs thus creates a new norm in which workers' schedules are unstable and unpredictable, but the harm that results is beyond the reach of employment law.

Finally, firms can use software in ways that mix noncompliance and avoidance. Here again, outdated or ill-fitting regulations allow firms to test the line between breaking the law and merely side-stepping it. The use of work distribution platforms by “gig” firms, such as ride-sharing company Uber, offers an example.⁶ Uber uses its app to connect drivers with customers. The company classifies these drivers as independent contractors and disclaims any employer-employee relationship.⁷ Indeed, the rules that distinguish employees

5. Scheduling software is discussed in greater detail in Part III, *infra*.

6. The terms “work distribution platform” and “work intermediation platform” come from Ilana Gershon & Melissa Cefkin, *Click for Work: Rethinking Work, Rethinking Labor Through Online Work Distribution Platforms* (Feb. 2017) (unpublished working paper) (on file with authors). Work distribution platforms are discussed in greater detail in Part V, *infra*. The terms “gig economy” and “gig firm” refer to companies and market sectors in which workers engage in short-term work arrangements with employers that are often mediated by digital technology and where workers are often characterized as independent contractors rather than employees. See generally Orly Lobel, *The Gig Economy & the Future of Labor and Employment Law*, 51 U.S.F. L. REV. 51 (2017). “Gig firms” are those that rely heavily on such short-term workers; the “gig economy” refers to the growing market share of such firms across various industries and sectors. See *id.* at 51.

7. See *Start Driving with Uber*, UBER, <https://www.uber.com/drive/> (last visited Dec. 18, 2017) (“Once you’re approved to drive with Uber as an independent contractor, we’ll provide everything you need to be a success on the road.”); Johana Bhuiyan, *Uber’s Class-Action Settlement with Drivers Means Almost Nothing Is Changing*, RECODE (Apr. 25, 2016, 3:35 PM), <https://www.recode.net/2016/4/25/11586386/uber-driver-tips-settlement>.

from independent contractors assume the existence of some human who controls aspects of the work relationship.⁸ Once the human intermediary is replaced by an app, the analysis becomes more difficult. In this way, firms like Uber use software to engage in a form of regulatory arbitrage,⁹ claiming independent contractor status for their workers and opting out of employment law coverage. Consequently, more workers operate in spaces beyond the law's reach, and employment rights are left only to the privileged few who are able to claim employee status.

In using software to avoid and violate employment laws, employers accomplish a regulatory hack. We use the term "hack" in two senses. The term's technical definition is to "gain access to a computer illegally."¹⁰ It can also mean something closer to a "workaround," i.e., "a clever solution to a tricky problem."¹¹ The latter usage connotes ingenuity (in the eyes of the hacker, at least) but not necessarily law-breaking; the former explicitly contemplates violating legal rules. We use the term "regulatory hack"¹² to refer to unlawful noncompliance, lawful avoidance strategies, and conduct that falls somewhere in between. The hacked target is not a computer but the system of laws that regulate the work relationship. Software makes it possible.

We explore regulatory hacks through four case studies: timekeeping programs, screening and selection algorithms, scheduling software, and work distribution platforms. In each instance, we identify the harms that software can

8. See, e.g., Richard R. Carlson, *Why the Law Still Can't Tell an Employee When It Sees One and How It Ought to Stop Trying*, 22 BERKELEY J. EMP. & LAB. L. 295, 314 (2001) (tracing the history of the control-based test for employee status and noting that all versions of the test "have control and domination as their central concern; the former purporting to focus on control over the worker's performance of services for the employer as a matter of contractual right, and the latter purporting to look at an employer's sources of power that give it true, if not contractually specified, control").

9. The concept of regulatory arbitrage is discussed further in Part I.A, *infra*.

10. *Hack*, MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY (11th ed. 2003). For an example of this usage, see Robby Mook, Opinion, *Russia's D.N.C. Hack Was Only the Start*, N.Y. TIMES (Jan. 10, 2017), <https://www.nytimes.com/2017/01/10/opinion/russias-dnc-hack-was-only-the-start.html> (exploring alternative uses of the term "hack" and defining the break-in to the Democratic National Committee's servers attributed to Russia as "an attack with stolen information").

11. *Hack*, URBAN DICTIONARY, <http://www.urbandictionary.com/define.php?term=hack> (last visited Dec. 18, 2017); *What Does the Use of "Hack" in Everyday, Non-Programming Contexts Mean?*, QUORA, <https://www.quora.com/Slang-What-does-the-use-of-hack-in-everyday-non-programming-contexts-mean> (last visited Dec. 18, 2017) ("[Y]ou can get an idea that a *hack* is a procedure or a way of doing something that: 1. Demonstrates cleverness or ingenuity[;] 2. Solves a meaningful problem[;] 3. Is not a common or well-known solution to the problem[;] 4. May not be the most straightforward or appropriate solution.").

12. As Part II, *infra*, explains, we have adopted the concept of a regulatory hack and the specific "regulatory hack" terminology from a variety of previous sources. This article builds on and extends those prior uses.

cause and examine whether the software enables noncompliance, lawful avoidance, or some combination. We then consider the implications of these hacks for employment law as a whole and offer some possible regulatory responses.

This Article proceeds as follows: Part II defines the term “regulatory hack” in more detail and tracks the development of the concept and terminology in the work of earlier scholars and writers. Parts III through VI present the four case studies, and Part VII turns to possible regulatory responses.

II. “REGULATORY HACK” DEFINED

This Part traces the origins of the “regulatory hack” concept and term in cyberlaw, copyright, and employment law scholarship.

A. *Roots in Cyberlaw and Copyright Scholarship*

Software-enabled noncompliance and avoidance have been a central focus of cyberlaw and copyright scholarship for many years. Drawing upon copyright controversies over peer-to-peer file sharing and the rapid expansion of the internet in the late 1990s and early 2000s, scholars focused considerable energy on the relationship between software and law.¹³ From this well-developed literature, we find Tim Wu’s theoretical framework most instructive. In a 2003 article, *When Code Isn’t Law*, Wu describes three ways in which software can erode, challenge, or alter legal rules: evasion, “avoision,” and change.¹⁴

Evasion, according to Wu, consists of strategies to “decreas[e] the odds of being punished for violating a law,” such as a bank robber’s wearing a mask

13. See, e.g., LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE 6–8 (1999); Tim Wu, *When Code Isn’t Law*, 89 VA. L. REV. 679, 707–09 (2003); R. Anthony Reese, *Will Merging Access Controls and Rights Controls Undermine the Structure of Anticircumvention Law?*, 18 BERKELEY TECH. L.J. 619, 631–32 (2003); R. Polk Wagner, *On Software Regulation*, 78 S. CAL L. REV. 457 (2005); Pamela Samuelson, *Three Reactions to MGM v. Grokster*, 13 MICH. TELECOMM. & TECH. L. REV. 177, 187–190 (2006); Bennet Lincoff, *Common Sense, Accommodation and Sound Policy for the Digital Music Marketplace*, 2 J. INT’L MEDIA & ENT. L. 1 (2008); Annemarie Bridy, *Why Pirates (Still) Won’t Behave: Regulating P2P in the Decade After Napster*, 40 RUTGERS L.J. 565, 573–74 (2009); Olufunmilayo B. Arewa, *YouTube, UGC, and Digital Music: Competing Business and Cultural Models in the Internet Age*, 104 NW. U. L. REV. 431 (2010).

14. Wu, *supra* note 13, at 682 (describing code as “an anti-regulatory mechanism: a tool to minimize the costs of law that certain groups will use to their advantage”). Though Wu articulated the differences among these three responses to regulation, the bulk of his analysis then collapsed the first two – evasion and avoision – and examined peer-to-peer sharing software as an instance of copyright law “avoidance,” as contrasted with “change” behavior. See *id.* at 692–99.

to disguise his or her identity.¹⁵ Wu views software as enabling both the underlying legal violation and measures to evade detection.¹⁶ “[L]aw-busting code,” in the file sharing context, allowed millions of users to trade digital music files freely, without regard for copyright limitations.¹⁷ By creating the conditions for noncompliance on such a large scale, software allowed everyday people to violate copyright law, giving “cover” to end users whose very number would seem to lower the odds of detection and punishment.¹⁸

The term “avoision,” which Wu borrows from Leo Katz and Ronald Turner, refers to “the avoidance of laws in ways that evade the law’s intent or purpose but do not actually constitute unlawful behavior.”¹⁹ Avoidance can also be characterized as regulatory arbitrage, a term that originally referred to multinational companies’ forum shopping in search of countries with the most favorable tax rates and regulatory environment.²⁰ Regulatory arbitrage has been used to describe many forms of legal avoidance and gamesmanship – both domestic and cross-national – such as workarounds “to avoid taxes, accounting rules, securities disclosure, and other regulatory costs.”²¹ Avoidance tactics

15. *Id.* at 692.

16. *Id.* at 682.

17. *Id.* at 680 (internal quotations omitted).

18. *See generally id.*

19. *Id.* at 682, 692 (citing LEO KATZ, *ILL-GOTTEN GAINS: EVASION, BLACKMAIL, FRAUD AND KINDRED PUZZLES OF THE LAW* 17–30 (1996); Ronald Turner, *Reactions of the Regulated: A Federal Labor Law Example*, 17 *LAB. LAW.* 479 (2002)). Katz and Turner’s work, in turn, echoes that of sociologist Doreen McBarnet, who has described firms’ creation of “strategies for weakening the law by legally *avoiding* it.” Doreen D. McBarnet, *Law, Policy, and Legal Avoidance: Can Law Effectively Implement Egalitarian Policies?*, 15 *J.L. & SOC’Y* 113, 114 (1988) (“Regulation is not so much lingering behind business practice as a major motivation for its change. Business adapts to law not necessarily by complying with its aims, but by changing to keep outside its ambit. Those allegedly subject to the law can turn the law upon itself and render it ineffective.”); *see also* Charlotte S. Alexander, *Legal Avoidance and the Restructuring of Work*, in 47 *RESEARCH IN THE SOCIOLOGY OF ORGANIZATIONS, THE STRUCTURING OF WORK IN ORGANIZATIONS* (Lisa E. Cohen, M. Diane Burton, & Michael Lounsbury eds., 2016).

20. *See, e.g.*, Atul K. Shah, *The Dynamics of International Bank Regulation*, 4 *J. FIN. REG. & COMPLIANCE* 371, 371 (1996) (noting that “regulatory endeavours have become enmeshed in international economic competition, and sophisticated regulatory arbitrage is being conducted on a global playing field. Thus, regulatory objectives and standards are being increasingly compromised or subverted”).

21. Victor Fleischer, *Regulatory Arbitrage*, 89 *TEX. L. REV.* 227, 229 (2010). Leo Katz offers an even more generalized version of this principle in his theory of “avoision”: the myriad ways in which individuals and corporations game a system to their advantage. *See* KATZ, *supra* note 19, at 103–04. Katz and Fleischer argue that avoidance is an inevitable side effect of rules and that any rule that privileges form over substance allows that form to be manipulated to avoid the rule. *Id.* at 10; Fleischer, *supra*, at 244 (identifying three conditions for regulatory arbitrage: where “the same transaction receives different regulatory treatment under different regulatory regimes,” where “two transactions with identical cash flows receive different regulatory treatment

almost always involve behavior that is technically legal, but that “exploit[s] the differences between a law’s goals and its self defined limits.”²² Thus, as Wu points out, peer-to-peer file sharing software was designed in a decentralized way to avoid vicarious liability for software companies as intermediaries under the copyright regime.²³

Change, finally, comprises direct efforts by regulated entities to alter legal rules to their benefit.²⁴ This could consist of lobbying, “a tool that delivers . . . legal change for a price.”²⁵ Change can also come about via litigation, by which “interest groups determine or radically influence the regulatory agendas of agencies.”²⁶

In Wu’s view, the three options are interrelated and can act as substitutes for one another. Regulated entities might choose to invest time and resources in evasion or avoidance, rather than direct change efforts. In other words, when the law generates compliance costs, regulated entities may try to change the rules through the front door (presumably while continuing to comply), use software to violate the law through the back door, or opt out of the law’s requirements entirely.

Further, in what Wu calls a “reaction to the reaction,”²⁷ regulatory change might occur *as a result of* widespread evasion or avoidance, as the law loses its grip on the behavior of regulated entities. Such change could cut in either direction: regulation could be loosened, consistent with the interests of the regulated, or it could be revised and tightened, in the interests of the regulators, to “restore the balance” that existed pre-evasion or avoidance.²⁸

B. Renewed Attention with the Rise of the Gig Economy

The problem of legal avoidance has long been a concern for employment law scholars.²⁹ Miriam Cherry, for example, has written extensively on the legal dilemmas associated with virtual work.³⁰ Recently, the rise of the “gig

under the same regulatory regime,” and where “the same transaction receives different regulatory treatment in the future than it does today”).

22. Wu, *supra* note 13, at 692.

23. *Id.* at 729–30.

24. *Id.* at 693–95.

25. *Id.* at 694.

26. *Id.* at 695.

27. *Id.* at 709.

28. *Id.* at 705.

29. See, e.g., Richard R. Carlson, *Variations on a Theme of Employment: Labor Law Regulation of Alternative Worker Relations*, 37 S. TEX. L. REV. 661, 663 (1996); Carlson, *supra* note 8, at 298; Katherine V.W. Stone, *Legal Protections for Atypical Employees: Employment Law for Workers Without Workplaces and Employees Without Employers*, 27 BERKELEY J. EMP. & LAB. L. 251, 257–58 (2006).

30. Miriam A. Cherry, *Working for (Virtually) Minimum Wage: Applying the Fair Labor Standards Act in Cyberspace*, 60 ALA. L. REV. 1077 (2009); Miriam A. Cherry,

economy” has captured the attention of employment law scholars³¹ in the same way that file sharing software previously mobilized copyright scholars.

This body of scholarship focuses primarily on the challenges to employment law when the business model of the “gig economy” diverges from (or appears to diverge from) traditional models of employment.³² In doing so, commentators also examine the extent to which the “gig economy” lies beyond the reach of existing laws³³ and changes that may (or may not)³⁴ be necessary to protect workers. Technology plays a central role in this story and has been characterized as the driving force behind its growth,³⁵ a dehumanizing mechanism,³⁶ and a substitute for management.³⁷

A Taxonomy of Virtual Work, 45 GA. L. REV. 951 (2011) [hereinafter Cherry, *A Taxonomy of Virtual Work*]; Miriam A. Cherry, *Cyber Commodification*, 72 MD. L. REV. 381 (2013); Miriam A. Cherry, *Beyond Misclassification: The Digital Transformation of Work*, 37 COMP. LAB. L. & POL’Y J. 577 (2016) [hereinafter Cherry, *Beyond Misclassification*].

31. See, e.g., Cherry, *Beyond Misclassification*, *supra* note 30; Valerio De Stefano, *The Rise of the “Just-In-Time Workforce”: On-Demand Work, Crowdwork, and Labor Protection in the “Gig-Economy”*, 37 COMP. LAB. L. & POL’Y J. 471 (2016); Orly Lobel, *The Law of the Platform*, 101 MINN. L. REV. 87 (2016); Elizabeth Tippet, *Using Contract Terms to Detect Underlying Litigation Risk: An Initial Proof of Concept*, 20 LEWIS & CLARK L. REV. 549 (2016); Keith Cunningham-Parmeter, *From Amazon to Uber: Defining Employment in the Modern Economy*, 96 B.U. L. REV. 1673 (2016); Paul M. Secunda, *Uber Retirement*, 2017 U. CHI. LEGAL F. (forthcoming 2017) (available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2894566); Benjamin Means & Joseph A. Seiner, *Navigating the Uber Economy*, 49 U.C. DAVIS L. REV. 1511 (2016); Janine Berg, *Income Security in the On-Demand Economy: Findings and Policy Lessons from a Survey of Crowdworkers*, 37 COMP. LAB. L. & POL’Y J. 543 (2016); Brishen Rogers, *Employment Rights in the Platform Economy: Getting Back to Basics*, 10 HARV. L. & POL’Y REV. 479 (2016); Noah D. Zatz, *The Piper Lecture, Does Work Have a Future if the Labor Market Does Not?*, 91 CHI.-KENT L. REV. 1081 (2016).

