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Caveat Emptor: How the Intersection of Big Data and Consumer Genomics Exponentially Increases Information Privacy Risks

Katherine Drabiak

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—ARTICLES—

Caveat Emptor: How the Intersection of Big Data and Consumer Genomics Exponentially Increases Informational Privacy Risks

Katherine Drabiak, JD[†]

Abstract

Our genomic sequence constitutes the most sensitive and personal of information: uniquely identifying us, revealing our propensity to develop certain diseases and conditions, and exposing familial connections of close genetic relatives. Big Data enables consumer-genomics companies to collect, store, and electronically share genomic-sequence data in conjunction with numerous pieces of private health and personal information. Consumer curation of data currently occurs largely outside pertinent federal regulations ordinarily governing the handling of private health information, which means consumers may not fully understand the implications of the transaction during the process of submitting their genomic and health information. This article describes 23andMe's corporate model, including relevant terms contained in its consent and privacy policies of which consumers should be aware, and discusses practices currently permitted by law that pose significant informational risks to individual privacy, including exposing the consumer and his close family members to stigma, bias, discrimination, and criminal investigation.

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I. Introduction

Our genomic sequence constitutes the most sensitive and personal of information. It uniquely identifies us, revealing our propensity for developing certain diseases and conditions and exposing familial connections to close genetic relatives.¹ In the era of Big Data, research using genomic information has moved beyond simply utilizing a physical biospecimen to including electronically stored genomic-sequence data, which permits infinite reproduction and limitless sharing.² Inexhaustible avenues for genomic data-sharing increase the potential for research advancements that could potentially uncover markers to identify an individual’s risk of contracting a disease, provide new and more effective treatment options, and provide targeted information for preventive measures.³ Corporations such as 23andMe attempt to merge society’s dual

1. Elizabeth Pike, *Securing Sequences: Ensuring Adequate Protections of Genetic Samples in the Age of Big Data*, 37 CARDOZO L. REV. 1977, 1980 (2016).
 2. *Id.* at 1984.
 3. *See generally* PRESIDENTIAL COMM’N FOR THE STUDY OF BIOETHICAL ISSUES, PRIVACY AND PROGRESS IN WHOLE GENOME SEQUENCING (2012) [hereinafter *Privacy & Progress*].

interest in learning more about one's own genome while capitalizing on the attractive utility of a large genomic database for commercial use.⁴

As 23andMe revamps its marketing and collection model to respond to FDA enforcement of its prior noncompliance,⁵ consumers may be blinded by the technological imperative to know and widely share their genetic profile or assuaged by notions of altruism highlighting their contribution to important scientific research. Consumers may bypass reading 23andMe's privacy-statement and research-consent policies, or alternatively, they may not fully appreciate the implications of the transaction. Under 23andMe's privacy statement and research-consent practices, purchasing the test and submitting DNA creates a potentially indelible electronic record of one's genomic sequence in 23andMe's database, along with a composite mosaic of additional health, lifestyle, and consumer-generated personal details.⁶

23andMe's privacy-statement and research-consent practices echo the current regulatory standard, which assumes that storing and using de-identified or aggregate genomic data poses minimal risk to the consumer and that the potential for re-identification is unlikely. Legal scholars and policymakers have sharply criticized this outmoded view, recognizing the high statistical potential of not only unintended disclosures and security breaches, but legally permissible uses of the data that pose substantial informational risks to consumer privacy.⁷ Indeed, placing the collection of genomic and related health data in the hands of private corporations means such transactions occur largely outside the scope of relevant federal regulations designed to protect these categories of deeply personal information.⁸

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4. Andrew Pollack, *23andMe Will Resume Giving Users Health Data*, N.Y. TIMES (Oct. 21, 2015), http://www.nytimes.com/2015/10/21/business/23andme-will-resume-giving-users-health-data.html?_r=0.
 5. Letter from Alberto Gutierrez, Director, Office of In vitro Diagnostics and Radiological Health, to Ann Wojcicki, CEO, 23andMe, Inc. (Nov. 22, 2013), *available at* <https://www.fda.gov/iceci/enforcementactions/warningletters/2013/ucm376296.htm>.
 6. *Privacy Highlights*, 23ANDME, <https://www.23andme.com/about/privacy/> (last updated Sept. 29, 2016) [hereinafter *Privacy Highlights*].
 7. Jane Yakowitz Bambauer, *The New Intrusion*, 88 NOTRE DAME L. REV. 205, 210-11 (2012); EXEC. OFFICE PRESIDENT, *BIG DATA: SEIZING OPPORTUNITIES, PRESERVING VALUES* 8 (2014) [hereinafter *Big Data*] (discussing re-identification), at 51 (discussing harms including financial loss, intrusion into private life, reputational damage and societal harms); Sejin Ahn, *Whose Genome is it Anyway? Re-Identification and Privacy Protection in Public and Participatory Genomics*, 52 SAN DIEGO L. REV. 751, 766-71 (2015).
 8. Pike, *supra* note 1, at 2003, 2006-07; Nicholas P. Terry, *Big Data Proxies and Health Data Exceptionalism*, 24 HEALTH MATRIX 66, 69 (2014); Kate Crawford & Jason Schultz, *Big Data and Due Process: Toward A Framework to Address Predictive Privacy Harms*, 55 B.C. L. REV. 93, 99 (2014).

The sheer amount of information in genomics databases makes them appealing to a number of additional parties, including data brokers, the pharmaceutical industry, employers, health insurers, and law enforcement.⁹ Deciding to participate in consumer genomics entails serious informational risks in a variety of contexts that could cause the consumer or his family members to be subjected to stigma, shame, discrimination, or criminal accusations.¹⁰ Consumers ought to exercise prudence when submitting DNA to consumer genomics companies such as 23andMe and enter the transaction with a meaningful understanding of what it means for the privacy of their genomic information.

II. Big Data and Consumer Genomics

A. *The Explosion of Big Data and Health Information*

In the past few years, we have witnessed the explosion of interconnected, interactive, and digital data from numerous sources.¹¹ According to IBM, ninety percent of all the data in the world has been generated in the last two years alone and this trend is predicted to continue; projections show that the amount of data in the world will double every two years.¹² The Obama Administration's Big Data and Privacy Working Group stated that the number of sources and the electronic format of data collection creates an unprecedented accumulation of data in volume, variety, and velocity.¹³ We currently have numerous points of data collection—social media that shows photos of us, our likes, interests, and dislikes; commercial databases tracking what we purchase at Target, creating a projection of what food we eat and whether we may be pregnant; and wearable sensors that monitor whether we are exercising, measure our heart rate, and record when we sleep.¹⁴ A number of location systems reveal where we are at a given moment by accessing GPS chips in

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9. See Big Data, *supra* note 7, at 43 (discussing data brokers), at 40 (discussing advertising and marketing), at 32, 40 (discussing law enforcement uses); see generally Crawford & Schultz, *supra* note 8; See generally Ifeoma Ajunwa, *Genetic Testing Meets Big Data: Tort and Contract Law Issues*, 75 OHIO ST. L.J. 1225 (2014).
 10. Bambauer, *supra* note 7, at 228-229, 258-261; Big Data, *supra* note 7, at 49.
 11. Big Data, *supra* note 7, at 4.
 12. Michael Murphy & John Barton, *From A Sea of Data to Actionable Insights: Big Data and What It Means for Lawyers*, 26 INTELL. PROP. & TECH. L.J. 8, 15-16 (2014); Julie Brill, Commissioner, Fed. Trade Comm'n, Keynote Address at Carnegie Mellon Data Privacy Day, It's Getting Real: Privacy, Security, and Fairness by Design in the Internet of Things (Jan. 28, 2015), available at <http://cups.cs.cmu.edu/privacy-day/2015/#keynote>.
 13. Brill, *supra* note 12, at 4-5.
 14. Big Data, *supra* note 7, at 4-5; Murphy & Barton, *supra* note 12, at 13; Crawford & Schultz, *supra* note 8, at 98.

our phones and fitness trackers, tracing cell-tower triangulation of mobile devices, mapping use of wireless networks, and tracking any electronic payments we make for purchases.¹⁵ Termed the “internet of things,” this interactive and interconnected web of wearable and portable networked devices captures, stores, and transmits data in real time.¹⁶

Increasingly, many of us volunteer to monitor and share private health information through fitness trackers and social media or send our DNA to consumer-genomics companies to reveal hidden secrets in our DNA. A recent study showed that 81.5 percent of consumers would have their genome sequenced if they could afford it.¹⁷ Our genome uniquely identifies us, can reveal a propensity for certain diseases and conditions, and can expose deeply personal health information not only about ourselves but also our close genetic relatives.¹⁸ Legal scholar Nicholas Terry refers to this as the “quantified self movement,” a movement in which consumers personally collect and curate their own health, wellness, and medically inflected data to track progress, learn more about themselves, and make assessments about their health.¹⁹

Consumers, however, are not the only eyes viewing this gem of curated data; businesses subsequently process, mine, and use the data in predictive analytics.²⁰ Ninety percent of connected devices we use collect and transmit personal information and seventy percent of these devices transmit this information without encryption.²¹ Big Data’s computational and analytic frameworks combine these “large data sets to identify patterns to make economic, social, technical, and legal claims.”²²

Population-wide genomic databases capitalize on merging Big Data and mining genomic and health information by examining the interaction between genes, the environment, and disease.²³ Although humans share 99.9 percent of our DNA sequence in common, scientists believe that the remaining genetic variations combined with external factors permits researchers to predict individuals’ susceptibility to adverse health conditions and development of disease.²⁴ Population-wide genomic research examines associations between genetic variants across large

15. Big Data, *supra* note 7, at 5.

16. *Id.* at 2; Murphy & Barton, *supra* note 12, at 8; Brill, *supra* note 12.

17. Ajunwa, *supra* note 9, at 1232.

18. Privacy & Progress, *supra* note 3, at 2; Pike, *supra* note 1, at 1980.

19. Terry, *supra* note 8, at 84.

20. *Id.* at 77.

21. Brill, *supra* note 12, at 6.

22. Ajunwa, *supra* note 9, at 1233.

23. Pike, *supra* note 1, at 1981-82.

24. *Id.* at 1982.

databases containing genomic and associated health data to enhance our understanding of common diseases with the goal of improving treatments and therapies.²⁵

B. Technology's Impact on the Availability and Revocability of Genomic Information

Technology massively shifted the methods of processing, storing, and accessing genomic data. One biospecimen of saliva or blood can reveal our entire genomic sequence.²⁶ Instead of relying on physically possessing the actual biospecimen, processing facilities create an electronic record of the genomic sequence and subsequently store it in a cloud, producing a permanent record of our private biological profile that can be accessed from numerous points and infinitely reproduced.²⁷ Unlike a paper record or physical sample that can be expunged, shredded, or destroyed, an electronic sequence of genomic data creates an indelible record of our DNA that, once shared, may be difficult to contain.²⁸ In some instances, a third party may hold and process the data, creating additional access points.²⁹ Even if the entity collecting the data deletes the primary record from the server, additional parties may have already downloaded and shared copies, creating a web that is difficult to trace and nearly impossible to fully retract.³⁰ Accordingly, many experts consider providing a DNA sample an irrevocable decision.³¹

Consumer genomics companies like 23andMe capitalize on Big Data's capabilities and the quantified self-movement, collecting genomic information, demographic information, health history, and self-reported medical information.³² 23andMe created a self-collecting and self-reporting model for amassing genomic and health information that it subsequently processes, analyzes, and sells to interested third parties for a fee.³³ As other scholars have noted, the value of the data is not limited to serving—or

25. *Id.*

26. *Id.* at 1984.

27. *Id.*; Jingquan Li, *Security Implications of Direct-to-Consumer Genetic Testing Services*, 2015 IEEE FIRST INTERNATIONAL CONFERENCE ON BIG DATA COMPUTING SERVICE AND APPLICATIONS (2015) 147, at 149-150.

28. Big Data, *supra* note 7, at 8-10; Andelka M. Phillips, *Genomic Privacy and Direct-to-Consumer Genetics: Big Consumer Genetic Data- What's in that Contract?* 2015 IEEE FIRST INTERNATIONAL CONFERENCE ON BIG DATA COMPUTING SERVICE AND APPLICATIONS (2015) 60, at 61; Ahn *supra* note 7, at 768-770.

29. Big Data, *supra* note 7, at 32.

30. Ahn, *supra* note 7, at 768-770.

31. *Id.*

32. Pollack, *supra* note 4.

33. Li, *supra* note 27, at 149-150; Pike, *supra* note 1, at 1987.

perhaps even intended to serve—the primary purpose for which it was collected: to provide information back to the consumer.³⁴ Rather, its value resides in the opportunities for numerous secondary uses.³⁵ Indeed, the sheer amount of genomic data “invites repurposing at a later stage.”³⁶ Consumer genomics corporations have not only convinced consumers to participate, but “to pay to give their genetic data away” in exchange for the informational profile the company offers its consumers.³⁷

C. Examining 23andMe’s Business Model

1. 23andMe’s Initial Business Model and FDA Noncompliance

Among all the consumer genomics companies, 23andMe captured the attention of the public, the Food and Drug Administration (“FDA”), the media, and defined itself as the reigning consumer genomics corporation.³⁸ 23andMe currently holds the largest database of consumer genomic and associated health information, containing over one million consumer profiles.³⁹ In 2007, 23andMe began selling to consumers its Personal Genome Service (“PGS”), a direct-to-consumer genetic test that offers personalized risk assessments for a variety of traits and conditions, including predisposition to breast cancer, the risk of developing Alzheimer’s disease, ancestry information, and pharmacogenomic profile.⁴⁰ Chief Executive Officer and co-founder Anne Wojcicki stated that she intends to revolutionize healthcare by empowering consumers to receive information about their genome.⁴¹ Wojcicki believes providing consumers such

34. Terry, *supra* note 8, at 87

35. *Id.*

36. Elizabeth Joh, *Policing By the Numbers: Big Data and the Fourth Amendment*, 89 WASH. L. REV. 36, 54 (2014) (quoting David Lazer and Viktor Mayer-Schonberger).

37. Pike, *supra* note 1, at 1987.

38. This article focuses on 23andMe because it is the largest consumer genomics company and has the most dynamic business plan of creating internal drug and therapeutics development wing. Anne Wojcicki, *One Million Strong: A Note From 23andMe’s Anne Wojcicki*, 23ANDME BLOG (Dec. 11, 2012) [hereinafter *One Million*], <https://blog.23andme.com/news/one-million-strong-a-note-from-23andmes-anne-wojcicki/>.

39. *Id.*

40. See 23ANDME, *TIME Magazine Names 23andMe’s Personal Genome Service 2008 Invention of the Year*, 23ANDME BLOG (Oct. 30, 2008), <http://mediacenter.23andme.com/?p=38>; see also Erin C., *Genetic Test Can Reduce Risk from Blood Thinner Warfarin*, 23ANDME BLOG (Mar. 16, 2010), <https://blog.23andme.com/health-traits/study-shows-that-genetic-testing-reduces-hospitalizations-in-people-taking-the-commonly-used-blood-thinner-warfarin/>.

41. See Elizabeth Segran, *How 23andMe CEO Anne Wojcicki Turned 23andMe Around After Falling Out With the FDA*, FAST COMPANY (Oct. 21, 2015), <http://www.fastcompany.com/3052283/most-creative-people/how-ceo-anne>

information will enable them to take steps to positively impact their health and refers to the personal genomics revolution in terms of ownership: “We believe you should be able to get your own data and you should be able to own your own data.”⁴² In addition to the goal of consumer empowerment through information, 23andMe aims to fundamentally re-envision the research process and expedite the timeline to deliver commercial products by developing diagnostics and therapeutics internally and working with its pharmaceutical, academic, and non-profit research partners using its extensive database of consumer genomic and health information.⁴³

In recent years, the FDA scrutinized the preliminary question of whether 23andMe’s initial PGS test components met threshold regulatory compliance requirements to offer the product to the public.⁴⁴ 23andMe’s initial PGS consisted of a report of 254 conditions and traits, marketing the sale of the PGS as “the first step in prevention” and a method to empower consumers to take “steps toward mitigating serious diseases” such as diabetes, heart disease, and breast cancer.⁴⁵ In 2010, several years after it began selling PGS, the FDA sent cease-and-desist letters to 23andMe, ordering it to discontinue its sales, asserting that PGS was a medical device for which 23andMe had not obtained approval to sell.⁴⁶ During this time, 23andMe maintained that PGS was an informational product and provided a disclaimer on its website that “the information in the personalized health report [is] for research, education, and informational use only” and that it “did not constitute medical advice.”⁴⁷ In 2013, the FDA sent a warning letter

wojcicki-turned-23andme-around-after-falling-out-with-the-; *see also* Wojcicki, *supra* note 38.

42. Segran, *supra* note 41; Ariana Eunjung Cha, *Anne Wojcicki on 23andMe’s New (And Improved?) Personal Genome Service*, WASH. POST (Oct. 21, 2015), <https://www.washingtonpost.com/news/to-your-health/wp/2015/10/21/anne-wojcicki-on-23andmes-new-and-improved-personal-genome-service/>.
43. *23andMe Research*, 23ANDME, <https://www.23andme.com/research/> (last visited Oct. 1, 2016).
44. Jennifer Wagner, *The Sky Is Falling for Personal Genomics! Oh, Nevermind. It’s Just A Cease and Desist Letter from the FDA to 23andMe*, GENOMICS L. REP. (Dec. 3, 2013), <http://www.genomicslawreport.com/index.php/2013/12/03/the-sky-is-falling-for-personal-genomics-oh-nevermind-its-just-a-cess-desist-letter-from-the-fda-to-23andme/#more-13173>.
45. *See* John Conley, *If 23andMe Falls in the Forest and There’s No One There . . .*, GENOMICS L. REP. (Dec. 3, 2013), <http://www.genomicslawreport.com/index.php/2013/12/03/if-23andme-falls-in-the-forest-and-theres-no-one-there/#more-13198>.
46. 21 U.S.C. § 321(h)(2) (2015) (The Food, Drug, and Cosmetic Act defines a medical device as a device “intended for use in the diagnosis of disease or other conditions, or in the cure mitigation, treatment, or prevention of disease.”); *see also* Wagner, *supra* note 44.
47. 21 U.S.C. § 321(h)(2) (2015); *see also* Katherine Drabiak-Syed, *Baby Gender Mentor: Class Action Litigation Calls Attention to a Deficient Federal Regulatory*

to 23andMe, ordering company to “immediately discontinue marketing” PGS to consumers and stating that 23andMe needed to obtain premarket review or de novo classification of PGS to sell the test to consumers.⁴⁸ Based on the nature of the product, the FDA enumerated concerns relating to 23andMe’s failure to demonstrate the test’s analytic validity and clinical utility, which exposed consumers to a risk of harm from false positives, false negatives, and the potential for consumers to self-manage their treatment protocol or abandon physician-recommended therapies based on test results.⁴⁹

2. 23andMe’s Revived Business Model

Following regulatory noncompliance related to its sale and marketing of the PGS test in 2013, 23andMe transformed its business model.⁵⁰ It began to sell a modified test for consumers to obtain ancestry information in the United States and expanded the sale of the original PGS to consumers in the United Kingdom and Canada.⁵¹ 23andMe achieved the goal of amassing one of the world’s largest population-wide databases. It combined genotypic-phenotypic information from over one million users, creating an incredibly attractive prospect for investigators seeking access to a large-scale database for research.⁵² Indeed, in January 2015, 23andMe announced a sixty-million-dollar partnership with Genentech to focus on Parkinson’s disease.⁵³ This disease focus was personal for Wojcicki—her husband at the time, Google co-founder Sergey Brin, found out using 23andMe’s services that he has a genetic variant that increases his risk of developing Parkinson’s disease.⁵⁴ 23andMe also publicized additional

Framework for DTC Genetic Tests, Politicized Statutory Construction, and a Lack of Informed Consent, 14 J. MED. & L. 71, 78-82 (2010) (discussing state statutory definitions of what constitutes providing medical advice and the practice of medicine).

48. Warning Letter from Alberto Gutierrez, Director, Office of In Vitro Diagnostics and Radiological Health, U.S. Food and Drug Admin., to Anne Wojcicki, CEO, 23andMe, Inc. (Nov. 22, 2013), available at <http://www.fda.gov/ICECI/EnforcementActions/WarningLetters/2013/ucm376296.htm>.
49. *Id.*
50. Pollack, *supra* note 4.
51. Katie Collins, *23andMe Approved to Sell Personal Genetics Kits in UK*, WIRED UK (Dec. 2, 2014), <http://www.wired.co.uk/news/archive/2014-12/02/23andme-uk-approval>.
52. Pollack, *supra* note 4; One Million, *supra* note 38.
53. Kevin Davies, *Putting the You in Therapeutics*, *Genome Magazine*, GENOME (June 29, 2015), <http://genomemag.com/davies-23andme/#.VqELsPkrI7Y>.
54. Stephanie Lee, *Anne Wojcicki’s Quest to Put People in Charge of Their Own Health*, S.F. CHRON. (Feb. 28, 2015) <http://www.sfchronicle.com/news/article/Anne-Wojcicki-s-quest-to-put-people-in-charge-6108062.php>.

relationships with other pharmaceutical companies, academic partners, and non-profit organizations to utilize the information contained in 23andMe's database.⁵⁵

In February 2015, 23andMe revived its marketing and sales mission by offering a redefined PGS, consisting of a carrier-status report for thirty-six autosomal recessive diseases and conditions in addition to ancestry, wellness, and trait reports.⁵⁶ In early 2015, the FDA approved 23andMe's carrier tests and 23andMe currently advertises that it is "the first and only genetic service available directly to you that meets FDA standards," distinguishing itself from other consumer-genomics corporations in the marketplace.⁵⁷ 23andMe designed the carrier-testing portion of the service to provide consumers with information relating to genetic diseases that may be relevant when making reproductive decisions.⁵⁸ A carrier for genetic disease is a person who has a genetic variant correlating to the disease or condition and has a chance of passing it on to future children, even if that person does not manifest the disease.⁵⁹ If both parents are carriers, there is a twenty-five percent chance that their future child will have the condition. Parents can consult with a physician and genetic counselor to make informed family-planning decisions.⁶⁰ 23andMe's directional shift to introduce carrier testing again resonated on a personal level with Wojcicki, arising from her own experiences in the healthcare system and her status as a carrier for Bloom syndrome.⁶¹

3. Transforming the Traditional Research Model

Based on Wojcicki's extensive media interviews and her personal influence in the progression of 23andMe's services, it appears she sincerely believes this business model will both revolutionize healthcare and positively impact consumers.⁶² 23andMe's long-term goal, however, is not expanding the traits and conditions that PGS assesses, but instead

55. Davies, *supra* note 53.

56. *Our Service*, 23ANDME, <https://www.23andme.com/service/> (last visited Oct. 1, 2016).

57. *23andMe Home*, 23ANDME (July 8, 2016) <https://www.23andme.com/> [<https://web.archive.org/web/20160708081356/https://www.23andme.com/>].

58. *See Carrier Status Reports*, 23ANDME, <https://www.23andme.com/service/> (last visited Oct. 2, 2016); *see also* Pollack, *supra* note 4.

59. Pollack, *supra* note 4.

60. *Id.*

61. Lee, *supra* note 54.

62. *See Research Portal*, 23ANDME (July 2, 2016), [hereinafter Archived Research Portal] <https://www.23andme.com/23andMeResearchPortal/> [<https://web.archive.org/web/20160702084412/https://www.23andme.com/23andMeResearchPortal/>] ("Core to our mission, is helping people, access, understand and benefit from the human genome.").

numerically building its database and selling access to the data, which poses additional concerns independent of Wojcicki's motivations.⁶³ In addition to building the genomic database from consumers who purchase PGS, in 2015, 23andMe created a therapeutics branch to actively recruit new research subjects for disease-specific cohorts to investigate illnesses such as Parkinson's disease, lupus, and irritable-bowel syndrome.⁶⁴

This step radically shifted the model for both research and drug discovery and delivery. As one article in the *San Francisco Chronicle* characterized it, "23andMe wants to do for health what Google has done for search: make massive quantities of information digital, accessible, and personal."⁶⁵ 23andMe transformed this concept of digitalizing and compiling genotypic-phenotypic data into a tangible product by creating a searchable format for interested investigators to run queries in 23andMe's research portal.⁶⁶ The research portal is an online searchable

database of over 650,000 genotyped individuals with more than 225 [million] phenotypic data points, including demographic, clinical, [and] family history information and more. By eliminating the need to gather, process, and analyze patient samples, research portal empowers scientists to significantly speed the time to discovery and publication.⁶⁷

Angela Calman-Wonson, 23andMe's Vice President of Communications explained that

traditional research can take more than a decade and millions of dollars to conduct studies with just under a few hundred participants. We can undertake real-time research initiatives drawn from . . . 23andMe customers who have pro-actively elected to share their de-identified genomic information for research and answer survey questions. This approach eliminates recruitment times, minimizes cost, and reduces the amount of time it takes to conduct research.⁶⁸

Through this model, 23andMe attracted the attention of a number of interested parties—members of the public who seek more information

63. Michael Grothaus, *How 23andMe is Monetizing Your DNA*, FAST COMPANY (Jan. 5, 2015), <http://www.fastcompany.com/3040356/what-23andme-is-doing-with-all-that-dna>.

