

Comments:

The Governing Dynamics of State Marijuana Legislation: Game Theory and the Need for Interstate Cooperation

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ABSTRACT

Social views evolve over time, but lasting societal change requires affirmative and strategic action. In modern American society, one social issue that requires strategic action is the legalization of marijuana through state legislation. Disagreements between state and federal law are common in a federal governmental structure. However, the individualized nature of state marijuana legislation and unpredictable federal prosecutorial discretion present novel legal issues that must be proactively addressed.

Since 1970, the Controlled Substances Act (“CSA”) has categorized marijuana as a “Schedule I” drug. Despite the unwavering criminalization of marijuana under federal law, thirty-three states and the District of Columbia now legally permit marijuana use in at least one form. Consequently, the use and possession of marijuana is no longer a binary issue of right or wrong. Instead, state marijuana legislation now raises new social and legal concerns impacting all federal and state governments.

* J.D. Candidate, The Pennsylvania State University, Penn State Law, 2020. Thank you to everyone who offered their love, support, and guidance throughout this journey. I hope this Comment inspires thoughtful and productive discussions in the future. Never settle for the status quo.

Importantly, this Comment does not endorse a specific position on the use or possession of marijuana, nor does it offer a new solution that will “fix” the issue overnight. Instead, this Comment utilizes existing scholarship to illustrate how economic game theory principles can produce new insights and strategies regarding marijuana legalization in America. More specifically, this Comment uses the Prisoner’s Dilemma game to evaluate state marijuana legislation and to explain how increased interstate collaboration can mitigate the uncertainty created by unchecked federalism and prosecutorial discretion. Above all, readers should critically consider how game theory principles can help address other complex social issues in the future.

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I. INTRODUCTION

Complex social issues often demand gradual change and strategic cooperation, not quick and straightforward solutions.¹ When complex social issues are not promptly addressed, growing tensions can lead to

1. See Dietrich Dorner & Joachim Funke, *Complex Problem Solving: What It Is and What It Is Not*, FRONTIERS PSYCHOL., July 11, 2017, at 1.

selfish choices that undermine basic democratic goals and values.² One modern example of this phenomenon is the growth of states legalizing the use and possession of marijuana in contradiction to federal criminal law.³ Conflict between state and federal law is not novel in the American federal system.⁴ Nonetheless, the complex nature of modern state marijuana legislation raises important questions that must be addressed, especially the role of federalism and the limits of constitutional power in American society.⁵

The modern conflict between federal law and state marijuana legislation is also well-documented by academics and legal practitioners alike.⁶ The legalization of marijuana is also a socially divisive topic.⁷ Consequently, this Comment does not endeavor to contradict past scholarship, nor does it claim to provide a universal solution that will “fix” current disagreements between state and federal law.⁸ Instead, this Comment uses game theory to offer new perspectives and practical tools to address the intersecting of federalism, prosecutorial discretion, and state marijuana legislation.⁹ More specifically, this Comment uses the Prisoner’s Dilemma game to illustrate how interstate collaboration can revitalize traditional notions of federalism and eventually decrease tensions caused by individualized and conflicting state marijuana laws.¹⁰ This Comment also aspires to provide a new evaluative framework that

2. See, e.g., Kevin Arceneaux, *Does Federalism Weaken Democratic Representation in the United States?*, 35 PUBLIUS: J. FEDERALISM 297, 299–301 (2005) (discussing the important role citizens play in federal society, especially when confronted with the historic question concerning “the amount of authority that should belong to the national government”); Steven Levitsky & Daniel Ziblatt, *How a Democracy Dies*, NEW REPUBLIC (Dec. 7, 2017), <https://bit.ly/31O3qvn> (noting that democracies work best when “constitutions are reinforced by norms of mutual toleration and restraint in the exercise of power”).

3. See *infra* Section II.B.

4. For the purposes of this paper, the legalization of marijuana through state legislation will be referred to as “state marijuana legislation.” For more information on American federalism, see *infra* Section II.A.

5. See *infra* Section II.A.

6. See, e.g., TODD GARVEY & BRIAN T. YEH, CONG. RESEARCH SERV., R43034, STATE LEGALIZATION OF RECREATIONAL MARIJUANA: SELECTED LEGAL ISSUES 1–5 (2014); TODD GARVEY, CONG. RESEARCH SERV., R42398, MEDICAL MARIJUANA: THE SUPREMACY CLAUSE, FEDERALISM, AND THE INTERPLAY BETWEEN STATE AND FEDERAL LAWS 1, 7–11 (2012); Erwin Chemerinsky, *Marijuana Laws and Federalism*, 58 B.C. L. REV. 857, 857–62 (2018); Erwin Chemerinsky et al., *Cooperative Federalism and Marijuana Regulation*, 62 UCLA L. REV. 74, 77 (2015) (“The ongoing clash over marijuana laws raises questions of tension and cooperation between state and federal governments and forces policymakers and courts to address the preemptive power of federal drug laws. Divergent federal and state laws also create debilitating instability and uncertainty on the ground in those states that are pioneering new approaches to marijuana control.”).

7. See *infra* Section II.B.

8. See *infra* Section II.B; see also *infra* Part III.

9. See *infra* Parts II–III.

10. See *infra* Sections II.B–C.

can be used to understand and address other complex social issues in the future.¹¹

I. BACKGROUND CONCEPTS

Marijuana use and regulation are not new issues in American society.¹² For over fifty years, the utility and legality of marijuana have remained virtually unchanged under federal law.¹³ Conversely, social views have evolved quite drastically during the past half-century.¹⁴ Today, two questions warrant consideration: (1) what caused the modern disparity between state and federal marijuana law; and (2) what can be done to alleviate current tensions and promote state and federal cooperation in the future?¹⁵

A. *The Basics of American Federalism*

Federal law officially criminalized the use and possession of marijuana in 1970.¹⁶ Yet after thirty years of social protest, California was the first state to contradict federal law and legalize marijuana use for medicinal purposes.¹⁷ More importantly, California's marijuana legislation created a ripple effect that has led to the passage of marijuana-related state legislation in 33 states and the District of Columbia.¹⁸ As public support for state marijuana legislation grows, state legislators must grapple with the role of federalism, the boundaries of constitutional law, and whether the power to legalize marijuana rests with the states or the federal government.¹⁹

11. See *infra* Part III.

12. See *infra* Section II.B.1.

13. See *infra* Section II.B.2.

14. See *infra* Section II.B.3.

15. See *infra* Parts II–III.

16. See *infra* Sections II.B.1–2.

17. See Dean M. Nickles, Note, *Federalism and State Marijuana Legislation*, 91 NOTRE DAME L. REV. 1253, 1254 (2016) (citing CAL. HEALTH & SAFETY CODE § 11362.5 (West 2014)).

18. See *infra* Section II.B.3; see also Keith Speights, *Timeline for Marijuana Legalization in the United States: How the Dominoes Are Falling*, MOTLEY FOOL (Jan. 2, 2020, 1:06 PM), <https://bit.ly/2SfM9Xk>; cf. JONATHAN P. CAULKINS ET AL., CONSIDERING MARIJUANA LEGISLATION: INSIGHTS FOR VERMONT AND OTHER JURISDICTIONS 2–5 (2015), <https://bit.ly/2vzgfNR> (summarizing marijuana-related changes in public sentiment across U.S. states, as well as reasons why state marijuana legislation is now the subject of serious social and political debate).