32. Tippet, *supra* note 31, at 586–91 (study finding substantial variance in estimated litigation risk for sharing companies); Lobel, *supra* note 31, at 92.

33. Zatz, *supra* note 31, at 1086 (making a broader argument that “current [legal] structures” exclude a number of categories of individuals that should properly be viewed as “workers”); Lobel, *supra* note 31, at 93 (stating that “the regulatory challenges are divisible into easy and hard cases”).

34. Cunningham-Parmeter, *supra* note 31, at 1707 (proposing a modified control test); Means & Seiner, *supra* note 31, at 1535 (arguing that the test should focus on “how much flexibility . . . the individual ha[s] in the working relationship”); Rogers, *supra* note 31, at 499 (suggesting that the concept of employment is analogous to the “concept of duty in tort”).

35. See Lobel, *supra* note 31, at 100–01.

36. De Stefano, *supra* note 31, at 477–78 (“[H]umans-as-a-service . . . [are] expected to run as flawlessly and smoothly as a software or technological tool”); Gerald F. Davis, *What Might Replace the Modern Corporation? Uberization and the Web Page Enterprise*, 39 SEATTLE U. L. REV. 501, 512 (2016) (“[T]he task may be replacing the job.”).

37. Cherry, *Beyond Misclassification*, *supra* note 30, at 596 (“[A] new trend is that algorithms are absorbing many organizational functions that managers traditionally

Of particular note for our purposes, Orly Lobel and Noah Zatz identify the gig economy as a form of regulatory arbitrage³⁸ – a concept that we explore more broadly in this Article as an avoidance mechanism. Several commentators also place the gig economy within larger trends toward the casualization of work – where “precarious workers” are limited to part-time and temporary work that is “uncertain, unpredictable, and risky.”³⁹

Indeed, the term “regulatory hack,” which we adopt in this Article, originated from commentary on the gig economy.⁴⁰ In a 2011 article, journalist Matt Yglesias first used the word “hack” to describe software’s role in facilitating regulatory avoidance.⁴¹ He observed that gig economy companies primarily derive their competitive advantage from the lawful avoidance of “dumb” legal rules:

It’s an extremely *elegant use of technology* to, in effect, *hack the legal system*. Through the magic of computer power, a sedan becomes a cab without changing its technical legal status. . . .

To be clear, I’m not accusing Uber of doing anything illegal. What they are doing, however, is running a business that would have bleak prospects of success if our nation’s taxi laws were not so dumb. One of

would perform. Computer code may perform a variety of supervisory tasks from the mundane to the sophisticated: assigning tasks to workers, speeding up work processes, determining the timing and length of breaks, monitoring quality, ranking employee, and more.”).

38. Lobel, *supra* note 31, at 92 (examining “whether digital disruptions comprise loopholes akin to regulatory arbitrage . . . [or] circumvention akin to controversial copyright protection reforms”); Zatz, *supra* note 31, at 1093; *see also* Cunningham-Parmeter, *supra* note 31, at 1691 (“[B]y tapping into their unique ability to skirt employment mandates, intermediaries can maximize savings for the firms that engage them.”); Cherry, *Beyond Misclassification*, *supra* note 30, at 579 (“[W]e are currently experiencing a far-reaching *digital transformation of work*. The changes include the growth of automatic management and a move toward ever more precarious work.”).

39. Cherry, *Beyond Misclassification*, *supra* note 30, at 598 (discussing foundational work by Arne Kalleberg on precarious work); *see* Lobel, *supra* note 31, at 131 (“The rise of the contingent workforce precedes the rise of the platform.”); De Stefano, *supra* note 31, at 480–81; GUY STANDING, THE PRECARIAT: THE NEW DANGEROUS CLASS 24–26 (2011); *cf.* Matthew W. Finkin, *Beclouded Work, Beclouded Workers in Historical Perspective*, 37 COMP. LAB. L. & POL’Y J. 603 (2016) (describing the history of work performed away from the employer’s premises).

40. *See* Matthew Yglesias, *When Is a Taxi Not a Taxi?*, SLATE (Dec. 15, 2011, 1:09 PM), http://www.slate.com/articles/technology/technocracy/2011/12/uber_car_service_exposing_the_idiocy_of_american_city_taxi_regulations_.html.

41. *See id.*

Uber's stronger markets, for example, is Boston, a city that features exorbitant fares and low taxi availability in part because Cambridge cabs can't pick up passengers in Boston and vice versa.⁴²

Investor Chris Dixon then used the phrase "regulatory hack" in a blog post in 2012.⁴³ Unlike Yglesias's avoidance-centered analysis, Dixon viewed software primarily as a means for noncompliance.⁴⁴ And like Wu's conception of evasion as an alternative to direct change efforts, Dixon argued that startups use software to violate the law instead of lobbying for new legal rules.⁴⁵ In Dixon's view, when startups demonstrate the economic value of a business model that is based on noncompliance, "[w]ith luck, regulators are forced to follow."⁴⁶

In this Article, we seek to broaden the frame beyond the gig economy and assess how software may erode employment law in additional ways. In other words, we apply Wu's typology to consider other employment law "hacks." This broad frame is important, as a narrow focus on the gig economy misses a larger shift, one in which the work relationship – in gig- and non-gig jobs alike – has come to be mediated, governed, and constrained by software. The following Parts examine four examples: timekeeping programs, screening and selection algorithms, scheduling software, and work distribution platforms.

42. *Id.* (emphasis added).

43. Chris Dixon, *Regulatory Hacks*, CDIXON BLOG (Oct. 10, 2012), <http://cdixon.org/2012/10/10/regulatory-hacks/>. Dixon's usage is not limited to software: he is also referring to certain types of business models that challenge legal rules. *See id.* Dixon uses the example of a cellular phone company that ignored then federal rules permitting only two cellular systems to operate in a city. *Id.* Another example of Dixon's usage might be Tesla's refusal to abide by dealership laws. Tesla's cars are full of software, but Tesla does not use the software to avoid dealership rules. It avoids dealership rules by opening storefronts in the same way that any car manufacturer could avoid dealerships by opening storefronts directly under the control of the manufacturer. *See* Elon Musk, *The Tesla Approach to Distributing and Servicing Cars*, TESLA (Oct. 22, 2012), <https://www.tesla.com/blog/tesla-approach-distributing-and-servicing-cars>. Since Dixon's first usage, journalists and bloggers have used the term in varying ways, sometimes appearing to refer to noncompliance and sometimes to avoidance. *See, e.g.*, Kevin Drum, *The Gig Economy Is Mostly a Myth*, MOTHER JONES (Apr. 19, 2016, 5:05 PM), <http://www.motherjones.com/kevin-drum/2016/04/gig-economy-mostly-myth>; *a16z Podcast: The Art of the Regulatory Hack*, ANDRESSEN HOROWITZ (May 16, 2016) (available at <http://a16z.com/2016/05/16/regulatory-hacking/>) (using the term in a way more consistent with Dixon's phrase, where startups "directly confront[t]," instead of stealthily bypassing, regulatory barriers and incumbent-driven regulatory capture challenges).

44. *Compare* Yglesias, *supra* note 40, *with* Dixon, *supra* note 43.

45. *See* Wu, *supra* note 13, at 692; Dixon, *supra* note 43.

46. Dixon, *supra* note 43.

III. TIMEKEEPING PROGRAMS

In a recent law review article, *When Timekeeping Software Undermines Compliance*,⁴⁷ we examined how software used to record employee hours can facilitate and legitimize non-compliance with wage and hour law. Many employers track workers' hours electronically – via computer log-ins, swipe cards, RFID badges,⁴⁸ or even iris or fingerprint scans – and use software to handle the recorded hours before they are forwarded to payroll.⁴⁹ As we explained in that article, the software offers a number of features to modify employee timecards, some of which are automatic (like “rounding” and “automatic break deductions”) and others of which are discretionary (buttons for supervisors to “edit” a subordinate’s timecard).⁵⁰

While that article was focused on the behavioral cues presented by specific software features, our focus here is on the attributes of software generally that can ultimately violate legal rules. To illustrate, we describe two timekeeping software functionalities that erode compliance: rounding – described briefly in the Introduction – and automatic break deductions. For each, we examine how the availability of automatic, scalable functionality combines with outdated regulations to erode compliance on the margin.⁵¹ Compounding the problem, the software tends to obscure violations by the employer, often due to information asymmetries.⁵²

47. Elizabeth Tippet, Charlotte S. Alexander & Zev J. Eigen, *When Timekeeping Software Undermines Compliance*, 19 YALE J.L. & TECH. 1 (2017).

48. The term “RFID” refers to “radio-frequency identification.” They are electronic tags that can convey information to a sensor. *Radio-Frequency Identification*, WIKIPEDIA, https://en.wikipedia.org/wiki/Radio-frequency_identification (last visited Dec. 19, 2017).

49. Tippet, Alexander & Eigen, *supra* note 47, at 2–3.

50. *Id.* at 18–19, 34–38.

51. From a big picture standpoint, timekeeping software inarguably promotes compliance over manual or quasi-manual forms of timekeeping. Part of this compliance function occurs by automating decisions that were previously vulnerable to human error. Transcription errors or calculation errors are less likely under a software-based system. Employees no longer have to worry about a paycheck delivered late because the payroll manager is behind schedule or out sick. Timekeeping software also assures a baseline level of compliance. The most blatant wage and hour violations can occur when employers keep *no records at all* of hours worked by employees. As long as the employer collects hours data through the software and applies whatever default settings come with the software, employees have some assurance they will more or less be paid what they are owed. Timekeeping software that is set up to pay employees only for half of the days they have worked will not gain much market share. Noncompliance would be readily detected by workers. The liability it would impose on employers would be intolerably high. Instead, timekeeping software exploits ambiguity to erode compliance at the margins, as we describe below.

52. Tippet, Alexander & Eigen, *supra* note 47, at 39–40.

A. Exploitation of Automatic, Scalable Functionality

A software feature known as “rounding” exemplifies the ways in which scalable functionality can systematically disadvantage workers.⁵³ Rounding allows employers to set the system to automatically alter an employee’s time punch to a pre-specified increment of time.⁵⁴ One common unit of rounding is 7.5 minutes, such that all time punches appear in quarter-hour increments (on the hour, fifteen minutes past the hour, thirty minutes, forty-five minutes).⁵⁵ Suppose, for example, that an employee logged in and began work at 8:55 a.m., five minutes before the formal start of her shift. The software would “round” the employee’s punch forward to 9:00, and pay her based on a 9:00 start time, causing her to lose five minutes of pay.⁵⁶ At the end of the shift, punching out at five minutes past the hour would result in losing those minutes of pay as well.⁵⁷

In theory, rounding does not disadvantage employees if we assume that employee punches are distributed equally before and after the quarter hour. However, this assumption may depart substantially from employee practice. Consider, for example, a typical employer attendance policy. The policy likely provides for discipline of employees who arrive late or leave early.⁵⁸ Consequently, employees are unlikely to collect “bonus” minutes available under the rounding system by cutting their shifts short.⁵⁹ Moreover, if the employer enforces the attendance policy strictly, requiring that an employee be at his or her station and logged in no later than the exact start of a shift, the likelihood of an early punch increases.⁶⁰

When rounding is combined with employer attendance policies, the resulting distribution of punches can favor the employer in the aggregate, even if any given employee sometimes benefits individually or a subset of employees benefit over time.⁶¹ Rounding exploits the scalability and automaticity of

53. *Id.* at 37–40.

54. *Id.* at 37.

55. *Id.*

56. Conversely, if the employee arrived five minutes late, the clock would “round” back to 9:00 a.m., and the employee would receive pay for five extra minutes.

57. As in the previous note, leaving early would produce a bonus for the employee, where the clock rounds forward.

58. Notwithstanding the attendance policy, it would still be theoretically possible for employees to benefit from a rounding system if they log in sufficiently early for an early punch to be rounded back even earlier. For example, an employee who logs in at 8:50 a.m. for a 9:00 a.m. shift would be rounded back to 8:45, providing the employee with a five-minute bonus. However, employers can defeat this strategy by prohibiting employees from logging in more than a certain number of minutes early (for example, seven minutes). They can do so either through a written policy or by setting the software to reject early logins.

59. Tippett, Alexander & Eigen, *supra* note 47, at 37–40.

60. *See id.* at 39.

61. *Id.* at 38–39.

software. Implemented through a single click, the employer's advantage arises less from the individual application of the rule than its aggregate effect. It operates as a form of casino odds,⁶² betting that the employer will receive a favorable outcome in the aggregate, rather than a sure win in each case. Failing to pay hourly employees for each hour worked can violate state wage and hour laws.⁶³ When lost time causes an employee's pay to dip below the hourly minimum wage, or results in unpaid overtime, this practice can also violate the federal Fair Labor Standards Act ("FLSA").⁶⁴

Another common feature of timekeeping software – known as “automatic break deductions” – offers a different mechanism for employers to reclaim employee wages over time.⁶⁵ This feature allows the employer to deduct unpaid meal or rest periods from an employee's hours automatically.⁶⁶ Automatic break deductions operate as a favorable default setting for the employer.⁶⁷ Consider, for example, a retail or food service worker scheduled to take a half-hour unpaid meal break, who is called back early or misses the break entirely

62. *Id.* at 40.

63. *Id.* at 11–12.

64. The FLSA requires that employees receive an average of at least \$7.25 per hour and 1.5 times their regular rate of pay for hours worked over forty in a workweek. Fair Labor Standards Act of 1938, 29 U.S.C. §§ 206–207 (2012). Some states have higher minimum wage requirements. *Minimum Wage Laws in the States – September 30, 2017*, U.S. DEP'T LAB., <https://www.dol.gov/whd/minwage/america.htm> (last visited Dec. 19, 2017). If an employee is paid at or near the relevant hourly minimum wage, then the loss of time due to automatic rounding means that his or her pay, when averaged across his or her *actual* hours worked, would dip below the required hourly minimum. Likewise, if an employee's actual hours worked, prior to automatic rounding, exceed forty hours per week, then he or she is due overtime. When rounding artificially brings those hours below forty, an overtime violation occurs.

65. Tippet, Alexander & Eigen, *supra* note 47, at 34–36.

66. *Id.* at 34.

67. *Id.* at 35–36. For this reason, automatic break deductions can be expected to be appealing even for employers without a legitimate need to avoid frequent punches. For example, employees working in call centers can have their break time tracked with reasonable precision based on logins and logouts from the call center software. Employees who take breaks away from their physical workstation can easily be logged in and out as they leave and return to the work area using their RFID tag. A driver's breaks (or a missed break) can be detected through GPS measures of a vehicle's movement. Where break time is more accurately detected through reliable proxies, automatic break deductions, like rounding, serve only to make time records more inaccurate, without a legitimate business justification. Automatic break deductions can also be applied in workplaces where hourly workers punch in and out for meal and rest breaks. In these situations, where the punch data indicates a missed break, the software will presume that the employee took the break but forgot to punch in and out (rather than assume that the break was missed entirely). Likewise, if the punch data is asymmetrical – where an employee only punches in from a break, or only punches out – the software can also infer the standard break time from that punch.

when business picks up. Unless the employee (or the supervisor) takes affirmative action to override the deduction, the software will deduct the break time from the employee's pay.