64. See, *Research Portal*, 23ANDME (Oct. 2, 2016), [herein after *Research Portal*] <https://www.23andme.com/23andMeResearchPortal/>.

65. Lee, *supra* note 54.

66. *Achieved Research Portal*, *supra* note 62.

67. *Id.*

68. Grothaus, *supra* note 63.

about their genomes and believe in 23andMe's research mission, the pharmaceutical industry, and the National Institutes of Health ("NIH").⁶⁹ 23andMe's accelerated research model facilitated highly expedited research into Parkinson's disease by enrolling 3400 Parkinson's patients, identifying two genetic associations for the disease, and publishing findings within eighteen months, an attractive beacon for its pharmaceutical research partners to follow.⁷⁰ In the past five years, 23andMe analyzed this data to publish thirty-two peer reviewed articles on research conducted using the database.⁷¹ 23andMe also garnered significant financial backing; in addition to agreements with Genentech, Pfizer, and private venture capitalists, the NIH awarded a \$1.4-million grant to assist 23andMe in expanding its database.⁷²

4. Consumer Curation of Genomic and Health Data

a. Tompkins v. 23andMe's Holding: Read the Clickwrap

According to 23andMe, eighty percent of its customers consent to additional research, providing their de-identified genomic data and answering personal survey questions related to health status, family history, and factors potentially impacting disease development.⁷³ Some consumers may be motivated by altruistic notions of participating in research; as one consumer reasoned, "genetic data is the most personal data [he] own[s], but if [his] data can contribute to finding better treatment or even a cure, why should [he] think twice about sharing it?"⁷⁴

Consumers' willingness to share such deeply personal information raises questions about whether they have a meaningful understanding of what the transaction means for the privacy of their genomic data and the implications of their participation. Specifically, consumers may be unaware of the ramifications of digitalizing genomic data and how digitalizing genomic data facilitates its rapid and irrevocable transmission. There are a number of terms in 23andMe's research-consent and privacy-statement policies pertaining to privacy and withdrawing from the research portal about which consumers may be unaware.

When a consumer orders a PGS test from 23andMe, the web interface presents a box containing links to 23andMe's Research Consent document

69. *Id.*

70. *Id.*

71. *Company Info Fact Sheet, 23ANDME*, <http://mediacenter.23andme.com/en-ca/fact-sheet/> (last visited Apr. 1, 2017).

72. Grothaus, *supra* note 63.

73. *Id.*

74. *Id.*

and Privacy Statement, referred to as a clickwrap.⁷⁵ To access these statements, the consumer must click on the link and read the full policies on a separate page.⁷⁶ Recent jurisprudence in this area affirms that the onus is on the consumer to actually click the link, carefully read, and agree to the terms when purchasing and using the product.⁷⁷ In 2014, *Tompkins v. 23andMe* addressed whether 23andMe's customers are bound by the product's terms of service, which include consent and privacy terms, based on the clickwrap method of accessing the additional information.⁷⁸ The court in *Tompkins* held that as long as 23andMe provides actual or constructive notice of the site's terms by providing the consumer a link to access, review, and assent to the policies, 23andMe's method of providing consumers notice of terms is sufficient.⁷⁹ Accordingly, a consumer cannot *ex post facto* void the terms of the commercial sale of service based on his failure to read the terms of the agreement.⁸⁰

b. A Closer Examination of 23andMe's Research Consent and Privacy Statement

23andMe's research-consent terms state that the purpose of the research is to make and support meaningful scientific discoveries by examining genomic and phenotypic traits associated with the development of disease and health conditions.⁸¹ 23andMe defines "research" as "research aimed at publication in peer-reviewed journals and as other research funded by the federal government [such as the NIH] or in collaboration with other entities including academic institutions and pharmaceutical companies."⁸² 23andMe intends for its research to contribute to therapeutics development, support the development of diagnostics and drugs to predict and treat illness, and commercialize its

75. Phillips, *supra* note 28, at 61; *Tompkins v. 23andMe*, 2014 WL 2903752 (N.D. Cal. 2014).

76. *Still Have Questions About Research?*, 23ANDME, <https://www.23andme.com/research/> (last visited Apr. 1, 2017).

77. *Tompkins*, 2014 WL 2903752, at *6 (Stating that "the [terms of service ("TOS")] resemble clickwrap agreements, where an offeree receives an opportunity to review terms and conditions and must affirmatively indicate assent . . . The fact that the TOS were hyperlinked and not presented on the same screen does not mean customers lacked adequate notice."); *Id.* at *9 (Concluding that "the Court decides that the named Plaintiffs accepted the TOS when they created accounts or registered their DNA kits.").

78. *Id.* at *6.

79. *Id.*

80. *Id.* at *8-9.

81. *Privacy Highlights*, *supra* note 6, at § 4(b).

82. *Id.*

knowledge to improve healthcare.⁸³ 23andMe suggests that participants benefit from consenting to research in that it allows them the opportunity to contribute to science by providing their genetic information to support research into the causes of illness, develop new drugs and treatments, and predict a person's risk of disease.⁸⁴

23andMe uses consumer data for a number of different purposes. 23andMe discloses that it will share genetic and personal data within the company, that it de-identifies the data, and that the investigator studying the data does not have access to the consumer's name or contact information.⁸⁵ 23andMe's current policies delineate that it may use consumers' information for scientific-research purposes, either conducted within 23andMe or through a research partner, if the consumer consents to such research.⁸⁶ 23andMe's research portal consists of genomic data and self-disclosed information from surveys such as family history, current health status, personal traits, age, racial origin, sexual orientation, and ethnicity.⁸⁷ 23andMe may share aggregate de-identified data with external researchers and other agencies as required by law, but the research-consent terms state that the data are summarized across enough customers to minimize the chance that a consumer's personal information will be exposed.⁸⁸ Thus, even if investigators are using de-identified data, the aggregate information contains individual genomic sequences combined with multiple pieces of highly personal and potentially identifying information.

Both 23andMe's research-consent terms and privacy statement disclose the risks of participation in research and describe potential privacy risks.⁸⁹ 23andMe's privacy statement and research consent describe the physical, technical, and administrative measures it institutes to protect consumer information. It also outlines the methods it uses to minimize the

83. *Id.* 23andMe has published 32 peer reviewed studies in the past five years and obtained a patent related to its research on Parkinson's disease. See *Company Info Fact Sheet*, *supra* note 73 (discussing peer reviewed research); see also Anne W., *Announcing 23andMe's First Patent*, 23ANDME (May 28, 2012), <https://blog.23andme.com/news/announcements/announcing-23andmes-first-patent/>; Bob Grant, *Gene Patent Stirs Controversy*, SCIENTIST (June 4, 2012), <http://www.the-scientist.com/?articles.view/articleNo/32143/title/Gene-Patent-Stirs-Controversy/> (discussing criticism relating to seeking profit over democratizing innovations in genomics).

84. *Research Consent*, 23ANDME, [hereinafter *Research Consent*] <https://www.23andme.com/about/consent/>.

85. *Id.* at 4.

86. *Id.* at 6.

87. *Id.* at 3; *Privacy Highlights*, *supra* note 6.

88. *Research Consent*, *supra* note 84.

89. *Id.*; *Privacy Highlights*, *supra* note 6.

possibility of an unintended breach, such as de-identifying the data, and to enhance consumer confidence, such as obtaining a Certificate of Confidentiality from the NIH.⁹⁰ 23andMe’s research-consent terms indicate to consumers that “genetic data, survey responses, and/or personally identifying information may be stolen in the event of a security breach . . . they may be made public or released to insurance companies, which could have a negative impact on your ability to obtain insurance coverage.”⁹¹ The research-consent terms also state that there is a risk that a third party could compare partial genetic data with published research results and identify individual consumers, though it describes this endeavor as “extremely difficult” but “possible.”⁹² 23andMe’s privacy statement explains how it contracts with third-party service providers to process and analyze saliva samples. Despite the measures intended to protect informational security, 23andMe disclaims that it “cannot guarantee confidentiality and security of this information due to inherent risks associated with storing and transmitting data electronically.”⁹³ As an anticipatory shield against backlash litigation related to this term, 23andMe also includes a clause that disclaims any liability for unintended or negative consequences arising from purchasing the product.⁹⁴

Even if a consumer declines to allow 23andMe to use his genomic and personal information for research use, 23andMe’s privacy statement still allows the company to use the individual’s information for other purposes, including any purpose 23andMe believes is permissible under current laws and regulations and use for targeted marketing and advertising.⁹⁵ 23andMe’s Privacy Statement describes in detail the types of information that it collects, such as tracking, collecting, and storing consumer web behavior. 23andMe uses cookies, web beacons, and device identifiers that record the consumer’s internet-protocol address, clickstream data, and geographic location.⁹⁶ 23andMe also encourages consumers to share and disclose their purchase or participation in research through social media by offering a Facebook like or share button and a button that connects to LinkedIn.⁹⁷ If consumers use a third-party site like Facebook or LinkedIn,

90. *Privacy Highlights*, *supra* note 6, at § 6(c) (discussing security measures); *Research Consent*, *supra* note 84, at 4 (discussing how 23andMe aims to minimize the potential for a privacy breach).

91. *Research Consent*, *supra* note 84, at 5.

92. *Id.*

93. *Privacy Highlights*, *supra* note 6, at § 4(d).

94. *Id.* at 5(c) (“23andMe will have no responsibility or liability for any consequences that may result because you have released or shared information with others.”).

95. *Id.* at § 4.

96. *Id.* at § 3(c).

97. *Id.* at § 3(a)(v).

23andMe may collect additional personal consumer information available through their social-media accounts, including their profile picture, network, gender, username, age range, and list of friends.⁹⁸

According to the privacy statement, 23andMe may internally use and share with third parties consumer information without the consumer's consent if the information has been "anonymized or aggregated so [the consumer] cannot be reasonably identified as an individual."⁹⁹ 23andMe's Privacy Statement promises that it will not "sell, lease, or rent your individual level information" without explicit consent.¹⁰⁰ However, this distinction must be read in conjunction with the rest of the terms contained in the privacy statement. Specifically, the privacy statement contains a clause that reserves 23andMe's unilateral right to change the terms of its privacy statement at any time by providing email notification to consumers.¹⁰¹ Thus, according to the terms outlined in the current privacy statement, 23andMe may properly change its current policy at a later date and elect to share or sell existing complete consumer profiles with every fully identifying detail.

Both the research consent document and privacy statement contain provisions to address situations in which a consumer wishes to remove his information from the research portal. If a consumer wishes to withdraw from research, the consumer must notify 23andMe's customer-care team.¹⁰² Thirty days after receiving the request, 23andMe will discontinue future use of the consumer's genomic and self-reported data.¹⁰³ Withdrawing from research, however, has no impact on research in progress, research that has already been conducted or published using that consumer's information, or research conducted by an associated research entity if the consumer's genomic and self-reported information has already been shared with that entity.¹⁰⁴ Accordingly, withdrawing from research still permits ongoing research use of the consumer's information within 23andMe and by external entities and only prevents the initiation of new, discrete research projects using that consumer's information.

Furthermore, withdrawing from research does not remove one's genomic and self-reported information from 23andMe's database.¹⁰⁵

98. *Id.* at § 3(a)(viii).

99. *Id.*

100. *Id.*

101. *Id.* at § 6(g).

102. *Research Consent*, *supra* note 84, at 6.

103. *Id.*

104. *Id.*

105. *Id.* (Stating "choosing not to give consent or withdrawing from 23andMe Research will not affect access to your Genetic Information," meaning that the 23andMe retains the consumer's information in its electronic database even if it no longer

Unless a consumer specifically contacts 23andMe's customer care and requests that 23andMe close his account, the consumer's information remains in 23andMe's database, even if it is no longer used in new, discrete research projects conducted by 23andMe or its research partners.¹⁰⁶ Even if a consumer requests that 23andMe completely close the account, 23andMe states that it or a third party contracted to perform sequencing may retain consumer genomic information, including backup copies as required by law or pursuant to 23andMe's data-protection policies.¹⁰⁷ 23andMe also retains consumer registration information for accounting, audit, and compliance purposes.¹⁰⁸ Thus, even if a consumer attempts to close her account, 23andMe reserves the right to retain an indelible record of her full genomic sequence, highly personal self-reported information, and fact of participation.

c. Integrating Tompkins with 23andMe's Policies

In summary, 23andMe explicitly discloses that it collects and stores massive amounts of information, creating an alarmingly complete consumer profile for each consumer, including his genomic sequence, name, self-disclosed family history, health conditions, race, ethnicity, sexual orientation, age, social networks, place of employment, as well as a record of every website that he clicks on, photos, and real-time tracking of his geographic location.

The detailed provisions set forth in 23andMe's research-consent terms and privacy statement that favor collecting, retaining, and sharing consumer information reiterate the gravity of the holding in *Tompkins* for enforcing online terms of service.¹⁰⁹ If a consumer does not follow the prompts in 23andMe's clickwrap to read the research consent and privacy statement or reads them and fails to understand the permanent nature of the transaction, then he may face a number of unanticipated outcomes. He cannot discontinue external entities' use of his genomic and self-reported information, even if he discovers these entities are conducting research to which he is opposed, such as cloning or creating chimeras. The consumer likely has little or no remedy available to remove his information from 23andMe's database and fully erase his participation. This poses informational risks stemming from 23andMe's continued retention of the consumer's genomic and consumer information. If 23andMe shares the data after modifying the terms of the privacy policy or if the information is disclosed by breach, the consumer may face increased risk of informational

uses it for active research); *see also Privacy Highlights*, *supra* note 6, at 6(d) (describing account closure).

106. *Id.*

107. *Id.*

108. *Privacy Highlights*, *supra* note 6, at § 5(d).

109. *Tompkins*, 2014 WL 2903752, at *5-7, 9.

harms. Furthermore, if 23andMe or a third party uses this information for targeted marketing that results in personal embarrassment, loss of employment, or denial of insurance coverage, 23andMe's policies specifically bar any legal recourse against 23andMe for harm arising from these disclosures.¹¹⁰

III. Regulations Governing Consumer Genomics

A. Outside the Regulatory Framework

The massive paradigm shift from collecting genomic and health information in the healthcare setting to the commercial arena means the transaction of collection, use, and distribution may occur outside the scope of regulatory structures designed to protect health data privacy and to ensure that companies have consumers' informed consent when they provide DNA.¹¹¹ Regulatory protections are contingent upon whether the law defines the party who collects and initially holds the data as a covered entity.¹¹² Under the Department of Health and Human Services' ("HHS") regulation for the Protection of Human Subjects—also called the Common Rule—and the Health Insurance Portability and Accountability Act ("HIPAA"), covered entities are subject to specific requirements pertaining to consent for research and procedures for maintaining health information privacy.¹¹³ However, HIPAA does not include commercial entities such as consumer-genomics companies in its definition of covered entity, so consumer-genomics companies are not required to adhere to HIPAA's standards for security and privacy.¹¹⁴ Thus, HIPAA does not apply to curation of consumers' health data or provide any protections related to privacy, security, or minimizing access. Similarly, the regulations set forth in the Common Rule do not govern a commercial entity's practices unless it conducts research that is supported by a federal department or agency.¹¹⁵

Currently, even if a commercial entity receives federal funding for its research using collected consumer DNA and health information, the entity may assert that the Common Rule does not apply. Under the current version of the Common Rule, the Office of Human Research Protections ("OHRP") clarified that it

110. See *Privacy Highlights*, *supra* note 6, at § 6(g) (discussing 23andMe's ability to change terms of the Privacy Policy); *Id.* at § 5(c) (discounting any liability of adverse outcomes: "23andMe will have no responsibility or liability for any consequences that may result because you have released or shared personal information with others.").

111. See Terry, *supra* note 8, at 69; Pike, *supra* note 1, at 1996-97, 2001, 2003.

112. See Pike, *supra* note 1, at 2003.

113. See Terry, *supra* note 8, at 68-69; see also Pike, *supra* note 1, at 2002-04.

114. See 45 C.F.R. § 160.103 (2013); Terry, *supra* note 8, at 69-71, 84.

115. 45 C.F.R. § 46.101(a) (2013).

does not consider research involving only coded private information or specimens to involve human subjects as defined under 45 CFR 46.102(f) if the following conditions are both met:

(1) the private information or specimens were not collected specifically for the currently proposed research project through and interaction or intervention with living individuals; and

(2) the investigator(s) cannot readily ascertain the identity of the individual(s) to whom the coded private information or specimens pertain.¹¹⁶

Accordingly, even if 23andMe were defined as a covered entity under the Common Rule based on its receipt of federal funds from the NIH, it could assert that the consumers who contribute DNA and private health information for research are not considered human subjects because 23andMe de-identifies consumers' information prior to placing it into the research portal. Aligned with this interpretation of the Common Rule, 23andMe currently maintains that its data-mining analysis "does not constitute research on human subjects."¹¹⁷ This stance is significant because it means that 23andMe believes that the consent it obtains to retain, use, and share consumer data from the sale of PGS is not necessary to comply with current regulations; rather, they believe that obtaining consent is a commercial transactional courtesy.

To compare, investigators who conduct research using human subjects are required, pursuant to the Common Rule, to obtain informed consent from subjects and take affirmative steps to relay the risks and benefits of participation in a manner that subjects can comprehend and evaluate.¹¹⁸ In addition to the regulatory requirements set forth in the Common Rule, investigators at a covered entity are bound by ethical principles governing human-subject research set forth by the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research in its Belmont Report.¹¹⁹ These ethical principles—respect for persons, beneficence, and informed consent—convey the spirit of the Common Rule as a mechanism for protecting research subjects from undue risk of harm and ensuring that subjects adequately comprehend the risks and benefits associated with participation during the informed-consent process.¹²⁰ This

116. *Guidance on Research Involving Coded Private Information or Specimens*, OFF. HUMAN RES. PROTS., U.S. DEP'T HEALTH & HUMAN SERV., <http://www.hhs.gov/ohrp/policy/cdebiol.html> (last updated March 21, 2016).

117. Grothaus, *supra* note 63.

118. 45 C.F.R. 46.116 (2013).

119. *See Belmont Report*, OFF. HUMAN RES. PROTS., U.S. DEP.'T HEALTH & HUMAN SERV. (Apr. 18, 1979), <http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html>.

120. *Id.*

dialogue between researcher and participant intended as a means to convey risks and benefits shifts dramatically when the consent process occurs online via consumer interaction with a website clickwrap interface rather than with a physical point-of-contact person from the research team. For both consumers who purchase PGS, as well as consumers who elect to participate in 23andMe's research protocols, the web-based interface presents an entangled, complex package including consumer service, medical information, and research components.¹²¹ Legal scholar Andelka Phillips argues that this transaction more accurately represents assent than actual informed consent, because the consumer agrees to 23andMe's terms in order to purchase PGS without understanding the provisions set forth in the informed-consent terms and privacy statement.¹²²

B. Commercial-Law Standards and the Federal Trade Commission

Even if 23andMe asserts that it is not bound by the current version of the Common Rule, its practices are subject to commercial-law standards. However, commercial law presumes that consumers act with autonomy and free will when sharing and curating their genomic and personal health data.¹²³ Categorizing this transaction as governed by commercial law sharply limits the legal and ethical requirements normally imposed on an entity collecting, using, and sharing genomic and health data, as compared to collection and use occurring pursuant to the Common Rule.

The Federal Trade Commission ("FTC") disseminates policy initiatives, provides consumer education tools, and issues enforcement actions as a means of protecting consumer privacy and preserving consumer control over the collection and use of consumers' personal data.¹²⁴ In a 2015 speech on the topic of data privacy, FTC Commissioner Julie Brill recognized the impact of the internet of things to create user-generated health data and the challenges of protecting consumers' personal information against unwanted disclosures.¹²⁵ At this juncture, however, privacy-law protections for personal information and consumer data are contingent upon a number of factors, such as the type of information collected, the classification of the collecting entity, and the purpose of collection and subsequent use.¹²⁶

In 2015, President Obama released the Consumer Privacy Bill of Rights Act ("CPBRA"), intended as a measure to provide consumers with greater

121. See Phillips, *supra* note 28, at 62.

122. See *id.*

123. See Terry, *supra* note 8, at 84; see also Phillips, *supra* note 28, at 61.

124. See generally *Protecting Consumer Privacy*, FED. TRADE COMM'N, <https://www.ftc.gov/news-events/media-resources/protecting-consumer-privacy> (last visited Apr. 1, 2017).

125. See Brill, *supra* note 12, at 1-2.

126. See Lisa J. Sotto & Aaron P. Simpson, *United States*, in *DATA PROTECTION & PRIVACY* 2014, at 191-93 (Rosemary Jay et al. eds., 2nd ed. 2014).

transparency, control, and security in their personal information in commercial transactions.¹²⁷ Despite legislative intent to increase commercial transparency and consumer control,¹²⁸ the proposed CPBRA would not force any meaningful changes to 23andMe's practices. First, CPBRA, if enacted, would only apply to "personal data," which includes

any data that are under the control of a covered entity, not otherwise generally available to the public through lawful means, and are linked, or as a practical matter linkable by the covered entity, to a specific individual, or linked to a device that is associated with or routinely used by the an individual,¹²⁹

but the definition as currently drafted specifically excludes de-identified data. Thus, if 23andMe continues to de-identify data prior to pooling the genotypic and phenotypic information into its research portal, the CPBRA would not apply if Congress passes the bill as it is written.

C. Anticipated Changes to Common Rule

Whether federal regulatory requirements apply to 23andMe is particularly murky, based on scholarly disagreements over the interpretation of current federal regulatory standards relating to biospecimen research, as well as impending changes to existing regulatory requirements.¹³⁰

Recently, OHRP published a Notice of Proposed Rulemaking expressing its intent to revise relevant portions of the Common Rule, specifically pertaining to the collection of human biospecimens intended for biobanking.¹³¹ The proposed rule contained a number of notable changes from the previous version as it relates to the collection of biospecimens.¹³²

127. *Administration Discussion Draft: Consumer Privacy Bill of Rights Act of 2015*, DEMOCRATIC MEDIA, [hereinafter Admin. Discussion Draft] https://www.democraticmedia.org/sites/default/files/field/public/2015/draft_consumer_privacy_bill_of_rights_act.pdf (last visited Apr. 1, 2017); see also *Analysis of the Consumer Privacy Bill of Rights Act*, CENTER FOR DEMOCRACY & TECHNOLOGY (Mar. 2, 2015), <https://cdt.org/insight/analysis-of-the-consumer-privacy-bill-of-rights-act/>.

128. See Admin. Discussion Draft, *supra* note 127, at § 101(a)-102(a).

129. *Id.* at § 4 (a)1.

130. See *id.*

131. See Federal Policy for the Protection of Human Subjects, 80 Fed. Reg. 53933, 53933, 53936-37 (Sept. 8, 2015).

132. See Human Subjects Research Protections: Enhancing Research Protections for Research Subjects and Reducing Burden, Delay, and Ambiguity for Investigators, 76 Fed. Reg. 44512 (proposed July 26, 2011) [hereinafter *Human Subjects Research Protection*]; see also *Regulatory Changes in ANPRM: Comparison of Existing Rules with Some of the Changes Being Considered*, U.S. DEP'T. HEALTH & HUMAN SERVS. [hereinafter *Regulatory Changes in ANPRM*], <http://www.hhs.gov/ohrp/humansubjects/anprmchangetable.html> (last

First, if an entity receives federal funding for any of its research activities, the proposed rule would apply to all research activities that the entity conducts independent of funding.¹³³ The proposed rule would streamline the consent process and permit written blanket consent for future use of biospecimens and associated private health information.¹³⁴ OHRP also intends to promote research transparency by requiring the collecting entity to disclose specific risks, including informational risks related to the privacy and security of the biospecimen and related private health information.¹³⁵ This provision represents a partial victory for privacy advocates, as numerous scholars have noted that the risks associated with participating in biospecimen research are not physical but informational risks such as stigma, embarrassment, and discrimination.¹³⁶ These informational risks crucial information required for subjects to appropriately assess the risks of participating versus the benefits during their informed consent process.¹³⁷ The proposed rule also departs from the current regulations, requiring research entities that use prospectively collected biospecimens to obtain blanket consent from subjects even if the entity strips identifiers from the biospecimen, though it clarifies that this policy would not retroactively apply to existing collections.¹³⁸

D. Applying Anticipated Changes to 23andMe

OHRP's proposed rulemaking would potentially impact consumer genomics' corporate-consent policies pertaining to all data collection if the corporation receives federal funding for any of its research projects. According to 23andMe, its research is "aimed at peer-reviewed journals and other research funded by the federal government."¹³⁹ Thus, if 23andMe receives federal funding for any of its research, the consent process for all prospective collection would have to comply with OHRP's future rule. If OHRP adopts this provision, compliance would include disclosing informational risks and drafting a policy designed to ensure that consumers adequately comprehend and assess the risks and benefits of permitting

modified March 21, 2016); *HHS Proposes Major Overhaul of the Common Rule*, ROPES & GRAY (Sept. 8, 2015), <http://www.ropesgrayhiring.com/newsroom/alerts/2015/September/HHS-Proposes-Major-Overhaul-of-the-Common-Rule.aspx>.