19. See, e.g., *Gonzales v. Raich*, 545 U.S. 1, 15–18, 28–29 (2005) (declaring that Congress has the legal and constitutional authority to regulate marijuana through preemptive federal law (first citing U.S. CONST. art. I, § 8, cl. 3 (Commerce Clause); and then citing U.S. CONST. art. VI, cl. 2 (Supremacy Clause)); Lea Brilmayer, *A General Theory of Preemption: With Comments on State Decriminalization of Marijuana*, 58 B.C. L. REV. 895, 921–23 (2017) (comparing the jurisdictional overlap of the federal system and individual state government systems); Chemerinsky, *supra* note 6, at 859 (“No state is required to have a law prohibiting or regulating marijuana. Indeed, it would violate the

1. The Basic Objectives of Federalism

The term “federalism” refers to the institutional “division of [shared] authority” between individual state governments and the United States federal government.²⁰ Although the term “federalism” never appears in the United States Constitution (“Constitution”),²¹ the concept of federalism is a foundational principle of American society.²² Federalism remains a relevant topic of modern society because the scope of federal power is a question that “perpetually aris[es], and will probably continue to arise, as long as our system shall exist.”²³

Federalism is not a passive political theory.²⁴ Federalism is a practical tool that can help resolve issues within individual states and create unity amongst otherwise independent states.²⁵ Federalism can also galvanize broad social change by allowing individual states to develop experimental solutions to local problems, which can later be adopted nationwide.²⁶

Tenth Amendment for Congress to compel states to have and enforce laws prohibiting possession of marijuana. . . . The more difficult arising issue is whether states, by legalizing marijuana and then regulating and taxing it, are impeding the federal government from achieving its goals in making marijuana a Schedule I controlled substance.”).

20. See Robert Longley, *What Is Federalism? Definition and How It Works in the US*, THOUGHTCo. (Aug. 3, 2018), <https://bit.ly/2sZi2uV>; see also George Charles Roche III, *American Federalism: Origins*, FOUND. FOR ECON. EDUC. (Dec. 1, 1966), <https://bit.ly/2zrVBxB>.

21. See Linda R. Monk, *Federalism*, PBS.ORG, <https://to.pbs.org/2F018Bm> (last visited Apr. 12, 2020); see also Martin Diamond, *The Ends of Federalism*, 3 PUBLIUS: J. FEDERALISM 129, 130–37 (1973) (discussing the historic evolution of federalism and its role in American society).

22. See Monk, *supra* note 21 (discussing the underlying American theme of “E Pluribus Unum,” which means “out of many states, one nation”); see also THE FEDERALIST NO. 39 (James Madison) (“The proposed Constitution, therefore, is, . . . neither a national nor a federal Constitution, but a composition of both.”).

23. Monk, *supra* note 21 (quoting *M’Culloch v. Maryland*, 17 U.S. 316, 405 (1819) (opinion of Marshall, C.J.)).

24. See Robert A. Shapiro, *Toward a Theory of Interactive Federalism*, 91 IOWA L. REV. 243, 272 (2005) (citing THE FEDERALIST NO. 51 (James Madison) (discussing that states serve as valuable guardians of the people’s liberties . . . [and] protect citizens from the overwhelming power of the national government.”)).

25. See Colin Roth, *Marijuana Legislation Is Federalism in Action*, WASH. EXAMINER (July 2, 2018, 5:05 AM), <https://washex.am/36x4KDL> (arguing that Clinton-era federalism “changed welfare from permanent dependency to a program that assists needy families while incentivizing reentry into the workforce”); see also Katie Tubb, *How Federalism Is Making a Difference on Western Lands*, HERITAGE FOUND. (Aug. 21, 2019) <https://heritag.org/37EuKhM> (explaining that states are best placed to manage local environmental issues, rather than relying on federal agencies to offer “blanket solutions to nuanced problems”). But see Pietro S. Nivola, *Why Federalism Matters*, BROOKINGS (Oct. 1, 2005), <https://brook.gs/2uC2gag> (arguing federalism should empower states to experiment and respond to local issues, but actual benefits are “a matter of considerable debate”).

26. See *supra* note 25 and accompanying text.

Federalism also “promot[es] competition and embrac[es] diversity”²⁷ based on the belief that states can often resolve local issues better than bureaucratic federal agencies.²⁸

2. The Constitutional Origins of Federalism

According to scholars, federalism is an evolutionary constitutional principle that demands regular and proactive consideration within modern American society.²⁹ Because the drafters of the Constitution could not predict the future, the Constitution purposefully uses malleable principles, like federalism, to establish a national system that can adapt and address present and future concerns.³⁰ Similarly, the Preamble to the Constitution demonstrates that the drafters wanted to establish “a more perfect Union”³¹ that could protect and preserve states’ rights within a broader national framework.³²

27. .See Roth, *supra* note 25 (“Lawmakers of both parties too often look for big, one-size-fits-all solutions that turn our national politics into an existential zero-sum game over controversial issues. If Republicans and Democrats can agree, in principle, on a federalist solution to marijuana, it just might open the door to more federalist solutions on other hot-button issues.”); cf. Will Kenton, *Zero-Sum Game*, INVESTOPEDIA (June 25, 2019), <https://bit.ly/2uS1TYZ> (defining zero-sum as a situation “in which one person’s gain is equivalent to another’s loss, so the net change in wealth or benefit is zero”).

28. See, e.g., Erin Ryan, *Federalism and the Tug of War Within: Seeking Checks and Balance in the Interjurisdictional Gray Area*, 66 MD. L. REV. 503, 580 (2007) (explaining that interjurisdictional regulatory problems, like national emergencies and environmental issues, are matters of “such local concern and/or expertise that it would not make sense to attack the problem as an exclusively national regulatory project” and thus the only effective result “flows from a collaborative approach”).

29. See *The Evolution of American Federalism*, LUMEN LEARNING, <https://bit.ly/2O86VHa> (last visited Apr. 12, 2020) (“The Constitution sketches a federal framework that aims to balance the forces of decentralized and centralized governance in general terms; it does not flesh out standard operating procedures that say precisely how the states and federal governments are to handle all policy contingencies imaginable. . . . This has led to changes in the configuration of federalism over time, changes corresponding to different historical phases that capture distinct balances between state and federal authority.”). See generally EUGENE BOYD, CONG. RESEARCH SERV., 95-518 GOV, AMERICAN FEDERALISM, 1776 TO 1997: SIGNIFICANT EVENTS (1997) (outlining the historic evolution of American federalism).

30. Larry Kramer, *Understanding Federalism*, 47 VAND. L. REV. 1485, 1488 (1994); cf. *U.S. Founding Documents*, CONGRESS.GOV, <https://bit.ly/2TTWEz3> (last visited Jan. 26, 2020) (providing the documents believed to be instrumental to the founding and philosophy of the United States).