Moreover, employees may not have the ability or authority to override deductions themselves.⁶⁸ Because federal wage and hour law does not require employers to provide employees with access to their own timecards,⁶⁹ employees may depend on others to override the deduction for them. The employer's policy may require them to record the missed break in a paper logbook or form.⁷⁰ Or, it may require them to ask their supervisor to override the deduction.⁷¹ Any breakdown in the implementation of this procedure inures to the employer's benefit. If the employee forgets to ask for the override, or is too afraid or uninformed to do so, the employer benefits. If the supervisor forgets or refuses to input the override, the employer benefits. If the paperwork is misplaced, the employer benefits as well.⁷² And as above, the employee's lost hours can constitute a violation of minimum wage law, overtime law, or both.⁷³

Our purpose here is not to make an empirical claim about the frequency of missed breaks or the frequency with which missed breaks are overridden. Depending on the circumstances, missed breaks may be rare, or missed overrides may be the exception rather than the rule. Such occurrences need not be common to erode compliance at the margins, however. Instead, like rounding, automatic break deductions favor the employer in small increments, which add up when aggregated over large numbers of employees and/or long periods of time.

68. See Elizabeth Tippett, *How Employers Profit from Electronic Wage Theft Under the FLSA*, 55 AM. BUS. L.J. (forthcoming 2018) (manuscript at 37–38) (on file with authors).

69. See Tippett, Alexander & Eigen, *supra* note 47, at 39–40, 46.

70. See, e.g., Tippett, *supra* note 68, at 42; *Berger v. Cleveland Clinic Found.*, No. 1:05 CV 1508, 2007 WL 2902907, at *13 (N.D. Ohio Sept. 29, 2007).

71. See, e.g., Univ. of Ala. at Birmingham, *Campus Kronos Quick Guide: 30 Minute Auto-Deduct Lunch Rule*, <http://www.uab.edu/images/finance/vpad/pdf/KRONOS/Autodeductlunchrulequickguide.pdf> (last visited Dec. 19, 2017) (explaining that supervisors have the authority to override the automatic deduction); TOWN OF BETHLEHEM, EMPLOYEE POLICY HANDBOOK 13, <http://www.townofbethlehem.org/DocumentCenter/View/3983> (last visited Dec. 19, 2017) (“Managers will handle canceling automatic lunch deduction if it happens.”).

72. Of course, one might imagine a scenario in which employees manipulate the automatic break deductions to their advantage – taking extra minutes on every break at every opportunity. Because the software assumes a standard break time, these strategic employees receive pay for work they did not perform. But like employees attempting to game the rounding policy, they would do so at the risk of discipline by their supervisor for violating rules regarding break duration. Over time, those employees would be disciplined or terminated, while the remaining conscientious employees are more likely to be disadvantaged by the automatic breaks.

73. See *supra* note 51.

B. *Exploitation of Information Asymmetries*

Compounding the problems of scalability and automaticity, timekeeping software's operation is opaque to employees, hiding the aggregate effects of rounding and automatic break deductions. Only the employer has access to the underlying punch data, and only the employer knows which automatic software settings have been enabled. This produces an information asymmetry that impedes detection by affected workers who might otherwise challenge the practice.⁷⁴ Because wage and hour rules rely heavily on private enforcement, information asymmetries ultimately reduce the employer's incentive to comply with the underlying rule.⁷⁵

Rounding rules rely heavily on information asymmetries to avoid detection.⁷⁶ Timekeeping software routinely stores the original punch information, in addition to the data that is generated after rounding is applied.⁷⁷ Thus, the employer has the option of reviewing the difference between actual and rounded punches to assess whether it benefits or loses from the rule. (On the other hand, employers may prefer to avoid the information to escape later arguments that wage and hour violations were willful.⁷⁸)

Suppose an employer discovers it is disadvantaged by the rounding rule. It can cut its losses by removing or adjusting software settings. If instead the employer discovers that it benefits from rounding, a litigation-averse employer might discontinue the practice, but others may leave it in place and continue to pocket the benefits.⁷⁹ Either way, an employer is unlikely to pay back the ag-

74. Tippet, *supra* note 68, at 28–29 (describing the difficulty plaintiffs experience in identifying the type of wage and hour violation without access to the employer's timekeeping settings).

75. Charlotte S. Alexander & Arthi Prasad, *Bottom-Up Workplace Law Enforcement: An Empirical Analysis*, 89 IND. L.J. 1069, 1070–71 (2014) (“Workplace rights in the United States are generally enforced from the bottom up. With few exceptions, labor and employment laws contain private rights of action that enable workers themselves to bring lawsuits when their rights are violated. These private lawsuits vastly outnumber government enforcement actions against law-breaking employers. Even what seems to be top-down government enforcement is often bottom-up enforcement in disguise, as government agencies depend in large part on worker complaints to direct their enforcement activity. Workplace law enforcement therefore depends significantly on worker ‘voice,’ with workers themselves identifying violations of their rights and making claims to enforce them.” (footnotes omitted)).

76. See Zev Eigen, Professor, Northwestern Univ. Sch. of Law, NYU 66th Annual Conference on Labor: Reforming the FLSA (June 6, 2013).

77. See Tippet, Alexander & Eigen, *supra* note 47, at 19.

78. A finding of willfulness under the FLSA can make the employer liable for liquidated damages equal to the underlying wage and hour violation and a longer statute of limitations. See *McLaughlin v. Richland Shoe Co.*, 486 U.S. 128, 133 (1988).

79. Rounding can be quite profitable for employers, even after litigation and settlement costs are taken into consideration. See Tippet, *supra* note 68, at 29.

gregate loss to employees generated by a rounding rule, which could tip employees off to the possible wage and hour violation and give rise to litigation risk at a potentially workforce-wide scale.

Employees, for their part, have no ability to assess whether they have been disadvantaged by the rule.⁸⁰ They would have to keep a personal record of their actual time punches, calculate their hours, and then (assuming no other changes have been made to their paychecks) compare their estimated paychecks to their actual pay. Employees also have no access to timestamps for other employees, so they cannot assess the aggregate effect of the rule on other workers.⁸¹ Consequently, a plaintiffs' lawyer seeking to represent a class of employees must guess whether a putative class representative has been individually harmed and the amount the class has lost overall. From an informational standpoint, individual employees are working from a manual, pen-and-paper system and fare poorly against the big data available to employers.

Automatic break deductions also place employees at an informational disadvantage. Unlike rounding, employers may not have the original punch data from breaks (if employees do not punch in and out for each break).⁸² Nevertheless, automatic breaks produce other information asymmetries. The first asymmetry arises from the structure of the break deduction. If the employer implements a simple form of break deduction – for example, automatically deducting an unpaid thirty-minute meal break each day – it is likely that the employee is aware of this practice, and no asymmetry exists.

But in reality, software break rules can be highly complex. One university, for example, has implemented a break rule that consists of several different automatic calculations that vary depending upon whether the employee has punched in and out for the break and the duration of the recorded break.⁸³ The rule functions essentially as a series of “if, then” contingencies, implemented by software.⁸⁴ Where the employer has no duty to disclose the fact or nature of the automatic break deduction, the employee is not well-positioned to identify when the actual circumstances diverge from the assumptions underlying

80. Tippet, Alexander & Eigen, *supra* note 47, at 39–40.

81. In fact, some employer policies prohibit employees from discussing their pay at all. See U.S. DEP'T OF LABOR, FACT SHEET: PAY SECRECY (2014), https://www.dol.gov/wb/media/pay_secretcy.pdf (reporting that “nearly half of all workers nationally reported that they were either contractually forbidden or strongly discouraged from discussing their pay with their colleagues”).

82. See Tippet, *supra* note 68, at 36 (study of automatic break deduction cases; employers tended not to have punch records of break time).

83. Univ. of Ala. at Birmingham, *supra* note 71.

84. See *id.* (applying automatic break deduction if employees worked 8.5 or more hours with no lunch punches, or with incomplete punches, but no deduction if employees punched in and out for lunch or worked fewer than 8.25 hours). An automatic break deduction system adopted by fast food chain Jack in the Box, for instance, was so complex it is difficult to summarize. See *Gessele v. Jack in the Box, Inc.*, No. 3:10-cv-960-ST, 2013 WL 1326563, at *8–10 (D. Or. Jan. 28, 2013).

the rule. And employees are in no position to request an override to rules when they do not know or fully understand the rules' structure or effect.

Employers also benefit from differential access to individual timecards among employees. Employees may not have access to their own time cards or to the credentials to override an automatic break deduction. Absent that access – or notification of an override – employees are left to guess whether they were fully compensated for their time.⁸⁵

C. *Exploitation of Outdated and Ill-Fitting Legal Rules*

Both rounding and automatic break deductions are made possible by outdated legal rules, which do not expressly prohibit either practice. When employees challenge employers' timekeeping systems, courts engage in an intensive fact-based inquiry.⁸⁶ This allows employers to credibly claim that they were not willfully or intentionally depriving employees of wages. This gap between regulations and software-enabled employment practices allows employers to claim some measure of "cover" for their noncompliance.

Federal regulations dating back to 1961 authorize rounding provided that it "will not result, over a period of time, in failure to compensate the employees properly for all the time they have actually worked."⁸⁷ The rule represents a vestigial legal accommodation to employers previously burdened with pen-and-paper calculations. There is, of course, no technological need for rounding within timekeeping software today – the software can record and calculate hours to the millisecond.⁸⁸ Instead, software makers offer rounding functionality to suit employer preferences for what might be euphemistically termed "predictable" labor costs.

When reviewing workplace rounding rules, courts require that employers do not systematically disadvantage employees over time.⁸⁹ The lawfulness of the employer's policy thus turns on a question of fact. Consider an employer's decision-making around whether to implement a rounding rule when setting up

85. Another asymmetry arises from the employer's exclusive access to information about the class of employees to whom the rule is applied. The employer can select, for example, whether to apply the automatic deduction to all hourly employees, or only to hourly employees occupying a certain position or working at a certain location. The size of the affected workforce may substantially affect the viability of a class or collective action against the employer, imposing further uncertainty and risk for plaintiffs' lawyers assessing the viability of a claim.

86. See Tippet, *supra* note 68, at 10–11.

87. 29 C.F.R. § 785.48 (2017).

88. See Tippet, Alexander & Eigen, *supra* note 47, at 38.

89. See 29 C.F.R. § 785.48 (2017); see, e.g., *Corbin v. Time Warner Entm't–Advance/Newhouse P'ship*, 821 F.3d 1069, 1075, 1078–79 (9th Cir. 2016) (rounding must be "facially neutral" and "neutral as applied"); *Waine-Golston v. Time Warner Entm't–Advance/Newhouse P'ship*, No. 11cv1057–GPB(RBB), 2013 WL 1285535, at *7 (S.D. Cal. Mar. 27, 2013); *Gonzalez v. Farmington Foods, Inc.*, 296 F. Supp. 2d 912, 932–33 (N.D. Ill. 2003).

a timekeeping system. In adopting a 7.5-minute rounding rule, a knowledgeable employer would know that it is likely to come out ahead as a result of attendance policies. But because it cannot be said with 100% certainty in advance that the system will systematically disfavor employees, employers can tell themselves that they are colorably complying with the rule. The violation arises not from the adoption of the practice but from its effect on later time punches.

Employers also adopt other strategies to game the rounding rules in their favor. Some employers restrict employees from punching in during rounding periods that are favorable to the employee.⁹⁰ Others assign additional work to employees during periods they know will be rounded away. For example, call centers will sometimes require employees to pick up incoming calls during the last few minutes or seconds of their scheduled shift, knowing the additional minutes required to complete the call will likely be rounded away.⁹¹

Employers also use policies to create uncertainty over whether lost time is compensable. Not all time spent on the employer's worksite must be paid – tasks in preparation for or at the conclusion of the workday may not be compensable unless they are “integral and indispensable to the principal activities that an employee is employed to perform.”⁹² Employers create uncertainty about the compensability of work performed during rounding periods through so called “grace periods,” which allow employees to punch in anytime during the employer-favorable rounding periods.⁹³ If employees later challenge the rounding policy in a class action, the employer may then argue that the case is not amenable to collective treatment because individual issues predominate regarding whether the time was spent working.⁹⁴

Automatic break deductions benefit from similar legal ambiguity, enabled by outdated rules that fail to consider the ways in which software settings can inure to an employer's advantage. The FLSA does not mandate breaks of a

90. See Tippet, *supra* note 68, at n.79 (collecting cases).

91. Fisher v. Mich. Bell Tel. Co., 665 F. Supp. 2d 819, 823 (E.D. Mich. 2009); Adair v. Wis. Bell, Inc., No. 08-C-280, 2008 WL 4224360, at *11 (E.D. Wis. Sept. 11, 2008); Russell v. Ill. Bell Tel. Co., 721 F. Supp. 2d 804, 810 (N.D. Ill. 2010); Ribot v. Farmers Ins. Grp., No. CV 11-02404 DDP (FMOx), 2013 WL 3778784, at *1 (C.D. Cal. July 17, 2013); see Tippet, *supra* note 68, at 24–25.

92. Integrity Staffing Sols., Inc. v. Busk, 135 S. Ct. 513, 517 (2014).

93. See, e.g., Sali v. Universal Health Servs., Inc., No. CV 14-985 PSG (JPRX), 2015 WL 12656937, at *3 (C.D. Cal. June 3, 2015); Martinez v. DHL Express (USA) Inc., No. 15-22505-CIV-ALTONAGA/O'Sullivan, 2016 WL 455394, at *7 (S.D. Fla. Feb. 5, 2016); Schneider v. Union Hosp., Inc., No. 2:15-CV-00204-JMS-DKL, 2016 WL 6037085, at *11 (S.D. Ind. Oct. 14, 2016); Kelly v. Healthcare Servs. Grp., Inc., No. 2:13-cv-00441-JRG, 2015 WL 3464131, at *4 (E.D. Tex. June 1, 2015); Tippet, *supra* note 68, at 25–27.

94. Tippet, *supra* note 68, at 24.

specified frequency or duration, or how breaks are recorded or tracked.⁹⁵ Some states, like California, place strict rules on the frequency, duration, and payment of breaks and impose penalties on employers that fail to make such breaks available.⁹⁶

Even though many state rules are strict about break availability, they tend not to focus on how employers record or track those breaks. As a result, automatic break deductions implemented via software do not violate state laws *per se*. Instead, courts tacitly permit automatic break deductions unless employees suffer frequent uncompensated breaks.⁹⁷

This flexible approach provides enough uncertainty about the legality of automatic break deductions that employers can insist that they are not knowingly engaging in wage theft. Employers that do not require employees to punch in or out for breaks can also hide behind uncertainty as to the true number of missed breaks. Unlike rounding, employers will not have the original punch information that can determine with a high degree of certainty whether the policy favors the employer.

Even though the lack of records is attributable to the employer's own practices, courts will sometimes refuse to certify (or decertify) automatic break cases on the basis that time worked must be decided on an individualized basis.⁹⁸ In such cases, employees are left with the choice to litigate small-dollar

95. The FLSA is only implicated to the extent that employees work through breaks without payment and those unpaid breaks result in unpaid overtime or push the employee's wage rate below minimum wage. *See supra* note 64.

96. *See* Tippet, Alexander & Eigen, *supra* note 47, at 12 n.46 (explaining California break requirements under Cal. Lab. Code § 512).

97. As one court explained, courts expect employers to provide a somewhat feasible method for employees to reclaim a lost break on their timecard. *See* Berger v. Cleveland Clinic Found., No. 1:05 CV 1508, 2007 WL 2902907, at *14 (N.D. Ohio Sept. 29, 2007).