133. *Regulatory Changes in ANPRM*, *supra* note 132.

134. *See* Human Subjects Research Protections, *supra* note 132, at 44514, 44519.

135. *Id.* at 44513-14.

136. *See generally* Ahn, *supra* note 7, at 756; Ajunwa, *supra* note 9, at 1228, 1249; Bambauer, *supra* note 7, at 217.

137. *See* Human Subjects Research Protections, *supra* note 132, at 44519; *see generally* Ahn, *supra* note 7, at 778; Ajunwa, *supra* note 9, at 1256.

138. *See* Human Subjects Research Protections, *supra* note 132, at 44519.

139. *Privacy Highlights*, *supra* note 6, at § 4(b).

23andMe and subsequent entities to use their DNA and private health information. However, any changes to the Common Rule's requirements for informed consent would not impact 23andMe's existing database of one million sequenced genomes and associated consumer-generated health information.¹⁴⁰

Significantly, OHRP's proposed rule also recognizes that advances in technology rapidly shift the assessment of what data is identifiable and what data is de-identified, conceding that "much of what is currently considered de-identified data is also potentially identifiable data" and that

it is possible to extract DNA from a biospecimen itself and potentially link it to otherwise available data to identify individuals. Consequently, we are considering categorizing all research involving the primary collection of biospecimens as well as storage and secondary analysis of existing biospecimens as research involving identifiable information.¹⁴¹

Although numerous legal scholars have promoted this viewpoint,¹⁴² it is uncertain at this juncture whether OHRP will redefine the applicability of the coverage based on identifiability.¹⁴³

If OHRP integrates these changes into the Common Rule, then 23andMe's current research-consent document and consent process would not comply with the Common Rule's new strictures. 23andMe would need to obtain consent for research use of genomic and self-reported information collected in the future, independent of whether it de-identifies the information, if 23andMe continues to receive federal funding from the NIH. 23andMe would also need to modify terms describing risk to indicate a higher likelihood of re-identification and the occurrence of other informational risks associated with the use of genomic and self-reported information. Perhaps most importantly, 23andMe would need to address the consent process. The proposed rule would require 23andMe to change its consent process; its current process, though compliant with *Tompkins* and perhaps with the Common Rule's current strictures, fails to meet the

140. See Human Subjects Research Protections, *supra* note 132, at 44519.

141. *Id.* at 45424-25.

142. See Katherine Drabiak-Syed, *Legal Regulation of Banking Newborn Blood Spots for Research: How Bearder and Beleno Resolved the Question of Consent*, 11 Hous. J. HEALTH L. & POL'Y 1, 41-44 (2011) (arguing even anonymization is insufficient because DNA is the ultimate identifier); Pike, *supra* note 1, at 2017; Ahn, *supra* note 7, at 766-68.

143. Just prior to publication, HHS's Final Rule rejected the Proposed Rule, and advised de-identified biological specimens used in biobanking research does not constitute human subjects research.

high standards required to obtain actual affirmative informed consent.¹⁴⁴ To compare, the Personal Genome Project at Harvard Medical School pioneered a novel informed-consent document and process, describing risks and benefits with hypotheticals and testing participant comprehension.¹⁴⁵ The Personal Genome Project's transparency is a model for best practices, under which a participant makes an informed decision based on an adequate understanding of the benefits and risks, not an indelible decision that causes the consumer regret and unanticipated informational risks.¹⁴⁶ Most importantly, the consumer should understand that being fully informed of benefits and risks does not prevent other parties from accessing or using the genomic and personal information in a manner that is detrimental to the consumer.¹⁴⁷

IV. Connecting Database Information Back to the Consumer

A. De-identification and Re-identification

The current regulatory structure abides by the fiction that de-identified data cannot practicably be re-linked or cause harm to individuals because de-identification makes finding the source of the data more difficult.¹⁴⁸ To de-identify data, a collecting entity commits to stripping identifying details from the data or to encrypting the data and promising not to re-identify it.¹⁴⁹ Increasingly, privacy advocates and even the Obama Administration's Big Data and Privacy Working Group recognized that de-identification as a means of protecting individual privacy "is, at best, a limited proposition" for

144. See Phillips, *supra* note 28, at 61 (arguing consumers likely do not read the clickwraps); *id.* at 62 (stating the consumer must "consent" to a consumer service, obtaining sensitive medical information, and to participate in a research protocol simultaneously, which is both confusing and the process of assent does not meet the requirement for informed consent); see also Josef Mejido, *Personalized Genomics: A Need for a Fiduciary Duty Remains*, 37 RUTGERS COMPUTER & TECH. L.J. 281, 304-305 (2011) (arguing that holders of genetic information and the contributor of that information should be categorized as a fiduciary relationship).

145. *But see Consent Form*, HARV. PERSONAL GENOME PROJECT 4, https://my.pgp-hms.org/static/PGP_Consent_2014-02-18_online.pdf (last modified Feb. 18, 2014).

146. See *id.* at 6 (describing, in detail, information risks to the participant, including how disclosure of data could impact employment, insurance, financial well-being, and social interactions, notably providing hypothetical scenarios to enhance participant's actual comprehension of the concept of informational risks); *id.* at 13 (employing a comprehension test following the consent process to check for participant understanding of research benefits and risks).

147. Mejido, *supra* note 144, at 299.

148. See Pike, *supra* note 1, at 1996.

149. See Big Data, *supra* note 7, at 8.

several reasons.¹⁵⁰ Perhaps most importantly, because DNA is the ultimate identifier, it cannot be truly de-identified.¹⁵¹ Combining a unique genomic sequence with numerous pieces of demographic and medically inflected data makes re-identification of sensitive health data easier.¹⁵² Furthermore, there is a delicate trade-off between protecting privacy and retaining the associated information that makes the data useful; protecting privacy by stripping away too much associated information decreases the data's scientific and research value.¹⁵³ Finally, rapidly evolving technology produces effective techniques designed to re-identify data, but forecasting de-identification measures designed to protect data privacy are difficult to devise.¹⁵⁴

Even if a consumer-genomics company de-identifies the consumer's profile, there are a number of other avenues for collecting data and piecing together a composite prediction of the consumer's address, socioeconomic background, and, ultimately, full identity.¹⁵⁵ Numerous studies have demonstrated that it is possible to re-identify data that has been de-identified according to current regulatory standards set forth in HIPAA, using information such as birth year and state of residency or through information publicly available through the Internet.¹⁵⁶ Our connectivity and burgeoning use of social media and even seemingly trivial public postings also exponentially increases the amount of public information tied to our identity. Researchers are discovering that even data that appears anonymous, such as Netflix reviews, contain unique attributes and clues that assist in re-identifying an individual.¹⁵⁷ As legal scholar and bioethicist Amy McGuire summarized, "to have the illusion you can fully protect privacy or make data anonymous is no longer a sustainable position."¹⁵⁸

B. Predictive Analytics Paint a Data Mosaic

Big Data's ability to collect, organize, process, and analyze each piece of data in concert creates a mosaic of details, painting an image of a

150. *See id.* at 8.

151. *See Pike, supra* note 1, at 1996.

152. *See id.*

153. *See Big Data, supra* note 7, at 8; *Pike, supra* note 1, at 1996.

154. *See Big Data, supra* note 7, at 8.

155. *See Brill, supra* note 12, at 2, 7-8; *see, e.g., Crawford & Schultz, supra* note 8, at 94-95, 101.

156. *See Pike, supra* note 1, at 1996; *Ahn, supra* note 7, at 767-768; *see also* Gina Kolata, *Web Hunt for DNA Sequences Leaves Privacy Compromised*, N.Y. TIMES (Jan. 17, 2013), http://www.nytimes.com/2013/01/18/health/search-of-dna-sequences-reveals-full-identities.html?_r=0.

157. *Murphy & Barton, supra* note 12, at 13.

158. *Pike, supra* note 1, at 1996.

person's identity. Consumers leave behind data exhaust—pieces of information showing what they look at online, their location, what purchases they make, and photos of them on social media.¹⁵⁹ The devices consumers use log and track their activity, showing purchase of the DNA test, revealing where they are geographically located, and reporting these details back to 23andMe, in addition to tracking any self-disclosure of additional information through social media.¹⁶⁰ Many people's photos—including many of mine—are publicly available online, whether through Google image search or via social media. As several commentators on Big Data have noted, the public uses Facebook as a means to give away our privacy and seclusion through updating our statuses, joining groups, and liking various causes.¹⁶¹

Professors Kate Crawford and Jason Schultz describe the process of predictive modeling to create a data mosaic based on available information, concluding that “not only can massive amounts of online behavior be collected and assessed to compute the probabilities of an individual's particular demographic characteristics, but that predictive analysis can also become a form of [personally identifiable information] as well.”¹⁶² Each piece of data, interpreted together, produces a compilation of deeply revealing personal information and inferences about our identities, even if the database de-identifies the genomic information.¹⁶³

Computational modeling utilizes predictive mathematical algorithms to produce a composition of highly personal details.¹⁶⁴ Data are compiled into an informational mosaic that infers details relating to a person's identity. However, the resulting conclusions, by their very nature, are statistical models independent of the prediction's accuracy and may simply be incorrect.¹⁶⁵ Professors Crawford and Schultz describe one example of how Target used predictive modeling based on its customers' purchases to predict which ones were pregnant.¹⁶⁶ Target disclosed this information to marketers, who sent out presumptuous marketing materials congratulating them before the women themselves had announced their private news.¹⁶⁷ When it comes to applying predictive models and identifying disclosures of

159. Bambauer, *supra* note 7, at 207.

160. *Privacy Highlights*, *supra* note 6.

161. *See* Bambauer, *supra* note 7, at 234; Crawford & Schultz, *supra* note 8, at, 100; Li, *supra* note 27, at 148.

162. Crawford & Schultz, *supra* note 8, at 101.

163. *See* Brill, *supra* note 12, at 9; *see also* Bambauer, *supra* note 7, at 206.

164. Crawford & Schultz, *supra* note 8, at 98-99.

165. *See id.*

166. *See id.* at 94, 98.

167. *See id.* at 94-95, 98.

private or potentially stigmatizing conditions and diseases, the risk for harm to the subject to whom the data pertains rises exponentially.

V. Informational Risks Arising from Participation in Consumer Genomics

A. Raising Concerns about Privacy

In 2013, science writer and New York University journalism professor Charles Seife flagged privacy concerns in an article he wrote for *Scientific American*.¹⁶⁸ Seife extended the comparison of 23andMe's searchable database as the Google of health research to posit that if Google tracks, monitors, and sells user data contrary to its privacy policies or changes its privacy policies if they do not suit its purpose, 23andMe might act in concert or utilize its right to change privacy policies to sell identifiable consumer information, too.¹⁶⁹ Although 23andMe reassures consumers that it does not provide individual-level identifiable genomic information without obtaining consent, Seife warned such promises should be utterly unconvincing to consumers given Google's history of selling consumer information.¹⁷⁰

Google Ventures' managing partner Bill Maris' recent statements to the public lend support to Seife's words of caution.¹⁷¹ In October 2015, Maris spoke at a Wall Street Journal technology conference, dismissing consumer privacy concerns relating to their genomic information.¹⁷² Maris asked

168. Charles Seife, *23andMe is Terrifying, But Not For the Reason the FDA Thinks*, *SCIENTIFIC AM.* (Nov. 27, 2013), <http://www.scientificamerican.com/article/23andme-is-terrifying-but-not-for-the-reasons-the-fda-thinks/>.

169. *See id.*

170. *See id.*; *see also* Jonathan Stempel, *Google Must Face U.S. Privacy Lawsuit Over Co-Mingled User Data*, *REUTERS* (July 22, 2014), <http://www.reuters.com/article/us-google-privacy-lawsuit-idUSKBN0FR1XA20140722>; Ryan Neal, *Google Sued for Data Mining: California Students Claim Violation of Educational Privacy*, *INT'L. BUS. TIMES* (Mar. 18, 2014), <http://www.ibtimes.com/google-sued-data-mining-california-students-claim-violation-educational-privacy-1562198>.

171. *See* Eric Newcomer, *"Your Genome Isn't Really Secret," Says Google Ventures's Bill Maris*, *BLOOMBERG* (Oct. 20, 2015), <http://www.bloomberg.com/news/articles/2015-10-20/-your-genome-isn-t-really-secret-says-google-ventures-s-bill-maris> (explaining how Bill Maris, Google Ventures managing partner and an investor in 23andMe, is interested in building genomic databases to slow aging, reverse disease, and extend life. Maris also helped form the company Calico, another company that uses data obtained from consumer genomics companies for its scientific research).

172. *See id.*

“What are you worried about? Your genome isn’t really secret.”¹⁷³ His dismissive attitude toward the privacy of genomic information and risks associated with its disclosure and widespread use could potentially impact consumer-genomics companies’ corporate policies in the future. Maris has a hand in both 23andMe and Ancestry, the most sizable consumer genomics databases in the United States.¹⁷⁴ Maris’ Google Ventures provides financial support to 23andMe, and Maris co-founded Calico, a company that focuses on age-related diseases and recently signed an agreement to use Ancestry’s database.¹⁷⁵

As Seife described, 23andMe’s business model “is a one-way portal into a world where corporations have access to the innermost contents of your cells and where insurers and pharmaceutical firms and marketers might know more about your body than you know yourself.”¹⁷⁶ Seife’s chilling words may not be far-fetched based on Google’s history and Maris’ statements when read in conjunction with the terms of 23andMe’s privacy statement.¹⁷⁷

B. Defining Privacy and Disclosures

The Presidential Commission for the Study of Bioethical Issues, an advisory committee created during President Obama’s administration, defines privacy as a concept that “includes confidentiality, secrecy, anonymity, data protection, data security, fair information practices, decisional autonomy, and freedom from unwanted intrusion.”¹⁷⁸ The Obama Administration’s Big Data and Privacy Working Group acknowledged the impact of Big Data on the privacy of sensitive information, maintaining that corporate policies should aim to protect personal privacy, ensure fairness, and prevent discrimination.¹⁷⁹ For genomic and highly personal health data that can be re-identified or predictively traced back to an individual, privacy serves as a mechanism for preventing shame, embarrassment, bias, or discrimination arising from unwanted disclosure of that information.¹⁸⁰

Disclosure may occur through legally permissible means according to the terms set forth in corporate privacy statements, as discussed in Section

173. *See id.*

174. *See id.*; CALICO, *Ancestry DNA and Calico to Research the Genetic of the Human Lifespan*, CALICOLABS (July 21, 2015), <http://www.calicolabs.com/news/2015/07/21/>.

175. *See id.*

176. Seife, *supra* note 168.

177. *See generally Privacy Highlights*, *supra* note 6.

178. *Privacy & Progress*, *supra* note 3, at 25.

179. *Big Data*, *supra* note 7, at 59-68.

180. *See Bambauer*, *supra* note 7, at 258-259.

II. In addition to permitted disclosures, data breaches may also compromise consumer privacy. As legal scholar Nicholas Terry points out, technology fundamentally shifts the amount and accessibility of information available to interested parties, transforming previously held silos of information in varied formats held by discrete entities into a centrally located database in an easily reproducible form.¹⁸¹ This change attracts increased utilization of the information contained in centralized databases such as 23andMe's research portal, both by permitted entities and unauthorized parties.¹⁸² Electronic storage, access, and sharing increases the potential for unintended disclosures or informational breach, ranging from unintentional mix-ups—such as when 23andMe sent PGS results to the incorrect customers—to hackers attempting to capitalize on the data's value.¹⁸³

C. Entities Interested in Accessing the Consumer Genomics Database

Genotypic and phenotypic information is not only a gold mine for health research, but also holds immense value for data brokers, marketing and advertising corporations, pharmaceutical companies, employers, insurers, and law enforcement.¹⁸⁴ Although a majority of individuals are willing to volunteer their genomic and highly personal health data, a recent study showed that ninety-one percent of people are concerned about the privacy of their information.¹⁸⁵ In this study, individuals cited concerns that despite trusting the researchers using the data, their information might end up in the wrong hands and be used against them.¹⁸⁶ Consumer enthusiasm for readily volunteering genomic and highly private information in the consumer genomics arena while expressing privacy concerns appears to be a paradox; I posit that it is likely that individuals are unaware of the range of subsequent uses for their genomic and personal information.¹⁸⁷

181. Terry, *supra* note 8, at 80.

182. *Id.*; See Pike, *supra* note 1, at 1983-1984; Ajunwa, *supra* note 9, at 1255; Li, *supra* note 25, at 150.

183. See Pike, *supra* note 1, at 1983-1984 (discussing permutations of potential disclosures and the skyrocketing potential for security breaches); Ajunwa, *supra* note 9, at 1254 (asserting that security breaches are expected); Li, *supra* note 27, at 150 (describing how 23andMe mixed up customers' results and sent results to the incorrect customer.)

184. Privacy & Progress, *supra* note 3, at 44; Li, *supra* note 27, at 150.

185. Privacy & Progress, *supra* note 3, at 43.

186. *Id.*

187. See also Pike, *supra* note 1, at 2009-10 (Discussing providing DNA that is subsequently used in a criminal investigation: "When people engage in interactions that result of their genetic data being collected and shared, to the extent they know it is happening, they have little expectation that their data could be subsequently accessed and used by the criminal justice system to track down persons of interest.").

Analytics firms, data brokers, and similar entities might use the genomic and personal information for predictive modeling and draw various inferences about whether and how to market a product, decide suitability for employment, deny insurance coverage to an individual or group, or target suspects in a criminal investigation.¹⁸⁸ Such predictive inferences presume numerous details about individuals, such as their behavior, characteristics, and attributes such as race, ethnicity, sexual orientation, health and disease status. Each of these inferences may be incorrect, but other entities may still base their decisions upon them in ways that could adversely affect the consumer.¹⁸⁹ Even if the entity correctly matches the genomic and health information to the individual, the use of genomic information in a vacuum results in inaccurate reductionism, fails to account for our limited understanding of the genome and its complex impact on health, and ignores the limitations of statistical models as a means of forecasting health outcomes.¹⁹⁰ Finally, and perhaps most problematically, entities may use this information against consumer interests in a number of areas that are currently permitted by law.¹⁹¹

1. Data Brokers and Marketing

Data brokers are corporations that offer to businesses and government agencies services such as marketing products, verifying an individual's identity, or providing reports intended for insurance, employment, healthcare, and credit entities.¹⁹² Data brokers collect data across multiple sources—clickstream data, social media, and network interactions—and combine it with publicly available information, then aggregate each piece of information and analyze the data into a profile.¹⁹³ According to the Big Data and Privacy Working Group, these profiles may contain thousands of pieces of data that the data broker inputs into an algorithm to produce a predictive composite to aid the purchasing entity in making business decisions.¹⁹⁴ The purchasing entity then makes numerous decisions based on this predictive information, resulting in data determinism—assessments

188. Crawford & Schultz, *supra* note 8, at 101.

189. Nicholas Terry, *Navigating the Incoherence of Big Data Reform Proposals*, 43 J. OF L., MEDICINE & ETHICS 44, 46 (2015); Ajunwa, *supra* note 9, at 1261; Brill, *supra* note 12, at 9.

190. Ajunwa, *supra* note 9, at 1261 (discussing genetic reductionism); Privacy and Progress, *supra* note 3, at 18-19 (discussing limitations of our understanding of what variations in the genome mean).

191. See Terry, *supra* note 8, at 69 (discussing the collection, processing and distribution of data outside applicable regulations); Big Data, *supra* note 7, at 29, 43-45 (discussing use of data by law enforcement and data brokers).

192. Big Data, *supra* note 7, at 43-45.

193. *Id.*

194. *Id.*

of risk or suitability based on a statistical model—independent of its actual accuracy.¹⁹⁵

It is foreseeable that the information contained in consumer-genomics databases such as 23andMe’s would be attractive to data brokers; they could include these additional pieces of information and sell the analyzed data to interested parties.¹⁹⁶ As noted in Section III, if a consumer provides his genomic information and discloses sensitive personal and health information, consumer curation may occur outside the scope of federal regulations designed to maintain the privacy of such information. Further, although 23andMe’s current privacy statement currently promises not to sell individually identifiable data, it explicitly retains the right to unilaterally change its privacy statement at any time and elect to sell the data to data brokers.¹⁹⁷ Data brokers could, in turn, legally sell highly sensitive pieces of information about consumers, such as mental health status, history of addiction, genetic risk of developing Parkinson’s disease, and sexual orientation, that could be used for targeted marketing and by employers and insurance companies.¹⁹⁸

2. Pharmaceutical Corporations

Pharmaceutical companies currently spend astronomical sums on marketing prescription drugs, including a combined \$4.5 billion on direct-to-consumer (“DTC”) advertising in 2014.¹⁹⁹ Statistics also demonstrate that advertisements markedly impact consumer behavior and physician prescribing.²⁰⁰ A recent study showed that after seeing a DTC advertisement, one-third of patients mentioned a drug advertised by name, one-fifth requested that drug, and physicians prescribed the requested drug about forty percent of the time when it was specifically mentioned by

195. See Terry, *supra* note 8, at 79-80 (discussing risk based data determinism and entities such as insurers, schools, and employers making decisions based on this information).

196. *Id.* at 80; Li, *supra* note 27, at 150.

197. *Privacy Highlights*, *supra* note 6, at § 6(g).

198. See also Brill, *supra* note 12, at 7 (discussing that consumer curation of health data that occurs outside the scope of HIPAA).

199. Jason Millman, *It’s True: Drug Companies Are Bombarding Your TV With More Ads Than Ever*, WASH. POST (Mar. 23, 2015), <https://www.washingtonpost.com/news/wonk/wp/2015/03/23/yes-drug-companies-are-bombarding-your-tv-with-more-ads-than-ever/>.

200. See *Prescription Project, Persuading the Prescribers: Pharmaceutical Industry Marketing and Its Influence on Physicians and Patients*, PEW CHARITABLE TRUSTS (Nov. 11, 2013), <http://www.pewtrusts.org/en/research-and-analysis/factsheets/2013/11/11/persuading-the-prescribers-pharmaceutical-industry-marketing-and-its-influence-on-physicians-and-patients>.

the patient.²⁰¹ Pharmaceutical companies could tailor their advertisements to target market groups or individuals based on the data broker's predictive modeling. They could target advertisements for chemopreventive drugs to consumers with a projected risk of cancer, selective serotonin reuptake inhibitors to consumers with presumed mental illness, and antiretroviral advertisements to consumers with HIV. Receiving such advertisements in one's place of business or home could cause shame, embarrassment, and stigma to the individual and harm both personal and professional relationships.²⁰² Although some legal scholars have argued for extending the tort framework for invasion of privacy to the nonconsensual disclosure of genetic information, such precedent is not currently well established.²⁰³ Additionally, proving causation and damages as a result of the disclosure would likely be difficult, and as a result, individuals harmed by the outcome of this advertising would have little legal recourse to address these injuries.²⁰⁴

3. Discrimination in Employment and Insurance

The information contained in consumer-genomic databases would also appeal to both employers and insurers. Employers seek to hire healthy workers over employees who may become ill or unable to perform their duties, because "unhealthy employees pose huge costs to employers in the form of above-average absenteeism, decreased productivity, overtime payments to hire workers to cover absent employees' shifts, higher job

201. *Id.*; see also Eric Campbell et. al., *Physician Acquiescence to Patient Demands for Brand-Name Drugs: Results of a National Survey of Physicians*, 173 JAMA INTERNAL MED. 237 (2013).

202. See Ajunwa, *supra* note 9, at 1229-1230 (Describing a hypothetical situation where an employee receives targeted advertisements at home and in his place of employment. These advertisements are for drugs to treat sickle cell anemia and Alzheimer's disease and advertisements for genetic testing to trace African-American heritage based on disclosure of his genetic risk information and racial classification. The employee was previously perceived as racially white, healthy, and capable. This hypothetical employee now faces emotional distress when his wife, concerned for the health of their future children divorces him, and his employer questions his competence, mental facilities, and subconsciously employs racial bias and passes him up for promotion.).

203. See Ajunwa, *supra* note 9, at 1253-1257 (discussing the difficulties of meeting the factors required to show injury in tort law and arguing for the recognition of a new tort for the negligent disclosure of genetic information).

204. See Bambauer, *supra* note 7, at 228-229 (discussing how an individual may suffer shame, embarrassment, loss of reputation without meeting the legal standard for the tort of intrusion into seclusion); Ajunwa, *supra* note 9, at 1243-1248 (discussing the standard for a private right of action related to the disclosure of genetic and medical information); *id.* at 1253 (discussing the high burden and difficulty to show causation and damages from the disclosure of genetic and health information necessary for a successful tort action).

turnover, administrative costs inherent in hiring, recruiting, and training replacements, and higher workers' compensation insurance premiums."²⁰⁵

Employers and insurers can utilize statistical modeling or individually linked data to predict which individuals will be healthy and subsequently make numerous decisions related to hiring, firing, and promoting in the employment context or coverage eligibility in the insurance context based on that information. Creating analytical models to predict what categories of people or specific individuals are healthy could become part of an entity's standardized assessment criteria used as a means to avoid other categories of bias in the decision-making process.²⁰⁶ These standardized assessments would provide the appearance of objectivity based on projected health and capability outcomes. However, researchers Solon Barocas and Andrew Selbst warn that conscious or subconscious assumptions may enter the process of formulating algorithms and predictive models, allowing data mining and predictive modeling to perpetuate bias under the guise of mathematical neutrality.²⁰⁷ Barocas and Selbst further posit that data mining could provide a cover for intentional discrimination, reproduce residual institutionalized discrimination, and create a barrier to adjudicating civil rights violations.²⁰⁸

In 2008, Congress passed the Genetic Information Nondiscrimination Act ("GINA"), designed to provide federal protection from discrimination based on genetic information in employment and insurance contexts.²⁰⁹ Currently, GINA contains several notable shortcomings relating to both statutory coverage and the ability to use it as a mechanism for addressing and remedying genetic discrimination.²¹⁰ Importantly, GINA defines genetic information as information about an individual's genetic test, the genetic tests of family members, and "the manifestation of a disease or disorder in family members of such individual."²¹¹ Thus, genetic information excludes an individual's current physical or mental condition, as opposed to genetic-

205. See Ajunwa, *supra* note 9, at 1240 n. 83 (quoting Lauren Perdue).

206. Bambauer, *supra* note 7, at 272 (discussing how "employers, like all humans, are susceptible to biases or unexamined assumptions.").

