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CAN NEW FINGERPRINT TECHNOLOGY HELP IN SOLVING AMERICA'S PROBLEM OF MASS INCARCERATION FOR NONVIOLENT DRUG CRIMES?

*Caroline Rumbolo**

I. INTRODUCTION

Cocaine is illegal under state and federal law.¹ The Fourth Amendment protects against illegal searches and seizures but does not protect against fingerprinting.² Additionally, the Fifth Amendment protects against being a witness against yourself, but recent federal court rulings concluded that fingerprints to unlock phones and other devices were not protected with an accompanying warrant.³ However, with new technology that can distinguish if someone handled or distributed cocaine, the question becomes how this may affect sentencing for cocaine offenses if an individual is fingerprinted and found to only have used or handled cocaine. Likewise, another question is how this new technology may affect Fourth Amendment and Fifth Amendment rights of those who may be subject to fingerprinting.

This Comment focuses specifically on the protections or lack of protections involved with distinguishing cocaine use from handling that can be distinguished by new technology under the Fourth Amendment, Fifth Amendment, other regulations, and judicially created law.

The Fourth Amendment provides:

The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.⁴

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1. See *Guide to U.S. Drug Laws*, AM. ADDICTION CTRS. (Jan. 10, 2020), <https://www.recovery.org/addiction/us-drug-laws/> [<https://perma.cc/T943-B8WQ>].
2. Nowell D. Bamberger, Melissa Gohlke & Sameer Jaywant, *Court Holds That 5th Amendment Self-Incrimination Privilege Precludes Compelling Fingerprint or Facial Recognition Access to Digital Devices*, CLEARLY GOTTLIEB, (Jan. 23, 2019), <https://www.clearlyenforcementwatch.com/2019/01/court-holds-5th-amendment-self-incrimination-privilege-precludes-compelling-fingerprint-facial-recognition-access-digital-devices/> [<https://perma.cc/XUV4-DXFB>].
3. See *Commonwealth v. Baust*, 89 Va. Cir. 267, 271 (Va. Cir. Ct. 2014).
4. U.S. CONST. amend. IV.

In general, the Fourth Amendment protects “against searches and seizures conducted by the government or pursuant to governmental direction.”⁵ However, the Fourth Amendment does not protect against “[s]urveillance and investigatory actions taken by strictly private persons, such as private investigators, suspicious spouses, or nosey neighbors.”⁶ An issue under the Fourth Amendment arises when these actions “are taken by a law enforcement official or a private person working in conjunction with law enforcement.”⁷ In order to prevail under a Fourth Amendment claim, along with the requirement of standing to bring a claim, defendants must first establish a “reasonable expectation of privacy” of the thing or place that is to be searched and/or seized.⁸ The Supreme Court of the United States has held that people maintain a “reasonable expectation of privacy in their bodies, clothing and personal belongings,” but there is no expectation of privacy for things “held open to the public,” including public records.⁹ Thus, “the police may require individuals to give handwriting and voice exemplars, as well as hair, blood, DNA, and fingerprint samples, without complying with the Fourth Amendment’s requirements.”¹⁰

In contrast, the Fifth Amendment provides:

[n]o person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a Grand Jury, except in cases arising in the land or naval forces, or in the Militia, when in actual service in time of War or public danger; nor shall any person be subject for the same offence to be twice put in jeopardy of life or limb; *nor shall be compelled in any criminal case to be a witness against himself, nor be deprived of life, liberty, or property, without due process of law*; nor shall private property be taken for public use, without just compensation.¹¹

For the discussion pertinent to this Comment, the Due Process and Self-Incrimination clauses are the most relevant. The due process right “requires the government to respect all rights, guarantees, and protections afforded by the U.S. Constitution and all applicable statutes before the government can de-

5. *When the Fourth Amendment Applies*, FINDLAW (Feb. 5, 2019), <https://criminal.findlaw.com/criminal-rights/when-the-fourth-amendment-applies.html> [<https://perma.cc/5JDQ-9S29>].

6. *Id.*

7. *Id.*

8. *Id.*

9. *Id.*

10. *Id.*

11. U.S. CONST. amend. V (emphasis added).

prive any person of life, liberty, or property.”¹² It “guarantees that a party will receive a fundamentally fair, orderly, and just judicial proceeding.”¹³ It applies only to the federal government but is applicable to the states through the Fourteenth Amendment.¹⁴ Under the Fifth Amendment, there are two types of due process—procedural due process and a substantive due process.¹⁵ Procedural due process “aims to ensure fundamental fairness by guaranteeing a party the right to be heard, ensuring that the parties receive proper notification throughout the litigation, and ensures that the adjudicating court has the appropriate jurisdiction to render a judgment.”¹⁶ Comparatively, substantive due process “protect[s] those substantive rights so fundamental as to be ‘implicit in the concept of ordered liberty.’”¹⁷

On the other hand, the Self-Incrimination Clause “protects criminal defendants from having to testify if they may incriminate themselves through testimony.”¹⁸ Additionally, the Fifth Amendment requires that law enforcement read *Miranda* rights to any suspect whom law enforcement takes into custody.¹⁹ In order to actually qualify as self-incriminating, “the compelled answers must pose a ‘substantial’ and ‘real,’ and not merely a ‘trifling’ or imaginary hazard of criminal prosecution.”²⁰

Through the use of legislation and court rulings, the government has used the Fourth and Fifth Amendments to regulate drugs and to punish drug users and handlers.²¹ Under the Fourth Amendment, the Supreme Court created exceptions to the warrant requirement in cases involving drug crimes.²² For example, in *United States v. Robinson*, “the Court held it reasonable for police to search a person in custody not just for weapons that might pose a threat to the police, but for any contraband, even without reasonable suspicion that the person is carrying drugs.”²³ Another example occurred in *Ker v.*

12. *Fifth Amendment*, CORNELL L. SCH. (Feb. 2020), https://www.law.cornell.edu/wex/fifth_amendment#:~:text=the%20Fifth%20Amendment%20of%20the,war%20or%20public%20danger%3B%20nor [https://perma.cc/LP5X-ZM74].

13. *Id.*

14. *Id.*

15. *Id.*

16. *Id.*

17. *Id.*

18. *Fifth Amendment*, *supra* note 12.

19. *Id.*

20. *Id.*

21. See Ilya Shapiro, *This is Your Constitution on Drugs*, 44 NAT'L AFF. 115, 124–28 (2020), <https://www.nationalaffairs.com/publications/detail/this-is-your-constitution-on-drugs> [https://perma.cc/ZL4A-5MNH].

22. *Id.* at 125.

23. *Id.*; see *United States v. Robinson*, 414 U.S. 218, 236 (1973).

California, where the Court “established the imminent-destruction-of-evidence exception to the warrant requirement, which allows police to break into suspects’ homes without knocking to prevent the destruction of narcotics or other contraband.”²⁴ Likewise, in *Oliver v. United States*, after police followed a tip that a landowner was growing marijuana on his property, the Court held that “landowners have no reasonable expectation of privacy in their land even if it is hidden from public view by a fence or other obstruction.”²⁵

In addition to land, the Supreme Court has also extended the Fourth Amendment coverage to individuals’ cars.²⁶ For example, in *United States v. Ross*, the Court held that “if police have probable cause to believe that a car contains drugs, they can search it without a warrant.”²⁷ Additionally, in *South Dakota v. Opperman*, the Court “authorized inventory searches of towed and impounded vehicles even without probable cause.”²⁸

In addition to the expectations created for the warrant requirement under the Fourth Amendment, the Supreme Court has made exceptions to the probable cause requirement under the Fourth Amendment for law enforcement when a case may involve drugs.²⁹ For example, in *United States v. Sokolow*, the Court held that the “Drug Enforcement Administration’s use of a ‘drug courier profile’ to detain people at airports” was permissible.³⁰ This profile allows police to detain individuals based on certain behavioral characteristics including “appearing nervous, making a phone call shortly after arriving, having little or no luggage, having a significant amount of luggage, using public transit, and paying cash for a ticket,” which are all very subjective standards.³¹ Not only did the Supreme Court extend the exceptions for probable cause under the Fourth Amendment to airports, but it also extended the exceptions to schools.³² For example, in *Safford Unified School District v. Redding*, the Supreme Court held that “two school staff members who forced a 13-year-old girl to remove her clothes and shake out her underwear because they thought she was hiding contraband—ibuprofen (Advil)—could not be

24. Shapiro, *supra* note 21, at 125; see *Ker v. California*, 374 U.S. 23, 40–41 (1963).

25. Shapiro, *supra* note 21, at 125; see *Oliver v. United States*, 466 U.S. 170, 181 (1984).

26. Shapiro, *supra* note 21, at 125.

27. *Id.*; see *United States v. Ross*, 456 U.S. 798, 825 (1982).