98. In *Gessele v. Jack in the Box*, a federal district court in Oregon declined to certify a collective action in a case involving a complex set of break rules based on actual punch times and automatically-deducted breaks. *Gessele v. Jack in the Box, Inc.*, No. 3:10-CV-00960-ST, 2013 WL 1326538, at *6 (D. Or. Apr. 1, 2013). The software was structured to include a half-hour automatic unpaid meal break, which could only be overridden by a supervisor. *Gessele v. Jack in the Box, Inc.*, No. 3:10-cv-960-ST, 2013 WL 1326563, at *22 (D. Or. Jan. 28, 2013). The software also assumed rest breaks of twenty minutes or fewer were paid. *Id.* The dispute arose over interrupted meal breaks that lasted more than twenty minutes but fewer than thirty minutes. *Id.* Whether due to oversight or an intentional decision by the employer, interrupted meal breaks between twenty-one and twenty-nine minutes were treated as unpaid, contrary to state law. *See id.* at *22–23. For reasons that are unclear, the court also expressed uncertainty about the number of minutes worked during these interrupted breaks. *Id.* at *24. Rather than punishing the employer for its sloppy software implementation or the poor recordkeeping of supervisors responsible for recording the interrupted breaks, the court concluded that the information gap made the case unsuitable for decision through a collective action. *See id.* at *37. In other words, the ambiguity ultimately allowed the employer to avoid liability for its practices.

cases individually or to drop their claims. In reality, this means that employees have no practical remedy for their lost wages, and the employer's incentive to adopt more accurate break-tracking practices is reduced.

Thus, timekeeping software – with embedded rules like rounding and automatic break deductions – can erode wage and hour law compliance and obscure employers' violations. This employment law hack exploits outdated regulations and legal ambiguity, resulting in wage loss for employees and “cover” from liability for employers.

IV. SCREENING AND SELECTION ALGORITHMS

Whereas employers use timekeeping software to manage employees' time and pay, screening and selection software operate at different phases of the employment relationship. As Cathy O'Neil documents in her book, *Weapons of Math Destruction*, large employers are increasingly turning to selection algorithms to sift through the mountains of applications they receive online.⁹⁹ They also use algorithms to evaluate employees for compensation and retention purposes.¹⁰⁰ This Part uses screening and selection software, and the algorithms that the software deploys, as a further example of the ways in which software can exploit scalability and automaticity, information asymmetries, and an outdated regulatory framework to violate employment law.

A. *Exploitation of Automation and Scalability*

In many ways, employers' use of software to automate screening and selection represents an improvement upon prior practice. As Pauline Kim and others have explained, selection algorithms can ensure a certain baseline level of compliance with antidiscrimination laws and can be superior to pre-digital employee selection practices in avoiding bias.¹⁰¹ Software can be structured to deliver seemingly objective, nondiscriminatory assessments of applicants or employees. For example, an employer can avoid asking about an applicant's race, gender, religion, age, leave-history, disability, or other protected category. If the software does not “know” about an applicant's protected status, then, at the very least, it avoids explicit bias. Likewise, a performance evaluation algorithm that uses factors highly predictive of job success may be preferable to the highly subjective evaluations that are vulnerable to implicit bias.¹⁰²

99. CATHY O'NEIL, *WEAPONS OF MATH DESTRUCTION: HOW BIG DATA INCREASES INEQUALITY AND THREATENS DEMOCRACY* 108 (2016).

100. *Id.* at 134–40 (using teacher evaluation algorithms to explore the latter application); see also *Cramblett v. McHugh*, No. 3:10–CV–54–PK, 2012 WL 7681280, at *18 (D. Or. Nov. 19, 2012) (referencing “computerized algorithm” used to assess resumes for minimal qualifications).

101. Pauline T. Kim, *Data-Driven Discrimination at Work*, 58 WM. & MARY L. REV. 857, 920–21 (2017).

102. This is the very theory that spawned *Wal-Mart v. Dukes*, along with related copycat lawsuits and multimillion dollar settlements. In that case, the women plaintiffs

Even if software improves compliance in some ways, it can also erode compliance at the margins. The problem, as O’Neil explains, is that the math underlying the algorithm is trying to maximize some measure specified by the employer – for example, minimum qualification standards, or, in the case of teacher assessments, student improvement in test scores year over year.¹⁰³ The software will do so using all data made available to it – whether it be information harvested from social media networks, credit scores, or scores on a psychometric test. As both O’Neil and Kim explain, if any of the original input data is correlated with membership in a protected category – zip code, for example – then the algorithm may treat applicants differently on the basis of a protected class after all.¹⁰⁴ Kim also notes that algorithms may replicate errors in the data that systematically disfavor employees in certain protected categories (e.g., women who have changed their names are more likely to be subject to database error that misidentifies them as having a criminal record).¹⁰⁵

Software also tends to reproduce the status quo.¹⁰⁶ If the measure of success on the job is itself the product of discrimination, then predictors of that success will likely reproduce that result.¹⁰⁷ As O’Neil explains, suppose a company seeks to recruit up-and-coming software programmers.¹⁰⁸ The company designs an algorithm to identify potential candidates by assessing the size of their online social networks or the frequency with which they engage in social network activity.¹⁰⁹ If those networks are predominantly male, then the software will rate male programmers as better candidates than their female counterparts, who do not show up on the social network measure. It may be, however, that there are talented female programmers who are doing other things with their time.¹¹⁰ If one of those “other” female programmers applies for a job that uses the social network algorithm, she will receive a lower rating because the software does not incorporate the variables that would otherwise identify her as promising. In sum, algorithms are not in the business of looking for new pathways to success; they identify and entrench existing ones instead.

Like timekeeping software, selection algorithms do not produce blatant, wildly illegal outcomes in every case. Presumably, a selection algorithm that

claimed that Wal-Mart’s policy granting store managers discretion to make pay and promotion decisions based largely on subjective criteria constituted sex discrimination in violation of Title VII of the Civil Rights Act of 1964. *See Wal-Mart Stores, Inc. v. Dukes*, 564 U.S. 338, 342–43 (2011). Although the *Dukes* plaintiffs ultimately lost, the sheer volume of related litigation – especially against large employers – may have pushed employers to consider other types of selection practices to reduce litigation risk and compliance costs, including those aided and implemented by software.

103. *See* O’NEIL, *supra* note 99, at 136–37.

104. Kim, *supra* note 101, at 877–78; O’NEIL, *supra* note 98, at 108–09.

105. Kim, *supra* note 101, at 885–86.

106. *See id.* at 872–83.

107. *See id.* at 876.

108. O’NEIL, *supra* note 99, at 119–20.

109. *Id.*

110. *Id.*

only selected men, or only selected white candidates, would be rooted out and discontinued quickly. Instead, the disadvantages pile up at a statistical level, with disadvantaged groups receiving a demerit here or a demerit there that make them less desirable candidates overall. This may not make a difference for each candidate, but it may affect candidates on the margin. And where multiple employers use similar selection algorithms, these can render a borderline candidate completely unemployable. O'Neil tells the story of a candidate with a history of mental illness who found himself systematically excluded from all entry-level jobs in his town.¹¹¹ The tests that employers used did not ask whether he had a history of mental illness, but the psychometric algorithms used in the online selection questions evidently declared him unfit.¹¹²

B. *Exploitation of Information Asymmetries*

Applicants or employees who experience discrimination as a result of a facially neutral employer practice – such as the operation of a screening or selection algorithm – traditionally turn to disparate impact law to seek a remedy.¹¹³ In a disparate impact claim, the plaintiffs must prove that the employer's policy, test, or rule, when put into practice, produces a discriminatory effect on the basis of a protected criterion, e.g., race or sex.¹¹⁴

Like rounding and automatic break deductions, however, information asymmetries make software-implemented disparate impacts difficult for employees to detect. Disparate impact cases have always presented a challenge for plaintiffs because only the employer has access to aggregate data on the statistical effect of the employment test at issue. This problem is compounded when screening and selection software relies on data mining because the applicant or employee may not know the sources of information from which the employer has drawn. For example, software may use information culled from social media. It might also use credit worthiness information from third parties that do not qualify as “credit rating” agencies under the Fair Credit Reporting Act, thus avoiding that law's disclosure rules.¹¹⁵

111. *Id.* at 105–07.

112. *Id.*

113. See Solon Barocas & Andrew D. Selbst, *Big Data's Disparate Impact*, 104 CAL. L. REV. 671, 694 (2016).

114. See, e.g., *Griggs v. Duke Power Co.*, 401 U.S. 424, 431 (1971); *Dothard v. Rawlinson*, 433 U.S. 321, 328–29 (1977).

115. For example, LinkedIn used to offer a feature called “reference search,” which identified contacts common to both the employer and the applicant. *Sweet v. LinkedIn Corp.*, No. 5:14-cv-04531-PSG, 2015 WL 1744254, at *3 (N.D. Cal. Apr. 14, 2015). The plaintiffs in that case alleged that putative employers surreptitiously contacted past employers using the “reference search” function and that they were denied employment based on those discussions. *Id.* at *3–4. The trial court dismissed the case on the basis that LinkedIn did not qualify as a “consumer reporting agency” under the Fair Credit Reporting Act (“FCRA”). *Id.* at *10. Had LinkedIn been covered by the FCRA, employers would have been required to obtain applicants' consent before

Further, software that determines employees' pay and promotion often relies on a combination of subjective and data-driven assessments – for example, supervisors' performance evaluations, plus other metrics that are weighted and combined by an algorithm.¹¹⁶ Employers are under no duty to disclose the metrics used and could very well rely on data gathered in the workplace that is deemed predictive of success – for example, number of hours spent in the office, size of business network (measured by email frequency), number of words typed, amount of time spent surfing the web, and frequency and duration of contact with others. For the most part, this information could be gathered surreptitiously and its application unknown to affected employees. And to the extent that these data are correlated with membership in a protected class – women who spend fewer hours in the office due to dependent care obligations but who are more productive during that time, for example – software's reliance on the data can produce an unlawful disparate impact.

This is in some ways structurally similar to timekeeping software, in that affected individuals may never know they were harmed or may not be able to identify the mechanism by which the harm occurred. Therefore, potential plaintiffs may not be equipped with sufficient information for attorneys to assess whether they have a viable claim.

C. *Exploitation of Outdated and Ill-Fitting Legal Rules*

Finally, like timekeeping software, employers' use of compliance-eroding selection algorithms is enabled by an inexact fit between existing rules and the current factual context. In theory, these selection algorithms are no different from the kind of written tests that originally gave rise to disparate impact jurisprudence in the 1970s.¹¹⁷ Using reams of data to “predict” who is a good hire is conceptually indistinguishable from using a written test to identify apti-

using the “reference search” feature and would have also been entitled to notice of an adverse employment decision based on the results of that search. *Id.* at *6. LinkedIn subsequently discontinued the service. Bob Sullivan, *Tempted to Accept that LinkedIn Invitation? Think Twice*, YAHOO! FIN. (Oct. 15, 2015), <https://finance.yahoo.com/news/tempted-accept-linkedin-invitation-think-154525936.html>.

116. See *Muñoz v. Orr*, 200 F.3d 291, 297–98 (5th Cir. 2000) (combines automated system with employee appraisal scores from a supervisor); *Chacko v. Connecticut*, No. 3:07-cv-1120 (CFD), 2010 WL 1330861, at *1 (D. Conn. Mar. 30, 2010) (plaintiff claimed that Asian doctors assigned heavier workloads as a result of patient assignment algorithm and supervisor decisions regarding coverage assignments); *Cramblett v. McHugh*, No. 3:10-CV-54-PK, 2012 WL 7681280, at *18–19 (D. Or. Nov. 19, 2012) (algorithm weeded out unqualified candidates at a preliminary stage, and then manager reviewed resumes and ranked candidates); *Onyiah v. St. Cloud State Univ.*, 684 F.3d 711, 715 (8th Cir. 2012) (algorithm calculated salary range, dean selected a salary within that range); *Coleman v. Exxon Chem. Corp.*, 162 F. Supp. 2d 593, 609–11 (S.D. Tex. 2001) (individual ranking list prepared by managers combined according to a computer algorithm).

117. See *Griggs*, 401 U.S. at 426, 436 (establishing disparate impact claim).

tude for a job. However, like other regulatory hacks, selection algorithms represent a problem for regulators because they are different enough from the old tests, and the rules that arose to regulate them, to allow employers to escape liability for noncompliance.

The legal rules regarding employer screening and selection practices reflect a pre-digital testing model. Promulgated in 1978, the Uniform Guidelines on Employee Selection Procedures offer employers various means of validating tests, depending on what the test seeks to measure (e.g., personality traits, job tasks, or skills associated with job success).¹¹⁸ The U.S. Equal Employment Opportunity Commission and other federal agencies use these guidelines to assess the legality of employers' screening and selection practices, though they are not binding on courts.¹¹⁹ Regardless, the Uniform Guidelines are of limited utility in evaluating screening and selection software, as data mining by algorithm does not fit exactly within any of the categories that the Uniform Guidelines offer. In theory, such processes seek to predict job success, but not necessarily, or exclusively, through job skills or personality traits.

118. The Uniform Guidelines on Employee Selection Procedures sorted the then-existing tests into three categories, within which employers were expected to validate the test using prescribed procedures. 29 C.F.R. §§ 1607.1–1607.16 (2017). These tests consisted of (1) those that measured employee traits – for example personality tests or IQ tests (“construct validity”); (2) those that mirrored components of the job itself (“content validity”) – for example a driving test for a truck driving job; and (3) those that measured for knowledge or skills predictive of success on the job (“criterion” validity) – for example, production rate. *Id.* at § 1607.14. The Guidelines set forth complex rules that delineated how to validate a test, which often required the services of an industrial or organizational psychologist to perform an in-depth job analysis and then develop or identify potential measures. For construct validity and criterion validity, this typically also involved testing the measure on a sample of workers representative of the “relevant labor market” to verify whether the measure was in fact statistically predictive of success on the job. *Id.* at § 1607.14(B)(4). For content validity, this involved showing that the test mirrored the job itself. *Id.* at § 1607.14(C). Employers in the private sector balked at the expense and complexity of the Uniform Guidelines and abandoned them in favor of more subjective selection practices, which did not require a robust statistical and procedural defense. *See generally* Elizabeth Tippet, *Robbing a Barren Vault: The Implications of Dukes v. Wal-Mart for Cases Challenging Subjective Employment Practices*, 29 HOFSTRA LAB. & EMP. L.J. 433 (2012) (describing the operation of the Uniform Guidelines); Ian Ayres & Peter Siegelman, *The Q-Word as Red Herring: Why Disparate Impact Liability Does Not Induce Hiring Quotas*, 74 TEX. L. REV. 1487, 1491–92 (1996) (noting the historical difficulty of proving a disparate impact in hiring); Peter E. Mahoney, *The End(s) of Disparate Impact: Doctrinal Reconstruction, Fair Housing and Lending Law, and the Antidiscrimination Principle*, 47 EMORY L.J. 409, 513–18 (1998) (describing the Uniform Guidelines).

119. George Rutherglen, *Abolition in a Different Voice*, 78 VA. L. REV. 1463, 1477 (1992) (reviewing RICHARD A. EPSTEIN, *FORBIDDEN GROUNDS: THE CASE AGAINST EMPLOYMENT DISCRIMINATION LAWS* (1992)) (describing the guidelines as “adopted by the Equal Employment Opportunity Commission and other federal agencies as non-binding interpretations of Title VII. These guidelines do impose very strict standards of validation, but they rarely have been strictly applied by the courts”).

Indeed, as Pauline Kim observes, data mining is atheoretical – heavy on evidence, short on theory.¹²⁰ By contrast, the rules assume testing that is heavy on theory but short on evidentiary support.¹²¹ The Uniform Guidelines are therefore intended to demand a baseline quantum of evidence to support the application of theoretical models. Kim predicts that these rules will be ineffective at curbing the use of selection algorithms because (circularly) their use is supported by the reams of data that generated the algorithms in the first place.¹²²

Selection algorithms also exploit uncertainty because the mechanics of their operation are opaque. In *Wards Cove Packing Co. v. Atonio*, the U.S. Supreme Court required plaintiffs to identify which particular components of a selection process produced a disparate impact.¹²³ This was somewhat straightforward when components of a selection process were discrete or readily identifiable.¹²⁴ This process becomes more difficult when data mining draws on multiple variables, some of which interact. Was it zip code data or data about an applicant’s attitudes that resulted in his or her rejection for a job? The answer may be one, the other, a combination, or some other variable. Although the 1991 amendment to the Civil Rights Act includes an exception for situations in which the components of an employment practice are not separable,¹²⁵ the plaintiff bears the burden of showing inseparability.¹²⁶ In practice,

120. Kim, *supra* note 101, 879–80.

121. *See id.* at 909.