207. Solon Barocas & Andrew Selbst, *Big Data's Disparate Impact*, 104 CAL. L. REV. 671, 677 (2016).

208. *Id.* at 675.

209. See *What is genetic discrimination?*, U.S. NAT'L LIBRARY OF MED. (Apr. 11, 2017), <https://ghr.nlm.nih.gov/primer/testing/discrimination>; *Genetic Discrimination*, NAT'L HUM. GENOME RES. INST., available at <http://www.gnome.gov/10002077>.

210. See Ajunwa, *supra* note 9, at 1239, 1252 (discussing definitions and coverage related to GINA); Privacy & Progress, *supra* note 3, at 27, 44 (discussing how only a few cases have tested using GINA as a vehicle to prevent and remedy genetic discrimination).

211. Genetic Information Nondiscrimination Act of 2008, Pub. L. No. 110-233, 122 Stat. 881, at § 101(d)(6)(A)(iii).

variant status or presumptions about genetic-variant status, nor would it include statistical modeling that predicts risk or propensity for developing a disease, as indicated in data-broker models.²¹² In addition to the narrow scope of the definition of genetic discrimination, recent cases brought under GINA demonstrate the high bar for plaintiffs to establish a defendant's intent to discriminate.²¹³

Similarly, insurers could seek to avoid offering coverage or inflate premiums for particular insurance categories to prohibitive levels, either generally based on this modeling or based on individually identifiable information for select categories of insurance coverage. With respect to insurance contexts, GINA does not apply to disability, life, or long-term-care insurance.²¹⁴ Accordingly, disability, life, and long-term-care insurance companies may legally acquire and use predictive modeling—as well as individually identifiable genetic and health information—from consumer-genomics companies to make coverage and premium decisions.²¹⁵

4. Police Power and Law Enforcement

In addition to these risks, using genomic databases for law-enforcement purposes is no longer a theoretical possibility; it has already occurred.²¹⁶ Law-enforcement utilization of these databases will foreseeably expand to enhance research related to medical and behavioral genetics associated with crime prevention.²¹⁷ The Big Data and Privacy Working Group has discussed the importance of using predictive analytics for determining criminal propensity and crime prevention, and the Presidential Commission for the Study of Bioethical Issues has addressed circumstances under which it is permissible to use genetic data for law-

212. Ahn, *supra* note 7, at 776-778 (discussing a case where the definition of “genetic information” is contested and plaintiffs’ showing of termination for physical and mental disabilities did not constitute genetic discrimination.).

213. See Ajunwa, *supra* note 9, at 1252 (discussing limitations during adjudication of GINA claims where plaintiffs must show discriminatory intent, not merely disparate impact to succeed on their claims.).

214. See *What is genetic discrimination?*, *supra* note 208.

215. See *id.*; see also Ahn, *supra* note 7, at 776-778.

216. See Jim Mustian, *New Orleans Filmmaker Cleared in Cold Case Murder: False Positive Highlights Limitations of Familial DNA Searching*, NEW ORLEANS NEWS ADVOC. (Mar. 12, 2015), <http://www.theneworleansadvocate.com/news/11707192-123/new-orleans-filmmaker-cleared-in>; Justin Poulsen, *Your Family’s DNA Could Turn You into a Suspect*, WIRED (Oct. 13, 2015), <http://www.wired.com/2015/10/familial-dna-evidence-turns-innocent-people-into-crime-suspects/>; Claire Maldarelli, *23andMe Discloses Police Requests for Customers’ DNA*, POPULAR SCI. (Nov. 22, 2015), <http://www.popsoci.com/23andme-publishes-transparency-repoty-that-reveals-authority-dna-requests> (stating that 23andMe received five requests for consumer DNA from law enforcement and 23andMe claimed to deny access).

217. See Poulsen, *supra* note 216.

enforcement purposes without consent.²¹⁸ It is highly probable that consumer genomics databases could be a massive resource for medical and behavioral genetics research examining the genetic and biological basis of crime; this database would provide an alternate route for accessing a large data pool for states that otherwise prohibit such studies using DNA collected from arrestees and criminals.²¹⁹

a. Big Data as a Resource for Targeted Policing

The Big Data and Privacy Working Group asserted that Big Data should be used to serve the public good and that data obtained by the government should be made available, discoverable, and usable.²²⁰ Such uses include developing statistical models to analyze the propensity for criminal behavior, predict future crimes, create profiles of criminal suspects, and increase targeted patrols in crime hot spots.²²¹ Integrating these goals with the availability of consumer-genomics databases creates numerous possibilities for use in law enforcement. The Presidential Commission for the Study of Bioethical Issues (“Commission”) stated that only using identifiable genomic information requires obtaining the individual’s consent. By distinguishing that consent is contingent upon identifiability, the Commission’s position permits using the aggregated, de-identified genomic information in consumer databases, independent of whether the consumer consented to additional research use.²²² Furthermore, as discussed in Section II, consumer-genomics companies may change their privacy policies at any time, potentially allowing them to provide identifiable information for research use or to law-enforcement agencies.²²³

Notably, the Big Data and Privacy Working Group cited the Supreme Court’s decision in *Smith v. Maryland*, which held that an individual has no

218. Big Data, *supra* note 7, at 31 (discussing predictive analytics to assess propensity to crime); *id.* at 11 (discussing using data for the public good broadly); *see also* Privacy & Progress, *supra* note 3, at 6 (distinguishing only identifiable genomic data requires the subjects consent to use); *id.* at 6 (discussing using genetic data for law enforcement purposes with consent).

219. *See* Sarah Berson, *Debating DNA Collection*, 264 NAT’L INST. OF JUST. J. 9, 11 (2009) (noting some statutes prevent using criminal DNA databases for research into predicting or identifying medical or genetic disorders; and accessing and using the information contained in consumer genomics databases would provide a means to conduct such research).

220. Big Data, *supra* note 7, at 11.

221. *Id.* at 29-30.

222. *Id.* at 45.

223. But, if OHRP enacts the proposed changes in the Common Rule requiring consent for research use even of de-identified data, then 23andMe would need to modify its Consent document and policy as well as face limitations regarding unilateral modification of its Privacy policy.

reasonable expectation of privacy in information he voluntarily provides to a third party.²²⁴ This decision has tremendous implications for federal agencies' use of the information contained in consumer-genomic databases, because *Smith's* holding quashes Constitutional privacy claims about government intrusion when accessing and using genomic and health information.²²⁵ The Supreme Court's decision in *Maryland v. King* further extends the permissible use of DNA.²²⁶ In *King*, the Court described DNA-typing as a "brief" and "minimal" intrusion to individual privacy, effectively categorizing DNA collection as ordinary law enforcement.²²⁷ The government has an interest "in knowing whom they are dealing with" when investigating both specific crimes and general patterns of crime, which includes not only criminal history, but also publicly available records, records of violence or mental disorders, and employment status, family ties, and character.²²⁸ The Supreme Court's opinion in *King* "opened the door for a broad police power historically unprecedented in our constitutional jurisprudence."²²⁹

b. Using Consumer Genomics for Medical and Behavioral Genetics

Evolving criminal jurisprudence reflects a pattern of minimizing potential privacy concerns while awarding greater discretion to those in possession of the genomic databases to define permissible uses of the data. This allocation of power increases the probability that the information contained in the consumer-genomics databases will be used for broad police-power functions and for research on medical and behavioral genetics that would form the basis of subsequent interventions on marginalized populations. Historically, federal agencies, such as the National Institute of Justice ("NIJ") and the National Institute of Mental Health ("NIMH"), have sponsored numerous programs designed to investigate the biological basis of criminal behavior and to create preventive measures.²³⁰ The NIJ's goal is "to strengthen science that advances justice;" to achieve this goal, it funds research examining biological factors relating to propensity for aggression,

224. Big Data, *supra* note 7, at 32-33.

225. See generally Erin Murphy, *License, Registration, Cheek Swab: DNA Testing and the Divided Court*, 127 HARV. L. REV. 161, 163-66 (2013).

226. *Id.* at 168.

227. Murphy, *supra* note 225, at 174-75 (discussing DNA typing as "brief" and "minimal" intrusion); *id.* at 177 (discussing how DNA collection now constitutes ordinary law enforcement).

228. *Id.* at 179.

229. *Id.* at 178.

230. See generally Marvin Wolfgang et al., *Criminal Violence: Biological Correlates and Determinants*, NAT'L INST. OF JUST. (1981), <https://www.njrs.gov/pdffiles/Digitization/82358NCJRS.pdf>.

violence, and crime.²³¹ The NIJ provides funding to research that includes studies examining associations between epilepsy, substance abuse, ADHD, and serotonin levels and aggressive behavior and crime rates.²³² Such research is highly stigmatizing and often grossly and inaccurately summarized by media through reductionist terms, such as announcements of a violence gene found in certain population groups.²³³ Scientists criticize these proclamations as largely unreliable predictive determinants of behavior and acts of crime and as inaccurate proxies for predicting outcomes, because social, economic, and environmental factors both mediate gene expression and influence behavior.²³⁴ The NIJ sponsors numerous laudable preventive measures and uses DNA databases to clear innocent subjects and appropriately direct law-enforcement resources, but the potential to expand use of existing genomics database for research on medical and behavioral genetics poses highly troubling implications.²³⁵

These categories of research threaten to shame and stigmatize vulnerable population groups, such as those suffering from neurological disorders, mental illness, and addiction, as well as target and marginalize sweeping categories of racial and ethnic minorities. Federal agency leaders historically not only proffered scientific proposals of race as a predictor of

231. *Id.* at v.; see also Berson, *supra* note 219.

232. See Kevin Beaver, *The Intersection of Genes, the Environment, and Crime and Delinquency: A Longitudinal Study of Offending* (2006) (PhD dissertation, Univ. of Cincinnati), available at <https://www.ncjrs.gov/pdffiles1/nij/grants/231609.pdf> (A 430 page dissertation funded by an NIJ grant and published through a link available on the NIJ website that provides a comprehensive analysis of the correlations between dopamine function, serotonin function, and MAOA variant status on levels of aggression, delinquency, substance abuse, arrest, and commission of crimes); See also Wolfgang et al., *supra* note 230 (providing an overview of historical research funded by NIJ).

233. See Melissa Hogenboom, *Two Genes Linked with Violent Crime*, BBC NEWS (Oct. 28, 2014), <http://www.bbc.com/news/science-environment-29760212> (describing research published in *Molecular Psychiatry* that stated 5-10% of all violent crime in Finland could be attributed to individuals with the MAOA gene variant; Hogenboom's subtitles for the article include "Warrior Gene" and "Crime Gene," describing the link between MAOA variations and aggressive behavior, which inaccurately summarizes the content of her article, as well as the science behind it).

234. *Id.* (Including a quote from Jan Schnupp from the University of Oxford at the close of the article, who criticized the work, stating: "to call these alleles 'genes for violence' would therefore be a massive exaggeration. In combination with many other factors these genes may make it a little harder for you to control your violent urges, but they emphatically do not predetermine you for a life of crime.").

235. See Berson, *supra* note 219 (discussing clearing innocent suspects and redirecting law enforcement); see also James Nolette, *Using Research to Move Policing Forward*, 276 NAT'L INST. OF JUST. J. 46, 47 (2015) (discussing using statistical models for allocating police resources); Joh, *supra* note 36, at 42-48 (discussing generally the utility of predictive policing).

potential violence and criminal activity, but listed examining race as a research priority to understand whether “males and black persons have a higher potential for violence” in recent decades.²³⁶ In the early 1990s, then-Director of the NIMH Frederick Goodwin promoted a highly controversial program called the Violence Initiative, which was designed to study inner-city children who he alleged had “biochemical and genetic defects [that] will make them prone to violence later in life.”²³⁷ During public speeches attempting to garner support for this research initiative, he compared the inner city to a devolving jungle and inner-city youth to rhesus monkeys, arguing that these adolescent male monkeys live in gangs and “only want to kill each other, have sex, and reproduce.”²³⁸ Goodwin’s plan included alarmingly early intervention; his intent was to start by monitoring four-month-old infants for potential violence and providing pharmaceutical treatments to correct such “biochemical derangements.”²³⁹ As psychiatrists Peter Breggin and Ginger Ross Breggin noted at the time, such research could result in phony scientific evidence to support police-power use of biomedical intervention in allegedly high-risk populations, both furthering racial bias and threatening civil liberties.²⁴⁰

Combined with the statistical modeling of Big Data, this so-called research in the field of medical and behavioral genetics can be integrated into a framework for compiling a composite profile for preventive policing techniques that zeroes in on allegedly risky population groups or used to re-identify and monitor risky individuals in the database. This system would appear neutral on its face, as it is based on scientific studies and computational analytics, but as Crawford and Schultz exposed, schematics to monitor, flag, and predict future crime are far from perfect and produce false alarms.²⁴¹ In one example, Crawford and Schultz described how a computational program to predict and prevent crime and terrorism led the Federal Bureau of Investigation (“FBI”) and National Security Administration to erroneously zero in on and flag peaceful Catholic nuns and a respectable political candidate as suspected terrorists, demonstrating

236. Peter Breggin & Ginger Ross Breggin, *A Biomedical Programme for Urban Violence Control in the US: The Dangers of Psychiatric Social Control*, 11 *CHANGES: AN INT’L J. OF PSYCHOL. & PSYCHOTHERAPY* 59, 60 (1993) (quoting the National Academy of Sciences “Research Priorities” and “Key Questions” from the early 1900s coinciding with Frederick Goodwin’s push to adopt the Violence Initiative).

237. *Id.*

238. *Id.*; see also Boyce Rensberger, *Science and Sensitivity*, *WASH. POST* (Mar. 1, 1992), <https://www.washingtonpost.com/archive/opinions/1992/03/01/science-and-sensitivity/285e7541-3b66-48c4-9cc9-55fb37d013f9/>.

239. See Breggin & Breggin, *supra* note 236, at 62 (discussing monitoring infants); *id.* at 60 (discussing pharmaceutical industry partnership to “correct” “biochemical derangements.”).

240. *Id.* at 65.

241. Crawford & Schultz, *supra* note 8, at 104.

the limitations of relying on allegedly accurate algorithms in the context of predictive policing.

c. Accessing Consumer Genomics Databases to Aid in Active Criminal Investigations

Law-enforcement agencies have already demonstrated interest in using consumer-genomics databases as part of their active criminal-investigation process.²⁴² In March 2015, the *New Orleans Advocate* published a story describing how the Idaho Falls Police Department gained access to Ancestry's consumer genomics database in an effort to solve a cold-case murder from the mid-1990s.²⁴³ Police used a DNA sample from the crime scene and performed familial matching, trying to find potential suspects by examining the DNA's Y chromosome using Ancestry's database.²⁴⁴ Investigators found a partial match between the DNA from the crime scene and Michael Usry Sr., who contributed a biological sample to Sorensen Molecular Genealogy Foundation, which was subsequently acquired by Ancestry, years prior through a genealogy project sponsored by his church.²⁴⁵ Police began investigating Usry's relatives, and through publicly available information including Facebook photos and posts, found Michael Usry Jr., a filmmaker living in New Orleans.²⁴⁶ Usry Jr. appeared to fit the murderer's profile—he had social ties to the geographic area, was present in the area during the time of the crime, and in his career path as a horror filmmaker, he reveled in depicting gruesome and grisly murders.²⁴⁷ Using this information, police traveled to New Orleans and located Usry Jr. for interrogation.²⁴⁸ Police provided this evidence to a judge, successfully obtained a warrant that ordered Usry Jr. to produce a DNA sample for comparison, and questioned his involvement in the 1996 Idaho case.²⁴⁹

Police eventually cleared Usry Jr. because his DNA did not match the DNA found at the scene of the crime.²⁵⁰ Though Usry Jr. suffered no harm

242. Mustian, *supra* note 216; Poulsen, *supra* note 216.

243. Mustian, *supra* note 216.

244. *Id.*

245. *Id.*

246. *Id.*

247. *Id.*

248. *Id.*

249. *Id.*

250. *Id.*; see Andrew Pollack, *DNA Evidence Can Be Fabricated, Scientists Show*, N.Y. TIMES (Aug. 17, 2009), http://www.nytimes.com/2009/08/18/science/18/dna.html?_r=0 (This is particularly important in conjunction with considering that DNA evidence at a

because the police subsequently cleared his name, it is unlikely that Usry Sr. would have contemplated that participating in consumer genomics to trace his genealogy in a church-sponsored project would cause his son anxiety, embarrassment, and shame for being accused of a violent crime he did not commit. Consumers need to consider not only the ramifications of participation on their own lives—including law-enforcement use of their DNA—but also the impact on their current and future genetically related family members.

As law professor Erin Murphy commented,

I think what we are looking at is a series of totally reasonable steps by law enforcement. But it has this really Orwellian state feeling to it, and it is a huge indictment of private genetic testing companies and the degree to which people seamlessly share that information online.²⁵¹

In late 2015, 23andMe published a transparency report disclosing that it had received four requests for consumer DNA from state law enforcement and the FBI.²⁵² 23andMe claimed that it had denied all requests and did not share consumer DNA for those requests.²⁵³ However, it is reasonable to believe that law enforcement will again seek access to the millions of DNA samples held in consumer genomics databases as a means to solve crimes and identify suspects.²⁵⁴

VI. Conclusion

Technology substantially improves society's ability to collect, store, and use genomic and private health information, enabling consumer-genomics companies like 23andMe to electronically hold a complete consumer profile of its customers, including their genomic sequence, name, self-disclosed family history, health status, health conditions, race, ethnicity, sexual orientation, age, social networks, place of employment, a record of every website they click on, photos, and their current geographic location. Consumer curation of deeply personal information currently occurs largely outside the scope of the federal regulations ordinarily governing these practices. 23andMe's electronic clickwrap process for obtaining consent to

crime scene can be constructed and planted as a means to falsely implicate a suspect.).

251. Mustian, *supra* note 216.

252. *Id.*

253. *Id.*

254. 23andMe currently has one million DNA sequences stored, and Ancestry.com also has one million sequences stored. See Wajcicki, *supra* note 36; Anna Swayne, *AncestryDNA Celebrates One Million People Tested*, ANCESTRY BLOGS (July 16, 2015), <http://blogs.ancestry.com/ancestrydna-celebrates-one-million-people-tested/>.

use consumer genomic and health information in the commercial transaction challenges the traditional consent process for participating in research. This structural challenge poses questions about whether the consumer accesses and understands the privacy implications of 23andMe's privacy statement and research-consent form pertaining to the informational privacy risk they accept and the irrevocability of their decision to participate. Consumer genomics databases are a tremendous resource for advancing scientific and medical research. However, this gold mine of information also appeals to data brokers, targeted marketers, employers, insurers, and law-enforcement agencies, whose use of the data poses myriad informational risks, including subjecting the consumer to shame, stigma, discrimination, or criminal accusation. It is imperative that consumers understand the implications of their purchase and carefully weigh the benefits of purchasing the test and supporting 23andMe's research mission against the substantial risks to their genomic privacy.

Controlling Excessive Off-Label Medicare Drug Costs Through the False Claims Act

David Kwok[†]

Abstract

High prescription drug prices are driving ever-increasing United States healthcare costs, and the federal government is following this alarming trend with ninety-five billion dollars in expenditures for prescription drugs under Medicare Part D. Even accepting arguments that high drug prices are necessary to encourage the development of safe and effective drugs, Medicare Part D is flawed in that it will pay top dollar for ineffective drugs. Because Part D lacks adequate oversight for off-label drug usage, pharmaceutical companies obtain windfall profits for drugs that have not been proven effective for off-label conditions. Permitting companies to reap such profits without incurring the costs of demonstrating efficacy creates a distorted marketplace that leads to excessive Medicare drug expenditures. In addition to the financial burden to taxpayers and the risks to Medicare patients' health, the flaws in Medicare Part D also increase the risk that non-Medicare patients will be prescribed ineffective and expensive drugs. This article proposes a theoretical reimbursement scheme that encourages fairness and restrains excessive off-label drug reimbursement by tying reimbursement rates to competitive products. Fully correcting this systemic problem will require substantial statutory, regulatory, and institutional reforms that are not immediately likely. In the interim, courts and regulators should embrace the civil False Claims Act to begin to correct the incentive problems created under the present off-label reimbursement structure, thereby immediately curbing excessive Medicare spending on prescription drugs.

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I. Introduction

High prescription-drug prices have been generating alarm in the media and in Congress,¹ and the federal government is no stranger to prescription-drug purchases. Medicare spending on outpatient prescription drugs through Medicare Part D was ninety-five billion dollars in 2016, amounting to thirteen percent of overall Medicare benefit payments.² The Centers for Medicare & Medicaid Services (“CMS”) have acknowledged that total Part D costs per capita have been rising at a troubling eleven-percent rate.³ Pharmaceutical companies (“manufacturers”) typically justify high drug prices by citing the costs of research and development.⁴ The high prices offset the substantial costs incurred in conducting scientific studies to demonstrate that drugs are safe and effective in treating particular conditions.⁵ High expenditures on drugs are arguably good for society and not excessive if patients are obtaining sufficient benefit from those drugs.

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1. See, e.g., Improving Access To Affordable Prescription Drugs Act, H.R. 1776, 115th Cong. (2017); John Russell, *How 2015 Became the Year of Prescription Drug Price Outrage*, CHI. TRIB. (Dec. 24, 2015), <http://www.chicagotribune.com/business/ct-drug-prices-1229-biz-20151224-story.html>; Margot Sanger-Katz, *Prescription Drug Costs Are Rising as a Campaign Issue*, N.Y. TIMES (Sept. 21, 2015), <http://www.nytimes.com/2015/09/22/upshot/prescription-drug-costs-are-rising-as-a-campaign-issue.html>; Andrew Pollack, *Drug Goes From \$13.50 a Tablet to \$750, Overnight*, N.Y. TIMES (Sept. 20, 2015), <http://www.nytimes.com/2015/09/21/business/a-huge-overnight-increase-in-a-drugs-price-raises-protests.html>; Andrew Pollack, *Drug Prices Soar, Prompting Calls for Justification*, N.Y. TIMES (Jul. 23, 2015), <http://www.nytimes.com/2015/07/23/business/drug-companies-pushed-from-far-and-wide-to-explain-high-prices.html>.
 2. CONGRESSIONAL BUDGET OFFICE, JANUARY 2017 MEDICARE BASELINE, <https://www.cbo.gov/sites/default/files/recurringdata/51302-2017-01-medicare.pdf>; See also KAISER FAMILY FOUND., *The Facts on Medicare Spending and Financing*, <http://kff.org/medicare/fact-sheet/medicare-spending-and-financing-fact-sheet/> (last updated Jul. 24, 2015); see also Charles Ornstein, *New Hepatitis C Drugs are Costing Medicare Billions*, WASH. POST (Mar. 29, 2015), http://www.washingtonpost.com/national/health-science/medicare-spent-45-billion-on-new-hepatitis-c-drugs-last-year-data-shows/2015/03/29/66952dde-d32a-11e4-a62f-ee745911a4ff_story.html.
 3. Press Release, Centers for Medicaid and Medicare Services, Medicare Prescription Drug Premiums Projected to Remain Stable (July 29, 2015), available at <https://www.cms.gov/Newsroom/MediaReleaseDatabase/Press-releases/2015-Press-releases-items/2015-07-29.html>.
 4. See, e.g., Jonathan D. Rockoff, *How Pfizer Set the Cost of Its New Drug at \$9,850 a Month*, WALL ST. J. (Dec 9, 2015) <http://www.wsj.com/articles/the-art-of-setting-a-drug-price-1449628081>.
 5. See, e.g., Seth D. Knocke, *Incentivizing Innovation: Pharmaceutical Pricing in the United States and the United Kingdom*, 20 ANNALS HEALTH L. ADVANCE DIRECTIVE 177, 178 (2011).