28. Shapiro, *supra* note 21, at 125; see *South Dakota v. Opperman*, 428 U.S. 364, 375–76 (1976).

29. Shapiro, *supra* note 21, at 125.

30. *Id.*; see *United States v. Sokolow*, 490 U.S. 1, 10 (1989).

31. Shapiro, *supra* note 21, at 126.

32. *Id.*; see *Safford Unified Sch. Dist. v. Redding*, 557 U.S. 364, 368 (2009).

held liable for their actions,” because the “search was unreasonable but not obviously unconstitutional.”³³

Similarly, the Fifth Amendment has been used as a way to regulate drug use and prevent its occurrence by the courts and law, but with some obvious issues under certain areas of law.³⁴ Specifically, one area of law, civil asset forfeiture, “which often coincides with suspected drug activity,” questionably puts doubt into the government’s requirement to provide due process under the Fifth Amendment.³⁵ One of the problems with civil forfeiture laws is that “statutes frequently fail to distinguish between illicit proceeds from criminal activity and property that belongs to criminals or their family members but has no connection to any crime.”³⁶ The statutes are in place to allow police to go onto property because of the “suspected connection with criminal activity.”³⁷ But because the statutes fail to distinguish illicit proceeds from criminal activity, the burden of proving that a forfeiture was illegitimate is placed on the owner, and “police are allowed to keep most of the proceeds acquired from the sale of the seized property,” which creates a “perverse incentive for officers to initiate forfeiture proceedings.”³⁸

A. History of Cocaine as an Illegal Drug in the United States

Cocaine is a highly regulated Schedule II drug under U.S. federal law.³⁹ For both the first offense of possession and/or distribution of 500–4999 grams mixture of cocaine and five to forty-nine grams mixture of cocaine base, the sentence is at a minimum five years but not more than forty years.⁴⁰ Additionally, if “death or serious injury” is involved, then the sentence is at minimum twenty years but not more than life imprisonment.⁴¹ Along with the sentencing requirements, there is a fine requirement for the first offense that is “not more than \$2 million if an individual” and “\$5 million if not an individual.”⁴² If there is a second offense with the same amounts of cocaine, the sentence becomes at minimum ten years but not more than life, unless the offense involves “death or serious injury,” which results in life imprison-

33. Shapiro, *supra* note 21, at 126.

34. *Id.*

35. *Id.*

36. *Id.*

37. Shapiro, *supra* note 21, at 126.

38. *Id.*

39. See *Federal Drug Penalties*, ILL. WESLEYAN U., https://www.iwu.edu/counseling/Federal_Drug_Laws.htm (last visited Jan. 31, 2022) [<https://perma.cc/5FHL-3L4V>].

40. *Id.*

41. *Id.*

42. *Id.*

ment.⁴³ And the fine becomes “not more than \$4 million if an individual” and “\$10 million if not an individual.”⁴⁴

In contrast, if an amount of both “5 [kilograms] or more mixture [of cocaine] or 50 [grams] or more mixture [of cocaine base],” then the first offense sentence becomes “[n]ot less than 10 years and not more than life.”⁴⁵ If “death or serious injury” is involved, then the sentence becomes “not less than twenty or more than life.”⁴⁶ The fine for the first offense with either of these amounts results in “not more than \$4 million if an individual, \$10 million if not an individual.”⁴⁷ However, if there is a second offense with either of these amounts, then the sentence is “[n]ot less than twenty years, and not more than life.”⁴⁸ But, if “death or serious injury” occurs, then the sentence is once again life imprisonment.⁴⁹ The fine for the second offense is “not more than \$8 million if an individual” and “\$20 million if not an individual.”⁵⁰ Finally, if someone has two or more prior offenses, then the individual receives a sentence of life imprisonment under federal law.⁵¹

There are federal acts that have updated and altered the surrounding legality and regulation around cocaine as well as other drugs, mainly regarding sentencing guidelines. Specifically, the First Step Act of 2018 (FSA) was created as a sentencing reform to “reduce and restrict enhanced sentencing for prior drug felonies.”⁵² Section 404 sets out the application of the FSA.⁵³ Under Section 404, covered offenses include an offense in “violation of a Federal criminal statute, the statutory penalties for which were modified by section 2 or 3 of the Fair Sentencing Act of 2010.”⁵⁴ If a defendant’s crime falls under a covered offense, then a

court that imposed a sentence for [the] covered offense may, on motion of the defendant, the Director of the Bureau of Prisons, the

43. *Id.*

44. *Id.*

45. *Federal Drug Penalties, supra* note 39.

46. *Id.*

47. *Id.*

48. *Id.*

49. *Id.*

50. *Id.*

51. *Federal Drug Penalties, supra* note 39.

52. First Step Act of 2018, Pub. L. No. 115-391, § 401, 132 Stat. 5194, 5220 (2018).

53. *Id.* § 404.

54. *Id.*; *see* Fair Sentencing Act of 2010, Pub. L. No. 111-220, §§ 2, 3, 124 Stat. 2372, 2372 (2010) (explaining that section two reduces the cocaine sentencing disparity and section three eliminates the mandatory minimum sentence for simple possession).

attorney for the Government, or the court, impose a reduced sentence as if sections 2 and 3 of the Fair Sentencing Act of 2010 . . . were in effect at the time the covered offense was committed.⁵⁵

However, there are limits to the application of this section, including

if the sentence was previously imposed or previously reduced in accordance with the amendments made by sections 2 and 3 of the Fair Sentencing Act of 2010 . . . or if a previous motion made under this section to reduce the sentence was, after the date of enactment of this Act, denied after a complete review of the motion on the merits.⁵⁶

Some have described the potential benefits of the FSA—specifically, that the bill will “allow for shorter prison terms and more judicial discretion in sentencing” and thereby “unwind[] some of the tough-on-crime policies that have swelled the federal prison population.”⁵⁷ This could be achieved, for example, through “more discretion” of federal judges to “bypass mandatory minimums and lighten drug sentences.”⁵⁸ Some other potential benefits of the FSA include: no more “stacked” sentences for “first-time offenders charged with federal crimes while in possession of a firearm”; increased “leeway” for judges to “sidestep mandatory minimums for nonviolent drug offenders”; the potential shortening of crack cocaine sentences; more incentives for inmates to “maintain good behavior in prison and to avoid reoffending once released”; and the release of pregnant women in federal prison.⁵⁹ Through the enactment of the FSA, the sentencing disparity for crack and powder cocaine was lowered from 100:1 to 18:1, in which more individuals were in prison for crack cocaine rather than powder cocaine.⁶⁰

However, there are negatives to the implementation of the FSA. One negative of the FSA is that it does not “affect state correctional systems, which hold most of the offenders in the country.”⁶¹ Also, the FSA does not include “undocumented immigrants and those who have committed nonvio-

55. First Step Act of 2018 § 404.

56. *Id.*

57. Eileen Sullivan, *Shorter Sentences, More Judicial Leeway: What the Criminal Justice Bill Would Do*, N.Y. TIMES (Dec. 18, 2018), <https://www.nytimes.com/2018/11/14/us/politics/sentencing-prison-bill.html> [https://perma.cc/D534-B93R].

58. *Id.*

59. *Id.*

60. *Fair Sentencing Act*, ACLU, <https://www.aclu.org/issues/criminal-law-reform/drug-law-reform/fair-sentencing-act> (last visited Jan. 31, 2022) [https://perma.cc/26VN-KV8J].