31. U.S. CONST. pmbl; see also Martin Diamond, *The Federalist on Federalism: Neither a National Nor a Federal Constitution, But a Composition of Both*, 86 YALE L.J. 1273, 1280 (1977) (noting that the Framers believed a “voluntary association [of states] was inadequate”); Michael Stokes Paulsen, *The Preamble’s Significance for Constitutional Interpretation*, NAT’L CONST. CTR., <https://bit.ly/34AC4dE> (last visited Apr. 12, 2020) (noting that the Preamble has “significant implications both for *how* the Constitution is to be interpreted and applied and *who* has the power of constitutional interpretation”).

32. See DAVID E. ENGBAHL, CONSTITUTIONAL FEDERALISM IN A NUTSHELL 5 (2d ed. 1987) (explaining that America’s founding documents intended to “facilitate national coordination and union while preserving sub-national centers of political control and

Unlike the unitary system used in Great Britain,³³ the drafters of the Constitution desired a political system “where it is necessary as a people to speak with one voice . . . but it [also] allows countless voices to be heard on matters pertaining to the day-to-day general welfare.”³⁴ Although the Constitution does not mention federalism by name, there is no doubt that the Constitution intends to simultaneously protect individual liberties, while promoting national cohesion through the strategic delegation of power between state and federal governments.³⁵ Today, the question is not whether federalism exists, but rather how constitutional powers should be divided between individual states and a more dominant federal government.³⁶

3. Determining the Limits of Federalism

In addition to the literal division of constitutional powers between federal and state authority, federalism also demands a cohesive balance of powers amongst individual states.³⁷ In other words, federalism should balance state and federal power through compromise, not selfish unilateral conduct.³⁸ True balance requires states to develop their own partnership based upon shared objectives and goals within modern society.³⁹

Although the notion of shared powers may appear simple, the basic goals of federalism are often confused by vague language and varying constitutional interpretations.⁴⁰ In theory, the Tenth Amendment says that all powers not expressly given to the federal government “are reserved to

choice”); *see also* THE FEDERALIST NO. 28 (Alexander Hamilton) (arguing that federalism should benefit the citizens of all states), NO. 46 (James Madison) (explaining that national and state governments “are in fact but different agents and trustees of the people, constituted with different powers”).

33. *See Federalism*, USHISTORY.ORG, <https://bit.ly/2U2Mqj8> (last visited Apr. 22, 2020).

34. Akhil Reed Amar & Douglas W. Kmiec, *Perspectives on the Constitution: Understanding Our Constitution*, NAT’L CONST. CTR., <https://bit.ly/2Bovcmh> (last visited Apr. 20, 2020).

35. *See supra* notes 28–32 and accompanying text.

36. *See infra* Section II.A.3.

37. *See Hearing on The Federalism Debate: Why Doesn’t Washington Trust the States? Before the H. Subcomm. on Human Res. & Intergovernmental Relations of the H. Comm. on Government Reform & Oversight*, 104th Cong. 113–18 (1995) (statement of Roger Pilon, Senior Fellow and Director of the Center for Constitutional Studies, Cato Institute) (testifying before Congress regarding the need for balanced relationships between state and federal governments), <https://bit.ly/38EQREQ>.

38. *See id.*; *see also* Lawrence Jia, *The Remnants of Federalism*, HARV. POL. REV. (Dec. 16, 2019), <https://bit.ly/2uQ2YAK>.

39. *See* Chemerinsky, *supra* note 6, at 116; *see also* GLEN KRUTZ ET AL., AMERICAN GOVERNMENT 2E 82–90 (Sylvie Waskiewicz et al. eds., 2d ed. 2019), <https://bit.ly/2VFhAhs>; Tivas Gupta, *The Future of Federalism*, HARV. POL. REV. (Sept. 24, 2019), <https://bit.ly/2vybx3h>.

40. *See* Kramer, *supra* note 30, at 1485 (noting that the complexity of federalism often “feels a bit like joining the proverbial blind men trying to describe an elephant”).

the States” and their local legislatures.⁴¹ In practice, the delegation of constitutional power to states is often overshadowed by general and specific powers prioritized for the three federal branches of government.⁴² For example, the Constitution states that Congress “has legal authority as delegated to it [specifically] under the Constitution.”⁴³ The Constitution also grants various powers to the President of the United States that impact the executive branch, the military, and the nation as a whole.⁴⁴ Finally, the Constitution grants the United States Supreme Court (“Supreme Court”) the power to interpret the Constitution, to determine the proper balance of constitutional powers, and to define the legality of state and federal laws.⁴⁵

The federal government enjoys a wide range of specific and general powers under the Constitution.⁴⁶ Although the Tenth Amendment promises to reserve constitutional powers to the states, the practical reality is that the federal government’s general powers can be used to purposefully limit what “remaining” powers are actually delegated to the states.⁴⁷ One modern application of the Tenth Amendment involves the

41. U.S. CONST. amend. X.

42. See U.S. CONST. arts. I–III (enumerating the powers of the legislative, executive, and judicial branches).

43. See U.S. CONST. art. I, § 8 (enumerating specific and general congressional powers, including the ability to “declare war” and to create “all laws which shall be necessary and proper for carrying into execution the foregoing powers”); see also ANDREW NOLAN ET AL., CONG. RESEARCH SERV., R45323, FEDERALISM-BASED LIMITATIONS ON CONGRESSIONAL POWER: AN OVERVIEW, at intro. note, 1-6 (2018), <https://bit.ly/2HinXP5>.

44. See U.S. CONST. art. II, § 2 (granting the President power to specific power to *nominate* “Judges of the supreme Court” and the general power to *appointment* “Officers of the United States,” including the U.S. Attorney General); see also 28 U.S.C. § 503 (2012) (“The President shall appoint, by and with the advice and consent of the Senate, an Attorney General of the United States. The Attorney General is the head of the Department of Justice.”).

45. See U.S. CONST. art. III, § 2; see also *McCulloch v. Maryland*, 17 U.S. 316, 405 (1816) (offering judicial affirmation that the federal government is “one of enumerated powers”); *Marbury v. Madison*, 5 U.S. 137, 176–80 (1803) (establishing the principle of judicial review); *The Court and Constitutional Interpretation*, U.S. SUP. CT., <https://bit.ly/2IziyCw> (last visited Feb. 10, 2020) (“As the final arbiter of the law, the [Supreme] Court is charged with ensuring the American people the promise of equal justice under law and . . . functions as guardian and interpreter of the Constitution.”); cf. Charles Wise & Rosemary O’Leary, *Intergovernmental Relations and Federalism in Environmental Management and Policy: The Role of the Courts*, 57 PUB. ADMIN. REV. 150, 151 (1997) (“[T]he courts can use their powers of judicial review to allocate decision power not only to agencies at various levels of government, but also to themselves as they decide the grounds for and scope of judicial review. How the courts implement their overlapping roles has profound effects for both management of public programs and the nature of the federal system in the United States.”).