The problem, however, is that Medicare Part D can pay manufacturers these high drug prices without a full demonstration that the drugs are effective. By law, Medicare reimbursements are limited to drugs prescribed for medically accepted indications—conditions for which there is scientific evidence that a drug will be safe and effective.⁶ In practice, however, there is no systemic mechanism to ensure that drugs are actually prescribed for such an indication.⁷ Drug prescriptions are not required to include the indication for which the drugs are prescribed under Part D.⁸ Furthermore, a physician may legally prescribe a drug for various “off-label” indications—conditions not formally approved by the Food & Drug Administration (“FDA”).⁹

This system is unfair, and it creates perverse incentives for manufacturers. A manufacturer who has not incurred the costs of completing scientific studies demonstrating its drug’s effectiveness can earn greater revenue than a competing manufacturer who has completed such studies for its alternative drug. This distorted system drives excessive Part D spending, because the government pays more for the unproven drug in comparison to the fully tested drug.¹⁰ In a rational system, the government would not pay higher prices for a drug with less evidence to indicate that it is safe and effective. These high prices are likely to drive aggressive manufacturer’s marketing efforts to physicians, and patients may be exposed to higher probabilities of expensive and unproven off-label drug usage.

This article proposes a theoretical reimbursement framework that eliminates this distortion and unfairness by capping off-label reimbursements at a competitive level. A drug that is prescribed for its on-label, FDA-approved condition will continue to receive existing full reimbursement. If a drug is prescribed for an off-label condition, however, its reimbursement level will be tied to the competitive market for the off-label condition. A manufacturer that has not completed scientific studies regarding off-label drug usage will not receive a higher reimbursement than a competing manufacturer that has completed those studies. This

6. OFFICE OF INSPECTOR GEN., U.S. DEP’T OF HEALTH & HUMAN SERVS., ENSURING THAT MEDICARE PART D REIMBURSEMENT IS LIMITED TO DRUGS PROVIDED FOR MEDICALLY ACCEPTED INDICATIONS (2011), <http://oig.hhs.gov/oei/reports/oei-07-08-00152.pdf> [hereinafter *OIG PART D REIMBURSEMENT REPORT*].

7. *See id.*; *See also* Tracy Weber, Charles Ornstein & Jennifer LaFleur, *Medicare Drug Program Fails to Monitor Prescribers, Putting Seniors and Disabled at Risk*, *PROPUBLICA* (May 11, 2013), <http://www.propublica.org/article/part-d-prescriber-checkup-mainbar>.

8. *See* *OIG PART D REIMBURSEMENT REPORT*, *supra* note 6.

9. *See* *Buckman Co. v. Plaintiffs’ Legal Comm.*, 531 U.S. 341, 349-51 (2001).

10. Jon Elswick, *Boosting Medicare Part D Rebates May Help Consumers, but Hurt Pharma*, *STAT NEWS* (May 11, 2016), <https://www.statnews.com/pharmalot/2016/05/11/medicare-drug-pricing-obama/>.

framework is superior to existing proposals in that it allows room for the development of optimal levels of off-label drug usage. Medicare beneficiaries will still have access to drugs for off-label purposes and manufacturers will have the proper incentives for research.

While attractive in theory, fully implementing this theoretical reimbursement framework is challenging in the short term. Like other proposals, it requires the integration of prescription and diagnosis information. There are difficult structural and statutory barriers to such integration; state law generally governs prescription information¹¹ and the federal government has been hesitant to interfere.¹² Additionally, the present standard for tracking patient diagnoses does not correspond with Part D reimbursement rules.¹³

In the interim, this article proposes civil False Claims Act (“FCA”) liability as a claw-back mechanism to control Part D expenditures by limiting the present system’s distortions and inequity. While manufacturers may temporarily enjoy excessive profits through ever-growing levels of off-label drug reimbursement, civil liability under the FCA will allow the government to reclaim, or “claw back,” those unfair profits and help fund the need for better links between diagnosis and prescription. Unlike other forms of immediately available civil litigation, such as tort liability, the FCA incorporates a whistleblower cause of action.¹⁴ Whistleblowers are critical in supplying the core missing information linking prescriptions to diagnoses. Without such whistleblowers, litigation lacks the funding and support to compile the missing information.

FCA liability has already been applied to subset of off-label reimbursement scenarios: off-label promotion cases against manufacturers.¹⁵ Under the existing theory, manufacturers are liable for excessive Medicare expenditures because their promotional efforts induce physicians to prescribe off-label drugs that result in improper Medicare reimbursement.¹⁶ This article’s proposed FCA solution expands on this theory by including any manufacturer behavior that is a cause-in-fact of excessive Medicare expenditures. Furthermore, FCA liability should be

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11. See *OIG PART D REIMBURSEMENT REPORT*, *supra* note 6.
 12. See James M. Beck & Elizabeth D. Azari, *FDA, Off-Label Use, And Informed Consent: Debunking Myths And Misconceptions*, 53 *FOOD DRUG LAW J.* 71, 76 (stating that the FDCA was “not intended as a medical practices act and [did] not interfere with the practice of the healing art.”); See also Weber et al., *supra* note 7 (quoting Jonathan Blum, director of Medicare, that agency philosophy “really has been to defer to physicians.”).
 13. See *OIG PART D REIMBURSEMENT REPORT*, *supra* note 6
 14. See 31 U.S.C. § 3730(b) (2012).
 15. See, e.g., *United States ex rel. Franklin v. Parke-Davis*, 147 F. Supp. 2d 39, 50-53 (D. Mass. 2001).
 16. *Id.*

calibrated to the competitive market for the patient's diagnosis; manufacturers should be liable for any windfall profits that result when their off-label reimbursement exceeds the competitive market rate for drugs with scientifically proven efficacy.

The FCA can be a surprisingly effective claw-back mechanism as a short-term solution. Applying a claw-back mechanism to all manufacturers who benefit from off-label reimbursements would provide properly aligned incentives and eliminate inequity from the present system.

Part II describes the regulatory environment and structure that leads Medicare Part D to be susceptible to excessive drug costs through off-label drug reimbursement. Part III highlights that even if we give manufacturers the benefit of the doubt, their legal actions will still lead to excessive drug costs and unfairness because of the existing reimbursement system. Part IV proposes a theoretically superior reimbursement system that acknowledges the potential societal value of off-label drug reimbursement. Part V discusses how the FCA can be used as an interim claw-back solution to reduce excessive drug costs. Part VI addresses some concerns about this expanded use of the FCA, and Part VII is the conclusion.

II. Background on Off-label Drugs and Medicare Part D

The United States healthcare system attracts extensive criticism for its high costs and comparatively inferior results.¹⁷ Medicare provided nearly six hundred billion dollars in benefits in 2014.¹⁸ Critics often point to expensive pharmaceuticals as contributing to high U.S. healthcare costs.¹⁹ Nonetheless, manufacturers generally defend high pharmaceutical prices by citing the need for expensive research to develop safe and effective

17. See, e.g., *America's Big Spending on Health Care Doesn't Pay Off*, *ECONOMIST* (Nov. 16, 2015), <http://www.economist.com/news/21678669-americas-big-spending-health-care-doesnt-pay>; David Squires & Chloe Anderson, *U.S. Health Care from a Global Perspective: Spending, Use of Services, Prices, and Health in 13 Countries*, *COMMONWEALTH FUND* (Oct. 8, 2015), <http://www.commonwealthfund.org/publications/issue-briefs/2015/oct/us-health-care-from-a-global-perspective>; Olga Khazan, *U.S. Healthcare: Most Expensive and Worst Performing*, *ATLANTIC* (Jun. 16, 2014), <http://www.theatlantic.com/health/archive/2014/06/us-healthcare-most-expensive-and-worst-performing/372828/>.

18. See also *KAISER FAMILY FOUND.*, *supra* note 2.

19. See *Centers for Medicaid and Medicare Services*, *supra* note 3; Chad Terhune, *Specialty Drug Costs Soar 32% to \$438 Million at CalPERS Amid Uproar Over Prices*, *L.A. TIMES* (Dec. 15, 2015), <http://www.latimes.com/business/la-fi-calpers-drug-costs-20151215-story.html>; Jonathan D. Rockoff, *Rising Drug Costs to Be in Focus at Congressional Hearing*, *WALL ST. J.* (Dec. 5, 2015), <http://www.wsj.com/articles/rising-drug-costs-to-be-in-focus-at-congressional-hearing-1449311407>.

drugs.²⁰ Medicare reimburses for prescription drugs through numerous mechanisms; this article focuses upon a particular flaw in Medicare Part D reimbursement.

Medicare Part D covers outpatient prescription drugs, also known as self-administered prescription drugs. Part D expenditures were ninety-five billion dollars in 2016, amounting to roughly thirteen percent of overall Medicare benefit payments.²¹ CMS has acknowledged that total Part D costs per capita have been rising at a troubling eleven-percent rate.²² Part of the core problem with Part D spending is that, while reimbursements are legally limited to drugs provided for medically accepted indications, there is no systemic mechanism to ensure that drugs are actually prescribed for such an indication.²³ The written prescription contains no direct link between the drug and the indication for which it was prescribed under Part D.²⁴ A physician will diagnose a patient with a certain condition and then prescribe a drug to treat that condition, but the prescription itself simply specifies the drug and dosage information. The patient then brings the prescription to a pharmacist who fills the prescription and files paperwork for reimbursement to Medicare.

CMS manages Part D, but much of the execution is delegated to Medicare Part D sponsors: private insurance companies.²⁵ Each plan sponsor has substantial autonomy in the coverage of Medicare Part D patients.²⁶ By delegating such authority to sponsors, Medicare attempts to benefit from the private competitive market. These sponsors can compete to provide superior drug coverage to patients while also competing to hold drug costs down.²⁷ The sponsors decide upon formularies, which are the lists of drugs covered by the sponsor. The sponsors may set different levels of cost-sharing with patients. For example, sponsors decide on

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20. See, e.g., Anna Edney, *Sarepta Stock Rises to Highest Since 2013 as Drug Approved*, BLOOMBERG NEWS (Sept. 19, 2016), <http://www.bloomberg.com/news/articles/2016-09-19/sarepta-wins-approval-for-duchenne-drug-after-long-fda-review>.
 21. See CONGRESSIONAL BUDGET OFFICE, *supra* note 2; see also KAISER FAMILY FOUND., *supra* note 2.
 22. See Centers for Medicaid and Medicare Services, *supra* note 3.
 23. OIG PART D REIMBURSEMENT REPORT, *supra* note 6, at 1.
 24. See *id.* at 5.
 25. See MEDICARE PAYMENT ADVISORY COMM'N, REPORT TO THE CONGRESS: MEDICARE PAYMENT POL'Y 359-60 (Mar. 2014), available at http://www.medpac.gov/docs/default-source/reports/mar14_entirereport.pdf?sfvrsn=0 [hereinafter MEDPAC 2014].
 26. See MEDICARE PAYMENT ADVISORY COMM'N., REPORT TO THE CONGRESS: MEDICARE AND THE HEALTH CARE DELIVERY SYSTEM 157-158 (June 2016), available at <http://www.medpac.gov/docs/default-source/reports/chapter-6-improving-medicare-part-d-june-2016-report-.pdf> [hereinafter MEDPAC 2016].
 27. See MEDPAC 2014, *supra* note 25, at 362-363. (noting that the sponsors have had some success in reducing drug prices when generic competition was available, but face challenges when drugs are unique treatments).

patient copays for particular tiers of drugs and negotiate drug prices and fees with pharmacies, along with rebates from manufacturers.

Sponsors receive a variety of payments from Medicare.²⁸ The core payment is the direct subsidy, a monthly payment to sponsors, adjusted for individual enrollee risk.²⁹ Medicare also pays for eighty percent of drug spending that exceeds the out-of-pocket threshold for any patient;³⁰ this payment is known as reinsurance. The third major payment is the low-income subsidy (“LIS”) through which Medicare covers enrollee costs for those who would have trouble paying for coverage.³¹

To be clear, physicians are free to exercise their own judgment in prescribing drugs for various conditions; the FDA does not want to be seen as interfering with a physician’s practice of medicine.³² Similarly, CMS’s focus is not upon physician decision-making, but on managing drug reimbursement for Medicare, and the agency’s decision is heavily entwined with the FDA’s processes. I begin with a discussion of the FDA’s drug approval process.

A. FDA Approval of Drugs

Before pharmaceuticals enter into interstate commerce, the Federal Food, Drug, and Cosmetic Act (“FDCA”) requires FDA approval for specific uses, including indication, population, dosage, and duration.³³ To obtain FDA approval, manufacturers must demonstrate the safety and efficacy of a new drug for each intended use or indication.³⁴ Pharmaceutical manufacturers pay for scientific studies to establish the safety and efficacy of the drugs for particular indications. In deciding whether to approve a new drug, the FDA compares the drug’s benefits against its risks by asking whether the drug offers sufficient benefits to justify the risk of side effects.³⁵

Once approved, the FDCA requires manufacturers to label the drug in a fashion consistent with the FDA-approved usage. The FDA similarly places limits on manufacturers’ promotional activities regarding the drugs. Physicians, however, do not fall within the FDA’s jurisdiction. Physicians

28. *See id.* at 375.

29. *See id.*; *see also id.* at 362 (explaining how there are also risk corridors that address market-based risks as opposed to individual patient risk).

30. *See* MEDPAC 2016, *supra* note 26, at 174.

31. *See id.* at 157.

32. *See* *Buckman Co. v. Plaintiffs’ Legal Comm.*, 531 U.S. 341, 349-51 (2001).

33. 21 U.S.C. § 355(a) (2012).

34. 21 U.S.C. § 355(d) (2012); *see also* *Weinberger v. Hynson*, 412 U.S. 609, 612–14, (1973).

35. Bruce Patsner, *Marketing Approval Versus Cost of New Medical Technologies in the Era of Comparative Effectiveness: CMS, not FDA, Will Be the Primary Player*, 3 J. HEALTH & LIFE SCI. L. 38, 55 (2010).

are free to prescribe an approved drug in a manner that differs from the approved usage.³⁶ Prescribing a drug for an alternative usage is known as off-label prescription.

Off-label prescription is common, potentially comprising over twenty percent of prescriptions.³⁷ Off-label usage is particularly frequent in psychiatry, oncology, and pediatrics.³⁸ The U.S. General Accounting Office³⁹ (“GAO”) found that one third of cancer drugs were off-label and that more than half of all cancer patients received at least one drug for an off-label indication.⁴⁰ Patients with rare diseases—also called orphan diseases—are also often dependent on off-label uses for their treatment because the number of patients with each orphan disease is often too low to justify the tremendous expense associated with seeking FDA approval for those indications.⁴¹ Approximately twenty-one percent of all drugs prescribed to treat orphan diseases are off-label.⁴²

B. Government reimbursement for off-label drug usage

The fact that the FDA has not approved a drug for an off-label indication is not determinative as to reimbursement eligibility. CMS decides whether or not to reimburse for a drug and at what price to reimburse for a drug.⁴³ Historically, CMS would generally reimburse for a drug that the FDA had approved, but the two agencies’ decisions have shown some divergence more recently.⁴⁴ Aside from differences in standards and procedures, CMS’s mission explicitly incorporates financial security; cost-effectiveness is a consideration beyond the benefits and risk of the drug.⁴⁵ CMS will consider off-label uses and clinical data that are not part of the FDA approval process, which leads to CMS approval of a drug for an indication that has not received FDA approval.⁴⁶ Conversely, if the

36. See 21 U.S.C. § 396 (2012).

37. See David C. Radley et al., *Off-Label Prescribing Among Office-Based Physicians*, 166 ARCHIVES INTERNAL MED. 1021, 1023 (2006).

38. Muriel R. Gillick, *Controlling Off-Label Medication Use*, 150 ANNALS INTERNAL MED. 344, 344 (2009); see also Marc A. Rodwin, *Rooting Out Institutional Corruption to Manage Off-Label Use*, 41 J. L. MED. & ETHICS 654, 656 (2013).

39. Now known as the Government Accountability Office.

40. U.S. GOV’T. ACCOUNTABILITY OFF., GAO/PEMD-91-14, OFF-LABEL DRUGS: REIMBURSEMENT POLICIES CONSTRAIN PHYSICIANS IN THEIR CHOICE OF CANCER THERAPIES 3 (1991), available at <http://www.gao.gov/assets/160/151121.pdf>.

41. Bryan A. Liang & Tim Mackey, *Reforming Off-Label Promotion to Enhance Orphan Disease Treatment*, 327 Sci. 273, 273 (2010).

42. *Id.*

43. See Patsner, *supra* note 35, at 41.

44. See *id.* at 43.

45. See *id.* at 55.

46. See *id.* at 56 (citing Jeffrey A. Kelman, M.D., Chief Medical Officer, Center for Beneficiary Choices, CMS).

costs of an FDA-approved drug are too high and the drug does not provide a superior benefit-risk calculus compared to existing competitors, CMS might decline to cover the FDA-approved drug.⁴⁷

Patient-administered drugs fall under Medicare Part D, in contrast to professionally administered drugs under Part A and Part B.⁴⁸ Also known as outpatient drugs, these patient-administered drugs are first prescribed by a physician. The patient then typically brings the prescription to a pharmacy that fills the prescription and bills the insurer, here Medicare Part D. While the patient's medical records with the physician contain the patient's diagnosis, the prescription that the pharmacy sees does not. Thus, under Part D, reimbursement is linked to the price of the drug and not to the patient's diagnosis.⁴⁹ The government knows the price of the drug to be reimbursed under Part D, but it does not explicitly know why the patient should be taking that drug.⁵⁰

As a formal matter, for outpatient drug claims to qualify for Medicare Part D reimbursement, the drugs must be provided for medically accepted indications. Medically accepted indications include both uses approved by FDA and uses supported by one or more of three publications, known as compendia, specified in section 1927(g)(1)(B)(i) of the Social Security Act.⁵¹ Medically accepted indications may also be established through Local Coverage Decisions, by which CMS contracts with private organizations to make regionally limited decisions. Finally, CMS also establishes medically accepted indications through annually published National Coverage Decisions.⁵²

To summarize, some off-label use of drugs may be reimbursable under Medicare Part D, but since the drugs are prescribed and reimbursed without a direct link to the diagnosis, CMS does not immediately know whether the drug prescription is legally reimbursable.

47. *See id.* at 57.

48. *See Which Part of Medicare Will Cover My Prescription Drugs (A, B, or D)?*, MEDICARE INTERACTIVE, <https://www.medicareinteractive.org/get-answers/medicare-covered-services/prescription-drugs/which-part-of-medicare-will-cover-my-prescription-drugs-a-b-or-d> (last visited Nov. 20, 2016); While this article focuses on Medicare Part D, it should be noted that Medicaid rules for off-label drug reimbursement are similar, and much of the article's reasoning can thus be applied to Medicaid reimbursement. *See, e.g., United States ex rel. Franklin v. Parke-Davis*, No. Civ. A. 96-11651PBS, 2003 WL 22048255 at *3 (D. Mass. Aug. 22, 2003).

49. *See* OIG PART D REIMBURSEMENT REPORT, *supra* note 6, at 5.

50. *See id.* at 5-6.

51. *Id.* at 1.

52. *See* Sandra J. Carnahan, *Medicare's Coverage with Study Participation Policy: Clinical Trials or Tribulations?*, 7 YALE J. HEALTH POL'Y, L. & ETHICS 229, 236-37 (2007).

C. Criticism of manufacturers

Criticism relating to off-label drug usage has generally focused upon the role of manufacturers.⁵³ Manufacturers do not prescribe drugs, but they certainly develop and promote drugs. In an oft-cited example, the manufacturer of Neurontin, an FDA-approved epilepsy drug, pursued an off-label marketing strategy that brought in over two billion dollars a year with roughly ninety percent of Neurontin prescriptions for off-label use.⁵⁴ Commentators and courts criticize manufacturers for egregious promotional efforts, including practices such as giving misleading information about drugs to physicians and offering them bribes and kickbacks.⁵⁵ Manufacturers may be supporting the publication and dissemination of articles that suggest off-label drug usage with insufficient scientific support.⁵⁶ Excessive off-label drug promotion and usage threatens to circumvent public oversight of drug safety and efficacy.⁵⁷ Off-label drug use itself may be dangerous and ineffective, and manufacturers may be exacerbating the problem through their off-label promotional efforts.⁵⁸

As noted earlier, physicians may freely prescribe off-label,⁵⁹ but there are restrictions on manufacturers' ability to promote off-label usage of their products. The FDA allows manufacturers to distribute copies of peer-reviewed journal articles discussing off-label usage, but summarizing such articles might subject manufacturers to prosecution.⁶⁰ Manufacturers may also be allowed to discuss off-label usage in response to unsolicited

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53. See, e.g., Barry Meier, *Narcotic Maker Guilty of Deceit Over Marketing*, N.Y. TIMES (May 11, 2007), <http://www.nytimes.com/2007/05/11/business/11drug.html>; See also Rodwin, *supra* note 38, at 657.
54. See *In re Neurontin Mktg. & Sales Practices Litig.*, No. 04-CV-10739-PBS, 2011 WL 3852254, at *6-*8 (D. Mass. Aug. 31, 2011) *aff'd*, 712 F.3d 21 (1st Cir. 2013).
55. See, e.g., Meier, *supra* note 53; Rodwin, *supra* note 38, at 657.
56. See Rodwin, *supra* note 38, at 656; see also Sergio Sismondo, *Key Opinion Leaders and the Corruption of Medical Knowledge: What the Sunshine Act Will and Won't Cast Light On*, 41 J. L. MED. & ETHICS 1, 640 (2013).
57. See Rodwin, *supra* note 38, at 659.
58. See Richard C. Ausness, *'There's Danger Here, Cherie!': Liability for the Promotion and Marketing of Drugs and Medical Devices for Off-Label Uses*, 73 BROOK. L. REV. 1253, 1324-25 (2008) (discussing dangers found with off-label usage of fen-phen, Letrozole, and Actimmune); but see Sandra H. Johnson, *Polluting Medical Judgment? False Assumptions in the Pursuit of False Claims Regarding Off-Label Prescribing*, 9 MINN. J.L. SCI. & TECH. 61, 63-65 (2008) (arguing that inappropriate relationships between manufacturers and physicians does not necessarily indicate that the off-label usage itself is inappropriate).
59. See 21 U.S.C. § 396 (2012).
60. See John C. Richter & Daniel C. Sale, *The Future of Off-Label Promotion Enforcement in the Wake of Caronia- Toward a First Amendment Safe Harbor*, 14 SEDONA CONF. J. 19, 26 (2013).

requests from physicians.⁶¹ The FDA has been criticized for offering insufficiently clear guidance as to appropriate promotional behavior regarding off-label drug usage.⁶²

If manufacturers improperly promote off-label usage, they can be held criminally culpable for misbranding under the FDCA.⁶³ The government has repeatedly convicted pharmaceutical companies and their representatives based on their off-label promotional activities.⁶⁴ As discussed further in Part V, manufacturers also face sanctions for off-label promotion under the False Claims Act.

If Medicare did not reimburse for off-label drug usage, the government would not be providing a direct incentive for manufacturers to promote off-label usage.⁶⁵ Both CMS and states have acknowledged, though, that there are some off-label uses that are beneficial, and there are, therefore, benefits to legal reimbursement for some off-label prescriptions.⁶⁶ Complicating matters is that the government often has weak and incomplete information regarding off-label drug usage and may not even know when reimbursements are for off-label usage.⁶⁷ The Inspector General of the Department of Health and Human Services (“HHS”) has already proposed a clear reform to improve tracking of off-label usage, allowing CMS to determine promptly whether reimbursements are appropriate.⁶⁸ As proposed in Part IV, this reform should be supplemented by tying reimbursement rates to the indication for which a drug is used, rather than to only the drug itself.

The tension between a regulatory scheme that attempts to restrict manufacturers’ encouragement of off-label drug usage while acknowledging the value in physicians prescribing off-label drug usage has manifested in various judicial decisions.⁶⁹ The Supreme Court recognized that off-label prescribing “is an accepted and necessary corollary of the FDA’s mission to regulate.”⁷⁰ While Neurontin’s manufacturer was fined for its off-label marketing efforts, the FDA also approved some off-label

61. *Id.*

62. *See, e.g.,* Sarah Chacko, *Drugmakers Await FDA Guidance on ‘Off-Label’ Uses of Medicines*, THE HILL (Dec. 19, 2016), <http://thehill.com/policy/healthcare/311061-drugmakers-await-fda-guidance-on-off-label-uses-of-medicines>.

63. 21 U.S.C. § 333(a) (2012).

64. *See, e.g.,* United States v. Caronia, 703 F.3d 149, 152 (2d Cir. 2012).

65. *See* Ausness, *supra* note 58, at 1325-1326.

66. *See* OIG PART D REIMBURSEMENT REPORT, *supra* note 6, at 2.

67. *See id.* at 1.

68. *See id.* at 6.

69. *See, e.g.,* Buckman Co. v. Plaintiffs’ Legal Comm., 531 U.S. 341, 349 (2001); *See, e.g.,* Caronia, 703 F.3d 153-169.

70. *Buckman Co.*, 531 U.S. at 350.

uses of Neurontin.⁷¹ Courts have debated the importance of scientific truth in manufacturer's promotional efforts,⁷² but this is typically difficult in off-label cases, because the FDA itself does not know the truth about whether a drug's off-label use is effective, and it is unlikely that a court could do better than an expert agency in evaluating drug effectiveness.⁷³

III. An Inherently Flawed Reimbursement System Drives Excessive Costs

The present focus on scientific truth and punishing deceptive manufacturer behavior overlooks the broader problem: because the present reimbursement system is flawed, all profit-seeking behavior contributes to excessive reimbursements under Medicare Part D. Given the system's present design, Medicare will end up spending excessively on off-label conditions, and even honest manufacturers will naturally over-invest in driving off-label drug usage.