61. Sullivan, *supra* note 57.

lent immigration offenses,” or those who are “high risk.”⁶² Another negative is that it does not address sentencing reform.⁶³ For example, the FSA “ignores all ‘front-end’ reform initiatives, lacking solutions to reduce the amount of people being sent to prison via arrests and prosecutions,” fails to “reform or reduce the number of years people are sentenced for, which directly contributes to overcrowded prisons,” and declines to “reduce or eliminate mandatory minimums” of sentencing.⁶⁴ Additionally, opponents of the FSA have argued that the “Risk Assessment System” relies too much on “factors that correlate closely with socioeconomic status and race,” which can create “racial and class disparities in how prisoners’ risk level is assessed.”⁶⁵ The FSA also has the “potential to facilitate more privatization of prison programming and reentry services” because it “allows for the Attorney General to develop policies for the warden of each [Bureau of Prisons] facility to enter into partnerships with private organizations to provide training, employment, and other services.”⁶⁶ The FSA gives a lot of discretion to the Attorney General, which can also be a negative, especially if the Attorney General is tough on crime for the punishing of petty drug crimes.⁶⁷

Differences exist between state drug laws and federal drug laws (including the FSA), but the two often intertwine when it comes to drug crimes. In general, “federal agencies enforce drug laws under the [Controlled Substance Act] (CSA),” while “all states and territories have their own statutory framework through which they enforce drug laws.”⁶⁸ But “the CSA places drug control under federal jurisdiction regardless of state laws,” meaning that “federal agencies may enforce the CSA in all states and territories.”⁶⁹ Regardless of the fact that federal agencies have broad enforcement power under the CSA, most drug crimes under U.S. law “are dealt with at the state level.”⁷⁰ The “DEA is primarily responsible for enforcing the controlled substance laws and regulations of the United States.”⁷¹ But, in accordance with Congress’s intent under the CSA, federal, state, and local law enforcement

62. Chrysse Haynes, *The First Step Act – A Pros and Cons List*, EQUAL JUST. UNDER L. (Aug. 30, 2018), <https://equaljusticeunderlaw.org/thejusticereport/2018/8/21/the-first-step-act-a-pros-and-cons-list> [<https://perma.cc/5MVA-BRAA>].

63. *Id.*

64. *Id.*

65. *Id.*

66. *Id.*

67. *Id.*

68. LISA N. SACCO, CONG. RSCH. SERV., R43749, DRUG ENFORCEMENT IN THE UNITED STATES: HISTORY, POLICY, AND TRENDS 16 (2014).

69. *Id.*

70. *Id.*

71. *Id.* at 17.

agencies “coordinate drug operations” through different “investigative efforts to curb drug abuse and suppress diversion of controlled substances.”⁷²

Drug crimes can be classified in different ways under federal or state laws. For example, a drug crime can be classified as a federal or a state crime, with the main difference being the “severity of consequences after a conviction.”⁷³ “Federal drug charges generally carry harsher punishments and longer sentences” while “state arrests for simple possession (i.e., possession without intent to distribute the drug) tend to be charged as misdemeanors and usually involve probation, a short term in a local jail, or a fine.”⁷⁴ The punishment under state law “depend[s] on the criminal history and the age of the person being charged.”⁷⁵ However, states have their own laws pertaining to drug offenses, each of which can be “very different.”⁷⁶ For example, “[s]tates each have their own statutory authorities, scheduling bodies, and controlled substance acts, though federal agencies can take over jurisdiction at any time.”⁷⁷ As mentioned before, “[m]ost drug offenses are handled at the state level,” but “[t]he consequences of drug possession can vary widely between states.”⁷⁸ One state worth mentioning is Oregon. Oregon recently decriminalized small amounts of cocaine and heroin.⁷⁹ It is important to consider what effect state criminalization and federal criminalization of drugs like cocaine has on the prison systems—including the number of individuals being put into prisons and those taken out as well as the increase or decrease in state revenue that comes from the prison systems and whether new technology can aid this process.

II. THE TECHNOLOGY BEHIND FINGERPRINTING FOR DRUGS

Fingerprinting has evolved as a way to not only identify individuals, but also as a way to document incarcerated individuals and connect criminals to

72. *Id.*

73. *Drug Laws and Drug Crimes: From Drug Possession to Drug Trafficking, a Look at Laws Regulating Controlled Substances*, NOLO, <https://www.nolo.com/legal-encyclopedia/drug-laws-drug-crimes-32252.html> (last visited Jan. 31, 2022) [<https://perma.cc/JPX6-WJ4L>].

74. *Id.*

75. *Id.*

76. *Guide to U.S. Drug Laws*, *supra* note 1.

77. *Id.*

78. *Id.*

79. Thomas Fuller, *Oregon Decriminalizes Small Amounts of Heroin and Cocaine; Four States Legalize Marijuana*, N.Y. TIMES (Dec. 2, 2020), <https://www.nytimes.com/2020/11/04/us/ballot-measures-propositions-2020.html> [<https://perma.cc/A4WU-UR45>].

the crimes they have committed—particularly drug crimes.⁸⁰ Fingerprinting for the detection of drugs has become popularized because the convenience and noninvasiveness achieved as compared to collecting bodily fluids, like blood or urine, from people to detect the presence of drugs.⁸¹ Blood and urine testing not only “increase[s] the complexity of sample handling in terms of storage and disposal,” but blood testing also “require[s] trained staff” and urine testing involves high “privacy concerns.”⁸² The added burden of blood and urine testing can be compared to the ease of obtaining fingerprints, which “can be deposited quickly and transported easily.”⁸³ However, no matter which test is used to detect the presence of drugs (i.e., blood, urine, or fingerprints), drugs are detected by their metabolites which are formed when the body breaks down the drug particles into chemically different parts.⁸⁴

In general, fingerprinting for drugs works by “analyz[ing] the sweat left behind in the grooves of a person’s fingerprint to determine whether that person has consumed various drugs, as trace amounts of particular analytes will be present in the sweat that can be used to infer this information.”⁸⁵ The analytes left behind are the result of drug metabolism unique to each drug.⁸⁶ For cocaine specifically, the drug “can passively diffuse through capillaries into sweat glands in its non-ionized form and can diffuse directly through the skin.”⁸⁷ The “primary metabolite of cocaine is benzoylecgonine, but ecgonine and ethyl methyl ecgonine are also generated.”⁸⁸ The metabolism process mainly occurs in the liver, “where [cocaine] undergoes hydrolytic ester cleavage” that breaks apart the cocaine molecules into these

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80. JOSEPH PETERSON, IRA SOMMERS, DEBORAH BASKIN & DONALD JOHNSON, *THE ROLE AND IMPACT OF FORENSIC EVIDENCE IN THE CRIMINAL JUSTICE PROCESS*, NAT’L INST. JUST. 19 (2010).
 81. *Fingerprint Drug Testing to Detect Drug Use or Contact*, LOCARD’S LAB (Nov. 12, 2019), <https://locardslab.com/2019/11/12/fingerprint-drug-testing-to-detect-drug-use-or-contact/> [<https://perma.cc/DH5C-8DYS>].
 82. Melanie J. Bailey et al., *Rapid Detection of Cocaine, Benzoylecgonine, and Methylcgonine in Fingerprints Using Surface Mass Spectrometry*, 140 ANALYST 6254, 6254 (2015).
 83. *Id.*
 84. *Our Drug Screening Technique*, INTELLIGENT FINGERPRINTING, <https://www.intelligentfingerprinting.com/technology/?lang=EN-US> (last visited Jan. 31, 2022) [<https://perma.cc/FV7H-CFCZ>].
 85. Michael Greenwood, *How Does Fingerprinting Drug Testing Work?*, AZO LIFE SCI. (Feb. 1, 2021), <https://www.azolifesciences.com/article/How-Does-Fingerprint-Drug-Testing-Work.aspx> [<https://perma.cc/7ESD-P668>].
 86. *Id.*
 87. *Id.*
 88. *Id.*

metabolites.⁸⁹ The metabolites are detected at different times in the sweat generated on a fingertip for a fingerprint.⁹⁰ For example, “[c]ocaine and ethyl methyl ecgonine are detectable in the sweat as soon as two hours following consumption, whereas benzoylecgonine is detectable in four to eight hours.”⁹¹ However, “[a]fter about [two] days, depending on the quantity of cocaine consumed, the metabolites will have been completely excreted and no longer be detectable in the sweat of an individual.”⁹²

A. Lateral Flow Assay

The detection of these metabolites of cocaine comes in different forms. One main form is “lateral flow assay.”⁹³ Lateral flow assay “utilize[s] fluorescently tagged probes to indicate that particular complementary molecules are present in the sample.”⁹⁴ These tagged probes are added to a “Sample Application Pad.”⁹⁵ Then, the probes “flow along” the device, “passing through [a] conjugate pad into the nitrocellulose membrane and then onto the absorbent pad.”⁹⁶ The absorbent pad contains specific biological components that the probes attach to show what molecules are present in the same and all of the other molecules that are not tagged for review flow past into an excess region.⁹⁷ The format set up of the lateral flow assays can be either “sandwich (direct) or competitive (competitive inhibition) in nature.”⁹⁸ The sandwich or direct assays are used “when testing for larger analytes with multiple antigenic sites” while “[c]ompetitive formats are typically used when testing for small molecules with single antigenic determinants,” or molecules that “cannot bind to two antibodies simultaneously.”⁹⁹

There are a few different types of lateral flow assays that differ in minor ways in how they operate.¹⁰⁰ For example, one type of lateral flow assay uses

89. *Id.*

90. *Id.*

91. Greenwood, *supra* note 85.

92. *Id.*

93. *Id.*

94. *Id.*

95. *Lateral Flow Immunoassays: How Does a Lateral Flow Device Work?*, DCN DIAGNOSTICS (Feb. 23, 2018), <https://dcndx.com/lateral-flow-rapid-diagnostic-test/> [<https://perma.cc/56XU-3P7H>].