46. See *supra* notes 42–45 and accompanying text.

47. See *Tenth Amendment: Effect of Provision on Federal Powers*, LEGAL INFO. INST., <https://bit.ly/3eAGZzR> (last visited Apr. 18, 2020) (discussing varying judicial views on the scope and power of the Tenth Amendment); see also *South Carolina v. Baker*, 485 U.S. 505, 505, 512 (1988) (holding that “[t]he Tenth Amendment limits on Congress’ authority to regulate state activities are structural, not substantive—that is, the States must find their

conflict between federal drug law, state marijuana legislation, and general police powers.⁴⁸ On one hand, states have “general police powers to enact legislation concerning health, safety, welfare, and morals that are inherent to government.”⁴⁹ On the other hand, federal government officials have the discretionary ability to intervene in state activities that affect national interests.⁵⁰ Although state drug legislation could be considered a permissible exercise of state police power, modern state marijuana legislation illustrates how the federal government can intervene and impact state law without enumerated constitutional powers.⁵¹ Additionally, the executive branch adds significant confusion to the state marijuana legislation debate by selectively enforcing federal law through the unchecked discretion of federal prosecutors.⁵²

B. *The Growth of State Marijuana Legislation*

Modern marijuana legislation represents a collective action problem that requires improved understanding and strategic cooperation amongst individual states.⁵³ According to the Tenth Amendment, all powers not delegated to the federal government “are reserved to the States.”⁵⁴ In theory, the Tenth Amendment gives states the autonomy to make their own laws and to act as “laboratories of democracy.”⁵⁵ In practice, the federal government is often more powerful than any one state and can interject

protection from congressional regulation through the national political process, not through judicially defined spheres of unregulable state activity”).

48. See *infra* Section II.B; see also J. Herbie DiFonzo & Ruth C. Stern, *Divided We Stand: Medical Marijuana and Federalism*, HEALTH LAW., June 2015, at 17, 18–20.

49. See MARK K. OSBECK & HOWARD BROMBERG, MARIJUANA LAW IN A NUTSHELL 144 (2017).

50. See *id.* at 144–46.

51. See *infra* Section II.B.2.

52. See *infra* Section II.B.4.

53. See Richard C. Rich, *A Cooperative Approach to the Logic of Collective Action: Voluntary Organizations and the Prisoners' Dilemma*, 17 J. VOLUNTARY ACTION RES. 5, 10–12 (1988); cf. Maxwell L. Stearns, *A Beautiful Mend: A Game Theoretical Analysis of the Dormant Commerce Clause Doctrine*, 45 WM. & MARY 1, 83, 110 (2003) (noting that “the prisoners’ dilemma characterizes the relationships that confront states, and nations, in choosing whether to enact special interest legislation that limits free trade” and states generally act in ways that attempt “to secure the benefit of a pure Nash equilibrium strategy”).

54. U.S. CONST. amend. X; see also *Tenth Amendment: Scope and Purpose*, LEGAL INFO. INST., <https://bit.ly/2TZ7t6f> (last visited Apr. 12, 2020) (explaining that the initial goal of the Tenth Amendment was to “allay fears that the new national government might seek to exercise powers not granted, and that the states might not be able to exercise fully their reserved powers” (quoting *United States v. Darby*, 312 U.S. 100, 124 (1941))).

55. *New State Ice, Co. v. Liebmann*, 285 U.S. 262, 311 (1932) (Brandeis, J., dissenting) (“It is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country.”); see also *Laboratories of Democracy Database*, NEW AM., <https://bit.ly/38ppyhX> (last visited Feb. 14, 2020).

itself into state issues without concern.⁵⁶ Consequently, modern societal issues require a better understanding of what the Constitution says and also how to apply its precepts in light of modern social and political realities.⁵⁷

The American federal system permits cooperation amongst the federal branches of government, as well as between state and federal actors.⁵⁸ Unfortunately, cooperation is not required and often treated as a last resort.⁵⁹ Consequently, states often pursue individual state interests, while federal entities similarly pursue federal interests.⁶⁰ Additionally, discussions of federalism often cite to the Tenth Amendment as “a bulwark against federal intrusion on state authority and individual liberty.”⁶¹ Unfortunately, the vague language of the Tenth Amendment offers little guidance to resolve conflicts regarding the appropriate balance of state and federal powers.⁶² Although federalism anticipates disagreements between state and federal law, complex social issues like state marijuana legislation still require proactive action to avoid negatively impacting interstate relations that could lead to broader social harms.⁶³

1. The Origins of U.S. Marijuana Regulation

Marijuana use can be traced back to Asia around the year 500 B.C.⁶⁴ Marijuana has also existed in America since the early seventeenth century,⁶⁵ and questions of regulation and legality only arose around 1906.⁶⁶ Although the Food and Drug Act of 1906 only indirectly regulated

56. See Marcus Hawkins, *A Definition of Federalism: The Case for Reinvigorating State's Rights*, THOUGHTCO. (Jan. 16, 2020), <https://bit.ly/3coFdjY>.

57. See *id.*

58. See *id.*

59. See *id.*; see also Maxwell A. Cameron & Tulia G. Falleti, *Federalism and the Subnational Separation of Powers*, 35 PUBLIS: J. FEDERALISM 245, 254–55 (2005) (explaining that federalism does not impose specific rules on the federal government, but it does recognize that state and federal government systems are “each supreme in its own sphere”).

60. See Hawkins, *supra* note 56.

61. Charles Cooper, *The Constitution in One Sentence: Understanding the Tenth Amendment*, HERITAGE FOUND. (Jan. 10, 2011), <https://herit.ag/2Xv8iWe>.

62. See ENGDAHL, *supra* note 32, at 9 (“Attempts to use the tenth amendment to restrict federal power are made from time to time; but in the long run such attempts always and inevitably fail. The reason is that the amendment . . . affirms that what is not delegated to the United States is reserved, but says nothing to clarify what has been delegated and what has not been.”).

63. See OSBECK & BROMBERG, *supra* note 49, at 240–41 (discussing how different marijuana-related legislation amongst neighboring states causes practical concerns like confusion regarding the applicability of federal law).

64. See *Marijuana*, HISTORY.COM (Oct. 10, 2019), <https://bit.ly/3aHJoqq>.

65. See *id.*; see also *Research Guide: History of Marijuana Regulation in the United States*, U. GA. SCH. LAW (Oct. 29, 2019, 8:46 AM), <https://bit.ly/2St3j5g>.

66. See Pure Food and Drug Act, Pub. L. No. 59-384, 34 Stat. 768 (1906) (repealed 1938) (providing an informal regulation of marijuana by “preventing the manufacture, sale, or transportation of adulterated or misbranded or poisonous or deleterious foods, drugs, medicines, and liquors, and for regulating traffic therein”).

marijuana passing through interstate commerce,⁶⁷ the law paved the way for the eventual criminalization of marijuana under both state and federal law.⁶⁸

By the late 1920s, marijuana became a topic of significant federal concern.⁶⁹ After the financial collapse of 1929, the ensuing “Great Depression” created widespread unemployment, which in turn “escalated public and governmental concern about the problem of marijuana.”⁷⁰ Additionally, other factors contributed to negative social perceptions of marijuana, including a governmental focus on familial welfare, the impact of drugs on children,⁷¹ and the general social perception that drug use led to crime and broad social disorder.⁷²

Over time, the criminalization of marijuana has become deeply engrained in modern American society, leading to a variety of social and political consequences.⁷³ Notably, federal drug policies largely prevented

67. See *id.*; see also *Did You Know . . . Marijuana Was Once a Legal Cross-Border Import?*, CBP.GOV (Dec. 20, 2019), <https://bit.ly/2FnQOCF>.