122. *See id.* at 894.

123. *Wards Cove Packing Co., Inc. v. Atonio*, 490 U.S. 642, 657 (1989), *modified*, *Tex. Dep’t of Hous. & Cmty. Affairs v. Inclusive Cmty. Project, Inc.*, 135 S. Ct. 2507 (2015).

124. For example, in *Wards Cove*, the plaintiffs challenged a multi-step selection process. *Id.* at 651–52. Under the disparate impact case law that defined these issues at the time, it was always reasonably clear to the person taking (or subject to) a test what the test was measuring, e.g., height and weight, firefighter policies and knowledge, high school-level academic achievement. Plaintiffs’ attorneys assessing a case could make an educated guess about the likely effect of the test on employment outcomes. And indeed, the *Wards Cove* Court required the plaintiff to identify which particular aspect of the test caused the disparate impact. *Id.* at 657 (“As a general matter, a plaintiff must demonstrate that it is the application of a specific or particular employment practice that has created the disparate impact under attack.”).

125. Kim, *supra* note 101, at 914–15; 42 U.S.C. § 2000e-2(k)(1)(B)(i) (2012) (“With respect to demonstrating that a particular employment practice causes a disparate impact . . . the complaining party shall demonstrate that each particular challenged employment practice causes a disparate impact, except that if the complaining party can demonstrate to the court that the elements . . . are not capable of separation for analysis . . . [it] may be analyzed as one employment practice.”).

126. *See Muñoz v. Orr*, 200 F.3d 291, 304 (5th Cir. 2000) (affirming summary judgment against plaintiff where plaintiff failed to produce sufficient evidence to prove that statistical impact could not be isolated to a particular portion of the selection process, or the interaction between the secret algorithm and subjective employment practices).

this burden is difficult to meet when the software-driven selection process is complex or opaque.¹²⁷

Moreover, when screening and selection programs use machine learning, a process by which the software independently updates the variables or interactions it considers in reaction to the data it receives, even employers may not know which inputs are driving the outcomes.¹²⁸ Employers may also be in the dark when screening and selection software is obtained from a third party vendor that treats the algorithm's design and operation as a trade secret.¹²⁹ To the extent employers are themselves the software designers, they may use the trade secret argument to their own advantage as well.¹³⁰ In one recent case involving software implemented by a public employer, for example, the employer refused to disclose its secret promotion algorithm.¹³¹ The court declined to compel production, reasoning that it was irrelevant, but then dismissed the case on the basis that the plaintiff had failed to identify the discriminatory employment practice with sufficient specificity.¹³²

Thus, screening and selection software, like timekeeping programs, can exploit scalability, information asymmetries, and badly fitting legal rules to enable employers to violate employment law. While the violations themselves – screening that produces discriminatory outcomes, wage theft accomplished by shaving workers' hours – may not be new, software can spread the violations across entire workforces and hide the violations from the would-be enforcers. This presents a challenge for workplace regulation writ large because legal rules lag behind by employers' software-aided innovations in noncompliance.

Next, we examine a different form of regulatory hack, where employers do not violate the law, but rather side-step it. Here, employers lawfully avoid compliance costs through software. These avoidance strategies can be problematic because they create new kinds of harms and re-set work norms in unanticipated ways, placing them beyond the reach of current employment laws.

127. *See id.*

128. Kim, *supra* note 101, at 921–22.

129. *See, e.g., Section of Intellectual Property Law: Trade Secrets and Interferences with Contracts*, A.B.A., <http://apps.americanbar.org/dch/committee.cfm?com=PT041000> (last visited Dec. 20, 2017) (providing 2015/2016 report listing multiple cases in which developers claimed trade secret protection for algorithms that perform a variety of functions); Elizabeth Minkel, *Transcript: Cathy O'Neil Talks "Weapons of Math Destruction"*, TRACK CHANGES (Nov. 29, 2016), <https://track-changes.postlight.com/track-changes-podcast-39-cathy-oneil-talks-weapons-of-math-destruction-transcript-fb668885e73>.

130. *Muñoz*, 200 F.3d at 304.

131. *Id.* at 305.

132. *Id.* at 305–07.

V. SCHEDULING SOFTWARE

While timekeeping software allows managers to review, edit, and process employees' time ex post, after work has been performed, scheduling software operates ex ante, allowing managers to assign, monitor, and change employees' work shifts ahead of time. Like timekeeping software, scheduling software allows employers to automate and scale tasks previously performed by humans with pen and paper. The software also allows data mining and predictive analytics so that employers can "right size" their workforce to fit customer demand¹³³ or – most importantly for this discussion – prevent an employee's hours from triggering an hours-contingent compliance cost. In this way, scheduling software operates as an avoidance hack.

A. Scheduling Software as an Avoidance Hack

We use the term "avoidance hack" in this Part to refer to a specific form of regulatory arbitrage: employers' lawful use of scheduling software to monitor employees' hours and avoid various benefits-triggering thresholds embedded in the law.

Specifically, the FLSA and the Patient Protection and Affordable Care Act of 2010 ("ACA", also known popularly as "Obamacare") both establish work-hour thresholds above which employees must receive, respectively, overtime premium pay and health insurance coverage. Under the FLSA, eligible employees are owed an overtime premium for every hour worked in excess of forty hours per week.¹³⁴ The ACA, in turn, requires most large employers to offer health insurance to employees with an average of thirty or more work hours per week, or 130 hours per month.¹³⁵ These hours-contingent requirements are ripe for avoidance hacks, in which employers use software's tracking and data mining functionalities to ensure that employees do not trigger benefits or payment obligations.

133. For a study of a retailer's use of scheduling controls to align labor costs with customer demand, see JULIA R. HENLY & SUSAN J. LAMBERT, *WORK SCHEDULING STUDY: A PROFILE OF RETAIL SALES ASSOCIATES IN A WOMEN'S APPAREL FIRM* (2015), https://ssascholars.uchicago.edu/sites/default/files/work-scheduling-study/files/wss_profile_of_retail_sales_associates.pdf. Additional research on scheduling practices for hourly workers can be found at *Work Scheduling Study Papers*, U. CHI. SCH. SOC. SERV. ADMIN., <http://ssascholars.uchicago.edu/work-scheduling-study/work-scheduling-study-papers> (last visited Dec. 20, 2017).

134. See *supra* note 64. Some states have more generous requirements. See *State Overtime Requirements*, NAT'L CONF. ST. LEGISLATURES, <http://www.ncsl.org/research/labor-and-employment/state-overtime-requirements.aspx> (last updated Jan. 1, 2014) (listing overtime requirements under state law).

135. *Identifying Full-Time Employees*, INTERNAL REVENUE SERV., <https://www.irs.gov/affordable-care-act/employers/identifying-full-time-employees> (last updated Nov. 22, 2017) (explaining employee eligibility requirements).

For example, software company OnShift sells scheduling and other workforce management programs designed for senior care providers.¹³⁶ OnShift's scheduling software allows managers to monitor employee hours in real time.¹³⁷ When an employee is nearing forty hours, the software alerts managers, who can send the employee home and call in a replacement who has worked fewer hours.¹³⁸ OnShift also allows employers to predict overtime risk ahead of time and schedule staff accordingly.¹³⁹ The software automatically accounts for these peak labor periods and allows managers to schedule more staff, instead of allowing employees to amass overtime hours. Likewise, OnShift markets its scheduling software specifically as a way for employers to "set their scheduling parameters to avoid pushing over their ACA part-time hours' threshold."¹⁴⁰ In other words, employers avoid coverage under the ACA. Kronos, another scheduling software provider, summarizes, "Scheduling is a balancing act. Take the guesswork out of scheduling by automating the process of aligning labor to demand and gaining better visibility to employee attributes. More often than not, there is room to further optimize a schedule for better bottom-line results and better employee satisfaction."¹⁴¹

Employers attribute big savings to such software-enabled scheduling optimization. A testimonial by a human resources director for assisted living homes described saving \$250,000 per year in overtime costs after implementing scheduling software.¹⁴² The Chief Financial Officer of Jamba Juice reported taking "400, 500 basis points out of our labor costs' . . . a savings of millions of dollars a year," with the help of scheduling software.¹⁴³ Similarly, the management of Dave & Buster's, a nationwide, publicly traded arcade, amusement, and restaurant company, has claimed that implementation of the ACA would cost the company as much as \$2 million, which could be saved via converting full-time workers' hours to part-time.¹⁴⁴

136. *About Us*, ONSHIFT, <https://onshift.com/about> (last visited Dec. 20, 2017).

137. *Employee Scheduling Software*, ONSHIFT, <https://onshift.com/staff-scheduling-software> (last visited Dec. 20, 2017).

138. *See* ONSHIFT, *THE STAFFING ADVANTAGE: STRATEGIES TO REDUCE LABOR COSTS* 3, 5 (on file with authors).

139. *Id.* at 3, 5.

140. Steve Moran, *Will the Affordable Care Act Be Your Big Gotcha in 2015?*, SENIOR HOUSING F. (Oct. 29, 2014, 1:00 AM), <https://www.seniorhousingforum.net/blog/2014/10/19/will-affordable-care-act-be-your-big-gotcha-2015> (interviewing OnShift CEO Mark Woodka).

141. Jennifer Ardery, *3 Ways to Optimize Employee Work Schedules*, KRONOS (Jan. 15, 2015), <https://itsabouttime.kronos.com/2015/01/15/3-ways-to-optimize-employee-work-schedules/>.

142. *See* Arnold, *supra* note 2.

143. Steven Greenhouse, *A Part-Time Life, as Hours Shrink and Shift*, N.Y. TIMES (Oct. 27, 2012), <http://www.nytimes.com/2012/10/28/business/a-part-time-life-as-hours-shrink-and-shift-for-american-workers.html>.

144. *Marin v. Dave & Buster's Inc.*, 159 F. Supp. 3d 460, 461 (S.D.N.Y. 2016).

Importantly, the practice of software-enabled schedule optimization, whether offered by OnShift, Kronos, or one of their many competitors, does not violate employment law. As one of us has noted in other work:

U.S. employers have wide discretion over [scheduling decisions], and the [FLSA], the main legal mechanism for assuring a wage floor for workers, does not reach this issue. Though the FLSA guarantees a minimum wage for all hours worked and requires overtime pay for more than forty work hours per week, it does not establish minimum hours requirements or regulate employers' scheduling practices. Nor does it offer protection to a worker who is given fewer work hours than she believed a job would provide.¹⁴⁵

Indeed, an employer that uses scheduling software to control workers' hours to avoid overtime or ACA compliance is likely driven by the same cost-saving motivation as the employer that uses rounding rules or automatic break deductions to shave workers' hours. The former is a lawful avoidance hack, however; the latter is of questionable legality. This is because the law requires employees to be paid for the hours that they have already worked but creates no entitlement to the *opportunity* to work, i.e., the chance to work overtime or to work in a job for more than thirty hours per week. And while employers have always been able to negotiate this distinction by controlling workers' shifts, scheduling software allows them to do so with unprecedented efficiency, scale, and precision. These avoidance strategies can harm employees in ways that are unanticipated by employment law and, in some sectors, are disrupting old work norms around the predictability and stability of worker schedules.

B. Creation of Unanticipated Harms and Disruption of Work Norms

When employers use scheduling software to keep an employee's hours below a certain threshold, that worker experiences a harm in the form of a lost opportunity for overtime or insurance coverage. However, these harms are anticipated – and deemed acceptable – under existing rules. In other words, by declining to create an entitlement to overtime or health insurance for all workers, employment law declines to treat the loss of those benefits as a compensable harm.

However, employers' use of scheduling software can cause substantial harm to employees beyond the loss of benefits or pay. Left to its own devices, for example, software is indifferent to scheduling a retail employee for a “clo-pening” shift – where he or she closes the store late at night and then is called at the last minute to return the next morning to open it again.¹⁴⁶ Indeed, scheduling algorithms produce many last-minute shift changes, as they incorporate new information and attempt to prevent employees from working overtime or

145. Charlotte Alexander, Anna Haley-Lock & Nantiya Ruan, *Stabilizing Low-Wage Work*, 50 HARV. C.L.-C.L. L. REV. 1, 5 (2015) (footnotes omitted).

146. O'NEIL, *supra* note 99, at 125–26.

exceeding their part-time hours.¹⁴⁷ While the employees who are approaching the thirty- or forty-hour threshold can reasonably expect to be dismissed, the replacement workers may have little expectation that they will be called to work. And while those replacement employees might like the additional pay, they may not like the inconvenience (or extreme difficulty, and high cost) of finding child or dependent care on a moment's notice.¹⁴⁸

Unpredictable work hours can also prevent employees from taking on second jobs, enrolling and staying in school, engaging in family and leisure activity, and meeting savings goals.¹⁴⁹ With respect to income volatility, for example, one recent analysis of bank records by the J.P. Morgan Chase Institute found that “for nearly one in four jobs . . . paycheck amounts varied by more than 30 percent from paycheck to paycheck.”¹⁵⁰ Attempts to plan and save, given such an unreliable income stream, are extremely difficult.

Further, research suggests that existing norms around scheduling have begun to change in many workplaces, as employers dispense with predictable, set schedules and adopt an on-call or variable approach to workers' hours. For instance, software-aided scheduling can push employees to offer “open availability” to their employers, being ready to appear at work at nearly any time during operating hours.¹⁵¹ At some companies, employees who decline last minute call-ins do so at the risk of losing their jobs or having their own hours reduced in the future.¹⁵² Moreover, some scheduling software companies advertise a feature that generates lists of all employees, from across an entire firm, with the skills necessary to fill in when another worker is sent home.¹⁵³ This means that nearly all employees are functionally on call at all times and do not have the information to gauge when they are likely to be selected.

147. *See id.*

148. *See generally* Charlotte S. Alexander & Anna Haley-Lock, *Underwork, Work-Hour Insecurity, and a New Approach to Wage and Hour Regulation*, 54 *INDUS. REL.* 695, 699–704 (2015) (summarizing research on harms to workers caused by scheduling variability and unpredictability).

149. *See id.*

150. DIANA FARRELL & FIONA GREIG, *PAYCHECKS, PAYDAYS, AND THE ONLINE PLATFORM ECONOMY: BIG DATA ON INCOME VOLATILITY* 16 (2016), <https://www.jpmorganchase.com/corporate/institute/document/jpmc-institute-volatility-2-report.pdf>; accord Patricia Cohen, *Steady Jobs, with Pay and Hours that Are Anything But*, *N.Y. TIMES* (May 31, 2017), <https://www.nytimes.com/2017/05/31/business/economy/volatile-income-economy-jobs.html?hp&action=click&pgtype=Homepage&clickSource=story-heading&module=first-column-region®ion=top-news&WT.nav=top-news>.

151. *See* Susan J. Lambert, *Passing the Buck: Labor Flexibility Practices that Transfer Risk onto Hourly Workers*, 61 *HUM. REL.* 1203, 1217 (2008) (describing “open availability” requirements).

152. *See* Pei-Chun Lai & Tom Baum, *Just-in-Time Labour Supply in the Hotel Sector: The Role of Agencies*, 27 *EMP. REL.* 86, 88 (2005) (describing open availability requirement for restaurant workers, who would lose their jobs if they refused call-ins).

153. *See* *ONSHIFT*, *supra* note 138, at 5.