96. *What Is a Lateral Flow Test?*, ABINGDON HEALTH, <https://www.abingdonhealth.com/services/what-is-lateral-flow-immunoassay/> (last visited Jan. 31, 2022) [<https://perma.cc/6T9D-YVA3>].

97. *Lateral Flow Immunoassays*, *supra* note 95.

98. *Id.*

99. *Id.*

100. Greenwood, *supra* note 85.

“cellulose or paper-based material . . . to support a mixed layer of molecules that will form complementary pairs with the analytes of interest in a sample.”¹⁰¹ Here, the sample is sweat, and it is “placed at one end of the assay test strip, which is then drawn through a membrane containing these molecules by an absorbent pad on the opposite end of the strip.”¹⁰² Then, “[t]he molecules are tagged with a fluorescent probe, dye, or in some cases, plasmonic materials such as gold nanoparticles, which will then be clearly visible once they reach the test line.”¹⁰³ This test line is “coated with antibodies that will only bind the formed analyte-probe complex, demonstrating the presence of the analyte in question.”¹⁰⁴ A real life example of this type of lateral flow assay is the common pregnancy test, “which operates on these sample principles by detecting analytes in the urine.”¹⁰⁵

B. Intelligent Fingerprinting

In addition to lateral flow assay, a newer technology has emerged that is used for drug detection from fingerprints.¹⁰⁶ This newer technology is Intelligent Fingerprinting, which uses the general technology for lateral flow assay described above.¹⁰⁷ Specifically, Intelligent Fingerprinting uses “fluorescence-labeled antibodies to selectively detect specific drugs or their metabolites in eccrine sweat collected from fingerprints.”¹⁰⁸ It is “non-invasive, portable technology that detects drug metabolites by analyzing the minute traces of sweat collected from fingerprints,” and can provide a “presumptive positive or negative result for each drug in the test within minutes.”¹⁰⁹ The specific device that detects for cocaine is the DSC-5 Plus.¹¹⁰ Additionally, “Liquid Chromatography Mass Spectrometry techniques” also work alongside the Intelligent Fingerprint technology to aid in confirming the fingerprint.¹¹¹

101. *Id.*

102. *Id.*

103. *Id.*

104. *Id.*

105. *Id.*

106. *See Our Drug Screening Technique, supra* note 84.

107. *Id.*

108. *Id.*

109. *Id.*

110. *Id.*

111. *Experimental Fingerprint Test Can Distinguish Between Those Who Have Taken or Handled Cocaine*, SCIENCE DAILY (Feb. 6, 2020), <https://www.sciencedaily.com/releases/2020/02/200206080453.htm> [<https://perma.cc/DASU-NWRT>].

C. Mass Spectrometry

Another recent technology for fingerprinting is mass spectrometry technology that has been used to differentiate drug use and drug handling, previously only with heroin, but more recently with cocaine.¹¹² Mass spectrometry measures the “mass-to-charge ratio” of molecules in a sample.¹¹³ It is used to identify unknown compounds by determining how much they weigh based on the weight of a molecule in the sample.¹¹⁴ Once the weight of the molecule is known, an identification can be made based on known molecular weights recorded.¹¹⁵ Specifically, a mass spectrometer completes this process first by converting the unidentified molecules into ions, or a molecule with a positive or negative charge, then the mass spectrometer separates these ions by their mass.¹¹⁶ Lastly, the mass spectrometer transmits the information about the charge and the masses of the molecules to a data system where a plot is made to determine the abundance of the molecules in the sample.¹¹⁷ A plot is then created by the masses of the molecules, where a scientist then determines what type of molecule is present in the sample and how much of it is in the sample.¹¹⁸

There are two types of mass spectrometry technology: tandem mass spectrometry and high-resolution mass spectrometry data.¹¹⁹ Tandem mass spectrometry is a “two-step technique used to analyze a sample either by using two or more mass spectrometers connected to each other or a single mass spectrometer by several analyzers arranged one after another.”¹²⁰ This type of mass spectrometry is useful for “analyzing complex mixtures and involves two stages of [mass spectrometry].”¹²¹ In the first stage, a set number of ions are “isolated from the rest of the ions coming from the ion source

112. *Fingerprint Drug Testing to Detect Drug Use or Contact*, *supra* note 81.

113. *What Is Mass Spectrometry?*, BROAD INST., <https://www.broadinstitute.org/proteomics/what-mass-spectrometry> (last visited Jan. 31, 2022), [<https://perma.cc/954Y-C7RV>].

114. *Id.*

115. *Id.*

116. *Id.*

117. *Id.*

118. *Id.*

119. *High Resolution Mass Spectrometry*, JBL SCI., <https://www.jblscience.org/hrms> (last visited Jan. 31, 2022) [<https://perma.cc/HC64-CQMM>].

120. Gülay Büyükköroğlu et al., *Techniques for Protein Analysis*, 1 OMICS TECHS. AND BIO-ENGINEERING: TOWARDS IMPROVING QUALITY OF LIFE 317, 329 (Debmalya Barh & Vasco Azevedo eds., 2018), <https://www.sciencedirect.com/science/article/pii/B9780128046593000154> [<https://perma.cc/9TUUJ-NPWU>].

121. *Id.* at 330.

and fragmented by a chemical reaction.”¹²² The second stage involves producing “mass spectra” for the fragments or results.¹²³ On the other hand, high resolution mass spectrometry “uses instruments capable of measuring the mass of chemicals to the [third] and [fourth] decimal place, i.e., highly accurately.”¹²⁴ It allows for the “exact chemical composition of small chemicals to be deduced with high confidence and even narrows down the elemental composition of biological molecules to a small range of potential formulas.”¹²⁵

Mass spectrometry is arguably more specific than “antibody reagents” because it binds specifically to a substance, meaning that metabolites can be detected by antibody reagents on a fingertip, but the binding is non-specific which can lead to “false positive results.”¹²⁶ Specifically, surface mass spectrometry is more precise to a small area of the fingertip than liquid chromatography mass spectrometry (LC-MS) to detect metabolites on the fingerprints of those who used cocaine.¹²⁷ LC-MS combined liquid chromatography, which “uses high pressure to separate a liquid phase and produces a high gas load” with mass spectrometry, which takes this information to identify the molecules present in the sample.¹²⁸ In the past five years, scientists discovered that mass spectrometry technology can be used to detect whether someone is consistently abusing a drug or just simply handling the drug.¹²⁹

III. DISTINGUISHING BETWEEN HANDLING AND USING COCAINE USING FINGERPRINT TECHNOLOGY

In addition to the numerous ways fingerprint technology has developed, a recent study has found yet another novel way to distinguish between handling and using cocaine.¹³⁰ The process behind how technology can distinguish between handling and using cocaine through fingerprints is a new high

122. *Id.*

123. *Id.*

124. *High Resolution Mass Spectrometry*, *supra* note 119.

125. *Id.*

126. Bailey et al., *supra* note 82, at 6254.

127. *Id.*

128. BASICS OF LC/MS, HEWLETT PACKARD 1, 4 (1998), <https://www.agilent.com/cs/library/support/documents/a05296.pdf> [<https://perma.cc/7XLH-MUMT>].

129. G. GROENEVELD ET AL., DETECTION AND MAPPING OF ILLICIT DRUGS AND THEIR METABOLITES IN FINGERMARKS BY MALDI MS AND COMPATIBILITY WITH FORENSIC TECHNIQUES, 5 SCI. REPS. 1, 2 (2015), <https://www.nature.com/articles/srep11716.pdf> [<https://perma.cc/TBV6-NGU6>].