68. See LISA N. SACCO, CONG. RESEARCH SERV., R43749, DRUG ENFORCEMENT IN THE UNITED STATES: HISTORY, POLICY, AND TRENDS 2–8 (2014); see also *Milestones in U.S. Food and Drug Law History*, FDA.GOV (Jan. 31, 2018), <https://bit.ly/37mWExB>; *Marijuana Timeline*, FRONTLINE, <https://to.pbs.org/2xzyhOg> (last visited Apr. 12, 2020) (“After the Mexican Revolution of 1910, Mexican immigrants flooded into the U.S., introducing to American culture the recreational use of marijuana.” (citing Marihuana Tax Act of 1937, Pub. L. No. 75-238, 50 Stat. 551 (1937) (repealed 1970) (the first federal law to regulate the “importation, cultivation, possession and/or distribution of marijuana”))).

69. The Great Depression began in 1929 and lasted until 1939. See Richard H. Pells & Christina D. Romer, *Great Depression*, ENCYCLOPEDIA BRITANNICA (Dec. 2, 2019), <https://bit.ly/2U9a6lq>.

70. See *Marijuana Timeline*, *supra* note 68; see also LISA N. SACCO & KRISTIN FINKLEA, CONG. RESEARCH SERV., R43164, STATE MARIJUANA LEGALIZATION INITIATIVES: IMPLICATIONS FOR FEDERAL LAW ENFORCEMENT 3 n.16 (2014) (“Congressional testimony indicated that marijuana, while it was a problem in the Southwest United States starting in the mid-1920s, became a national menace in the mid-1930s (1935-1937).”).

71. See, e.g., H.J. Anslinger, *Marijuana, Assassin of Youth*, AM. MAG., July 1937, at 1; Eric Schlosser, *More Reefer Madness*, ATLANTIC, Apr. 1997, at 90, <https://bit.ly/2KrnziW>; Stephen Siff, *The Illegalization of Marijuana: A Brief History*, 7 ORIGINS: OHIO ST. U., no. 8, May 2014, at 1, <https://bit.ly/2UTgGgS>; Becky Little, *Why the US Made Marijuana Illegal*, HISTORY.COM (Aug. 31, 2018), <https://bit.ly/3bFgqI4>.

72. See, e.g., CONG. RESEARCH SERV., R44782, THE MARIJUANA POLICY GAP AND THE PATH FORWARD 42 (2017).

73. See, e.g., Zhuang Hao & Benjamin Cowan, *The Cross-Border Spillover Effects of Recreational Marijuana Legalization* 5 (Nat’l Bureau of Econ. Research, Working Paper No. 23426, 2017), <https://bit.ly/2FFHcRV> (noting that recreational marijuana legalization caused a “sharp increase in marijuana possession arrests of border counties relative to non-border counties in both the Colorado and Washington regions”); Dominic Miranda, *Legalized Weed in Illinois Affects Neighboring States Like Indiana*, WTHI-TV 10 NEWS (Jan. 2, 2020, 6:31 PM), <https://bit.ly/2FIHIPE>. But see *Report: Marijuana Legalization Not Associated with Adverse ‘Spillover’ Effects in Neighboring States*, NORML.ORG (Oct. 17, 2019), <https://bit.ly/2slrDfi> (arguing that “[a]dult-use marijuana legalization laws are not associated with any significant increase in cannabis-related criminal activity in neighboring states or counties” (citing ERIN J. FARLEY & STAN ORCHOWSKY, NAT’L CRIMINAL JUSTICE REFERENCE SERV., PUB. NO. 253137, MEASURING THE CRIMINAL JUSTICE

marijuana-focused medical research throughout the twentieth century.⁷⁴ Today, the absence of marijuana-related medical research is not only unfortunate, but it is also used to justify the continued criminalization of marijuana as a Schedule I drug under the federal Controlled Substances Act (“CSA”).⁷⁵

2. The Controlled Substances Act

On October 27, 1970, President Richard M. Nixon signed the CSA into law.⁷⁶ Codified under Title II of the Comprehensive Drug Abuse Prevention and Control Act of 1970,⁷⁷ the CSA allows the federal government to regulate the lawful “[production], possession, use, importation, and distribution of certain drugs, substances, and precursor chemicals.”⁷⁸ The CSA also classifies regulated substances into “one of five schedules based on [their] medical use, potential for abuse, and safety or dependence liability.”⁷⁹ Schedule I is the most restrictive category and lists over 240 substances considered to have a high potential for abuse and no accepted medical benefit.⁸⁰

SYSTEM IMPACTS OF MARIJUANA LEGALIZATION AND DECRIMINALIZATION USING STATE DATA, at iv (2019), <https://bit.ly/2TdFuPK>)).

74. See, e.g., Paul Armentano, *35 Years of Prohibition*, NORML.ORG, <https://bit.ly/2UgVAIK> (citing U.S. NAT’L COMM’N ON MARIHUANA & DRUG ABUSE, MARIHUANA: A SIGNAL OF MISUNDERSTANDING (1972), <https://bit.ly/2RPbCYM>); David Downs, *The Science behind the DEA’s Long War on Marijuana*, SCI. AM. (Apr. 19, 2016), <https://bit.ly/2GPUWu1> (arguing that “listing cannabis among the world’s deadliest drugs ignores decades of scientific and medical data”).

75. See *infra* Section II.B.2.

76. See Controlled Substances Act of 1970, Pub. L. No. 91-513, 84 Stat. 1242 (codified as amended at 21 U.S.C. §§ 811–14 (2018)); see also JOANNA R. LAMPE, CONG. RESEARCH SERV., R45948, THE CONTROLLED SUBSTANCES ACT (CSA): A LEGAL OVERVIEW FOR THE 116TH CONGRESS 1–3 (2019); SACCO, *supra* note 68, at 5.

77. Comprehensive Drug Abuse Prevention and Control Act of 1970, Pub. L. No. 91-513, 84 Stat. 1236 (codified as amended at 21 U.S.C. §§ 801–971 (2010)).

78. SACCO & FINKLEA, *supra* note 70, at 2; see also *Gonzales v. Raich*, 545 U.S. 1, 29 (2005) (holding that the CSA is “a valid exercise of federal power . . . [used to] conquer drug abuse and to control the legitimate and illegitimate traffic in controlled substances”).

79. See 21 U.S.C. § 811 (2018); see also BRIAN T. YEH, CONG. RESEARCH SERV., RL34635, THE CONTROLLED SUBSTANCES ACT: REGULATORY REQUIREMENTS 2 & n.14 app. (2012); *The Controlled Substances Act*, DEA.GOV, <https://bit.ly/2RP2bZW> (last visited Feb. 2, 2020) (discussing how to amend current schedules); SACCO & FINKLEA, *supra* note 70, at 2 & n.11.

80. For an annual update of all regulated substances, see 21 C.F.R. § 1308.11–.15 (2019). For additional information, see also U.S. DEP’T OF JUSTICE, DRUG ENF’T AGENCY, *Foreword* to LISTS OF: SCHEDULING ACTIONS, CONTROLLED SUBSTANCES, REGULATED CHEMICALS (2020), <https://bit.ly/2SakY0o> (“[S]ection 812 of the CSA lists only those substances which were controlled in 1970 when the law was enacted. Since then, over 200 substances have been added, removed, or transferred from one schedule to another.”).