Indeed, unstable schedules may be the new normal. A recent study by the Brookings Institution found that “household income became noticeably more volatile between the early 1970s and the late 2000s” and attributed much of that change to “greater volatility in earnings per hour *and in hours worked*.”¹⁵⁴ Other studies note similar trends, particularly in industries such as retail and hospitality that rely to a great extent on low-wage, hourly-paid workers.¹⁵⁵ And researchers lay blame squarely at the feet of scheduling software: “Facilitated by new software technology, many employers are adopting a human resource strategy of hiring a cadre of part-time employees whose work schedules are modified, often on short notice.”¹⁵⁶

One might dismiss these harms as an acceptable result of the legislative line drawing that enables employers to engage in avoidance strategies in the first place. As others have argued, regulatory arbitrage is an expected result of legal rules that privilege form over substance (in this case, compliance costs triggered by a specified number of weekly hours worked).¹⁵⁷ However, some legislators and policymakers have begun to view work hour instability as outside the set of harms that employees might reasonably be expected to bear, which we examine in Part VII.¹⁵⁸ Next, we present our final case study of software-enabled employment law hacks: work distribution platforms.

VI. WORK DISTRIBUTION PLATFORMS

This Part examines the use of work distribution or intermediation platforms by firms that operate in the so-called gig economy.¹⁵⁹ Building on the work of anthropologists Ilana Gershon and Melissa Cefkin, we focus specifically on the examples of ride-sharing company Uber and Amazon’s Mechanical Turk, an “online marketplace for work.” Both firms use software to connect workers (drivers and online task-completers known as “Turkers,” respectively) directly with customers, and both firms disclaim any employer-employee relationship with those who offer services via the firms’ platforms. These firms

154. KAREN DYNAN, DOUGLAS ELMENDORF & DANIEL SICHEL, *THE EVOLUTION OF HOUSEHOLD INCOME VOLATILITY 2* (2012) (emphasis added), <https://www.brookings.edu/wp-content/uploads/2016/06/household-income-volatility-dynan.pdf>.

155. LONNIE GOLDEN, *IRREGULAR WORK SCHEDULING AND ITS CONSEQUENCES 4* (2015), <http://www.epi.org/files/pdf/82524.pdf> (“Such jobs are disproportionately found in the service occupations and in the retail and wholesale trade and services industries, such as hospitality and leisure, professional and business services, and health services.”).

156. *Id.*

157. See Fleischer, *supra* note 21, at 229–30.

158. Some employers, too, have abandoned the practice. See Bourree Lam, *The End of On-Call Scheduling?*, ATLANTIC (Oct. 23, 2015), <https://www.theatlantic.com/business/archive/2015/10/on-call-scheduling-labor/412132/>.

159. We borrow the terms “work distribution platforms” and “work intermediation platforms” from anthropologists Ilana Gershon and Melissa Cefkin. Gershon & Cefkin, *supra* note 6.

use software to split traditional managerial tasks among multiple entities – customers, the gig firms, and the workers themselves. This splintering creates difficulties in identifying an “employee,” an “employer,” and an “employment relationship” in these work arrangements – prerequisites for the application of most employment laws.¹⁶⁰ Thus, the firms attempt an avoidance hack on a grand scale, avoiding the entire set of wage and hour, antidiscrimination, workers’ compensation, family and medical leave, and other legal and regulatory obligations contingent on employee status.

There is nothing inherently unlawful in this strategy: a firm is free to choose a business model that relies on non-employee workers and to use software to connect those workers with customers. However, gig firms’ use of work distribution platforms raises two sets of concerns. First, what looks like avoidance sometimes turns out to be noncompliance. Instead of making a clean break from the employment relationship, some gig firms exercise control over workers who use their platforms, engaging in what might be called “false avoidance.”¹⁶¹ That control entitles gig workers to all of the protections of employment law, but they must first win a misclassification claim in court to vindicate their rights.

Second, many gig firms engage in “true” avoidance – leaving workers to their own devices and leaving the customer and worker to negotiate the terms of their relationship. Though these firms violate no employment law, like the scheduling software described above, their avoidance practices may create new harms for workers and upend traditional work norms in problematic ways. Further, if enough firms successfully avoid the employment relationship, then employment law as a whole may be weakened. This form of avoidance operates as a kind of meta-hack, posing an existential challenge to the regulatory project.

This Part begins to engage with these issues, using the examples of Uber and Mechanical Turk. Part VII turns to possible regulatory responses.

A. *The Splintering of Roles*

Uber and Mechanical Turk both rely on software “platforms” to connect customers and workers. As Gershon and Cefkin describe it, this software “make[s] it possible for work to be distributed by ‘open-call’ rather than by

160. Charlotte S. Alexander, *Misclassification and Antidiscrimination: An Empirical Analysis*, 101 MINN. L. REV. 907, 907–08 (2017) (explaining coverage of federal employment laws relative to protections for independent contractors).

161. Tippet, *supra* note 31, at 574–76 (finding that several ride-sharing companies exercised similar levels of control as taxi and delivery companies, although many “service sharing” companies exercised considerably less control over workers than temp agencies); De Stefano, *supra* note 31, at 481 (describing “disguised employment relationships, or sham self-employment [intended] to circumvent labor and social security regulation” (internal quotation marks omitted)).

assignment or pre-defined job role requirements.”¹⁶² Thus, Uber allows ride-seekers to place a virtual “open call” for a ride via the company’s app, and Mechanical Turk operates as a “marketplace for work” where requesters post “microtasks” for completion by anonymous online workers.¹⁶³ Orly Lobel adds to this conception of the “platform economy,” noting, “Platform companies adamantly endeavor to be defined first and foremost by what they are not.”¹⁶⁴ According to these firms, they “are not selling the thing itself: the service, the product, the content. Rather, they are selling access to the software, the matching algorithms, and a digital system of reputation and trust between their users.”¹⁶⁵ In other words, gig firms’ use of software may allow them to avoid the employer-employee relationship.¹⁶⁶

At the center of this avoidance hack is work distribution platforms’ parceling out of task management and control functions among customers, the gig firms, and the workers themselves. In a traditional employer-employee relationship, the customer first seeks out the employer. The employer then assigns tasks to employees, the results of which are delivered back to the customer. Thus, in stylized form, the workflow among the three parties might look something like item A in Figure 1, below.

162. Gershon & Cefkin, *supra* note 6, at 2; *see also* Cherry, *A Taxonomy of Virtual Work*, *supra* note 30, at 967–69 (describing Mechanical Turk as a form of crowdsourcing); Cherry, *Beyond Misclassification*, *supra* note 30, at 577–78 (describing same); De Stefano *supra* note 31, at 484 (describing the “fissurization” of business structure in the gig economy).

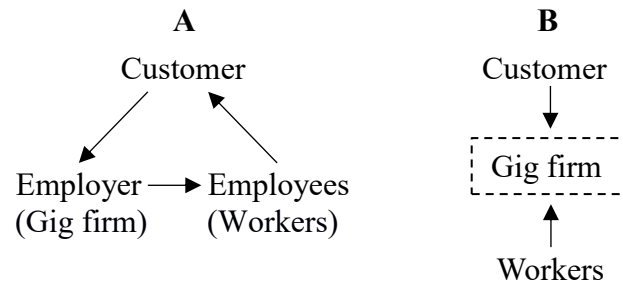
163. *Amazon Mechanical Turk*, AMAZON MECHANICAL TURK, <https://www.mturk.com/mturk/welcome> (last visited Dec. 20, 2017) (“Amazon Mechanical Turk . . . operates a marketplace for work”); Gershon & Cefkin, *supra* note 6, at 4–5 (describing microtasks).

164. Lobel, *supra* note 31, at 100.

165. *Id.*

166. Companies within the “gig economy” may seek to avoid legal rules beyond employment laws. Uber might be avoiding rules regarding taxi medallions, transportation regulations, and taxes. *See* Yglesias, *supra* note 40. A company like AirBnB might be avoiding various laws and taxes that apply to the hospitality industry. However, we do not mean to suggest that companies use software primarily for the purpose of avoiding regulation. Technology also offers convenience and efficiencies that customers and workers find appealing.

Figure 1: Two Ways of Looking at Gig Work: Task Management

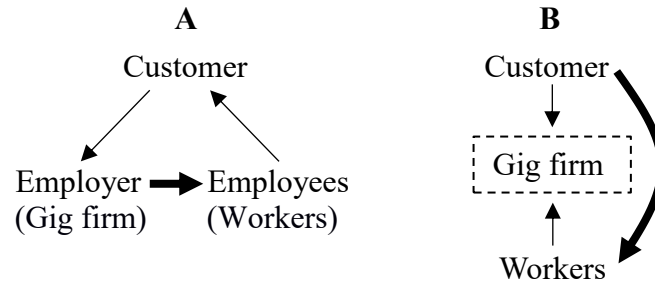


If this structure were reproduced in the context of the gig economy, the firm would stand in for the employer and the gig workers for the employees. In that view, the gig firms receive requests for services from customers via the software platform, and then, again via their software, assign those requests to workers, who deliver the services to customers. However, as Lobel points out, gig firms frequently portray their business models as operating something like item B instead. In this structure, customers seek out services and workers seek out tasks via the firms' software, which functions only as a hiring hall or marketplace, a background space in which workers and customers meet and interact directly.¹⁶⁷ The firm's passive role in this depiction of gig work is indicated by the dotted border in item B.

Along with this difference in the management of work tasks, gig firms claim that workers experience control in a different way in their model. In the traditional structure, the employer controls the employee's work and assesses his or her performance. This is indicated in item A in Figure 2 below by the heavy arrow between employer and employee. Employers may also rely on customer judgments, which are commonly used to evaluate employees. However, the employer functions as a filter through which customer feedback passes back to employees.

167. Gershon & Cefkin, *supra* note 6, at 24 (“[Gig firms like Uber] argue that they are not a firm providing transportation services, but rather a technology company enabling small business-owners, their drivers, to connect to customers.” (citing Julia Tomassetti, *Does Uber Redefine the Firm? The Postindustrial Corporation and Advanced Information Technology*, 34 HOFSTRA LAB. & EMPL. L.J. 1 (2016))).

Figure 2: Two Ways of Looking at Gig Work: Control



If gig firms function as a version of the traditional employment relationship, then control would pass from the gig firm directly to workers in the same way. Gig companies, however, claim that workers are controlled and assessed directly by customers, via software.¹⁶⁸ This structure is shown in item B. Uber, for example, instructs customers to rate drivers by assigning a number of stars following their ride. Low-rated drivers can eventually be disenrolled from the Uber platform entirely.¹⁶⁹ Conversely, the software gives high-rated, VIP Uber drivers access to customers in close proximity to their current location. On the Mechanical Turk platform, workers are not paid at all for the tasks they complete if the customer refuses.¹⁷⁰ Workers receive a rating based on the frequency with which customers have rejected their work.¹⁷¹ And like Uber VIP drivers, “[t]he most productive are invited to become ‘Masters’ and gain exclusive access to better-paying tasks.”¹⁷² This entire system of evaluation and work assignment is implemented via software.¹⁷³ As Gershon and Cefkin observe, “Algorithms guide the selection of where and how to place inputs to the system. . . . While numerous factors may be used in the design of the algorithms, most include an element of frequency or density of prior activity,” along with customer reviews.¹⁷⁴

168. See Cherry, *Beyond Misclassification*, *supra* note 30, at 597; Cunningham-Parmeter, *supra* note 31, at 1677 (“[T]he delegating firms appear to control no one. In reality, however, engaging businesses often retain far more control than initial appearances might suggest.”).

169. O’Connor v. Uber Techs., Inc., 82 F. Supp. 3d 1133, 1151 (N.D. Cal. 2015).

170. Mark Harris, *Amazon’s Mechanical Turk Workers Protest: ‘I Am a Human Being, Not an Algorithm’*, GUARDIAN (Dec. 3, 2014, 9:41), <https://www.theguardian.com/technology/2014/dec/03/amazon-mechanical-turk-workers-protest-jeff-bezos>; see Gershon & Cefkin, *supra* note 6, at 20 (“One risk to workers in contest and micro-task labor sites is that people will perform work, but their work is rejected. There may be little or no explanation as to why nor a means of disputing these decisions.”); De Stefano, *supra* note 31, at 492.

171. Harris, *supra* note 170.

172. *Id.*

173. See De Stefano, *supra* note 31, at 483 (“[W]hen they do show up for work they are usually bound to follow rules and guidelines set out by platforms and apps and, in some cases, also to accept a certain percentage of jobs coming through the app.”).

174. Gershon & Cefkin, *supra* note 6, at 18.

B. False Avoidance

Central to work distribution platforms' operation as avoidance hacks is their ability to exploit the legal distinction between employees and non-employees – most commonly, independent contractors. Employment law contains a variety of tests for assessing employee status, some of which are statutory and some from common law.¹⁷⁵ These tests are typically variations of the “economic realities” test and the “control test,” which both consider the “nature and degree of the alleged employer’s control as to the manner in which the work is to be performed.”¹⁷⁶

When a worker believes that a company has misclassified him or her as an independent contractor, the worker may challenge this classification in court.¹⁷⁷ A judge then decides whether the worker, despite his or her independent contractor label, should actually be considered an employee under the law. Those workers deemed employees may then make claims for unpaid wages, antidiscrimination protections, family and medical leave rights, compensation for occupational illnesses and injuries, and all other rights that are contingent on employee status.¹⁷⁸

The legal tests used in these classification disputes do not explicitly *require* human managers to exercise control over workers, but the version of “control” embedded in the tests seems to assume that control is exercised through oversight by a person.¹⁷⁹ Gig firms, by contrast, exercise control by algorithm. The algorithm implements a series of rules built into the software program, which, as explained above, take into account customer ratings and preferences.¹⁸⁰ This creates a challenge for the law. When a gig company designs an algorithm, and then puts it into practice, essentially to run on autopilot, is the company still in control? Likewise, when a firm outsources granular management and assessment tasks to customers, can it still be considered an employer?

As one of us has explored in prior work, the answers to these questions vary considerably.¹⁸¹ In terms of the risk of independent contractor misclassification, some gig firms are functionally indistinguishable from traditional brick and mortar companies, exercising substantial control over their workers, though continuing to label them as independent contractors.¹⁸²

175. Alexander, *supra* note 160, at 939 (explaining tests).

176. Sec’y of Labor v. Lauritzen, 835 F.2d 1529, 1534–35 (7th Cir. 1987); *accord* Nationwide Mut. Ins. Co. v. Darden, 503 U.S. 318, 323–24 (1992).

177. *See* Cotter v. Lyft, Inc., 60 F. Supp. 3d 1067, 1073 (N.D. Cal. 2015).

178. *See id.* at 1073–74.

179. *See, e.g.,* Carlson, *supra* note 8, at 361–62.

180. Cherry, *Beyond Misclassification*, *supra* note 30, at 583 (“Control may be high, given that companies like Uber use customer ratings to maintain almost a constant surveillance over workers, with consumers deputized to manage the workforce.”).

181. *See generally* Alexander, *supra* note 160.

182. *See id.* at 954–55.

In fact, the very software that enables firms to disclaim control might also be the mechanism by which control is exerted. For example, as David Weil, the U.S. Department of Labor's Wage and Hour Division Administrator under President Obama, has observed, software becomes essential as "lead companies" replace employees with various forms of non-employee labor but attempt to guarantee the consistency and quality of the services provided – to ensure the integrity of the brand. According to Weil:

It is not coincidental . . . that the expansion of the fissured workplace [Weil's term for the growth in independent and sub-contracting and franchise structures] has been accompanied by the creation of many forms for standard setting and monitoring, among them the promulgation of bar codes, electronic data interchange protocols, product identification, shipment and delivery standards, GPS, and other methods of tracking products through supply chains and monitoring provision of service to customers.¹⁸³

Thus, some gig firms engage in false avoidance.¹⁸⁴ It is yet to be seen how quickly courts will adapt to hidden forms of control exercised through software. Litigation involving Uber and Lyft, another ride-sharing company, suggest that courts are at least receptive to arguments to that effect. Courts in both cases examined how those companies used star ratings and ride-refusal rates to discipline and ultimately terminate drivers from the service.¹⁸⁵ Their analysis, however, was substantially aided by a clear paper trail describing the operation of the software.¹⁸⁶ Uber warned drivers in its handbook about the importance of accepting proffered rides requests.¹⁸⁷ Lyft was more circumspect about its "driver deactivation" practices but provided sufficient discovery on that point to support the court's analysis.¹⁸⁸

183. DAVID WEIL, *THE FISSURED WORKPLACE: WHY WORK BECAME SO BAD FOR SO MANY AND WHAT CAN BE DONE TO IMPROVE IT* 12 (2014).