Focusing on manufacturer violations of pharmaceutical promotional rules may help limit disinformation, but it is unlikely to stem the tide of excessive reimbursements under Medicare Part D. Manufacturers can follow every rule and regulation regarding off-label promotion and they will still have every incentive to over-invest in encouraging and developing off-label drug usage. Investment is a broad concept covering a manufacturer's behavior in pursuing revenue from off-label drugs; it includes research into off-label efficacy, for example, and it is not limited to promotional behavior that directly engages physicians. This over-investment will continue to drive excessive Part D reimbursements.

This part demonstrates the danger of this over-investment contributing to excessive Medicare reimbursements. The article here makes every assumption in favor of manufacturers and demonstrates that, nonetheless, the present system will continue to drive excessive drug reimbursement levels. The situation may actually be worse in reality, given that manufacturers may not always act in the public interest as assumed here.

A. A standard for excessive costs

Analyzing excessive costs begins with a general principle that drug costs are excessive if they exceed the social benefit obtained from a patient utilizing the drug. If there is no scientific evidence that a drug is

71. See *In re Neurontin Mktg. & Sales Practices Litig.*, No. 04-CV-10739-PBS, 2011 WL 3852254, at *1-*2 (D. Mass. Aug. 31, 2011) *aff'd*, 712 F.3d 21 (1st Cir. 2013).

72. See, e.g., *Caronia*, 703 F.3d at 166-67; See Mark Ratner & Trisha Gura, *Off-Label or Off-Limits?*, 26 NATURE BIOTECHNOLOGY 867, 873-74 (2008).

73. See Christopher Robertson, *When Truth Cannot Be Presumed: The Regulation of Drug Promotion Under an Expanding First Amendment*, 94 B.U. L. REV. 545, 560 (2014) ("FDA defers to physician discretion to prescribe off label, because it remains ignorant about safety and efficacy claims until they are proven.").

safe and effective for an off-label condition, then any Medicare spending on that drug for that off-label condition is excessive. This would be the archetype of purely wasteful spending, as patients do not benefit at all from taking unsafe, ineffective drugs.⁷⁴ At the other end of the spectrum are FDA-approved drugs for the treatment of an on-label condition for which CMS is willing to reimburse. Given that cost-benefit analysis is part of CMS's approval process,⁷⁵ it is safe to presume that spending on such drugs for the on-label condition is not excessive.

Drugs prescribed for off-label conditions will fall somewhere along this spectrum. Some drugs may have an extremely limited number of scientific studies supporting their efficacy for off-label conditions—those drugs will fall closer to the wasteful end of the spectrum. Other drugs may have excellent studies supporting the off-label usage—these drugs will lie close to the FDA-approved on-label end. There is therefore some optimal level of Medicare spending on the drug for the off-label condition that balances the costs of the drug against the benefits patients may obtain from the drug. Note that this optimal level of Medicare spending is specific to a drug-condition combination. If a drug can treat two distinct conditions, there will be an optimal level of Medicare spending for condition A and a separate optimal level of spending for condition B. Similarly, if a condition can be treated by two distinct drugs, there will be an optimal level of spending for drug X for that condition and a separate optimal level of spending for drug Y for the same condition.

Expanding this analysis, consider that Medicare spending on drugs has at least two related purposes. First, CMS has an immediate interest in ensuring that patients receive safe, effective treatment that is presently available. Second, CMS has a long-term interest in manufacturers producing new safe and effective drugs.

Regarding CMS's immediate interest in ensuring that patients receive treatment, an optimal level of spending corresponds to the safety and effectiveness of the drugs. If the drug is highly beneficial to patients suffering from a costly condition, the optimal level of spending would likely be higher. If a drug produces only limited benefits for a small portion of patients suffering a mild condition, the optimal level of spending may be lower. If there are two potential drugs for the treatment of one condition and they are identical in safety and effectiveness, any spending on the more expensive drug is excessive unless there is some other justification for such spending. For example, CMS might value having competition in the market supply of the drugs.⁷⁶ To maintain the viability

74. If the drug is actually harmful to patients, society should actually invest in preventing access to such drugs, even if they were free to the Medicare system.

75. See Patnsner, *supra* note 35, at 55.

76. This competitive interest may be linked to CMS's below long-term interest in new drug development. Competition may also be important in negotiating prices for existing drugs.

of the manufacturer producing the more expensive but otherwise identical drug, CMS might agree to reimburse for some limited level of the more expensive drug. Spending may be excessive if it is heavily concentrated on relatively ineffective drugs when safe, more effective alternatives are available.

CMS's long-term interest in manufacturers producing new safe and effective drugs interacts with its immediate interest in patient treatment. A naïve method of compensating manufacturers for drugs would be to reimburse at the marginal cost of production for those drugs. Manufacturers, in theory, would continue to produce existing drugs, but such a strategy would strip out the profit incentive for future drug research and development. The reimbursement rates for drugs thus must be sufficiently high to induce manufacturers to conduct ongoing research and development of drugs. Excessive spending, considering CMS's long-term interest in ongoing research, could come in the form of market distortion. For example, CMS's willingness to reimburse for a high-priced drug is a signal to the marketplace that there is a strong need for safe, effective treatment of the particular condition the drug treats. CMS would expect manufacturers to react to the high price signal by investing in new drug development for that particular condition. If CMS is reimbursing for a high-priced drug, but there is already a safe, equally effective, and lower-cost treatment for the same condition, CMS expenditures on the high-priced drug might induce other manufacturers to continue emphasizing drug research for that same condition. Such expenditures and investments might be excessive, as the existence of the lower-cost option would suggest that other conditions should be research priorities. Under these principles, CMS should place the strongest reimbursement incentives upon FDA-approved drug treatments for on-label conditions. These are drugs that have crossed a threshold of scientific evidence in establishing safety and efficacy for certain conditions. At the other end, if there is no scientific evidence of safety and efficacy for the treatment of another condition, there should be no Medicare reimbursement for that drug-condition combination.

In between, a drug for which there is limited scientific evidence of off-label efficacy should receive an intermediate level of reimbursement incentive. If CMS were to allow reimbursement at the same level as an FDA-approved on-label treatment, there would be no incentive for the manufacturer to continue research and testing to satisfy FDA standards for an off-label use. If CMS were to prohibit any reimbursement for this intermediate case, patients might not have access to the drug. Allowing intermediate reimbursement strikes a balance for patients who might benefit from a drug that has not completed scientific-efficacy studies; those patients will receive the drug, but the manufacturer will not receive more reimbursement than a competing manufacturer that has completed those scientific studies demonstrating efficacy.

There are thus multiple criteria by which Medicare drug expenditures may be excessive. This section is not a comprehensive list of parameters in

determining optimal Medicare spending on off-label drugs, nor is this a claim that society can necessarily establish the precise, optimal level of spending on any particular drug. Rather, it is rather a claim that there are different levels of scientific evidence supporting the efficacy of drugs and that it is excessive to spend more money for drugs that have lower levels of scientific evidence supporting their efficacy. The Medicare spending framework will have a tendency to drive patients, physicians, and manufacturers to either better levels of spending that are closer to optimal or worse levels of spending that stray further from optimal.

B. Even an idealized manufacturer contributes to excessive drug reimbursement under the present system.

The next step in analyzing off-label drug costs under Medicare Part D is to consider manufacturer behavior. Instead of focusing on manufacturer misbehavior, a problem both courts and commentators have discussed at length,⁷⁷ this section discusses the impact of ethical profit-seeking manufacturers on Medicare Part D off-label expenditures. While unethical, avaricious manufacturers can cause excessive drug expenditures, this section demonstrates that even ethical profit-seeking manufacturers within the existing reimbursement framework lead to excessive Part D off-label expenditures.

One beginning premise is that off-label drug usage is, in the short term, good for society.⁷⁸ Doctors can be trusted to treat their patients properly, and if a doctor believes that prescribing a drug for an off-label use is a good choice, this section assumes that the patient will benefit from taking that drug. Nonetheless, it is important to recognize that physicians are limited in their availability and capacity to learn about new drug uses.⁷⁹ Physicians do not instantaneously learn about new drug uses; they have limited time to both treat patients and study new treatment developments. Moreover, physicians have very limited information regarding drug prices.⁸⁰

77. *See supra* Part II.C.

78. *See* 21 U.S.C. § 396 (2012). While the FDA's lack of involvement in physician off-label prescription can be described as a reluctance to interfere with the practice of medicine, this similarly suggests that there are positive aspects to off-label prescription. If a particular off-label prescription were generating consistently bad outcomes for patients, it is difficult to believe that a regulatory agency would not take action.

79. *See* Puneet Manchanda & Elisabeth Honka, *The Effects and Role of Direct-to-Physician Marketing in the Pharmaceutical Industry: An Integrative Review*, 2 YALE J. HEALTH POL'Y L. & ETHICS 785, 785-87 (2005); *see also* Adriane Fugh-Berman & Shahram Ahari, *Following the Script: How Drug Reps Make Friends and Influence Doctors*, 4 PLOS MED. 621, 623-24 (2007).

80. *See* PETER TEMIN, TAKING YOUR MEDICINE: DRUG REGULATION IN THE UNITED STATES 102-06 (1980).

The second assumption is that pharmaceutical firms are broadly acting in the public interest.⁸¹ This assumption automatically rules out deliberate lies and deception regarding off-label drug usage. Moreover, this implies that any increased investment that the firms make in off-label research corresponds to increased public good. For example, this means that if a firm increases its spending on off-label research, it conducts legitimate clinical research on safety and efficacy and it disseminates the results of that research.

The third premise of this section is a focus on off-label usage of a patent-protected drug in a market of patent-protected drugs.⁸² Once patent protection expires, competition from generics and other manufacturers may reduce prices and may even provide insufficient incentive for off-label research.⁸³ Thus, in this section, the market price of drugs refers specifically to the competitive market of patent-protected drugs.

1. Manufacturer pricing

First consider the manufacturer's pricing mechanism. After completing scientific studies and obtaining FDA approval for a drug, how does a manufacturer set the price of its patent-protected drug? As many have acknowledged, manufacturers set prices at whatever the market will bear.⁸⁴ This is standard profit-seeking behavior, and this piece is not criticism of such behavior. Following general market theory, the drug will be sold for a price that corresponds to the benefits that a patient expects to receive from the drug. In other words, a drug that offers little benefit will not command a high price.

Rather, the challenge leading to excessive Medicare reimbursements is that the manufacturer will set the drug price at a level tied solely to the market for the on-label condition.⁸⁵ There is little reason to believe that the market for a drug's off-label condition will be tightly linked to the

81. Cf. Keith B. Leffler, *Persuasion or Information? The Economics of Prescription Drug Advertising*, 24 J.L. & ECON. 45, 55 (1981) (drawing dichotomy of firms' advertising efforts as either informative or persuasive & uninformative, but not actually deceptive).

82. For a brief discussion of this unique environment, see Rebecca S. Eisenberg, *The Problem of New Uses*, 5 YALE J. HEALTH POL'Y, L. & ETHICS 717, 720 (2005).

83. There is empirical data to suggest, however, that drug prices even with generic competition may not necessarily be lower. See Panos Kanavos, Joan Costa-Font & Elizabeth Seeley, *Competition in Off-Patent Drug Markets: Issues, Regulation and Evidence*, 23 ECON. POLICY 500, 500-01 (July 2008).

84. See Sham Mailankody & Vinay Prasad, *Five Years of Cancer Drug Approvals: Innovation, Efficacy, and Costs*, 1 J. AMER. MED. ASS'N. ONCOLOGY 539, 540 (2015).

85. The present Medicare Part D reimbursement system does not have visibility into the treated condition, thus limiting downward pressure on pricing. As I discuss later in Part VI, though, it is possible that market pressures outside of the Medicare system may create price pressure on the manufacturer.

market for the on-label condition.⁸⁶ To the extent that the market price for drugs treating the off-label condition is actually lower, Medicare reimbursement based on drug prescription independent of condition will be excessive.

For example, begin with a firm that has obtained FDA approval for a new drug X for the treatment of condition A. It sets the price for drug X by evaluating the market of treatments for condition A. If existing treatments for condition A are limited, expensive, and not particularly effective, the firm may be able to charge a high price for drug X. Assume that the firm charges \$5000 per dose of drug X given the market for condition A. Parallel research determines an off-label use for drug X in treating condition B, but the market for condition B is much more competitive. Even if the firm obtained FDA approval of drug X for treating condition B, the firm believes it could only charge fifty dollars per dose of drug X if it were selling drug X solely for the treatment of condition B.

In this scenario, Medicare reimbursement for drug X at the \$5000 price for an off-label treatment of condition B is excessive. This claim is based on the assumption that market prices are a proxy for the harm associated with the treated condition.⁸⁷ If the market price for the off-label condition is significantly lower, it implies that the harm from the off-label condition is significantly lower. Thus, Medicare expenditure at the higher drug price for condition B is likely excessive.

It is nonetheless possible that the drug could be worth the full price of reimbursement, regardless of indication. In the above example, even though the \$5000 per dose price is linked to the on-label condition, it is theoretically possible that an educated consumer would be willing to pay that price for the off-label condition.⁸⁸ We might think a physician would

86. This depends, of course, on the type of off-label scenario at play. Some types of off-label usage involve patient groups that have not been adequately addressed in studies (i.e., drugs not tested on children under the age of two). See Alexandra Ossola, *FDA Allows Company To Market Drug For Off-Label Use: Some Experts Predict That More Companies Will Try To Do The Same*, POPULAR SCIENCE (Mar. 10, 2016), <http://www.popsci.com/fda-allows-company-to-market-drug-for-off-label-use>; see also COMMITTEE ON ACCELERATING RARE DISEASES RESEARCH AND ORPHAN PRODUCT DEVELOPMENT, BOARD ON HEALTH SCIENCES POLICY, RARE DISEASES AND ORPHAN PRODUCTS: ACCELERATING RESEARCH AND DEVELOPMENT 192 (2010).

87. The assumption that market prices are a relative proxy for harm assumes that there is some rationality in the marketplace. This assumption is more credible as a proxy for the minimum level of harm caused by a condition: a patient, insurance carrier, or physician would not purchase the drug if the harm of the condition did not exceed the price of the drug. In contrast, it is possible that the harm of the condition greatly outweighs the price of the drug, and the consumer is getting a great deal by paying a low price to remove a great harm. See Richard E. Caves et al., *Patent Expiration, Entry, and Competition in the U.S. Pharmaceutical Industry*, 1991 BROOKINGS PAPERS ON ECONOMIC ACTIVITY: MICROECONOMICS 1, 7 (1991).

88. See *id.* at 5 (describing patients as unlikely to select physicians based on the physicians' drug prescription behavior).

be best suited to make such a determination. In reality, of course, most physicians are not aware of the particular price or reimbursement rates of drugs,⁸⁹ but they at least may be aware of insurance coverage and the ability of patients to actually obtain prescribed drugs. Even if, in the short term, this off-label drug is worth the full price of reimbursement, the next section describes the method by which improper incentives drive excessive drug costs.

As a final note, while this article focuses on utilitarian concerns, there is also an underlying fairness concern that supports this argument. To the extent that there are already drugs that are effective in treating condition B that have obtained FDA approval for the condition, it seems inequitable to allow drug X, which has not obtained FDA approval for condition B, to receive a higher price for treating condition B.

2. Manufacturer investment

One possible criticism of the aforementioned concern with manufacturer pricing is that costs may balance out; sometimes Medicare pays an excessive amount for an off-label treatment, but sometimes Medicare gets a good deal because the off-label drug is actually cheaper than the competitive products for the off-label condition.

This leads to the next problem: the manufacturer's response to this incentive structure. The above costs are unlikely to balance out because of the manufacturer's investment decisions given a pharmaceutical market with manufacturers setting prices as described in the prior section. Broadly speaking, manufacturers that see the opportunity to profit from off-label usage are likely to invest in off-label usage, but if Medicare is instead getting a good deal, it is unlikely that manufacturers will similarly invest in such off-label usage.

Following the earlier example, begin with a manufacturer that has obtained FDA approval for drug X in treating condition A. At this point, there may be zero scientific evidence regarding the efficacy of the drug for the off-label condition B. The optimal spending on research into drug X's efficacy in treating condition B depends on two factors: first, the manufacturer's beliefs about the future efficacy of such research, and second, the size of the market for condition B.

It is possible that those factors will lead the manufacturer to actually obtain FDA approval of drug X for condition B. Since this paper discusses off-label usage, though, I assume that either the market for condition B or the cost of the research somehow makes obtaining FDA approval for drug X for condition B infeasible for the firm.⁹⁰ Nonetheless, because of the

89. See TEMIN, *supra* note 80, at 102-06.

90. It is also possible that the manufacturer may be unwilling to invest in the necessary research because of the risk of discovering some side-effects that would jeopardize its original FDA-approved indication. See COMMITTEE ON ACCELERATING RARE DISEASES RESEARCH AND ORPHAN PRODUCT DEVELOPMENT, *supra* note 88, at 192.

possibility of off-label usage and reimbursement, the firm will invest some non-zero amount into condition B research. Roughly speaking, the amount the firm invests into condition B research corresponds with the expected revenue from condition B reimbursement. If reimbursement for drug X is fixed regardless of condition, then the firm will invest in condition B research at a level corresponding to the price determined by condition A—in this example, \$5000 per dose.

Note, however, that the price of \$5000 may have no correlation with the market for condition B. There may be already effective, patent-protected drugs that treat condition B and have a significantly lower price, and drug X might not be any more effective. If the manufacturer estimates the market size for condition B using the \$5000 per dose value, the market opportunity for condition B will be much greater than the market value based upon the present, lower-cost drugs available for condition B.

Faced with this incentive structure, the manufacturer will over-invest, leading to societal losses. The price discrepancy is a distorted allocation of research funding.⁹¹ To the extent manufacturer investment is on research, this spending is misallocated; Medicare does not actually prioritize investments in condition B research at a level corresponding with a drug priced at \$5000 per dose, and society would be better off if the manufacturer invested in other research. Stated another way, if the market price of a competitor drug in treating condition B is fifty dollars per dose, Medicare would not encourage manufacturers to invest at a market level corresponding to \$5000 per dose for condition B; there are other conditions worthier of investment. From the drug X manufacturer's perspective, though, there is a large revenue opportunity in pushing drug X for condition B. It is possible that drug X might actually be one hundred times more effective and safe in comparison to the existing competitors in treating condition B, but charging a hundred-times higher rate should require FDA approval.

Note that an investment incentive problem still exists if the off-label market price is higher than the on-label market price; i.e., a fifty dollar per dose drug has an off-label use for which competitors are charging \$5000 per dose. In this situation, manufacturers face insufficient incentive to invest in off-label usage. The result will be insufficient research and promotion of cost-saving off-label drug usage. In other words, Medicare expenditures will be higher than optimal, as there will be relatively increased usage of the FDA-approved drugs for condition B and less-than-optimal research and information supporting cheaper off-label drugs for condition B.

A further complication is the fact that the manufacturer will split its investment in the off-label condition between research and promotion.⁹²

91. Some have described drug regulations as an incentive for producing knowledge about the drug. See Robertson, *supra* note 73, at 561.

92. See, e.g., Caves, *supra* note 87, at 2.

Given that research has a downside,⁹³ there is a serious risk that the investment may favor promotion over research. A manufacturer considering further research must consider the possibility that subsequent clinical research will reveal weaker results or worse side effects.⁹⁴ Such negative clinical findings could jeopardize not only use of the drug for the off-label condition, but also its use for the on-label condition.⁹⁵ The general problem here is that manufacturers may have a difficult time capturing benefits from further off-label research.⁹⁶ If subsequent research reveals weaker results or worse side effects, society is better off learning about the weaker results or worse side effects. Unfortunately for the manufacturer, it is in the business of selling drugs and not information. When its research reveals these negative results, society benefits from the knowledge, but it is difficult for the manufacturer to profit from such negative knowledge.

In contrast to research, manufacturers will likely capture much of the benefit from promotional activity. Promotional activity likely increases physician awareness and thus propensity to prescribe the manufacturer's drug.⁹⁷ Following the basic assumption that manufacturers do not act deceptively, society benefits from the increased physician knowledge.⁹⁸ The manufacturer will benefit from revenue due to the reimbursement for the prescribed drug.

The fact that a physician learns about the drug's off-label uses, however, does not automatically mean that increased promotional activity in distributing knowledge is universally desirable. Physicians have limited time and mental resources; learning new information is constrained by those resources.⁹⁹ If physicians are limited in their time to listen to manufacturers' reps, those physicians may disproportionately favor drugs

93. See Robertson, *supra* note 73, at 559-60.

94. *Id.*

95. In 2004, Merck was forced to remove from the market its \$2.5 billion Vioxx product, a drug approved for the treatment of arthritic pain, when clinical studies on an alternative treatment, preventing recurrence of colon polyps, revealed increased cardiovascular side effects from the drug. See Barbara Martinez et al., *Merck Pulls Vioxx From Market After Link to Heart Problems*, WALL ST. J. (Oct. 1, 2004), <http://www.wsj.com/articles/SB109654671320932405>.

96. See Robertson, *supra* note 73, at 561 ("Information is needed to make product markets perform optimally, but if sellers are to provide that information then they must be given an incentive to do so.") (citing Howard Beales et al., *The Efficient Regulation of Consumer Information*, 24 J.L. & Econ. 491, 504 (1981)).

97. See, e.g., Caves *supra* note 87, at 5 (citing TEMIN, *supra* note 91) (describing physicians' lack of "ready and well-organized information" regarding drug choices).

98. See *id.* at 4-8.

99. See *id.* at 5 (citing TEMIN, *supra* note 91) (describing physicians' lack of "ready and well-organized information" regarding drug choices).

whose manufacturers dedicate greater promotional resources.¹⁰⁰ Regardless of the actual impact on physician prescriptions, there is the social loss of spending physician time on relatively weak scientific studies that do not rise to the same level of the studies supporting FDA-approved drugs and conditions. Stated another way, the result of increased manufacturer investment may be a lot of distracting noise that makes it more difficult for physicians to focus on relevant new information.¹⁰¹

C. *Existing limits to excessive off-label expenditures*

While off-label reimbursement is difficult to detect under the present Medicare Part D system, there are limits to manufacturers' ability to profit in such a manner.

One possible limitation is that off-label reimbursements might come to dominate on-label reimbursement. If only a small number of patients suffer from the on-label condition, but Medicare is paying for a much larger volume of the manufacturer's drug, this would attract significant attention.¹⁰² Rather than identifying specific prescriptions that are for off-label usage, the aggregate data would provide a conservative estimate of the off-label usage volume. If there are only 100,000 patients with condition A and Medicare is reimbursing for 500,000 patient-doses of drug X, CMS might reasonably be suspicious of drug X. The benign assumption is that such high levels of drug X reimbursement are due to off-label usage, but such high reimbursement might also be a signal of fraudulent billing. Either way, the suspicion could drive CMS to begin requiring preauthorization or other administrative controls on the prescription of the manufacturer's drug. Such rules would not only limit off-label prescriptions of the drug but also hamper on-label prescriptions.

Manufacturers would not want to attract such attention. They therefore might limit promotional efforts to avoid exceeding some threshold that could trigger CMS investigation.¹⁰³ Given CMS's general reluctance to take investigative steps, though, I assume that this upper

100. *Id.* at 12 (describing large volume of advertisements as a "signal-jamming" strategy to fight competitor information).

101. *Id.*

102. For example, 83% of physician prescriptions for Gabapentin (Neurontin) were for off-label uses. David C. Radley et al., *Off-Label Prescribing Among Office-Based Physicians*, 166 ARCHIVES INTERNAL MED. 1021, 1021 (2006). This led to subsequent litigation. *See id.* at 1026.

103. More formally, a manufacturer would conduct research and promote the off-label use of its drug until the marginal benefits from doing equaled the marginal costs of such research & promotion. Those marginal benefits would be severely reduced if CMS instituted investigations into its drug. *See* CTR. FOR MEDICARE & MEDICAID SERVS., OFF-LABEL PHARMACEUTICAL MARKING: HOW TO RECOGNIZE AND REPORT IT (Oct. 2015), available at <https://www.cms.gov/Medicare-Medicaid-Coordination/Fraud-Prevention/Medicaid-Integrity-Education/Downloads/off-label-marketing-factsheet.pdf>.

limit to the manufacturer's over-investment is not sufficiently low to justify non-intervention by other means.

D. The role of sponsor competition

The existence of multiple Part D sponsors increases the complexity of the manufacturer's decision. First, simply to maximize profit and revenue from its drug, the manufacturer should ensure that its drug is included in all sponsors' formularies. This could be accomplished by ensuring that the drug is part of Part D's list of required drugs that every sponsor must include, or it could be accomplished through individual negotiation with each sponsor. Working from the assumption that the manufacturer's drug can command a high price, it is reasonable to believe that there is little competition for the drug and its on-label treatment condition. With little or no competition, inclusion in formularies should be relatively straightforward.