130. *Experimental Fingerprint Test Can Distinguish Between Those Who Have Taken or Handled Cocaine*, *supra* note 111.

resolution mass spectrometry technique.¹³¹ This mass spectrometry technique can determine whether a person has merely handled cocaine or ingested it, even after that person has washed their hands.¹³²

The University of Surrey, Forensic Science Ireland, National Physical Laboratory and Intelligent Fingerprinting, in a novel study, “took fingerprints from people seeking treatment at drug rehabilitation clinics who had testified to taking cocaine during the previous twenty-four hours.”¹³³ These “[f]ingerprints were collected from each patient, and the participants were then asked to wash their hands thoroughly with soap and water before giving another set of fingerprints.”¹³⁴ Then, “[t]his same process was used to collect samples from a pool of drug non-users who had touched street cocaine.”¹³⁵ Using rapid, high resolution mass spectrometry to “cross-reference the information from the drug non-users who had touched cocaine with that of volunteers who testified [to] ingesting it,” the researchers “found that a molecule produced in the body when cocaine is ingested, benzoylecgonine, is essential in distinguishing those who have consumed the class A drug from those who have handled it.”¹³⁶ But “[b]enzoylecgonine was not present in the samples from non-users, even after touching street cocaine and then washing their hands.”¹³⁷ This entire fingerprinting process can occur in less than two minutes,¹³⁸ whereas previous studies took a little less than ten minutes.¹³⁹

One researcher, Dr. Catia Costa from the University of Surrey, expanded on the new technology, stating,

[w]e are excited about the possibilities for fingerprinting drug testing. In addition to illicit drugs, we have found that we can detect pharmaceutical drugs in fingerprinting, and we are keen to see if we can use this to help patients to check that their medication is being delivered at the right dose.¹⁴⁰

131. *Id.*

132. *Id.*

133. *Id.*

134. *Id.*

135. *Id.*

136. *Experimental Fingerprint Test Can Distinguish Between Those Who Have Taken or Handled Cocaine*, *supra* note 111.

137. *Id.*

138. *Id.*

139. See Mark Hudson et al., *Drug Screening Using the Sweat of a Fingerprint: Lateral Flow Detection of Δ9-Tetrahydrocannabinol, Cocaine, Opiates, and Amphetamine*, 43 J. ANALYTICAL TOXICOLOGY 88, 88 (2018), <https://doi.org/10.1093/jat/bky068> [<https://perma.cc/PL6A-KPNG>].

140. *Experimental Fingerprint Test Can Distinguish Between Those Who Have Taken or Handled Cocaine*, *supra* note 111.

Also, another researcher, Professor David Russell, Founder and Chief Scientific Officer at Intelligent Fingerprinting, describes the importance of this new technology:

This University of Surrey laboratory study into cocaine testing using experimental high resolution mass spectrometry techniques validates the approach Intelligent Fingerprinting took when originally commercializing our portable fingerprinting-based drug screening system for use at the point-of-care. Because our commercially available test detects both cocaine traces and benzoylecgonine—the major metabolite of cocaine—our customers have been successfully using fingerprinting-based drug tests since the Summer of 2017 to determine whether cocaine has actually been taken.¹⁴¹

Previously, researchers had shown that levels of the benzoylecgonine molecule present in cocaine users exceeds “normal” environmental levels of benzoylecgonine.¹⁴² Researchers had also shown that “shaking hands with a drug user does not give a false positive result.”¹⁴³ From this, “environmental contamination of cocaine” does not “appear to create a problem for fingerprint-based drug testing provided that samples are donated and handled appropriately.”¹⁴⁴

IV. LEGAL PROTECTIONS FOR TECHNOLOGY THAT DISTINGUISHES BETWEEN THOSE WHO HAVE HANDLED OR USED COCAINE

This new technology raises the issue of whether taking fingerprints for the purpose of distinguishing those who have handled cocaine is protected

141. *Id.*

142. Catia Costa et al., *Distinguishing Between Contact and Administration of Heroin from a Single Fingerprint Using High Resolution Mass Spectrometry*, 44 J. ANALYTICAL TOXICOLOGY 218, 219 (2019), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7299524/pdf/bkz088.pdf> [<https://perma.cc/KU5U-PPWY>].

143. *Id.*

144. *Id.* In that specific study,

fingerprints were collected from individuals (n=10) seeking treatment at drug rehabilitation clinics and testified taking either heroin or cocaine in the last twenty-four hours. A fingerprint was collected from each finger of the right hand. Participants were instructed to wash their hands thoroughly with soap and water and then wear nitrile gloves for ten minutes to induce sweating. This was followed by removal of the gloves and finally depositing fingerprint samples. The same process was used to collect fingerprint samples from the right thumb and right index finger from fifty participants who testified not to be drug users.

Id. at 219.

under the Fourth Amendment, Fifth Amendment, or other applicable state law. The taking of fingerprints for this purpose is likely allowed under the Fourth and Fifth Amendment. State law may permit some aspects, but the continual push of states to legalize scheduled drugs may begin to change this.

A. Protection Under the Fourth Amendment

In general, the Fourth Amendment protects against unreasonable searches and seizures but does not protect against fingerprinting.¹⁴⁵ The rationale behind the lack of protection under the Fourth Amendment from fingerprinting is that fingerprints “may constitute a much less serious intrusion upon personal security than other types of police searches and detentions” because it “involves none of the probing into an individual’s private life and thoughts that marks an interrogation or search.”¹⁴⁶ Secondly, fingerprinting, arguably, cannot be used “repeatedly to harass any individual, since the police need only one set of each person’s prints.”¹⁴⁷ Thirdly, fingerprinting is a more reliable and effective crime-solving tool than eyewitness identifications or confessions and is not subject to such abuses as the improper line-up and the “third degree.”¹⁴⁸ Lastly, since “there is no danger of destruction of fingerprints, the limited detention need not come unexpectedly or [at] an inconvenient time.”¹⁴⁹

As long as an “initial seizure” of an individual under the Fourth Amendment is “reasonable, as in lawful arrest, subsequent fingerprinting is permissible.”¹⁵⁰ But “it is also possible that the requirements of the Fourth Amendment could be met through ‘narrowly circumscribed procedures for obtaining, during the course of a criminal investigation, the fingerprints of individuals for whom there is no probable cause for arrest.’”¹⁵¹ However, “a detention of longer than 48 hours without a probable cause determination

145. *In re Search of Residence in Oakland*, 354 F. Supp. 3d 1010, 1013–14 (N.D. Cal. 2019), review dismissed, No. 19-mj-70053-KAW-1, 2019 WL 6716356 (N.D. Cal. Dec. 10, 2019).

146. *Davis v. Mississippi*, 394 U.S. 721, 727 (1969).

147. *Id.*

148. *Id.*

149. *Id.*

150. U.S. DEP’T OF JUST., CRM 1-499, CRIMINAL RESOURCE MANUAL: FINGERPRINTING—SEARCH AND SEIZURE § 251 (Jan. 22, 2020), <https://www.justice.gov/archives/jm/criminal-resource-manual-251-fingerprinting-search-and-seizure> [<https://perma.cc/8B94-Y2VZ>] (citing *Davis*, 394 U.S. at 728).

151. *Id.* (quoting *Davis*, 394 U.S. at 728.)

violates the Fourth Amendment as a matter of law in the absence of a demonstrated emergency or other extraordinary circumstance.”¹⁵²

But “[n]on-consensual extraction of blood implicate[s] Fourth Amendment privacy rights.”¹⁵³ Not only does “‘this physical intrusion, penetrating beneath the skin, infringe[] [a reasonable] expectation of privacy,’”¹⁵⁴ but it reaches beyond the bounds of a reasonable search under the Fourth Amendment.¹⁵⁵ The Fourth Amendment only forbids searches that are unreasonable, and the reasonableness of a search “generally depends on whether the search was made pursuant to a warrant issued upon probable cause.”¹⁵⁶ However, the government “may interfere with an individual’s Fourth Amendment interests with less than probable cause and without a warrant if the intrusion is only minimal and justified by law enforcement purposes.”¹⁵⁷

When the government wants to obtain fingerprints from “free persons” they must “demonstrate that they have probable cause, or at least an articulable suspicion, to believe that the person committed a criminal offense and that the fingerprinting will establish or negate a person’s connection to the offense.”¹⁵⁸ But regardless of the expectations of privacy that fingerprints may have to a person, “everyday ‘booking’ procedures routinely require even merely accused to provide fingerprint identification, regardless of whether investigation of the crime involves fingerprint evidence.”¹⁵⁹ This is because “[t]aking fingerprints is universally standard procedure, and no violation of constitutional rights” if it is before booking.¹⁶⁰

Although the government must demonstrate probable cause for taking of fingerprints from free persons, there is a difference between getting fingerprints from these people “to determine their guilt of an unsolved criminal offense and the gathering of fingerprints for identification purposes from per-

152. *Fourth Amendment: Everything You Need to Know*, UPCOUNSEL TECH. INC., <https://www.upcounsel.com/legal-def-fourth-amendment> (last visited Jan. 31, 2022) [<https://perma.cc/LG2E-PSUC>]; see *Cnty. of Riverside v. McLaughlin*, 1500 U.S. 44, 61 (1991).

153. *Fourth Amendment: Everything You Need to Know*, *supra* note 152.

154. *Id.* (quoting *Skinner v. Ry. Labor Execs.’ Ass’n*, 489 U.S. 602, 616 (1989)).