184. As Orly Lobel puts it, "Are companies like Uber . . . digital clearinghouses connecting independent drivers-for-hire with customers, or rather are they employers violating wage-and-hour [and other employment] laws?" Lobel, *supra* note 31, at 91.

185. See *Cotter v. Lyft, Inc.*, 60 F. Supp. 3d 1067, 1071 n.3 (N.D. Cal. 2015); *O'Connor v. Uber Techs., Inc.*, 82 F. Supp. 3d 1133, 1151 (N.D. Cal. 2015).

186. See Elizabeth Tippet, *Employee Classification in the Sharing Economy*, in *CAMBRIDGE HANDBOOK OF LAW AND REGULATION OF THE SHARING ECONOMY* (forthcoming 2018).

187. *O'Connor*, 82 F. Supp. 3d at 1149.

188. In a deposition, one witness admitted that "Lyft also tracks each driver's cancellations, and may terminate a driver for high cancellation rates." *Cotter*, 60 F. Supp. 3d at 1071. Communications with drivers explained that an acceptance rate above ninety percent was "excellent," while seventy-five percent "needs improvement." *Id.* It apparently did not disclose the exact threshold at which they would be cut off, instead advising that an acceptance rate "well below the community standard" will trigger a warning and that three warnings would lead to being deactivated. *Id.*

C. True Avoidance

Others firms, however, seem to fall squarely outside traditional definitions of the employer-employee relationship.¹⁸⁹ In this regard – as other scholars have argued – certain “gig economy” work relationships legitimately reside beyond the reach of existing legal rules.¹⁹⁰ Mechanical Turk may be one such firm, in that it has ceded control over workers completely to customers, who have the ability unilaterally to hire and fire (i.e., refuse to pay) Turkers, with limited to no oversight from the gig firm itself.¹⁹¹ These companies’ “true” avoidance hacks give them a stable competitive advantage over their rivals. However, like scheduling software, these avoidance strategies can cause harms to gig workers beyond their loss of employee status; change the norms around fair wages and working conditions, even for employees; and weaken the system of employment law, writ large.¹⁹²

First, the harm to workers stems from software’s transmission of customer feedback and control directly to workers. As algorithms translate customer feedback into management, they often do so in ways that are opaque to workers. A gig worker may have an inferential sense for the constraints imposed by the software, for example, but is unlikely to know its exact specification.¹⁹³ Indeed, these specifications are not fixed – the company might change the algorithm overnight, and the change would be undetectable to workers, except by inference, or perhaps through a generic notice of a software update. Returning to Gershon and Cefkin:

189. Matthew Finkin offers a historical comparison to the practice of “outwork” – giving projects to others to complete at their home or work site. “As with the putting-out of wool work five centuries ago, an employer concerned only with the price and quality of the product turned in need not expend time and money in the supervision of the work process.” Finkin, *supra* note 39, at 609.

190. Tippet, *supra* note 31, at 576–77 (noting that some gig companies are essentially “listing” companies and exercise similar (minimal) levels of control to Craigslist or LinkedIn).

191. See Harris, *supra* note 170.

192. One survey of crowdworkers found that a chief complaint was low pay combined with an insufficient quantity of work. Berg, *supra* note 31, at 557. This is quite similar to the income instability described in our discussion of scheduling software in Part IV.B, above. On the other hand, crowdworkers and gig companies are not monolithic in this regard. Berg’s study of crowdworkers found that a majority had other jobs, with thirty-seven percent reporting that their gig job was their primary source of income. *Id.* at 554–55. Likewise, a study of Uber drivers found that they received a higher hourly rate of pay than taxi drivers, “even after accounting for their expenses.” Lobel, *supra* note 31, at 131 (citing study by economist Alan Krueger); see also Cherry, *A Taxonomy of Virtual Work*, *supra* note 30, at 961 (“The concern about virtual work is that it will lead to further acceleration of the race to the bottom and ultimately the further erosion of workers’ rights and benefits.”).

193. See James Grimmelmann, Note, *Regulation by Software*, 114 YALE L.J. 1719, 1723 (2005).

[W]orkers are still being controlled and disciplined [when performing gig work], but because this occurs through technological platforms that re-allocate and often obfuscate where the source of control might be located, workers have trouble determining who is responsible for what, and thus need to develop new analyses and strategies when they want to change the working conditions or payment system enabled by these platforms.¹⁹⁴

Moreover, where the entirety of the relationship between the worker, the customer, and the gig firm is mediated by software, research suggests that the worker is likely to be treated harshly.¹⁹⁵ A customer – especially one that has never met the worker performing a task halfway across the internet – may assign a negative rating or withhold payment upon the slightest provocation.¹⁹⁶ Due to the opacity of the algorithms that run the work distribution software, workers are left struggling to identify the source of their negative treatment and to adapt accordingly.

Second, true avoidance hacks may change the norms around fair treatment of workers across all types of employment relationships. For example, workers who provide services via the Mechanical Turk platform commonly receive sub-minimum wages for their labor.¹⁹⁷ Like workers' "loss" of overtime pay when they are sent home after forty hours of work, this "loss" cannot be considered a compensable harm to the Turkers, as it is a result of the bargain inherent in legislative line-drawing. When the entitlement to a minimum wage is contingent on employee status, it follows that non-employees can permissibly receive less than the minimum wage.

Nevertheless, the labor market is porous, and labor practices that grow up outside the walls of the employer-employee relationship can influence norms and practices within. Rock-bottom wages paid to Turkers may drive down wages for employees who do similar, routine tasks. Turkers' "sustained sense

194. Gershon & Cefkin, *supra* note 6, at 23.

195. See Berg, *supra* note 31, at 562 ("A main complaint of crowdworkers is mistreatment by requesters Of the crowdworkers surveyed, 94% have had work rejected or were refused payment.").

196. De Stefano, *supra* note 31, at 478 ("[Workers] could be expected to run as flawlessly and smoothly as a software or technological tool and then, if something goes amiss, they might receive worse reviews This, in turn, might have severe implications on their ability to work or earn in the future").

197. Utpal Dholakia, *My Experience as an Amazon Mechanical Turk (MTurk) Worker*, PSYCHOL. TODAY (July 21, 2015), <https://www.psychologytoday.com/blog/the-science-behind-behavior/201507/my-experience-amazon-mechanical-turk-mturk-worker> (reporting earning "somewhere between \$3 and \$3.25 per hour of work" (bold omitted)); see also Cherry, *A Taxonomy of Virtual Work*, *supra* note 30, at 994 (identifying minimum wage and FLSA issues in virtual work).

of powerless,” as one described it, embodied by the fact that they work completely at the mercy of customers,¹⁹⁸ might also seep into the employer-employee relationship, as traditional employers feel less inclined to create “good jobs,” where the alternative is cheap, powerless labor obtained via software.¹⁹⁹

Third, avoidance hacks, if sufficiently widespread, undermine employment law by removing workers from its ambit. As sociologist Doreen McBarnet notes, a set of laws without subjects upon which to operate becomes fundamentally ineffective: “The law is not broken but it is, nonetheless, entirely ineffective in achieving its aims. *Despite* the legislature, *despite* the enforcers, law becomes merely symbolic.”²⁰⁰ Particularly for workers with already tenuous ties to the labor force, legal avoidance at the margins feels a lot like no protection at all. For these marginal workers, employment law becomes ossified, a term that Cynthia Estlund has used to describe the lack of adaptation and renewal in American labor law.²⁰¹ Estlund states:

The labor laws have failed to deliver an effective mechanism of workplace representation, and have become nearly irrelevant, to the vast majority of private sector American workers. . . .

. . . .

. . . The core of American labor law has been essentially sealed off – to a remarkably complete extent and for a remarkably long time – both from democratic revision and renewal and from local experimentation and innovation.²⁰²

If avoidance hacks become sufficiently widespread, then this description may apply equally to employment law. Firms will continue to use software to

198. Dholakia, *supra* note 197.

199. Compare, e.g., ARNE L. KALLEBERG, GOOD JOBS, BAD JOBS: THE RISE OF POLARIZED AND PRECARIOUS EMPLOYMENT SYSTEMS IN THE UNITED STATES, 1970S TO 2000S 10 (2011) (defining what it is to have a “good job,” as opposed to a “bad job,” characterized by “low wages, few benefits, and virtually no long-term security”), with Cherry, *Beyond Misclassification*, *supra* note 30, at 601 (“In many ways then, crowdsourcing is a return to industrial (or even pre-industrial in terms of its pay by the piece and work at home) systems. Crowdwork features highly rigid control systems and deskilled work.”).

200. McBarnet, *supra* note 19, at 118. Similarly, on the implications of widespread noncompliance, Tim Wu quotes theorist John Perry Barlow: “No law can be successfully imposed on a huge population that does not morally support it and possesses easy means for its invisible evasion.” Wu, *supra* note 13, at 751 (quoting John Perry Barlow, *The Next Economy of Ideas*, WIRED (Oct. 1, 2000), <https://www.wired.com/2000/10/download/>).

201. Cynthia L. Estlund, *The Ossification of American Labor Law*, 102 COLUM. L. REV. 1527, 1530 (2002).

202. *Id.* at 1528–30.

innovate – lawfully and at scale – in spaces that employment law does not reach, and the law will begin to lose its relevance to the modern worker.

VII. REGULATORY RESPONSES

As the four case studies show, both noncompliance and avoidance hacks can threaten employment law. They also harm workers, and tend to do so cumulatively, affecting the employees with the most marginal attachment to the workplace, and those with the weakest bargaining power.²⁰³ Hourly workers who manage to pass the selection algorithms and secure a job find their wages shaved by rounding and automatic break deductions, their hours reduced by scheduling software, and their free time eroded by uncompensated “on call” status. Those unable to find traditional employment may instead opt for work in the gig economy, where they lack any such protections, however poorly enforced. In other words, software’s costs fall upon the workers least able to bear them.

The question thus becomes: What sorts of regulatory responses might limit harms to these workers, without triggering further regulatory hacks?²⁰⁴ We offer four possible approaches. The first is to treat software rules as employer rules, requiring employers to disclose the rules’ use and operation to employees. A second approach might be focused on harm reduction. A third would be to punish employers for intentional avoidance. The fourth approach would remove the legal classifications that enable avoidance.

A. *Treat Software Rules as Employer Rules*

Broadly speaking, regulators and courts could mitigate software’s corrosive effect on legal rules by recognizing software for what it is: a means of implementing employer requirements and metrics. An employer’s rounding rules and automatic break deductions are no different from employer policies implemented by hand, and their fairness should be evaluated as such. Likewise, an algorithm that screens out certain applicants qualifies as an employee selection procedure. This provides a more concrete frame through which to view employer decision-making.

203. Highly compensated employees have thus far been largely insulated from the constraining effects of software, as they offer “intangible” skills that seemingly demand in-person interviews and individual consideration. They are paid the same salary regardless of hours worked. Though technology makes them perpetually “on call” in a different way, it generally does not require them to drop what they are doing and return to the office.

204. Returning to Wu’s typology, then, noncompliance and avoidance have the potential to change legal rules in the favor of regulated entities – here, the employers who chafe at the obligations and compliance costs imposed by employment law. *See generally* Wu, *supra* note 13. Instead of investing in direct change efforts like lobbying, employers who read Barlow and McBarnet might invest in ever better software to achieve more effective noncompliance and avoidance.

Where employers have highly accurate records of an employee's actual time punched, should they be allowed to adopt a policy to make that time less accurate through rounding? Should employers be allowed to deduct breaks automatically from employee pay, when the deductions are in fact erroneous? These are clear policy questions that tend to be obscured when the issues are cast as technological matters or software configurations. Indeed, courts sometimes decline to assess employer policies in a rigorous way because the policies were enacted via software – as though the software's technological status provided an additional layer of legitimacy.²⁰⁵

The same is true for software that serves a managerial function. When an employer adopts software that constrains employees – whether by cutting them off if they receive certain customer ratings or assigning them inferior work tasks – it is equivalent to an employer policy enforced by a manager. (This actually represents greater control because software operates as a manager that enforces the policy 100% of the time.) As the types of software we describe become more ubiquitous and familiar, courts and regulators will likely become savvier in this regard, just as they became more sophisticated in their handling of legal issues related to the internet, email, and e-discovery over time.

Second, employers should also be presumed to know the likely effects of policies implemented through software – both from a substantive standpoint and an informational one. Employers know that their software rules apply at the aggregate level, and they implement them with those aggregate effects in mind. Especially for software rules that place employers at a statistical advantage, there is little uncertainty about the rules' effects at the time they are implemented. Additionally, employers always have the luxury of measuring the effects of their policies, should they so choose. Indeed, software's data mining and predictive functions provide employers with an unprecedented opportunity to gather information about the impact of their software-implemented policies and procedures. Consequently, using software settings that round employee time, deduct unpaid breaks, and otherwise harm employees is no different from other wage and hour violations that are routinely declared willful, such as misclassifying employees as exempt from overtime or as independent contractors. Courts should presume employers know what they are doing when they implement software, and to the extent they do not, the threat of additional penalties provides added incentive to do so with greater care.

The same is true of selection and performance algorithms. When employers choose to implement complex selection algorithms, they should be presumed to know what is in those algorithms and how they work. The underlying purpose of the Uniform Guidelines on Employee Selection Procedures,²⁰⁶ as

205. *See, e.g., Corbin v. Time Warner Entm't-Advance/Newhouse P'ship*, 821 F.3d 1069, 1079 (9th Cir. 2016) (ignoring expert conclusions that rounding policy shaved more overtime minutes than regular minutes and seemingly deferring to the technology: "TWEAN's system is mechanical and does not depend on managerial oversight – indeed, all time punches are controlled by the Avaya/Kronos timekeeping system and are fully walled off from supervisory editing").

206. 29 C.F.R. §§ 1607.1–1607.16 (2017).

well as disparate impact case law,²⁰⁷ was to place a duty of care on the employer to know what the algorithm was testing. Previously, employers exercised considerable care on the theoretical side but insufficient care with regard to the data. In the current context, data-based models should be no defense for algorithms that are poorly understood and that replicate existing inequalities.²⁰⁸ As the U.S. Supreme Court in *Griggs v. Duke Power Co.* articulated, Title VII of the Civil Rights Act of 1964 (“Title VII”) seeks to eliminate the “built-in headwinds” that operate as barriers to employment.²⁰⁹ If the employer’s models heedlessly reconstruct those headwinds, Title VII protections should not yield.

Likewise, employers should be presumed to know the effects of software on the quality of their data. Automatic break deductions are problematic because employees no longer record their actual break time. Courts often refuse to certify such claims as a class or collective action because each missed break would need to be assessed on an individualized basis.²¹⁰ Likewise, when employers adopt software rules and policies that obscure the amount of time worked – like “grace periods” – they should be presumed to know the effect on the quality of their records.

Lastly, treating software rules as employer rules requires employers to disclose them. Employers tend to disclose their formal workplace policies in lengthy employee handbooks. They should do the same for their software rules.²¹¹ Some of them already do – for example, some employer time and attendance policies available online describe the rounding and automatic break deduction rules applicable to employees. Employers should be required to make this information available to all affected employees, along with the time and attendance data produced by the timekeeping system. Likewise, selection and performance algorithms should be made available to employees upon request, just as some states give employees the right to request their personnel file.²¹² This is not currently the case – in one lawsuit, the plaintiff was not even able to get a copy of the algorithm during discovery, and then the case was dismissed for the plaintiff’s failure to identify the component of the selection mechanism that produced the disparate impact.²¹³

207. See, e.g., *Albemarle Paper Co. v. Moody*, 422 U.S. 405, 422 (1975).

208. Purchasing an unknown algorithm from a third party that claims it to be a trade secret should not be a defense to the discriminatory, adverse impact that the algorithm produces.