Uniform inclusion of the drug in all sponsors' formularies is also important in protecting its off-label profitability. If the manufacturer fails to include the drug in a limited number of sponsors' plans, the manufacturer may create a negative feedback cycle that will damage its off-label earning potential. This negative feedback cycle is triggered by the fact that a sponsor that does include the manufacturer's drug will be at a relative disadvantage to a sponsor that does not include the manufacturer's drug. A sponsor that includes the manufacturer's drug for its on-label condition faces increased costs for the off-label condition. These increased costs may reduce that sponsor's competitiveness in contrast with a sponsor that does not cover the manufacturer's drug. Such reduced competitiveness may trigger the sponsor to conduct research that would identify the manufacturer's drug as the cause of its comparatively higher costs. If all sponsors include the manufacturer's drug in their formularies, though, there is less risk of this reduced competitiveness triggering investigation of the manufacturer.

E. An instrumental need for off-label revenue

Critics of the argument in III.B. might claim that off-label revenue is important in getting the drug out at all. It is possible that manufacturers rely upon the off-label revenue to support their investment in the FDA-approval process for the on-label condition. The argument, then, is that the manufacturer would not even invest in the drug for any FDA approval, because it believes that there is insufficient potential revenue for the on-label condition to justify its investment. This is an open empirical question, although there are commentators who argue that manufacturers overstate the actual investments necessary to develop FDA-approved drugs.¹⁰⁴

104. See, e.g., Donald W Light, Rebecca Warburton, *Demythologizing the High Costs of Pharmaceutical Research*, 6 *Biosocieties* 34, 34 (2011); See also Joseph A.

Another potential criticism is that manufacturers naturally under-invest in off-label conditions. The threat of patent expiration and generic competition may generally induce under-investment in off-label research in patent-protected drugs.¹⁰⁵ Thus, allowing for high reimbursement rates for off-label prescriptions provides an incentive for manufacturers to conduct a limited level of research prior to patent expiration, even if those manufacturers are not conducting sufficient research to satisfy FDA approval requirements.

These arguments are of secondary importance. The present system obfuscates the connection between drugs and the conditions being treated. Moreover, the potential positive instrumental benefits of the existing system are due to chance: a drug happens to be effective for certain on-label and off-label conditions. The above goals can be better pursued via direct, more visible means of subsidy and promotion.

In summary, the existing government reimbursement system for off-label drug usage is inherently flawed. The improper incentives and unfair windfall profits will lead even scrupulous manufacturers to over-invest in off-label activity, resulting in excessive expenditures under Medicare Part D.

IV. A theoretical solution: reimbursement linked to competitor pricing

The above theoretical model focuses on excess drug expenditures resulting from the present system; in reality, there are more harms that may result. As discussed earlier, physicians might be insufficiently or improperly informed about the costs and benefits of off-label drug use, and manufacturers might not be completely honest and transparent in their promotional efforts. Patient health and safety may also be at risk.

Because of those additional harms, some have suggested eliminating manufacturer profits from off-label prescriptions,¹⁰⁶ proposing reimbursing off-label prescriptions at the marginal cost of production for the drug, which effectively eliminates any profit from the off-label prescription and sale.¹⁰⁷ This proposal may be the best solution; a thorough analysis depends on the extent to which firms behave badly in response to the off-label incentives in comparison to the potentially good responses described in Part III. If the potential revenue from off-label drug usage drive manufacturers towards socially harmful activities that

DiMasi et. al., *The Price of Innovation: New Estimates of Drug Development Costs*, 22 J. OF HEALTH ECON. 151, 151 (2003).

105. See, *Caves*, *supra* note 87, at 1-2.

106. Rodwin, *supra* note 38, at 659-660.

107. *Id.* at 659.

outweigh beneficial activities, then this proposal to eliminate any off-label reimbursement profit is the right solution.

A. *Capping reimbursement by reference to an FDA approved competitor*

If it is the case, however, that firms have the public interest in mind, eliminating all incentive for off-label efforts may be detrimental to society. Instead of reimbursing at the marginal cost of production, this article proposes that a fair reimbursement rate would be capped at a rate tied to the competitive, patent-protected market for treatment of the condition. Such a cap would ensure that patients would still have access to drugs for off-label indications, while improving manufacturers' incentives for research. This cap could take multiple forms.

One option that results in the greatest amount of fairness is to cap at the lowest-priced FDA approved competitor. Under such a system, a manufacturer who has not received FDA approval for the off-label condition could not receive reimbursement higher than any competitor who has received FDA approval for treatment of the condition.

This would not eliminate the incentive for incremental off-label research and promotion. Instead, setting such a reimbursement rate would give manufacturers incentive to invest in some level of off-label research and promotion, but such incentive would be no greater than the incentive enjoyed by an FDA-approved competitor.

An alternative cap would be to set the maximum reimbursement rate at the second-highest priced FDA-approved competitor. This might reduce some of the fairness of the first option, in that some FDA-approved competitors might receive a lower reimbursement rate than manufacturers who have not received FDA approval. Nonetheless, it is possible that this cap would provide superior incentives for manufacturers who had not obtained FDA approval. The lowest priced FDA-competitor may be a remarkably low-efficacy product that was approved at a time when no other treatments were available for the relevant indication. The newer off-label drug may be more comparable in efficacy to the best FDA-approved drugs on the market. Allowing the off-label drug to be reimbursed at the second-highest FDA-approved competitor price may provide a better incentive despite the potential unfairness. Some auction theories suggest that this second-highest price may be a good choice.¹⁰⁸

There are other cap proposals that could be justified, such as a cap linked to the mean or median reimbursement rate of the FDA-approved competitors and there will be similar trade-offs between fairness and potential incentives. This article does not take a position as to the best particular cap. Rather, the important core is that the cap must somehow be linked to the market of FDA-approved competitors.

108. See, e.g., William Vickrey, *Counterspeculation, Auctions, and Competitive Sealed Tenders*, 16 J. FIN. 8, 8 (1961).

B. An extended proposal: reimbursement tied to competitive indication

The aforementioned cap proposal seeks to limit excessive Medicare Part D expenditures on off-label drugs that result from the presently flawed reimbursement system. There is a flip side to this discussion, though: the possibility that the flawed reimbursement system also benefits Medicare by obtaining cheaper off-label drugs. The prior section focused on scenarios in which the off-label drug commands a higher price than the prevailing FDA-approved competitors. There is also the possibility that the drug price is substantially lower than the competitive price for the off-label condition. Under the present system, to the extent the lower-price drug is used for an off-label purpose and is safe and effective, Medicare is actually getting a good deal in the short term; the patient is receiving treatment at a substantially lower drug cost than she would have if she were receiving a drug approved for the condition.

The arguments raised in Part III regarding incentives nonetheless apply in this situation, too. In this case, however, manufacturers may under-invest in off-label research under the present regime. Compared to companies that are looking into new, patentable drugs specifically for the off-label condition, manufacturers who have an existing drug at a relatively lower price will not invest as much because of their weakened ability to command a higher price. If the manufacturer unilaterally raises the price for all customers, they may receive tremendous pushback in the marketplace and negative media attention.¹⁰⁹ Given the existing disconnect between diagnosis and prescription, though, manufacturers have no way of charging different prices to Medicare for the same drug. Manufacturers dealing with an existing drug will likely be stuck at the lower reimbursement rate of the on-label condition.

Thus, a broader proposal would be to tie all reimbursement rates to the competitive indication rates. Medicare would thus reimburse for a specific indication rather than a specific drug. Rather than a physician prescribing a specific drug and the manufacturer receiving reimbursement at a negotiated price, all manufacturers would receive the same reimbursement price when their drug is used. A manufacturer in the above situation could then benefit from higher rates as long as the patient had the off-label condition, and such a manufacturer would then face comparable incentives for investment.

In the short term, this extended proposal is likely to lead to higher Medicare drug expenditures in comparison with the above cap proposals, because it would allow a manufacturer to benefit from higher reimbursement rates if the price for the off-label condition is higher than the on-label reimbursement rate. In the long term, however, correction of this incentive problem should induce greater research for the off-label

109. For example, consider the recent outcry regarding Mylan NV and its EpiPen price increase. See Louise Radnofsky, *EpiPen Maker Executive to Testify at House Hearing*, WALL ST. J. (Sept. 15, 2016), <http://www.wsj.com/articles/epipen-maker-executive-to-testify-at-house-hearing-1473894399>.

condition, resulting in greater manufacturer competition for the off-label condition and eventually lower prices.

Note that these proposals to cap reimbursement rates fall under Part III's theoretical model of an idealized manufacturer. To the extent there are additional harms, the cap should actually be lower. In fact, if the harms from off-label usage are sufficiently severe, even proposals to cap rates at the marginal cost of production may be insufficient. Rather than allowing reimbursement at the marginal cost of production, perhaps no reimbursement should be allowed at all.

Also consider that this proposed solution focuses solely on the market for patent-protected drugs. Once generic equivalents enter the marketplace, there is reason to believe that prices will drop to a point where there may be insufficient manufacturer incentive for further research. Thus, in analyzing the competitive market for any specific condition, the reimbursement cap must focus solely on the patent-protected competitors. For example, if there are five FDA-approved treatments for a condition and two of the treatments have lost patent protection and have generic equivalents available, the reimbursement cap would only consider the three other FDA-approved treatments. Even under this formulation, the existence of the generic products may still have some downward influence on the market price, but excluding such influence is likely to be difficult and of limited benefit.

Regardless of the precise optimal reimbursement rate, all reform proposals hinge upon one critical piece of information: tying patient indication to the prescription. Without this key piece of information, this article's proposed reforms are infeasible. Reimbursement based upon indication requires that we actually have the indication for which a drug was prescribed.

Implementing such a change in reimbursement would require significant statutory, regulatory, and professional changes. These changes will be difficult, though, and unlikely in the short term. First, the FDA and CMS have demonstrated a long-standing commitment to avoiding interference with the practice of medicine.¹¹⁰ Forcing physicians to fundamentally change their drug prescription process seems contrary to its non-interference commitment. As CMS has noted, including a diagnosis in a prescription is not presently standard practice.¹¹¹ Moreover, information included with prescriptions is generally governed by state law and outside of CMS's present statutory authority.¹¹² Finally, present

110. See Beck & Azari, *supra* note 12, at 76. (stating that the FDCA was "not intended as a medical practices act and [did] not interfere with the practice of the healing art."); see also Weber et al., *supra* note 7 (quoting Jonathan Blum, director of Medicare, that agency philosophy "really has been to defer to physicians.").

111. OIG PART D REIMBURSEMENT REPORT, *supra* note 6, at 6.

112. *Id.* at 6.

coding standards for diagnosis are not sufficiently detailed to correspond with CMS rules regarding medically accepted indications.¹¹³

V. FCA liability as a claw-back for windfall off-label profits.

Despite the above barriers to a first best solution, there are immediate steps that could be taken to reduce the excessive costs stemming from the flawed Part D reimbursement scheme for off-label uses of drugs. I begin this part with an overview of existing short-term proposals, followed with a proposal for expanding use of the civil False Claims Act.

A. *Interim solutions are not priorities*

The Office of the Inspector General (“OIG”) of HHS has recognized the core informational disconnect within Medicare Part D and has mentioned a variety of proposals to address the problem.¹¹⁴ These proposals, however, all share one common flaw: they require CMS to shift limited resources towards addressing this challenge. As suggested in the CMS response to the OIG report, such increased resource allocation is unlikely and the detection of improper off-label drug reimbursement faces numerous obstacles.¹¹⁵ A review of the alternative OIG proposed interim solutions follows.

1. Prior authorization

Prior authorization is a prepayment strategy that could provide the missing informational link between prescription and diagnosis. Prior authorization requires explicit authorization from Medicare prior to a patient obtaining drugs.¹¹⁶ Presently, CMS permits Medicare Part D sponsors to use prior authorization for certain drugs that are at high risk for prescription without a medically accepted indication.¹¹⁷ Prior authorization could be expanded, but it is viewed as a cumbersome, time-consuming process that limits patient access to drugs.¹¹⁸ Because of its cumbersome nature, regulations presently prohibit sponsors from using prior authorization for six classes of drugs.¹¹⁹ A more limited proposal is to require prior authorization for drugs exceeding a specific reimbursement cost.¹²⁰

113. *Id.* at 8.

114. *Id.* at 9.

115. *Id.* at 8-9.

116. *Id.* at 2.

117. *See id.* at 8.

118. Murriel R. Gillick, *Controlling Off-Label Medication Use*, ANNALS INTERNAL MED. 344, 346-47 (2009).

119. *See* 74 Fed. Reg. 2882 (Jan. 16, 2009).

120. Gillick, *supra* note 118, at 346-47.

The present situation suggests that the Part D sponsors are not interested in expanding prior authorization, nor is CMS encouraging them to do so.¹²¹ This may be evidence that CMS and the sponsors are responsive to the patient and physician interest in ease of access to medications.

2. Post-payment Audits

Another option is requiring Part D sponsors to conduct audits of prior payments. Sponsors could obtain diagnosis information from physicians and retroactively compare those notes with drug reimbursements. Again, the main challenge here is that sponsors and CMS apparently do not seem motivated to conduct such audits.¹²²

A secondary, more technical problem is that CMS may approve payments that are part of certain drug compendia, but subscribers may only have access to the most recent version of those compendia.¹²³ Because at least one compendium is updated on a quarterly basis, sponsors would have to complete audits on a timely basis.

Given the reluctance of CMS and its delegates to prioritize either an interim solution or the larger systematic challenge, filling in the information gap requires some third-party action. The civil FCA may fill this role, given its prominent involvement of whistleblowers. The FCA can serve as a temporary transition to a diagnosis-based reimbursement regime.

B. General FCA Background

The False Claims Act has become one of the most prominent tools in combatting fraud against the federal government.¹²⁴ The FCA generally proscribes fraud or false claims against the federal government.¹²⁵ The relevant *mens rea* for defendant liability is knowledge; the statute defines “knowledge” to include a person who “acts in reckless disregard of the truth or falsity of the information; and [the statute] require[s] no proof of specific intent to defraud.”¹²⁶ The FCA has both civil and criminal provisions; this article focuses solely on the civil FCA.

121. See OIG PART D REIMBURSEMENT REPORT, *supra* note 6, at 2.

122. See *id.*

123. See *id.* at 1-2.

124. See Press Release, Dep’t of Justice, Justice Department Recovers Over \$3.5 Billion From False Claims Act Cases in Fiscal Year 2015 (Dec. 3, 2015), *available at* <https://www.justice.gov/opa/pr/justice-department-recovers-over-35-billion-false-claims-act-cases-fiscal-year-2015>.

125. 31 U.S.C. §§ 3729-30 (2012). The civil FCA also has a criminal counterpart found in 18 U.S.C. § 287, but for reasons similar to the FDCA, I do not focus on criminal sanctions in this article.

126. 31 U.S.C. § 3729(b)(1) (2012).

Besides traditional public enforcement, the FCA also contains *qui tam* provisions, which allow private litigants—known as “relators”—to pursue civil actions and prosecute cases of fraud in lieu of the Department of Justice (“DOJ”).¹²⁷ Today, relators can receive as much as thirty percent of the civil recovery, which can be substantial given the statute’s treble damages provisions. Civil penalties also include \$5500 to \$11,000 in fines per false claim. A successful relator is also entitled to legal fees from the defendant.¹²⁸

As a practical matter, though, the FCA is an information-providing system rather than a private-enforcement system.¹²⁹ The vast majority of FCA cases in which the relator recovers from the defendants are DOJ-prosecuted cases.¹³⁰ The law firms that represent relators in FCA actions generally specialize in obtaining DOJ intervention.¹³¹ Purely private enforcement of the FCA is generally either not pursued or unsuccessful.¹³² Thus, the FCA broadly functions as a whistleblower system in which relators provide information to the DOJ and the DOJ decides whether or not to pursue the defendant based on such information.¹³³

C. *The existing theory of off-label promotion as an FCA violation*

Roughly sixty percent of FCA cases today involve allegations of healthcare fraud.¹³⁴ Some of the largest settlements generally involve off-label promotion claims.¹³⁵ The FCA’s present role is contentious for a variety of reasons and this article’s proposed solution of leveraging FCA liability as a claw-back mechanism is likely to be similarly contentious.

127. 31 U.S.C. § 3730(b) (2012).

128. *Id.*

129. See David Kwok, *Evidence from the False Claims Act: Does Private Enforcement Attract Excessive Litigation?*, 42 PUB. CONT. L. J. 225, 227-28 (2013).

130. U.S. DEP’T OF JUSTICE, COMMERCIAL LITIGATION BRANCH, FRAUD SECTION, FALSE CLAIMS ACT STATISTICS (2015), <http://www.justice.gov/file/fcastatspdf/download> [hereinafter FALSE CLAIMS ACT STATISTICS].

131. See Kwok, *supra* note 129, at 237-38.

132. FALSE CLAIMS ACT STATISTICS, *supra* note 130.

133. See Kwok, *supra* note 129, at 226-30; FALSE CLAIMS ACT STATISTICS, *supra* note 130.

134. See FALSE CLAIMS ACT STATISTICS, *supra* note 130.

135. See, e.g., Press Release, U.S. Dep’t of Justice, Johnson & Johnson to Pay More Than \$2.2 Billion to Resolve Criminal and Civil Investigations (Nov. 4, 2013), available at <http://www.justice.gov/opa/pr/johnson-johnson-pay-more-22-billion-resolve-criminal-and-civil-investigations>; Press Release, U.S. Dep’t of Justice, Justice Department Recovers \$3.8 Billion from False Claims Act Cases in Fiscal Year 2013 (Dec. 20, 2013), available at <http://www.justice.gov/opa/pr/justice-department-recovers-38-billion-false-claims-act-cases-fiscal-year-2013> (referencing \$1.5 billion Abbott case and \$762 million Amgen case).

While FCA cases typically address direct fraud against the federal government,¹³⁶ such as a healthcare provider billing Medicare for a procedure that was never performed, the courts have recognized FCA cases under an inducement-of-fraud theory for off-label promotion.¹³⁷ Under this theory, “[a]ny person who . . . knowingly . . . causes to be presented a false or fraudulent claim for payment or approval . . . is liable.”¹³⁸ As applied to the case of off-label uses of pharmaceuticals, the false claim is the healthcare provider’s paperwork billing Medicare for a drug used in a non-reimbursable manner. While Medicare would be willing to reimburse for an on-label, medically acceptable use, it would not reimburse for an off-label, non-medically-acceptable use. Billing Medicare for the on-label use while using it for the non-medically-acceptable use would be considered a false claim, as Medicare would not have reimbursed had it known the truth about the drug’s usage with that particular patient.

The manufacturer is liable under this inducement theory because it is the arguable cause of the healthcare provider’s billing. The provider presents the false claim, but the off-label promotional efforts of the manufacturer cause the provider to do so. If the manufacturer had not told the provider about the alternative uses for the drug, then the provider would not have prescribed the drug for those alternative, non-medically-accepted indications.

The FCA has proven to be desirable in off-label-promotion cases due to the information problem described earlier; detection of off-label usage is difficult under the present system and there is little day-to-day government oversight of manufacturers’ representatives in the field. The FCA’s whistleblower provisions provide an incentive for those who have information about manufacturer’s behavior to come forward.

D. Off-label promotion cases under the FCA have been contentious for a number of reasons.

1. Off-label promotion does not fit the statutory purpose

First, there is the broader problem of the FCA’s original statutory purpose. The FCA originally targeted wartime-fraud cases in which the government paid for military supplies and received, for example, sawdust instead of gunpowder.¹³⁹ It is clear that the government suffered loss in

136. See CLAIRE M. SYLVIA, *THE FALSE CLAIMS ACT: FRAUD AGAINST THE GOVERNMENT* § 4:2 (2016).

137. See, e.g., *United States ex rel. Franklin v. Parke-Davis*, 147 F. Supp. 2d 39, 49 (D. Mass. 2001).

138. 31 U.S.C. § 3729(a) (2012).

139. See *United States ex rel. Marcus v. Hess*, 127 F.2d 233, 236 (quoting FRED. A. SHANNON, *ORGANIZATION AND ADMINISTRATION OF THE UNION ARMY*, 56-58 (1928)) (alterations in original) (internal quotation marks omitted), rev’d, 317 U.S. 537 (1943); J. Randy Beck, *The False Claims Act and the English Eradication of Qui Tam Legislation*, 78 N.C. L. Rev. 539, 554-55 (2000).

such a transaction, and courts are most comfortable in assigning liability when the government receives nothing of value in exchange for payment.¹⁴⁰

Many modern FCA cases, however, have addressed more difficult problems given the more complex regulatory and administrative state. Courts have been divided as to when civil FCA liability should attach, as it is unclear if any known regulatory violation makes a claim false or fraudulent.¹⁴¹ In *Ab-Tech v. United States*, for example, the court agreed with the defendant that the government had obtained the benefit of the contracted services, despite a regulatory violation.¹⁴² The defendant contractor constructed an automated data-processing facility in accordance with the government's physical specifications, but it did not comply with the terms of the Small Business Act.¹⁴³ The court upheld civil FCA liability, but rejected damages in that context.¹⁴⁴ The government paid \$1.4 million to Ab-Tech and requested \$4.2 million plus interest as treble damages, but the court found there were no damages to treble.¹⁴⁵ The court noted that when "viewed strictly as a capital investment, the Government got essentially what it paid for."¹⁴⁶

Generally, courts have attempted to establish some limitations on behavior that could constitute a fraudulent or false claim under the FCA.¹⁴⁷ The Second Circuit, for example, expressed discomfort in extending FCA liability in the healthcare context, noting that "the False

140. See *Ab-Tech Constr., Inc. v. United States*, 31 Fed. Cl. 429, 434 (1994), *aff'd*, 57 F.3d 1084 (Fed. Cir. 1995).

141. See, e.g., *United States ex rel. Cantekin v. Univ. of Pittsburgh*, 192 F.3d 402, 415 (3d Cir.1999) ("[N]ot every regulatory violation is tantamount to making a knowingly false statement to the government."), *cert. denied*, 531 U.S. 880 (2000); *United States ex rel. Thompson v. Columbia/HCA*, 125 F.3d 899, 902 (5th Cir. 1997) ("claims for services rendered in violation of a statute do not necessarily constitute false or fraudulent claims under the FCA."); *United States ex rel. Hopper v. Anton*, 91 F.3d 1261, 1266–67 (9th Cir.1996) ("Violations of laws, rules, or regulations alone do not create a cause of action under the FCA."), *cert. denied*, 519 U.S. 1115 (1997); *United States v. White*, 765 F.2d 1469, 1479–80 (11th Cir.1985) (FCA case based on altered time cards submitted in violation of the Truth in Negotiations Act); *Pickens v. Kanawha River Towing*, 916 F. Supp. 702, 705–06 (S. D. Ohio 1996) (remedies under federal Clean Water Act did not preempt FCA action); *United States ex rel. Fallon v. Accudyne Corp.*, 880 F. Supp. 636, 638 (W.D. Wis. 1995) (allowing FCA action based on failure to comply with environmental standards); *United States v. Incorporated Village of Island Park*, 888 F. Supp. 419, 440 (E.D.N.Y.1995) (allowing FCA action based on failure to comply with non-discrimination requirements).

142. *Ab-Tech Constr., Inc.*, 31 Fed. Cl. at 434.

143. *Id.*

144. *Id.*

145. *Id.*

146. *Id.*

147. See *Universal Health Servs., Inc. v. United States*, 136 S. Ct. 1989, 1989 (2016).

Claims Act was not designed for use as a blunt instrument to enforce compliance with all medical regulations.”¹⁴⁸ Some courts have focused on whether defendants implicitly or explicitly certified compliance with regulations or contracts in determining whether or not there was a civil FCA violation.¹⁴⁹

These limitations reflect a number of different concerns. One problem is that courts may be uncertain about whether harm results from the conduct; if the government feels it is acceptable for a physician to prescribe off-label, this behavior must not be very harmful or may actually be desirable.¹⁵⁰ Under such conditions, it may be difficult or inappropriate to sanction a manufacturer.

Another problem is that courts feel that the FCA is punitive in nature.¹⁵¹ Unless the defendant has committed some wrong that is closer to *malum in se*, courts might feel that a technical regulatory violation does not deserve punishment and would be likely to label the violation as not material.¹⁵²

On the other hand, if there is concern that sanctions are too great or improperly calculated, it is important to note that the prevalence of off-label promotion cases suggests that manufacturers are not deterred by FCA sanctions.¹⁵³ In 2013, Pfizer had the distinction of settling its fifth case of off-label promotion since 2002.¹⁵⁴ In one of its earlier cases, from 2009, Pfizer paid \$2.3 billion to settle healthcare fraud charges arising from improper marketing activities relating to four drugs; it was the largest healthcare-fraud settlement in history at the time.¹⁵⁵ Arguably, these

148. *United States ex. rel. Mikes v. Straus*, 274 F.3d 687, 699 (2d Cir. 2001). *But see Universal Health Servs., Inc.*, 136 S. Ct. at 1988-99 (abrogating *Mikes v. Straus*).

149. *See Universal Health Servs., Inc.*, 136 S. Ct. at 1999; David Kwok, *A Fair Competition Theory of the Civil False Claims Act*, 94 NEB. L. REV. 355, 365 (2015).