155. *Id.* (citing *Schmerber v. California*, 384 U.S. 757, 778 (1966)).

156. *Id.* (citing *United States v. Place*, 462 U.S. 696, 701 (1983)).

157. *Id.* (citing *Terry v. Ohio*, 392 U.S. 1, 20 (1968)).

158. *Id.*; see, e.g., *Hayes v. Florida*, 470 U.S. 811, 814 (1985) (holding that “there was no probable cause to arrest, no consent to the journey to the police station, and no judicial authorization for such a detention for fingerprinting purposes”); see also *Davis v. Mississippi*, 394 U.S. 721, 728 (1969) (holding that “detentions for the sole purpose of obtaining fingerprints are no less subject to the constraints of the Fourth Amendment”).

159. *Fourth Amendment: Everything You Need to Know*, *supra* note 152.

160. *Napolitano v. United States*, 340 F.2d 313, 314 (1st Cir. 1965).

sons with the lawful custody of the state.”¹⁶¹ When fingerprints are compared to other forms of a person’s identification that are “observable by the public at large, such as voice prints, handwriting exemplars, and photographs,” fingerprints “belong to a different category of search that ‘represents a much less serious intrusion upon personal security than other types of searches and detentions.’”¹⁶²

The test to determine whether a search is reasonable or not was established in *Katz v. United States*.¹⁶³ First, an individual must “have exhibited an actual (subjective) expectation of privacy.”¹⁶⁴ Second, this expectation must “be one that society is prepared to recognize as ‘reasonable.’”¹⁶⁵ Under the Fourth Amendment, a fingerprint taken and analyzed for the determination of whether someone used or handled cocaine will most likely not have an expectation of privacy, mainly because it is much less of an intrusion into someone’s privacy.¹⁶⁶ But taking fingerprints from “free persons” is an invasion of privacy, so it might not be possible for law enforcement to take random fingerprints from individuals off the street unless police have probable cause or reasonable suspicion.¹⁶⁷

However, the initial seizure of these fingerprints to determine whether someone has handled or used cocaine must be reasonable, which may not include randomly fingerprinting inmates or any individual who is arrested.¹⁶⁸ But the Fourth Amendment may not be violated when these fingerprints are taken for booking reasons.¹⁶⁹ There is also a question of whether using this new technology instead of or alongside regular fingerprinting for booking services is an invasion of privacy because of the personal information it releases about an individual and whether they have used or handled cocaine.¹⁷⁰

Additionally, use of this new technology to determine whether someone used or handled cocaine should be analyzed as to whether it is reasonable or not. If taking fingerprints from individuals can be seen as objectively reasonable, then Fourth Amendment protections are in place.¹⁷¹ However, what is

161. *Fourth Amendment: Everything You Need to Know*, *supra* note 152.

162. *Id.* (quoting *Hayes*, 470 U.S. at 814).

163. *Katz v. United States*, 389 U.S. 347, 353 (1967).

164. *Id.* at 361 (Harlan, J., concurring).

165. *Id.*

166. *See Davis*, 394 U.S. at 727.

167. *See Fourth Amendment: Everything You Need to Know*, *supra* note 152.

168. *See Bamberger et al.*, *supra* note 2.

169. *See Davis*, 394 U.S. at 727.

170. Rod McCullom, *Fingerprint Scanning Technology Leaps Forward, But to What End?*, UNDARK (Apr. 11, 2018), <https://undark.org/2018/04/11/fingerprint-biometrics-drugs-law-enforcement/> [<https://perma.cc/8GRS-KTBU>].

171. *See Katz v. United States*, 389 U.S. 347, 361 (1967) (Harlan, J., concurring).

reasonable may change based on who is fingerprinted for the detection of drug use or handling. Law enforcement cannot fingerprint just anyone at will without affecting a person's expectation of privacy, but they can if there is probable cause.¹⁷² The issue remains as to whether society at large would see using this technology as reasonable or not.

B. Protection Under the Fifth Amendment

In contrast to the Fourth Amendment, the Fifth Amendment protects against someone being a witness against themselves in a criminal trial.¹⁷³ This right under the Fifth Amendment is “broad and expansive” giving “‘absolute protection to a person called as a witness in a criminal case against the compulsory enforcement of any criminating testimony against himself.’”¹⁷⁴ An individual is “‘not only protected from any criminating testimony against himself relating to the offense under investigation, but also relating to any act which may lead to a criminal prosecution therefore.’”¹⁷⁵ Under the Fifth Amendment, there are three elements that an individual must show for protection: “(1) compulsion, (2) a testimonial communication or act, and (3) incrimination.”¹⁷⁶

The testimonial element also includes “written words, gestures intended to communicate, and physical evidence and acts that compel ‘[answers] that are essentially testimonial.’”¹⁷⁷ But the “privilege against compelled testimony does not extend to compulsion of ‘real or physical evidence’ alone, at least not under the Fifth Amendment.”¹⁷⁸ In order for an “act to qualify as testimonial, it must require the defendant to ‘disclose the contents of his own mind.’”¹⁷⁹ There are arguments as to why fingerprints are testimonial under the required section element for a Fifth Amendment claim.¹⁸⁰ “An act of

172. See *Fourth Amendment: Everything You Need to Know*, *supra* note 152.

173. See U.S. CONST. amend. V.

174. Aaron Chase, *Secure the Smartphone, Secure the Future: Biometrics, Boyd, a Warrant Denial and the Fourth Amendments*, 17:2 HASTINGS RACE & POVERTY L.J. 577, 590 (2020) (citing *Brown v. Walker*, 161 U.S. 581, 630 (1896)).

175. *Id.*

176. *In re Grand Jury Subpoena Duces Tecum*, 670 F.3d 1335, 1341 (11th Cir. 2012).

177. Chase, *supra* note 174, at 590 (citations omitted).

178. *Id.* (quoting *In re Search of a Residence in Oakland*, 354 F. Supp. 3d 1010, 1015 (N.D. Cal. 2019)).

179. *Id.* (quoting *Curcio v. United States*, 354 U.S. 118, 128 (1957)).

180. *Your Fingertips Are Protected by the Fifth Amendment. Sort of.*, STERLING IDENTITY (Apr. 2, 2019), <https://sterlingidentity.com/news/your-fingertips-are-protected-by-the-fifth-amendment-sort-of/#:~:text=ruling%3A%20Biometrics%20Are%20Protected%20by,be%20a%20witness%20against%E2%80%9D%20themselves> [<https://perma.cc/YJU2-7QGF>].

production” or producing a fingerprint, “can be testimonial in finding that ‘Fifth Amendment concerns’ are present in [a] case.”¹⁸¹ Additionally, one case, *Commonwealth v. Baust*, held that “the government could compel the defendant to produce a non-testimonial fingerprint to unlock the phone.”¹⁸² The *Baust* court’s reasoning was that the fingerprint to unlock a phone does not “require the Defendant to ‘communicate any knowledge’ at all.”¹⁸³

Some courts have ruled that the Fifth Amendment is violated when the government uses an individual’s fingerprints to unlock devices, but other courts have held differently.¹⁸⁴ With that said, not much has been analyzed regarding fingerprinting with drug crimes, especially cocaine. The Fifth Amendment’s protection is broad and using fingerprints obtained to distinguish whether someone handled or used cocaine may be subject to its protection. While courts have found that fingerprints to unlock a phone are not testimonial because they do not communicate anything further, fingerprints that are taken to distinguish the handling or use of cocaine arguably do communicate more.¹⁸⁵ Producing fingerprints in this way can be an act of production that is testimonial, therefore invoking Fifth Amendment protection.¹⁸⁶

C. State Law Protections

In general, state law likely will also come into play as different states have different laws pertaining to the punishment for possession, sale, and trafficking of cocaine.¹⁸⁷ There is a difference in sentencing for crack cocaine versus powder cocaine in state versus federal law.¹⁸⁸ Additionally, the laws regarding cocaine possession and consequences can come in different forms, including simple possession and constructive possession.¹⁸⁹

There is also a question of whether the United States should look at changing its drug laws, specifically cocaine laws, on a state-by-state basis

181. Chase, *supra* note 174, at 584 (quoting *In re Search*, 354 F. Supp. 3d at 1072–74).

182. Chase, *supra* note 174, at 594 (quoting *Commonwealth v. Baust*, 89 Va. Cir. 267, 271 (Va. Cir. Ct. 2014)).

183. *Id.*

184. *See Baust*, 89 Va. Cir. at 271.

185. *See id.*

186. *See In re Search*, 354 F. Supp. 3d at 1015.