3. Modern Marijuana Use in the United States

Marijuana has been listed as a Schedule I drug since 1970.⁸¹ Although many Schedule I drugs have a high potential for abuse and no accepted medical benefit, modern social support for marijuana is slowly changing state and federal opinion.⁸² In fact, the characterization of marijuana under the CSA is not only a point of concern among recreational marijuana users, but also medical advocates and non-users with practical benefits of the substance in mind.⁸³

Social views involving marijuana have drastically changed over time.⁸⁴ Less than three decades ago, marijuana was illegal in all 50 states.⁸⁵ Today, thirty-three states and the District of Columbia have some form of legislation allowing the use of marijuana under specific conditions.⁸⁶ Although support for marijuana continues to increase,⁸⁷ attempts to change

81. See 21 U.S.C. § 812 (b)(1), (c)(c)(10) (2018); see also U.S. DEP'T OF JUSTICE, DRUG ENF'T AGENCY, DRUGS OF ABUSE 9, 20 (2017), <https://bit.ly/31juguS>; *Drug Scheduling*, DEA.GOV, <https://bit.ly/33D9yHR> (last visited Mar. 21, 2020) (listing other Schedule I drugs like heroin, ecstasy, and LSD); *What is medical marijuana?*, NAT'L INST. ON DRUG ABUSE, <https://bit.ly/2S5Ekn2> (last visited Mar. 22, 2020); YEH, *supra* note 79, at 2 & n.16 (citing 21 U.S.C. § 811(h)(1) (2017)) (explaining how the CSA was used alongside the Comprehensive Crime Control Act of 1984 to “place a drug or substance, on a temporary basis, into Schedule I when necessary to avoid an ‘imminent hazard to public safety’”).

82. See Alex Kreit, *What Will Federal Marijuana Reform Look Like?*, 65 CASE W. RES. L. REV. 689, 689–92 (2015) (“So much energy has been directed at the debate about *whether* to change federal marijuana laws that the question of *how* to change them has been almost an afterthought. Barring a dramatic political reversal, however, it is no longer a matter of *whether* but *when*, and that makes the *how* of federal marijuana reform increasingly important.”); see also Justin McCarthy, *Record-High Support for Legalizing Marijuana Use in U.S.*, GALLUP (Oct. 25, 2017), <https://bit.ly/2IJzTrF> (analogizing the rise of social support for marijuana to support for same-sex marriage).

83. See, e.g., Earl L. Carter & Earl Blumenauer, *If marijuana remains a Schedule I substance, we can never do the research everyone knows we need*, NBC NEWS (Apr. 29, 2019, 10:10 AM), <https://nbcnews.to/2tIFVwM> (explaining that the CSA limits legitimate medical access to marijuana and creates barriers to medical research); Kerry Cork & Hudson B. Kingston, Staff Att’y’s, Pub. Health Law Ctr. at Mitchell Hamline Sch. of Law, Webinar, *What if Marijuana Were NOT a Schedule I Drug?: Legal and Policy Implications* (June 6, 2019), <https://bit.ly/3aZx8Sl> (discussing how marijuana’s designation under the CSA negatively impacts international treaties and medical research); Christopher Ingraham, *The government spent \$18 million destroying marijuana plants last year*, WASH. POST (Apr. 15, 2016, 10:18 AM), <https://wapo.st/37SIHtF>.

84. See *Marijuana Overview*, NAT’L CONF. ST. LEGISLATURES (Oct. 17, 2019), <https://bit.ly/39Z6f0c>.

85. See Speights, *supra* note 18.

86. See *id.*; see also *Map of Marijuana Legality by State*, DISA GLOBAL SOLUTIONS, <https://bit.ly/2H2fqj2> (last visited Feb. 5, 2020) [hereinafter *State Marijuana Map*].

87. See Hannah Hartig & Abigail Geiger, *About six-in-ten Americans support marijuana legalization*, PEW RES. CTR. (Oct. 8, 2018), <https://pewrsr.ch/2RzZQzp>; see also *Background of the Issue*, PROCON.ORG (Dec. 27, 2018, 3:02 PM), <https://bit.ly/2QidpT1> (“More than half of US adults, over 128 million people, have tried marijuana, despite it being an illegal drug under federal law.” (citing *Marist Poll: Weed & The American Family*, MARIST INST. FOR PUB. OP. (Apr. 17, 2017), <https://bit.ly/2oqJiuA>)); *From*

federal legislation continue to fail and thus marijuana continues to cause significant tension between state actors and federal government officials.⁸⁸

States with marijuana-related legislation are not exactly alike.⁸⁹ In fact, states with similar levels of social support for marijuana-related legislation often do not share similar goals or beliefs regarding the use of marijuana.⁹⁰ Importantly, states with marijuana legislation often differ in two ways. First, state marijuana legislation can permit the use of marijuana for medicinal purposes, recreational purposes, or both.⁹¹ Second, state marijuana legislation either formally legalizes or merely decriminalizes the use and possession of marijuana.⁹²

The differences amongst state marijuana laws are not surprising because every state is comprised of diverse constituents who require individualized approaches to the same topic.⁹³ States have also passed marijuana legislation at different times and under different

Prohibition to Progress: A Status Report on Marijuana Legalization, DRUGPOLICY.ORG (Jan. 22, 2018), <https://bit.ly/2E2YJ4T> [hereinafter *Status Report*].

88. See Strengthening the Tenth Amendment Through Entrusting States Act, S. 3032, 115th Cong. §§ 1-2 (2018) (describing a failed Congressional attempt to combat tensions between state and federal laws by eliminating federal interference in state legalization efforts without modifying the CSA); see also Tom Angell, *Congress Votes To Block Feds From Enforcing Marijuana Laws In Legal States*, FORBES (June 20, 2019, 5:37 PM), <https://bit.ly/373HuNP> (citing H.R. 3055, 116th Cong. § 531 (2019) (as passed by House, June 25, 2019)); Jonathan Martin, *Gregoire to DEA: Make marijuana a legal drug*, SEATTLE TIMES (Dec. 1, 2011, 9:51 AM), <https://bit.ly/2M4wGG8> (discussing how the governors of Rhode Island and Washington “petitioned the DEA to reclassify marijuana, recognize it has therapeutic value and allow it be treated as a prescription drug”); *2020 Marijuana Policy Reform Legislation*, MARIJUANA POL’Y PROJECT (Mar. 19, 2020), <https://bit.ly/2GZP4yj>.

89. See SACCO & FINKLEA, *supra* note 70, at 5–6.

90. See, e.g., Amy Mazurek, *Attitudes and Influences Regarding the Legalization of Medical Marijuana*, 19 IND. U. S. BEND UNDERGRADUATE RES. J. 105, 110 (2019) (discussing how voter preferences regarding medical marijuana are impacted by variables such as “the highest level of education, knowledge of benefits and side effects, past use, and whether respondents have minor children”).

91. See *State Laws*, NORML.ORG, <https://norml.org/laws> (last visited Apr. 18, 2020); see also *Marijuana Overview*, *supra* note 84; *State Marijuana Map*, *supra* note 86.