150. *See Coleen Klasmeier & Martin H. Redish, Off-Label Prescription Advertising, the FDA and the First Amendment: A Study in the Values of Commercial Speech Protection*, 37 AM. J.L. & MED. 315, 318 (2011).

151. *See Universal Health Servs., Inc.*, 136 S. Ct. at 1996 (describing civil penalties as “essentially punitive in nature.”). *But see Cook Cnty., Ill. v. U.S. ex rel. Chandler*, 538 U.S. 119, 130 (2003) (claiming “the tipping point between payback and punishment defies general formulation.”).

152. *See Universal Health Servs., Inc.*, 136 S. Ct. at 2001.

153. *See* Press Release, U.S. Dep’t of Justice, Justice Department Recovers Nearly \$ 5 Billion in False Claims Act Cases in Fiscal Year 2012 (Dec. 4, 2012), *available at* <http://www.justice.gov/opa/pr/2012/December/12-ag-1439.html>.

154. *See* Hui Zhang & Gregory S. Zaric, *Using Price–Volume Agreements to Manage Pharmaceutical Leakage and Off-Label Promotion*, 16 EUR. J. HEALTH ECON. 747 (2015).

155. Press Release, U.S. Dep’t of Justice, Justice Department Announces Largest Health Care Fraud Settlement in Its History (Sept. 2, 2009), *available at* <http://www.justice.gov/opa/pr/2009/September/09-civ-900.html>.

repeated settlements suggest that Pfizer may not be deterred by the present enforcement scheme.

2. Causality

A more specific challenge for FCA liability in the off-label-promotion context is causality. There is a long causal chain between the manufacturer's promotional efforts and the improper reimbursement from Medicare.¹⁵⁶

The most proximate cause of harm to Medicare is the healthcare provider submitting reimbursement for a drug that has been prescribed for a non-CMS-approved indication.¹⁵⁷ If CMS had known the truth about the indication, it would not have provided reimbursement for that drug prescription.

In comparison, the manufacturer's promotional efforts' role in causing the improper reimbursement is more attenuated and uncertain. Given the general availability of studies and drug compendia regarding off-label drug uses, it is entirely possible for providers to learn of off-label uses independent of the manufacturer's paid representatives.¹⁵⁸ To the extent that CMS approval does not correspond with the drug compendia recommendations, there is plenty of opportunity for providers to improperly bill Medicare without direct intervention by the manufacturer. Of course, off-label clinical studies may be funded by the manufacturer, but that is also a more attenuated causal inference, and those studies may also offer societal benefit.

Moreover, some commentators have argued that manufacturers should not be held liable because of a specificity problem.¹⁵⁹ They suggest that a manufacturer should only be held liable if they have "specific knowledge of the falsity of the claim in question."¹⁶⁰ Thus, while manufacturers might have general knowledge that a number of claims are false, they do not know which specific claims are actually false.

Important for this article's purposes, though, is that there is no falsity requirement for the manufacturer's promotional efforts, because off-label promotion claims are under section 3729(a)(1)(A). Claims under section 3729(a)(1)(B) have a "double falsehood" requirement; the statute holds liable any person who "knowingly makes, uses, or causes to be made or

156. Ralph F. Hall & Robert J. Berlin, *When You Have a Hammer Everything Looks Like a Nail: Misapplication of the False Claims Act to Off-Label Promotion*, 61 FOOD & DRUG L. J. 653, 673 (2006).

157. *See, e.g.*, United States *ex rel.* Franklin v. Parke-Davis, 147 F. Supp. 2d 39, 51 (5th Cir. 1975).

158. *See, e.g.*, Robertson, *supra* note 73, at 550 (noting that the FDCA does not regulate non-manufacturers speech regarding off-label uses and that such independent speech may be more reliable).

159. *See* Hall & Berlin, *supra* note 156, at 673.

160. *Id.*

used, a false record or statement material to a false or fraudulent claim.”¹⁶¹ In contrast, there is no “double falsehood” requirement under section 3729(a)(1)(A).¹⁶² There is no need to allege that a false statement led to the false claim.¹⁶³ Moreover, these false claims may be filed by innocent third parties.¹⁶⁴

As some critics have noted, the role of the healthcare provider in prescribing a drug is certainly another cause of the eventual submission for off-label reimbursement.¹⁶⁵ The expertise of the healthcare provider may serve to cut causality here.¹⁶⁶ Moreover, critics relatedly argue that if manufacturers face liability for their attenuated causal role in driving the submission for reimbursement, many other parties might also face liability.¹⁶⁷ Nonetheless, the FCA’s broad definition of “knowing” seems to suggest that the attenuated-causality theory under off-label promotion is sufficient to establish liability.¹⁶⁸

E. Expanding FCA liability as a claw-back for excessive reimbursement

If we can tolerate the present concerns about FCA liability for off-label promotion, we can next consider whether expanding liability makes sense. Given that the present reimbursement system does not properly track indications, manufacturers will obtain improper profits through excessive off-label prescriptions and reimbursement. Thus, the remaining interim solution is to claw back those improper profits. Expanding civil FCA liability is the best immediate choice for detecting those problems and bringing back those profits.

1. The Proposal

This proposal suggests that courts hold manufacturers generally liable under the civil FCA for excess profits from improper Medicare Part D off-

161. 31 U.S.C. § 3729 (2012); *See also United States ex rel. Franklin*, 2003 WL 22048255 at *2-*3.

162. *See Appellant’s Reply Brief, United States, et al. ex rel. Michael Keeler, Plaintiff-Appellant, v. EISAI, Inc. Defendant-Appellee.*, Nos. 13-10973-F, 13-11949-F, 2014 WL 99645 at *9. (11th Cir. Jan 2, 2014).

163. *See United States ex rel. Franklin v. Parke-Davis*, No. Civ.A. 96–11651PBS, 2003 WL 22048255 (D. Mass. 2003).

164. *See Appellant’s Reply Brief, United States, et al. ex rel. Michael Keeler v. EISAI, Inc.*, Nos. 13-10973-F, 13-11949-F, 2014 WL 99645 at *9. (11th Cir. Jan 2, 2014).

165. *See Hall & Berlin, supra* note 156, at 673.

166. *See id.* at 665.

167. *See id.* at 673 (“If so, then any person including an independent physician, who discusses off-label uses would be liable under the FCA.”).

168. *See id.* at 674 (proposing FCA liability scheme in which manufacturers “would have to have a specific intent to cause a specific treatment reimbursement submission . . .”) The present FCA explicitly rejects a specific intent requirement. *See* 31 U.S.C. 3729 (b)(1)(B) (2012).

label reimbursement. Rather than looking at manufacturer's promotional behavior, courts should view manufacturers as liable under the FCA because they are a cause of the improper reimbursement and they profit from such improper reimbursements. The goal is to pursue the theoretical solution in part IV by clawing back the excessive off-label drug profits from manufacturers.

This is a mild expansion of the existing off-label promotion doctrine. HHS can continue to rely upon whistleblowers to identify egregious off-label promotional behavior. Under this proposal, HHS would also rely upon whistleblowers to identify off-label prescription and the frequency of reimbursement for off-label prescription, independent of egregious manufacturer behavior.

Inferring that manufacturers are knowing, general cause of improper reimbursements is not a large step from the presently accepted inference that egregious manufacturer behavior causes improper reimbursements.¹⁶⁹ This one step is sufficient to address cases of completely improper off-label prescriptions—prescriptions that should not be reimbursable at all under Medicare Part D. One example of a completely improper off-label prescription would be a prescription for a drug that does not match indications in any of the specified compendia.¹⁷⁰ Another example would be if CMS has already considered the unapproved indication and explicitly rejected it for good reason. One good reason for rejecting the use of a drug for a particular indication would be the existence of sufficient scientific studies to evaluate effectiveness and safety for the unapproved condition that found the drug to be ineffective or unsafe for the unapproved condition.¹⁷¹ Manufacturers would be liable for the entire reimbursement amount for such non-reimbursable off-label prescriptions.

Perhaps the more challenging step is addressing the proper reimbursement rate for off-label prescriptions. The present system is binary; either a drug is reimbursable or it is not. As described in Part IV, I propose a more calibrated approach: implementing a cap on reimbursement rates. Courts or CMS would declare that any

169. See Hall & Berlin, *supra* note 156, at 673.

170. See SOCIAL SECURITY ACT OF 1935, Pub. L. 74-271, § 1927(g)(1)(B)(i); Also, following existing case law, illegal kickbacks to physicians would also make such prescriptions sanctionable under the FCA. See, e.g., *United States ex rel. Hutcheson v. Blackstone Medical, Inc.*, 647 F.3d 377, 379 (1st Cir. 2011).

171. This is the rough existing rule regarding Medicare Part A, which indicates that “[a]s long as the FDA has not specified such use as non-approved, coverage is determined taking into consideration the generally accepted medical practice in the community.” CENTERS FOR MEDICAID AND MEDICARE SERVICES, MEDICARE BENEFIT POLICY MANUAL § 1.30 (2014), available at <https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Downloads/bp102c01.pdf>; 42 U.S.C. § 1395x(t)(2)(B)(II) (2016).

reimbursement rate in excess of the capped competitive rate is subject to FCA liability.

This cap would only be triggered if the off-label condition has patent-protected, FDA-approved treatments available. If one such treatment exists and its cost is less than the price of the off-label drug, then the civil sanction should be the difference in rates.¹⁷² If there are multiple approved reimbursement rates, the relevant rate should be the lowest reimbursement rate or any of the other options presented earlier in Part IV.A.

If there are no approved treatments for the unapproved indication, then there are a number of possibilities. An aggressive move would be to cap all unapproved treatments at the same reimbursement level. This would level the playing field and reduce costs for Medicare. Here, however, it is unclear whether there is a strong need for intervention, given that no manufacturer has satisfied government standards for approval. The more cautious alternative is to disallow civil liability in this scenario. If there are no other treatments, approved or unapproved, for the unapproved indication, then there is no civil liability.

This strategy will incorporate proper incentives for manufacturers to bring the best products to market. If providers truly believe that a drug is effective for a condition that CMS has not approved condition and CMS has not explicitly rejected the drug, allowing limited reimbursement will provide an incentive for CMS to make a clear determination about the cost-effectiveness of the drug. Basing effective reimbursement on the lowest reimbursement rate will also help ensure that the manufacturer does not have a competitive advantage over competitors who have already obtained CMS approval for the same indication.

Additionally, establishing third-party restitution liability for manufacturers ensures that unapproved CMS reimbursements are not simply a windfall for manufacturers who produce an expensive drug. The fact that a manufacturer has not participated in improper off-label promotion efforts should not be an open door for it to benefit from improper physician-billing practices. Nonetheless, this article's approach attempts to balance those revenues with the potential good that providers may be accomplishing.

Note also that this proposal provides for sanctions for off-label reimbursements even if those drugs eventually receive FDA approval for the off-label condition. Of course, once those drugs receive FDA approval for the off-label condition, there will be no further FCA liability. Not all off-label treatments will eventually receive FDA approval, and there may be a variety of reasons for such lack of approval. For drugs that do eventually receive approval for the off-label condition, though, note that those

172. See, e.g., *In re Neurontin Mktg. & Sales Practices Litig.*, No. 04-cv-10739-PBS, 2011 WL 3852254 at 98-99 (D. Mass. Aug. 31, 2011), *aff'd* Kaiser Foundation Health Plan, Inc. v. Pfizer, Inc. (*In re Neurontin Mktg. & Sales Practices Litig.*), 712 F.3d 21 (1st Cir. 2013), *cert. denied*, 134 S. Ct. 786 (2013).

manufacturers are still civilly liable for excess profits obtained prior to FDA approval. While such manufacturers may enjoy high prices unconstrained by the FCA after they obtain FDA approval, that benefit does not extend to sales made prior to FDA approval for the off-label condition.

2. The statutory basis for the proposal

There are at least two potential bases for manufacturer liability under this proposal. I discuss the most commonly used basis first, section 3729(a)(1)(A). Present actions for off-label promotion typically proceed under this portion of the statute.¹⁷³

a) Section 3729(a)(1)(A): “Presentation of a false or fraudulent claim”

As discussed earlier, under section 3729(a)(1)(A), the manufacturer is liable because it is knowingly inducing healthcare providers to bill Medicare for prescription drugs that are not actually reimbursable due to their non-covered off-label usage. Important to note here is that purposeful behavior is not required; the fact that the manufacturer knows or acts in reckless disregard of the improper billing is sufficient.¹⁷⁴ Given manufacturer involvement in researching and testing for off-label usage,¹⁷⁵ it is difficult to believe that any manufacturer could claim ignorance of such billing.

The challenge, of course, is in the causal inference under this portion of the statute. Did the manufacturer cause the healthcare provider to improperly bill Medicare? I suggest that courts take a broad view of causation here rather than focusing on the manufacturer’s marketing behavior. If the manufacturer conducted or contributed to the research relating the drug to the off-label indication, this alone should be sufficient to demonstrate causation of improper billing.

Thus, courts should set aside their reluctance to impose liability, although their motivation to impose liability likely lies more in the damage done by improper billing and the instrumental usefulness of the FCA.

b) Section 3729(a)(1)(G): “Reverse False Claims”

The expanded version of the reverse-false-claims provision, section 3729(a)(1)(G), was introduced in 2009 as part of the Fraud Enforcement and Recovery Act of 2009 and has yet to generate substantial case law.¹⁷⁶ Nonetheless, it provides an alternative route for liability. Section 3729(a)(1)(G) establishes liability for a person who knowingly conceals or knowingly and improperly avoids or decreases an obligation to pay or transmit money or property to the Government. The Affordable Care Act

173. See SYLVIA, *supra* note 136.

174. See 31 U.S.C. § 3729(b)(1) (2012).

175. See 21 U.S.C. § 355(b)(5)(C) (2015).

176. See THE ELEMENTS OF A CAUSE OF ACTION UNDER THE FALSE CLAIMS ACT BEFORE AND AFTER FERA, 1 CIV. FALSE CLAIMS & QUI TAM ACTIONS (CCH)§ 2.01, 2015 WL 4602833 (2016).

“ACA”) specifies that Medicare overpayments are obligations subject to liability under the FCA.¹⁷⁷ Under the ACA, Medicare overpayments must be reported and returned within sixty days of identification; they are otherwise grounds for FCA liability.¹⁷⁸

Unlike section 3729(a)(1)(A), which looks at the cause of the excessive Part D reimbursements, section 3729(a)(1)(G) addresses parties who know of an obligation to pay the government. Given their role in researching off-label drug usage, manufacturers know that they improperly benefit from such off-label reimbursements.¹⁷⁹ They therefore have an obligation to pay those excessive profits back.

The difficult part is establishing the element of “identification” of overpayments under this theory. First, as a matter of law, it must be established that reimbursement above the competitive cap for an off-label drug prescription is improper.¹⁸⁰ Second, someone must identify such overpayments. This dovetails with the existing specificity problem under section 3729(a)(1)(A) as discussed earlier in section V.C.2. Does “identification” correspond with specific knowledge of a particular claim’s falsity? Such knowledge seems difficult to come by.

As a practical matter, this prong is most likely useful if statistical sampling of aggregate prescription rates with aggregate diagnosis rates is sufficient to establish liability. Given manufacturer’s research into indications for their products, they should know—or at least be aware of—the risk of off-label usage and how much they might benefit. To the extent that they benefit improperly from off-label usage billed to CMS, the reverse-false-claims provision can establish civil FCA liability.

3. Why this proposal works

a) *Relators provide the link between indication and prescription.*

The FCA allows private litigants to pursue actions against manufacturers in the form of *qui tam* lawsuits. Without extensive overhaul of the present prescription and reimbursement system, it is very costly for CMS and its delegates to determine the eligibility of drugs for reimbursement under Part D, and investing in such improved data acquisition does not appear to be a present priority for CMS.¹⁸¹ Investigating individual doctors and providers is costly. Manufacturers and insiders are best positioned to observe off-label drug issues and to bring them to light.

177. See AFFORDABLE CARE ACT, Pub. L. No. 111-148, § 1128J (d) [hereinafter ACA].

178. ACA §1128J(d)(1)-(2).

179. See 21 U.S.C. § 355(b)(5)(C).

180. See, e.g., United States of America *ex rel.* Elaine Bennett v. Boston Sci. Corp. and Guidant Corp., No. Civ. A. H-07-2467, 2011 WL 1231577, at *5 n.5 (S.D. Tex. 2011).

181. See OIG PART D REIMBURSEMENT REPORT, *supra* note 6, at 4; See also Weber et al. *supra* note 7.

Relators can provide a variety of information to make this system work. The present doctrine of off-label promotion has relators focused upon manufacturers' promotional behavior. The increased scope of manufacturer liability under this proposal allows relators with different types of information to come forward. One possibility is relators who have direct information linking prescriptions together with indications; this would be the most direct linkage between reimbursements and the use of the drug. Another possibility would simply be evidence that manufacturers know of the aggregate rates of off-label prescriptions and reimbursements.

Additionally, this form of litigation provides payment for the cost of detection. The FCA provides for attorneys' fees,¹⁸² which helps compensate for the role of attorneys in detecting offenses. The percentage bounty for relators similarly compensates for their efforts in uncovering off-label drug usage and reimbursement.

An alternative to FCA liability would be litigation under a theory of unjust enrichment.¹⁸³ Civil liability for unjust enrichment incorporates the possibility that the defendant did no wrong but was simply the unknowing recipient of unjust gains. As noted above, though, this form of litigation requires information regarding diagnosis, so this cause of action would be extremely difficult without whistleblower support.

b) Manufacturers are the ones who profit.

Liability under the FCA is fair, given the allocation of revenue from the off-label reimbursement. Unless there are kickbacks or other improper incentives at play, the provider is not a direct beneficiary of the improper billing, except to the extent that the provider generates goodwill and business from the patient. The primary beneficiaries are the patient who receives the drug and the manufacturer. The patient's benefit is from improved health, which can be difficult to quantify. Moreover, it is politically difficult to go after individual patients who may attract sympathy and may not be aware of the off-label nature of their treatment. As a practical matter, the manufacturer accrues benefit and thus is in a position to pay civilly.

VI. Concerns

A. Stigma and signaling

Expanding FCA liability for manufacturers and off-label drug reimbursement may raise the problem of excessive stigmatic harm by lumping defendants with varying levels of moral culpability together. A healthcare provider committing fraud by collecting Medicare payments for

182. 31 U.S.C. § 3730(d) (2012).

183. See RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 41 (AM. LAW INST. 2011).

which no service was provided could be liable under the FCA, as could a manufacturer engaging in truthful off-label promotion of a useful pharmaceutical product.

I suggest that on the balance, though, there is actually insufficient stigmatic sanction under the FCA. As stated in that statute, the FCA addresses false or fraudulent claims. Falsity is a less morally laden description than fraud.¹⁸⁴ Only certain portions of the FCA actually require fraudulent intent.¹⁸⁵ Thus, for a defendant committing outright fraud through non-delivery of service, there is probably insufficient stigmatic harm in FCA liability.

Nonetheless, to the extent that there may be excessive stigmatic harm through the aggregation of fraud and falsity in the statute, the DOJ could seek to alleviate this harm by emphasizing the falsity aspect in press releases.

As noted above, another solution would be to pursue civil remedies under the doctrine of unjust enrichment. Civil liability for unjust enrichment incorporates the possibility that the defendant did no wrong but was simply the unknowing recipient of unjust gains.¹⁸⁶ The combination of litigation and the “unjust” portion of the label may have sufficient stigmatic power against the defendant for those reading the popular press.

As a practical concern, the stigmatic and signaling effects of FCA liability may impact manufacturer behavior. They may further discourage manufacturer investment in off-label drug usage. Note that this proposal deliberately attempts to reduce manufacturer over-investment in off-label drug usage. It is possible that combining the reduced reimbursement rates with the stigma of FCA liability may overly reduce manufacturer investment. As noted in Part IV, the harms from off-label usage may be higher than assumed in Part III’s model, so such increased reduction may actually be desirable.

Stigma could also affect healthcare providers. While this article does not propose litigation against healthcare providers, it is entirely possible that providers would learn about litigation against particular manufacturers and their drugs. A number of problems might result from such knowledge. One might be that healthcare providers might simply be more reluctant to prescribe a manufacturer’s drugs because they interpreted the litigation news as generalized wrongdoing. Professional norms would hopefully prevent healthcare providers from drawing strong negative inferences in such cases. Rather, if they really believed that a drug was particularly risky as a result of hearing of manufacturer litigation,

184. Fraud incorporates the intent to deceive for the purposes of causing some loss. *See, e.g.,* United States v. Hawkey, 148 F.3d 920, 924 (8th Cir. 1998).

185. *See, e.g.,* 31 U.S.C. 3729(a)(1)(E) (2012).

186. *See* RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 41 (AM. LAW INST. 2011).

they would directly investigate the scientific studies concerning the drug. Nonetheless, the stigmatic effects might still subtly reduce healthcare providers' prescriptions of certain drugs, even for on-label conditions and might reduce provider reliance upon manufacturer-sponsored information. Such reduced reliance might be in society's interest, depending on society's beliefs concerning the value of manufacturer-sponsored information.

Healthcare providers might also feel the threat of litigation, even if whistleblowers and assistant U.S. attorneys do not target them directly. The theory of liability under this proposal emphasizes cause-in-fact; the providers likely have at least comparable levels of causal responsibility for off-label drug reimbursements. While providers do not profit in the same way that manufacturers do, they may be concerned about being subject to at least the threat of civil liability. The risk of such fears may be assuaged by continued statements from the FDA and HHS that they do not intend to regulate the practice of medicine.

B. Manufacturers still excessively profit from off-label reimbursement.

This claw-back proposal under the FCA is not a panacea; manufacturers will still profit from off-label reimbursements in a variety of ways.

1. Manufacturers with no knowledge

First, a manufacturer could avoid FCA liability if it had no knowledge of the off-label reimbursements. The FCA diverges from an ideal solution for these profits in that it contains a *mens rea* component. In theory, the optimal solution would be strict liability for windfall profits; the unintended over-reimbursement by the government for off-label prescriptions is a real loss, regardless of the manufacturer's subjective awareness of those windfall profits. Nonetheless, given the incentive for manufacturers to study and track the effectiveness and reach of their products, it seems unlikely that manufacturers would be unaware of the general practice of off-label reimbursement.

It is technically possible that a manufacturer might not only have no knowledge of the off-label usage, but it might also have not contributed at all to the research leading to the discovery of the off-label indication. The ideal claw-back solution would need a relatively broad causal theory to claim that manufacturers were liable for the improper off-label drug reimbursements.

Pushing the law to this point may be desirable from a claw-back perspective, but such precedent might cause difficulties in other areas of the FCA. The preferable long-term solution is actual statutory reform of the reimbursement system, rather than acceptance of the more attenuated causality.

2. Profits from private insurance

The improper windfall profits are the result of not only government payments; they may also be the result of private-insurer payments. Implementing this FCA-based claw-back system in the interim will not completely solve the inequitable distribution of profits stemming from off-label reimbursement. To the extent that private health insurance companies also face disparities regarding off-label reimbursement, there may still be excessive expenditures and improper incentives. Rather than the government bearing the costs of such excessive expenditures, though, private health insurance companies likely pass along such excessive costs to their insured.

While excessive costs for private health-insurance companies are not the focus of this paper, it is important to acknowledge that those companies may face challenges that parallel the government's challenges with off-label drug prescriptions. Some of the systematic changes proposed herein linking prescriptions to indications may similarly help private insurance companies address this shared problem with excessive healthcare costs. Private insurance companies may be useful allies in obtaining reforms of the prescription and reimbursement process; a fair discussion of the potential interaction between the private market for off-label drugs and the government-led marketplace would require a separate paper.

VII. Conclusion

High drug prices are important in motivating pharmaceutical manufacturers to bring safe and effective products to market. At the same time, Medicare should not incur excessive drug costs by paying top dollar for drugs that have not been proven effective for treatment. Unfortunately, Medicare Part D is prone to excessive drug prices due to the practice of off-label drug prescription. The present systemic failure to link indication with reimbursement in the Medicare Part D regime encourages excessive prescription-drug costs from even well-intentioned manufacturers. Moreover, these flawed incentives also increase the risk of spillover effects for non-Medicare patients. Because manufacturers will over-invest in off-label drug usage, even non-Medicare patients may face increased exposure to expensive and ineffective off-label drug usage. This article proposes a theoretically superior Part D reimbursement system that allows for the development of an optimal level of off-label drug usage. In the long-term, such a reimbursement system will allow Medicare beneficiaries to obtain a variety of drugs for treatment while ensuring that Medicare is not paying higher prices for unproven drugs.

The long-term solution requires substantial systemic and regulatory reforms that are not immediately likely. In the short term, civil enforcement through the civil False Claims Act can serve as an interim tool to limit excessive Part D off-label drug costs. Rather than emphasizing

punishment of wrongful behavior, the DOJ can leverage whistleblowers under the FCA to focus on facilitating fair reimbursement for off-label drug prescriptions. Even well-intentioned manufacturers can obtain windfall profits from off-label drug reimbursement. Off-label drug usage may be safe, effective, and desirable for some patients, but those benefits do not automatically justify windfall profits. Litigation under the FCA can claw back the excessive profits and correct the unfairness and improper incentives resulting from the present Medicare Part D reimbursement system.