187. Deborah C. England, *Cocaine Possession*, CRIMINALDEFENSELAWYER <https://www.criminaldefenselawyer.com/resources/criminal-defense/crime-penalties/cocaine-possession.htm> (last visited Jan. 31, 2022) [<https://perma.cc/HNP9-RURM>].

188. *Id.*

189. *Id.*

like Oregon already has.¹⁹⁰ There are different possible options to enacting change in these laws in the United States.¹⁹¹ Some possible options are (1) decriminalization or (2) making drug use a misdemeanor or administrative offense, like a seatbelt violation.¹⁹² Other possibilities include regulation of the drug market, facilitating the legal purchase and supply of drugs, and allowance of drugs in certain circumstances like medical prescriptions, non-profit, or government licensed private operators.¹⁹³

Specifically, there is the question of whether all states should move toward the extreme like Oregon has. Oregon has decriminalized cocaine this year and mimics European plans in order to place “emphasis on treating addiction as a health issue, rather than one of law and order.”¹⁹⁴ “Instead of jail time, those found in possession of drugs [in Oregon] will have the option to either pay a \$100 fine, or sign up for addiction services.”¹⁹⁵ Further, the money saved from law enforcement and generated via tax revenue from drug sales will be put toward “treatment and social services for drug users—such as addiction recovery centers, housing, and healthcare.”¹⁹⁶

Additionally, there is a difference in European policy versus the United States that may account for the variation in state laws.¹⁹⁷ European policy looks at the different aims and policies of the different EU member states and the outcome of drug use.¹⁹⁸ Also, the EU has a focus on prevention via education and information through media to the public.¹⁹⁹ The EU, unlike the United States, has released its grip on establishing a “drug-free society” and rather approaches the situation as “harm reduction,” like lessening HIV infections with needle sharing.²⁰⁰ Additionally, the EU has assessed whether

190. Poppy Noor, *US Drug Laws Set for Sweeping Overhaul as Voters Choose Decriminalization*, GUARDIAN (Nov. 4, 2020), <https://www.theguardian.com/us-news/2020/nov/04/us-drug-laws-decriminalization-voters-us-elections> [https://perma.cc/Q8C9-336J].

191. *Id.*; see *Why We Need Drug Policy Reform*, OPEN SOC’Y FOUND. (June 2021), <https://www.opensocietyfoundations.org/explainers/why-we-need-drug-policy-reform> [https://perma.cc/YM45-4LJP].

192. *See id.*

193. *See id.*

194. Noor, *supra* note 190.

195. *Id.*

196. *Id.*

197. See Mirja Gutheil et al., *A Review and Assessment of EU Drug Policy*, EUROPEAN PARLIAMENT 1, 205 (2016), [https://www.europarl.europa.eu/RegData/etudes/STUD/2016/571400/IPOL_STU\(2016\)571400_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2016/571400/IPOL_STU(2016)571400_EN.pdf) [https://perma.cc/LL8E-MZEQ].

198. *See id.* at 11.

199. *See id.* at 58.

200. *See id.* at 13.

targeting specific population groups, rather than drug users as a whole, may be an effective measure of lessening drug use, specifically through reintegration programs that allow those recovering from addiction to reenter society.²⁰¹ It is possible that, because of the difference in governing structure in the EU, they are able to accomplish some of these goals more easily than the United States, which tends to reinforce the ideals of state sovereignty through its governing structure, allowing states to create their own drug laws still under the prevailing federal law.²⁰²

V. WHAT EFFECT COULD THIS FINGERPRINT DISTINGUISHING TECHNOLOGY HAVE ON PEOPLE INCARCERATED FOR MINOR DRUG CRIMES IN THE UNITED STATES?

In addition to the differences in state law on combating drug use, federal actions in the past in the United States have tried, with a lot of consequences, to effectively lessen drug use across the nation. The main culprit of this ideal movement was the War on Drugs.²⁰³ The War on Drugs, first started in the 1970s, was a “government-led initiative that aim[ed] to stop illegal drug use, distribution and trade by dramatically increasing prison sentences for both drug dealers and users” that is “still evolving today.”²⁰⁴ It first started with the Controlled Substance Act (CSA), which was signed into law in 1970 by President Nixon.²⁰⁵ The CSA “outline[d] five ‘schedules’ used to classify drugs based on their medical application and potential for abuse.”²⁰⁶ Nixon, as the initiator of the War on Drugs, “increased federal funding for drug-control agencies and proposed strict measures, such as mandatory prison sentencing, for drug crimes.”²⁰⁷

In 1973, Nixon created the Drug Enforcement Administration (DEA) as part of the War on Drugs.²⁰⁸ Today, the DEA has “nearly 5,000 agents and a budget of \$2.03 billion” compared to the original 1,470 agents and a budget less than \$75 million.²⁰⁹ President Reagan then “reinforced and expanded

201. *See id.* at 61.

202. *See id.*

203. *War on Drugs*, HISTORY.COM (Dec. 17, 2019), <https://www.history.com/topics/crime/the-war-on-drugs#:~:text=The%20War%20on%20Drugs%20is,and%20is%20still%20evolving%20today> [<https://perma.cc/6N65-VNY8>].

204. *Id.*

205. *Id.*

206. *Id.*

207. *Id.*

208. *Id.*

209. *War on Drugs*, *supra* note 203.

many of Nixon's War on Drugs policies" during his presidential term.²¹⁰ In 1984, Reagan's wife "launched the 'Just Say No' campaign, which was intended to highlight the dangers of drug use."²¹¹ Reagan's shift of his focus in the War on Drugs to "passing of severe penalties for drug-related crimes in Congress and state legislatures led to a massive increase in incarcerations for nonviolent drug crimes."²¹² Specifically, in 1986, "Congress passed the Anti-Drug Abuse Act, which established mandatory minimum prison sentences for certain drug offenses."²¹³ This law "allocated longer prison sentences for offenses involving the same amount of crack cocaine (used more often by Black Americans) as powder cocaine (used more often by White Americans)."²¹⁴

These policies led to a "rapid rise in incarcerations for nonviolent drug offenses, from 50,000 in 1980 to 400,000 in 1997."²¹⁵ As a result, in 2014, "nearly half of the 186,000 people serving time in federal prisons in the United States had been incarcerated on drug-related charges" (according to the Bureau of Prisons).²¹⁶ From 2009 to 2013, around "40 states took steps to soften their drug laws, lowering penalties and shortening mandatory minimum sentences" (according to the Pew Research Center).²¹⁷

The statistics of who are actually in prison for drug offenses show that state prisons hold the most individuals at around 1.29 million people.²¹⁸ One in five incarcerated people is locked up for a drug offense, the majority of whom are in state prison (191,000 individuals).²¹⁹ Overall, 450,000 individuals are incarcerated for nonviolent drug offenses on any given day which includes the 191,000 in state prisons, 120,000 unconvicted in local jails, 37,000 convicted in local jails, 78,000 in federal Bureau of Prisons, and 22,000 in federal U.S. Marshals.²²⁰ This overall number also includes juvenile detention (2,100) and military (80).²²¹

210. *Id.*

211. *Id.*

212. *Id.*

213. *Id.*

214. *Id.*

215. *War on Drugs*, *supra* note 203.

216. *Id.*

217. *Id.*

218. See Wendy Sawyer & Peter Wagner, *Mass Incarceration: The Whole Pie 2020*, PRISON POL'Y INITIATIVE (Mar. 24, 2020) <https://www.prisonpolicy.org/reports/pie2020.html> [<https://perma.cc/RU4U-UJ88>].

219. *See id.*

220. *See id.*

221. *See id.*

One of the biggest issues with the War on Drugs is the mass incarceration of a disproportionate number of people in certain populations.²²² Specifically, a disproportionate number of individuals in prison and jail are poor compared to the rest of the U.S. population.²²³ Further, getting out of jail can also “destroy” someone’s wealth, as well as increase debt and decrease job opportunities, which increases the poverty these individuals experience.²²⁴ The other population that is disproportionately represented in prison is people of color—specifically Black Americans who make up “40% of the incarcerated population despite representing only 13% of U.S. residents.”²²⁵ The United States has the “highest incarceration rate in the world” and a big part of that is for nonviolent drug crimes.²²⁶ If this newer technology can be used to potentially lower sentences or help accurately sentence those who handled versus used drugs like cocaine, this might help the over-incarceration of U.S. citizens for these crimes.