92. See *Marijuana Overview*, *supra* note 84 (noting that “[t]wenty-six states and the District of Columbia have decriminalized small amounts of marijuana,” which means that small amounts of marijuana “are a civil or local infraction, not a state crime”); see also German Lopez, *15 states have decriminalized—but not legalized—marijuana*, VOX (July 10, 2019, 5:34 PM), <https://bit.ly/2v3Hpwd>; Tom Murse, *Decriminalization Versus Legalization of Marijuana*, THOUGHTCO. (Jan. 16, 2020), <https://bit.ly/382isA3> (defining decriminalization as “a loosening of criminal penalties imposed for personal marijuana use even though the manufacturing and sale of the substance remain illegal” and legalization as the “lifting or abolishment of laws banning the possession and personal use of marijuana”).

93. See Mazurek, *supra* note 90, at 110; see also Natalie Fertig, *The Great American Cannabis Experiment*, POLITICO (Oct. 14, 2019), <https://politi.co/3bk6i7e> (discussing how generational alignments impact support for marijuana legislation); Sarah Trumble et al., *All State Marijuana Laws Are Not Created Equal*, THIRD WAY (Feb. 17, 2016), <https://bit.ly/2Kj1hzS>.

circumstances.⁹⁴ Consequently, disparate state laws affirm that the unique needs of each state legislature produce inherently individualized laws, which in turn also explains why there is often little appetite for interstate cooperation.⁹⁵ Additionally, the inconsistent use of prosecutorial discretion to uphold federal law is another critical consideration to understand the individualized nature and inherent tension surrounding state marijuana legislation.⁹⁶

4. Prosecutorial Discretion and Marijuana Use

The term “prosecutorial discretion” refers to a federal prosecutor’s ability to decide when to file criminal charges on behalf of the federal government.⁹⁷ Prosecutorial discretion is an important legal tool for law enforcement officials.⁹⁸ However, the unpredictable nature of prosecutorial discretion can also create confusion that negatively impacts the rule of law. Such concerns are especially true when the same federal laws are enforced differently in certain states or even within subsections of the same state.⁹⁹ Federal courts can also contribute to existing confusion by presuming that federal prosecutors use their discretion in good faith, which in turn impacts individual states, federal judicial districts, and the broader American legal system.¹⁰⁰

Under the current federal structure, the President of the United States nominates the United States Attorney General (“Attorney General”).¹⁰¹ Once confirmed by the Senate, the Attorney General establishes the internal priorities of the Department of Justice (“DOJ”) and communicates

94. See *State Marijuana Map*, *supra* note 86.

95. See OSBECK & BROMBERG, *supra* note 49, at 239–41.

96. See *infra* Section II.B.4.

97. See *Prosecutorial Discretion*, BLACK’S LAW DICTIONARY, (10th ed. 2014).

98. See Stephanos Bibas, *The Need For Prosecutorial Discretion*, 19 TEMP. POL. & C.R. 369, 372 (2010).

99. See W. RANDOLPH TESLIK, PROSECUTORIAL DISCRETION: THE DECISION TO CHARGE 12–15 (1975), <https://bit.ly/323IC2X>; see also Celesta A. Albonetti, *Prosecutorial Discretion: The Effects of Uncertainty*, 21 LAW & SOC’Y REV. 291, 292 (1987) (discussing three areas of “unfettered discretion” for prosecuting attorneys: “(1) the circumstances under which a criminal charge will be filed; (2) the level at which an alleged offender will be charged; and (3) when to discontinue prosecution.”); Bruce A. Green, *Prosecutorial Discretion: The Difficulty and Necessity of Public Inquiry*, 123 DICK. L. REV. 589, 613 (2019); 9-27.000–*Principles of Federal Prosecution*, U.S. DEP’T JUSTICE, <https://bit.ly/37qTyIZ> (last visited Feb. 15, 2020).

100. See *Twenty-Second Annual Review of Criminal Procedure*, 81 GEO. L.J. 853, 1029 (1993) (arguing that prosecutorial discretion is due in part to a “regard for the separation of powers doctrine and in part because courts recognize that the decision to prosecute is particularly ill-suited to judicial review”); see also *West v. Holder*, 60 F. Supp. 3d 197, 203 (2015) (“[The government’s] broad discretion rests largely on the recognition that the decision to prosecute is particularly ill-suited to judicial review.” (quoting *Wayte v. United States*, 470 U.S. 598, 607 (1985))).

101. See *Office of the Attorney General*, U.S. DEP’T JUSTICE, <https://www.justice.gov/ag> (last visited Apr. 12, 2020).

those preferences to 93 United States Attorneys (“U.S. Attorneys”) throughout the country.¹⁰² Finally, each U.S. Attorney implements individualized procedures and strategies that embody the Attorney General’s guidance and impact how Assistant United States Attorneys (“AUSAs”) address local issues in their respective regions.¹⁰³

The exercise of prosecutorial discretion is beneficial, but also largely invisible and unreviewable.¹⁰⁴ Prosecutorial discretion also allows prosecutors to act as intermediaries between courts and the police by selectively enforcing criminal laws and defining potential criminal penalties “outside the formal legal system.”¹⁰⁵ Heavy reliance on federal prosecutorial discretion also creates a trickle-down system wherein the guidance of the Attorney General is interpreted and applied through the literal decisions of individual AUSAs.¹⁰⁶

Prosecutorial discretion is not a perfect system, but it remains a concept of modern social and legal importance for three reasons.¹⁰⁷ First, the decision to prosecute directly impacts individual criminal offenders.¹⁰⁸ Second, the unpredictable nature of prosecutorial discretion can also impact ancillary topics like employment and immigration laws,¹⁰⁹ low-

102. See *Mission*, U.S. DEP’T JUSTICE (Sept. 22, 2016), <https://bit.ly/2WyR0qA>; *U.S. Attorneys Listing*, U.S. DEP’T JUSTICE (Mar. 30, 2020), <https://bit.ly/2SJHBZM>.

103. See *Attorneys*, U.S. DEP’T JUSTICE (Oct. 24, 2019), <https://bit.ly/38xsv0b>.

104. See William J. Stuntz, *The Pathological Politics of Criminal Law*, 100 MICH. L. REV. 505, 594 (2001).

105. See *id.*; see also Jordan A. Sklansky, *The Nature and Function of Prosecutorial Power*, 106 J. CRIM. L. & CRIMINOLOGY 473, 504–05 (2016).

106. See Henry L. Chambers, Jr., *Scope of Executive Power: The President, Prosecutorial Discretion, Obstruction of Justice, and Congress*, 52 U. RICH. L. REV. 609, 616–18 & n.53 (2018) (“The Attorney General sets litigation policy for the DOJ and directs United States Attorneys in litigation matters.” (citing 28 U.S.C. § 519 (2012))).