209. *Griggs v. Duke Power Co.*, 401 U.S. 424, 432 (1971).

210. See *Gessele v. Jack in the Box, Inc.*, No. 3:10-cv-960-ST, 2013 WL 1326563, at *24–25 (D. Or. Jan. 28, 2013).

211. See *Tippett, Alexander & Eigen*, *supra* note 47, at 56.

212. Cf. CAL. LAB. CODE § 1198.5 (West 2017).

213. *Muñoz v. Orr*, 200 F.3d 291, 304–05 (5th Cir. 2000).

B. Reduce Harm

The previous section focused primarily on improving the enforcement of legal rules against noncomplying employers. This section turns to avoidance. As discussed in the previous Parts, true avoidance hacks present problems because they cause harms to workers that are beyond the set of “acceptable” losses that arise when a worker is ineligible for a right or protection. In this view, an employer’s lawful use of software to situate workers beyond the reach of employment law is not the problem; the problem is the extra or unexpected harm that results.²¹⁴ Indeed, some commentators worry that clamping down on software’s use in the workplace will “stymie” good and beneficial innovation, i.e., will throw the metaphorical baby out with the bathwater.²¹⁵ A harm reduction approach to employers’ software-aided avoidance tactics does not penalize the avoidance hack itself or change the legal line-drawing that enables the avoidance in the first place but rather blunts some of the harms that workers experience.

For example, responding to the software-enabled rise in scheduling instability for hourly workers, some localities have experimented with fair scheduling laws that require employers to give employees advance notice of schedule changes, compensate employees for on-call hours during which they are not called in, and offer additional hours first to existing part-time employees before hiring new workers.²¹⁶ A similar bill has been introduced in the U.S. Senate.²¹⁷ Likewise, gig firms might be required to lessen the harm caused to workers by seemingly unreasonable customer ratings, in the case of Uber, or refusal to pay, in the case of Mechanical Turk.

These strategies do not penalize employers directly for engaging in schedule “optimization” or mining customer ratings for management purposes but instead focus on reducing the harm caused to workers. Of course, the more onerous these practices become for an employer, the less likely the employer

214. Brishen Rogers offers a useful frame for thinking about this problem. He argues that judgments about whether a particular worker qualifies as an employee rarely involve “mechanically determining issues of fact. Rather, such courts inevitably make substantive judgments regarding the fairness of imposing employment duties in particular instances. In this regard, employment is like the concept of duty in tort.” Rogers, *supra* note 31, at 482–83.

215. Lobel, *supra* note 31, at 137 (“[R]egulators should prefer solutions that directly address any negative consequences that people or society may experience from the rise of the platform, rather than blanket prohibitive solutions that stymie its development.”).

216. See, e.g., *Formula Retail Employee Rights Ordinances*, CITY & COUNTY S.F. <http://sfgov.org/olse/formula-retail-employee-rights-ordinances> (last visited Dec. 20, 2017).

217. See Press Release, Elizabeth Warren, Warren, DeLauro, Murray, Scott, Murphy Introduce Schedules That Work Act to End Unstable Scheduling Practices (July 15, 2015), https://www.warren.senate.gov/?p=press_release&id=896.

will be to engage in them. In this sense, harm reduction can function as a penalty, albeit indirectly.

Other harm-reduction responses to avoidance hacks are enacted via the tax system or by coalitions of businesses and worker advocacy groups, rather than via obligations placed on individual employers.²¹⁸ The Earned Income Tax Credit, for example, might help cushion some of the income volatility experienced by workers subject to last minute scheduling changes.²¹⁹

However, harm reduction strategies such as these do little directly to stop the underlying practices that originally generated the harm: the avoidance hacks that are enacted via scheduling software and/or work distribution platforms. In fact, blunting the harms that workers experience might have the unintended consequence of normalizing employers' avoidance strategies because those strategies would then cause "only" the losses that are already anticipated by the law: the "loss" of overtime for workers below forty hours or the "loss" of ACA-guaranteed health insurance for workers below thirty.²²⁰ Yet if firms' avoidance hacks, taken together, relegate enough workers to employment law-free spaces, then the existence of lower labor standards outside the employer-employee relationship may have a detrimental impact on wages and working conditions for employees as well. Moreover, to quote McBarnet once more, employment law as a whole suffers as it is avoided repeatedly and rendered "merely symbolic."²²¹

Addressing these losses would require a different set of responses: those that penalize employers' avoidance hacks directly, and/or those that remove the classifications within the law that allow employers to engage in arbitrage and avoidance in the first place. The following sections take on these regulatory responses in turn.

C. Punish Intentional Avoidance

An alternative, or complementary, approach to avoidance hacks is to penalize employers' intentional acts of avoidance.²²² This approach can apply equally to "true" avoidance hacks, where employers use software lawfully to

218. See Rogers, *supra* note 31, at 516–17.

219. Rogers argues for revisiting "our system of employment-linked benefits," for deterring job creation and further fueling avoidance practices. *Id.* at 517.

220. Marc Andreessen and others have argued that the gig economy is made possible by the ACA because it enables workers to obtain health care without an employer. Evan McMorris-Santoro & Johana Bhuiyan, *How Obamacare Drives the Sharing Economy*, BUZZFEED NEWS (Oct. 14 2014, 5:20 PM), https://www.buzzfeed.com/evanmcsan/how-obamacare-drives-the-sharing-economy?utm_term=.tnVm10NBr#.hcZY8ydgA (quoting Andreessen); Diane Mulcahy, *Repealing Obamacare Would Be Bad News for the Gig Economy*, HARV. BUS. REV. (Feb. 13, 2017), <https://hbr.org/2017/02/repealing-obamacare-would-be-bad-news-for-the-gig-economy>.

221. McBarnet, *supra* note 19, at 114.

222. See KATZ, *supra* note 21, at 11–13.

avoid compliance costs (e.g., scheduling software), or “false” avoidance hacks, where employers use software in an attempt to avoid the employer-employee relationship but retain too much actual control to be successful (e.g., the misclassifications allegations against Uber). Either way, employers dodge the requirements of employment law, and that dodge could be the target of a new regulatory response.

Some models for this approach already exist. First, the Employee Retirement Income Security Act (“ERISA”) prohibits some of employers’ attempts to navigate around the ACA’s thirty-hour threshold. Under Section 510 of the statute, an employer may not

discharge, fine, suspend, expel, discipline, or discriminate against a participant or beneficiary for exercising any right to which he [or she] is entitled under the provisions of an employee benefit plan . . . or for the purpose of interfering with the attainment of any right to which such participant may become entitled under the plan.²²³

Commentators interpret this provision as stopping employers from changing an employee’s status in order to avoid a benefits requirement.²²⁴ In other words, ERISA would protect “full-time employees whose hours are reduced to part-time status (or fired outright) with the specific intent to deny benefits under the employer’s group health plan.”²²⁵

This is precisely the allegation being made by a class of formerly full-time employees of Dave & Buster’s, whose hours were reduced to part-time post-ACA.²²⁶ At the time of this writing, the employees’ lawsuit has survived a motion to dismiss; whether their claims survive on the merits remain to be seen.²²⁷ Further, it is unclear whether Section 510 extends to part-time employees who are *kept* in part-time status, rather than being shifted from full- to part-time, in order to avoid the ACA.²²⁸ It is this latter scenario in which scheduling software is likely the most useful to employers as an avoidance hack –

223. *Teumer v. Gen. Motors Corp.*, 34 F.3d 542, 544 (7th Cir. 1994) (quoting 29 U.S.C. § 1140 (2012)).

224. See Colleen E. Medill, *Comparing ERISA and Fair Labor Standards Act Claims Under the Affordable Care Act*, 20 EMP. RTS. & EMP. POL’Y J. 173, 182–83 (2016).

225. *Id.* at 189.

226. *Marin v. Dave & Buster’s, Inc.*, 159 F. Supp. 3d 460, 461 (S.D.N.Y. 2016).

227. See *id.* at 463.

228. Medill, *supra* note 224, at 189 (“It is less clear, however, whether section 510 is violated when an employer refuses to hire a full-time employee, or refuses to promote a part-time employee to full-time status, with the specific intent to deny such an employee benefits under the employer’s group health plan. Prior to the enactment of the ACA some federal courts refused to recognize ‘failure to hire’ claims under section 510, creating a split among the circuit courts of appeals. The federal courts have yet to address these questions in the context of ACA-related claims, making the issue ripe for Supreme Court review and resolution.” (footnote omitted)).

preventing, as OnShift promises, “part-time workers [from] . . . slipping into full-time status.”²²⁹

Second, some jurisdictions are experimenting with directly penalizing the act of misclassification.²³⁰ Under federal employment law as currently written, employers only experience indirect misclassification penalties.²³¹ In other words, when a misclassified independent contractor successfully argues for employee status in court, he or she then receives the opportunity to make a wage and hour, discrimination, or other claim (which may or may not itself be successful). The employer, of course, pays in the form of attorneys’ fees and other resources devoted to litigation. But the employer is not forced to pay any penalty for the act of misclassification, in and of itself. David Weil describes state laws, as well as proposed federal legislation, that sanction employers directly for the act of misclassification.²³² These represent penalties for employers’ false avoidance hacks.

The examples of ERISA’s ACA avoidance sanction and some state laws’ misclassification sanctions are different in important ways, however. The ERISA sanction targets “true avoidance,” i.e., successfully implemented avoidance. In scheduling optimization scenarios, there is generally no dispute over the number of hours that an employee worked; the facts support the claim to legal avoidance. As a result, ERISA uses employer intent as the dividing line to determine which acts of true avoidance are permissible and which are prohibited.²³³ Intent inquiries in employment law are notoriously thorny, however, and so a proposal that ERISA-style avoidance penalties be applied broadly is not a simple one.

In the misclassification example, by contrast, the underlying avoidance hack is a “false” one, meaning that the facts do not support the employer’s claim to have avoided the requirements of employment law. Penalizing the employer for faking avoidance – based on a variety of types of evidence concerning the reality of the work relationship – is an easier task than requiring a messy and difficult intent inquiry.

D. Remove Classifications That Enable Avoidance

A final possible regulatory response to avoidance hacks, both true and false, is the removal of the classifications and eligibility parameters within the law that enable avoidance in the first place. Indeed, “[i]f . . . employment laws did not exclusively protect employees, the thinking goes, then employers would have no incentive to manipulate their employees’ classification to avoid

229. Moran, *supra* note 140.

230. See WEIL, *supra* note 183, at 204–05.

231. *What Is “Misclassification”?*, U.S. DEP’T. LAB., <https://www.dol.gov/featured/misclassification/> (last visited Dec. 20, 2017).

232. WEIL, *supra* note 183, at 205.

233. See generally Medill, *supra* note 224 (providing background on ERISA).

the laws' coverage."²³⁴ Pennsylvania state law does this already, protecting independent contractors alongside employees from job discrimination.²³⁵ Similarly, the ACA could be rewritten to remove or change the thirty-hour threshold.²³⁶ As one of us has summarized elsewhere:

Both of these solutions would close off an avenue for employers' legal avoidance by removing the distinctions within the law that employers can exploit[.] In doing so, the legal inquiry could refocus on the merits of the parties' arguments – whether an employer actually engaged in unlawful discrimination, for example, or whether an employer supplied the required benefits – instead of on the threshold question of a worker's proper classification as an employee or independent contractor or full- or part-time worker.²³⁷

Thus, a firm using software to operate in noncompliance with employment law would be unable to claim the “cover” of the avoidance label, as there would be no threshold within the law that would enable this sort of avoidance and arbitrage tactic.

Lu-in Wang has proposed something similar in an article that examines the way that work distribution platforms like Uber's “giv[e] customers opportunities to discriminate against service workers.”²³⁸ There, Wang suggests that “employment discrimination law needs a model of employer liability to reach discrimination that originates *beyond the employer-employee dyad*, in recognition of both the triangular structure of, and the power of the customer in, interactive service work.”²³⁹ Orly Lobel makes a similar point: “Contemporary realities may necessitate extending protections we find valuable as a society –

234. Alexander, *supra* note 19, at 324 (citing Marc Linder, *Dependent and Independent Contractors in Recent U.S. Labor Law: An Ambiguous Dichotomy Rooted in Simulated Statutory Purposelessness*, 21 COMP. LAB. L. & POL'Y J. 187 (1999); Lewis L. Maltby & David C. Yamada, *Beyond “Economic Realities”: The Case for Amending Federal Employment Discrimination Laws to Include Independent Contractors*, 38 B.C. L. REV. 239 (1997)).

235. See Pennsylvania Human Relations Act, 43 PA. STAT. AND CONS. STAT. ANN. § 955(a) (West 2017).

236. Alexander, *supra* note 19, at 324 (“Likewise, advocates have proposed eliminating, or at least changing, the work-hour thresholds contained in employer mandates like the Affordable Care Act for the very reason that such cutoffs encourage employer work-arounds. . . . In introducing an amendment to the ACA in January 2015, for example, Senator Susan Collins of Maine argued that the current work-hour threshold ‘creates a perverse incentive for businesses to cut their employees’ hours so they are no longer considered full time.’”).

237. *Id.*

238. Lu-in Wang, *When the Customer Is King: Employment Discrimination as Customer Service*, 23 VA. J. SOC. POL'Y & L. 249, 253 (2016).

239. *Id.* at 250 (emphasis added).

dignity and anti-discrimination principles, whistleblowing protections, insurance and portable benefits, and occupational health and safety – to all laborers regardless of their employment status.”²⁴⁰

Apart from changes in the law’s classification structure, labor conditions for workers who are subject to avoidance hacks might be changed as a matter of fact. And if wages and working conditions outside the traditional employment relationship begin to rival those within, then avoidance hacks begin to lose some of their luster. For example, some Turkers have formed an advocacy group to pressure Amazon to establish a minimum wage for work performed via the company’s platform.²⁴¹ If such efforts are successful, then they would begin to functionally erase the distinction between those whose employment law rights are being avoided and those whose are being honored.

VIII. CONCLUSION

This Article has identified ways in which software can operate as a “regulatory hack,” through noncompliance and avoidance. It has examined four case studies of software programs used to accomplish such hacks: timekeeping software, screening and scheduling algorithms, scheduling software, and work distribution platforms used by firms in the gig economy. These and other types of software²⁴² increasingly mediate, manage, and monitor the work relationship, creating new harms for workers and eroding employment law itself. We conclude by offering four regulatory strategies for addressing the hacking of employment law.

240. Lobel, *supra* note 31, at 136.

241. There is currently no such minimum. *Amazon Mechanical Turk Pricing*, AMAZON MECHANICAL TURK, <https://requester.mturk.com/pricing> (last visited Dec. 20, 2017) (“You decide how much to pay Workers for each assignment.”).

242. There are other examples – not covered here – of software that is used to monitor and manage the work relationship. One is the handset system used to monitor warehouse workers’ time spent engaging in productive activity, in transit, and in idleness. *See, e.g.*, Carole Cadwalldr, *I Spent a Week Working at an Amazon Warehouse and It Is Hard, Physical Work*, BUS. INSIDER (Dec. 1, 2013, 11:48 AM), <http://www.businessinsider.com/i-spent-a-week-working-at-an-amazon-warehouse-and-it-is-hard-physical-work-2013-12> (discussing workers’ being “monitored by an Orwellian handset every second of every shift”). Another example is the wearable health monitoring device used by employers to encourage employees to engage in physical activity and to achieve other wellness goals, thereby – in theory – reducing absenteeism, improving productivity, and lowering employers’ health insurance costs. *See e.g.*, Elizabeth A. Brown, *The Fitbit Fault Line: Two Proposals to Protect Health and Fitness Data at Work*, 16 YALE J. HEALTH POL’Y, L. & ETHICS 1 (2016).