A. Lower Sentencing for Petty Crimes With This New Technology

One question that is posed by this technology is whether it would help individuals who are incarcerated serve accurate sentences for their crimes. A big issue with individuals serving sentences for drug crimes is their seemingly inaccurate sentences compared to the crime they committed.²²⁷ Tangential to this concern is whether these individuals are serving excessive sentences for what may be petty crimes like drug possession.²²⁸

Although criminal defendants can appeal a criminal sentence if it is “illegal, unconstitutional or unreasonably excessive,” they cannot appeal a sentence if it is “lawful.”²²⁹ In some cases “involving allegedly excessive sentences for narcotics offenses, the courts have expressed an adherence to the common-law doctrine of the nonreviewability of criminal statutes,” which essentially provides that a court of appeals has “no power to review a

222. *Id.*

223. *Id.*

224. Sawyer & Wagner, *supra* note 218.

225. *Id.*

226. *Id.*

227. *Excessive Punishment*, EQUAL JUST. INITIATIVE, <https://eji.org/issues/excessive-punishment/> (last visited Nov. 11, 2021) [<https://perma.cc/E8S9-XGU7>].

228. *Id.*

229. Michael Tarleton, *Appealing a Sentence*, NOLO, <https://www.nolo.com/legal-encyclopedia/appealing-sentence.html#:~:text=CRiminal%20defendants%20generally%20can't,%2C%20unconstitutional%2C%20or%20unreasonably%20excessive.&text=IN%20some%20states%2C%20however%2C%20if,appellate%20court%20cannot%20review%20it> (last visited Jan. 31, 2022) [<https://perma.cc/D38G-CHYM>].

sentence which is within the limits prescribed for the offense.”²³⁰ But there is movement away from application of this rule, even though there has been much case law on not allowing appellate court review.²³¹ The “rule in federal courts appears to be firmly established that such sentences are not reviewable for excessiveness.”²³² Additionally, the “weight of Texas authority appears to be that such sentences are not subject to review for excessiveness.”²³³ For example, in *Rodriguez v. United States*, the court held that in federal criminal practice, the rule is “firmly established” that an “appellate court has no control over a sentence which is within the limits allowed by the applicable statute.”²³⁴

Another question is whether this new technology helps lower the sentences for individuals who maybe only used the drug once. One study concluded that mandatory minimum sentencing of illicit drug offenses may not be an effective method of deterring cocaine use.²³⁵ Even though the Fair Sentencing Act may have lessened the difference between individuals arrested for crack cocaine versus powder cocaine, this may not have solved one of the ultimate issues with mandatory sentencing for drug crimes.²³⁶ The War on Drugs led to mass incarcerations of black men in the United States.²³⁷ Black men were arrested for a lot of minimal possession crimes, and under the mandatory sentencing guidelines, they were “prosecuted to the fullest extent of the law [more often] than white males.”²³⁸ Racial disparity in the United States has played the ultimate role in mass incarceration of black men

230. John J. Michalik, Annotation, *Review for Excessiveness of Sentence in Narcotics Case*, 55 A.L.R.3d 812, § 3 (originally published in 1974).

231. *Id.* (citing cases upholding the nonreviewability rule, including *United States v. Carroll*, 518 F.2d 187 (6th Cir. 1975), *United States v. De Marie*, 261 F.2d 477 (7th Cir. 1958), and *Boles v. Texas*, 488 S.W.2d 113 (Tex. Crim. App. 1972), among others).

232. *Id.*

233. *Id.*

234. *Id.*; *Rodriguez v. United States*, 394 F.2d 825, 826 (5th Cir. 1968).

235. Lauryn Saxe Walker & Briana Mezuk, *Mandatory Minimum Sentencing Policies and Cocaine Use in the U.S., 1985-2013*, 18 BMC INT’L HEALTH & HUM. RTS. 1, 1 (Nov. 29, 2018), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6267913/> [<https://perma.cc/89L8-BAYU>].

236. Ryan Carlsen, *The Fair Sentencing Act of 2010: How Fair Is It?*, 16 PUB. INT. L. REP. 17, 18 (2010).

237. *The Drug War, Mass Incarceration and Race*, DRUG POL’Y ALLIANCE (June 2015), https://www.unodc.org/documents/ungass2016/Contributions/Civil/DrugPolicyAlliance/DPA_Fact_Sheet_Drug_War_Mass_Incarceration_and_Race_June2015.pdf [<https://perma.cc/U3CA-WYT7>].

238. Walker & Mezuk, *supra* note 235, at 2.

and still exists today.²³⁹ If newer technology can be used to objectively determine one's use and handling of cocaine accurately, it could be a step in the right direction to resolve unequal and unfair sentencing of Black individuals, especially black men in the United States.

Positive state reform to reduce felony convictions and increase second chances for those individuals incarcerated for minor drug offenses, especially minorities, could be accomplished through the use of technology like this.²⁴⁰ This technology could be used in the future for accurate sentencing and punishment of crimes, especially if crimes like drug possession are reclassified to a misdemeanor.²⁴¹ Drug possession makes up “more than 80 percent of arrests for drug law violations” and “3.4 percent of the state prison population—nearly 50,000 people.”²⁴² As of 2018, “five states have reclassified simple drug possession as a misdemeanor” including California, Utah, Connecticut, Alaska, and Oklahoma.²⁴³ But California is “the only state to allow these changes to be applied retroactively,” which means that individuals who “have been convicted of one of the offenses changed by [California law] can apply for resentencing or reclassification.”²⁴⁴ As a result of reclassification, prison populations are reduced for “both the people in prison for drug possession and the prison population overall” and potential “prison savings [can] be reinvested in evidence-based programs that reduce recidivism and improve public safety.”²⁴⁵ The reclassification of drug possession crimes can also put this money saved into crime prevention programs, mental health treatment, and other programs.²⁴⁶ The reclassification will also allow law enforcement to focus on other more serious crimes.²⁴⁷

One final question that should be asked is if this technology is able to aid in the proper sentencing of drug crimes (i.e., handling versus using), should it be applied retroactively to those already in prison? In general, when a new statute is enacted, it is supposed to be applied prospectively in order to

239. *Id.*

240. See Brian Elderbroom & Julia Durnan, *Reclassified: State Drug Law Reforms to Reduce Felony Convictions and Increase Second Chances*, URB. INST. 1, 3 (Oct. 2018), https://www.urban.org/sites/default/files/publication/99077/reclassified_state_drug_law_reforms_to_reduce_felony_convictions_and_increase_second_chances.pdf [<https://perma.cc/T3KD-N54P>].

241. *Id.* at 3–4.

242. *Id.* at 4.

243. *Id.*

244. *Id.* at 5.

245. *Id.* at 6.

246. Elderbroom & Durnan, *supra* note 240, at 7.

247. *Id.* at 7–8.

ensure fairness in application.²⁴⁸ However, when it comes to penal statutes, this might not be the best way to ensure fairness.²⁴⁹ One argument in favor of retroactivity is that it does not necessarily violate ex post facto laws.²⁵⁰ Additionally, although courts do not generally apply retroactive laws to individuals already incarcerated, federal courts do allow the “modification of imprisonment terms in numerous instances.”²⁵¹

VI. CONCLUSION

This technology could aid in distinguishing the handling of cocaine from the use cocaine, which could involve protections under the Constitution and state laws that would eventually keep those who are guilty of lesser crimes out of the prison systems and break the cycle of more minorities in prison for minor drug crimes. If fast technology like this high-resolution mass spectrometry can be used to accurately determine those who have used versus handled cocaine, then this could be an efficient way to provide adequate sentences for those who handled cocaine versus those that actually used cocaine.

However, along with the use of this new technology, there needs to be federal and state reform for cocaine laws. Movement in the right direction occurred with the lessening of mandatory sentences under the Fair Sentencing Act,²⁵² but there still exists an issue as to whether acts like these actually address sentencing reforms head-on²⁵³ and whether the minimum sentence for cocaine is excessive in the first place.²⁵⁴ Some states, like Oregon, have completely decriminalized cocaine.²⁵⁵ This may be a step in the right direction, but it is unlikely that all states will adopt this standard. A middle ground is the use of new technology to aid in accurate detection of what the “crime” is that an individual committed with cocaine. Technology like this could be very important if it becomes widespread in the United States and may even alter the way the law looks at the punishment and sentencing of cocaine-related crimes.

248. Ryan E. Brungard, *Finally, Crack Sentencing Reform: Why It Should Be Retroactive*, 47 TULSA L. REV. 745, 761 (2012).

249. *Id.*

250. *Id.* at 765–66.

251. *Id.* at 771.

252. *See* First Step Act of 2018, Pub. L. No. 115-391, § 401, 132 Stat. 5194, 5222 (2018).

253. *See* Haynes, *supra* note 62.

254. *See Excessive Punishment*, *supra* note 227.

255. *See* Fuller, *supra* note 79.