107. See Green, *supra* note 99, at 601 (“Prosecutors’ discretionary decisions are enormously important, whether they are made by an office categorically or ‘wholesale’ by adopting policies for recurring situations, or they are made individually or ‘retail’ by one or more prosecutors considering all the relevant and available facts on an ad hoc basis.”). But see Stephanos Bibas, *Prosecutorial Regulation Versus Prosecutorial Accountability*, 157 U. PENN. L. REV. 959, 1000–01 & n.162 (2009) (arguing that prosecutors utilize structures that “create direct control and political accountability, promoting consistent enforcement” (citing Memorandum from John Ashcroft, Att’y Gen., U.S. Dep’t of Justice to all Federal Prosecutors (Sept. 22, 2003), <https://bit.ly/2HrIXDb>)).

108. See Sklansky, *supra* note 105, at 484.

109. See Dora Lane & Anthony Hall, *Working Though the Haze: What Legal Marijuana Means for Nevada Employers*, NAT’L L. REV. (Dec. 14, 2016), <https://bit.ly/2IOAt9V>; see also Sam Kamim, *Prosecutorial Discretion in the Context of Immigration and Marijuana Law Reform: The Search for a Limiting Principle*, 14 OHIO ST. J. CRIM. L. 183, 191 (2016).

income communities,¹¹⁰ and financial markets.¹¹¹ Finally, prosecutorial discretion can impact the behavior of states, which in turn can either lead to interstate cooperation or individualized conduct that exacerbates current confusion.¹¹² One example demonstrating how prosecutorial discretion can impact state behavior involves the conflicting DOJ memos provided by former Deputy Attorney General James M. Cole and former Attorney General Jefferson B. Sessions.¹¹³

a. The Cole Memo

In August 2013, then-Deputy Attorney General James M. Cole distributed an internal DOJ memorandum regarding the federal enforcement of marijuana-related crimes (“Cole Memo”).¹¹⁴ Rather than prosecuting every potential violation, the Cole Memo asked U.S. Attorneys to reprioritize law enforcement efforts and to focus on eight specific uses of marijuana.¹¹⁵ Additionally, the Cole Memo reaffirmed the

110. See Mona Zhang, *Legal Marijuana Is A Boon To The Economy, Finds Study*, FORBES (Mar. 13, 2018, 5:34 PM), <https://bit.ly/2QSirVQ> (highlighting that in Pueblo County, Colorado, “[r]esearchers found that legalizing marijuana had a positive impact on the economy . . . [and] a taxed and regulated cannabis industry contributed more than \$58 million to the local economy,” including “\$420,000 to scholarships for 210 students”); see also Mrinalini Krishna, *The Economic Benefits of Legalizing Weed*, INVESTOPEDIA (Dec. 11, 2019), <https://bit.ly/2BdTUUm> (highlighting benefits such as the creation of tax revenue, local income and job opportunities, financial investment opportunities, and federal law enforcement savings).

111. See Julie Andersen Hill, *Banks, Marijuana, and Federalism*, 65 CASE W. RES. L. REV. 597, 597 (2015) (“[A]lthough the United States’ dual banking system comprises both federal- and state-chartered institutions, when it comes to marijuana banking, federal regulation is pervasive and controlling.”); Steven Mare, *He Who Comes Into Court Must Not Come With Green Hands: The Marijuana Industry’s Ongoing Struggle With The Illegality And Unclean Hands Doctrines*, 44 HOFSTRA L. REV. 1351, 1353 (2016) (highlighting that in 2015, Colorado marijuana sales generated \$135 million in state tax revenue).

112. See Kreit, *supra* note 82, at 693-95 (explaining that prosecutorial discretion has created a confusing “top-down” marijuana non-enforcement policy that could result in “no *ex post facto* bar to prosecuting marijuana business operators for conduct they undertook while the nonenforcement prosecutorial guidance was in effect”); see also OSBECK & BROMBERG, *supra* note 49, at 240-43.

113. See *infra* Sections II.B.4.a-b; see also *Attorney General: Jeff Sessions*, U.S. DEP’T JUSTICE (Nov. 8, 2018), <https://bit.ly/2UZAMFE>; *Former Deputy Attorney General James Cole*, U.S. DEP’T JUSTICE ARCHIVES (Feb. 14, 2017), <https://bit.ly/38u2JKg>.

114. See Memorandum from James M. Cole, Deputy Att’y Gen., U.S. Dep’t of Justice for all United States Att’y’s (Aug. 29, 2013) [hereinafter *Cole Memo*]; see also Dep’t of Justice Press Release Regarding Memorandum from James M. Cole, Deputy Att’y Gen., U.S. Dep’t of Justice for all United States Att’y’s (Aug. 29, 2013), <https://bit.ly/2kMC3w9> [hereinafter *Cole Guidance Summary*].

115. *Cole Memo*, *supra* note 114 (identifying eight enforcement areas for federal prosecutors to prioritize: marijuana distribution to minors, the receipt of marijuana sales revenue by organized crime and gangs, the diversion of marijuana from states where its use is legal into other states, use of state-allowed marijuana use as a front for broader trafficking, marijuana-related violence, drugged driving and the exacerbation of public

criminalization and illegality of marijuana under the CSA, while also implying that most marijuana infractions should not be prosecuted if they occur within states with marijuana-friendly laws.¹¹⁶

Although the Cole Memo is a topic of significant legal discussion, only three points are worth noting herein. First, the Cole Memo expressly prioritized state legislation over pre-existing federal law.¹¹⁷ Second, the Cole Memo demonstrated that prosecutorial discretion could narrow the impact of federal law without actually changing the law itself.¹¹⁸ Finally, the Cole Memo implicitly encouraged states to circumvent the bureaucracy of Congress by legalizing marijuana via state law without any guarantee of federal support in the future.¹¹⁹ While the Cole Memo did not produce new law,¹²⁰ the memo did lead to internal confusion within the DOJ and amongst state legislatures.¹²¹

health concerns, marijuana growth and production on public lands, and the possession or use of marijuana on federal property).

116. See Mare, *supra* note 111, at 1357 (“Cole cautioned that the federal government and the DOJ do still have the right to interfere should they wish to, explaining that ‘[i]f state enforcement efforts are not sufficiently robust . . . the federal government may seek to . . . bring individual enforcement actions, including criminal prosecutions.’” (quoting *Cole Memo*, *supra* note 114)).

117. Kreit, *supra* note 82, at 693-95.

118. See Bibas, *supra* note 98, at 372.

119. See SACCO & FINKLEA, *supra* note 70, at 2 (“The [Cole] memorandum implied that the federal government’s drug enforcement priorities would likely not include prosecuting individuals or organizations engaged in marijuana activities that are conducted in clear compliance with state laws that permit and regulate them.”); see also Rosalie Winn, Note, *Hazy Future: The Impact of Federal and State Legal Dissonance on Marijuana Business*, 53 AM. CRIM. L. REV. 215, 223-25 (2016) (“While the guidance memos do offer some insight into federal enforcement, they do not offer marijuana businesses certainty as a defense against individual prosecutions. Moreover, enforcement priorities and guidance may change with future presidential administrations, further undermining the ability of marijuana businesses to rely on the guidance.”).

120. See *Cole Guidance Summary*, *supra* note 114 (providing an update to the DOJ’s “federal marijuana enforcement policy”).

121. See *id.* (“The Cole Memo reflected presidential control over a broad law enforcement policy tempered by federalism concerns. As long as states attempted to stop behavior that triggered the federal government’s enforcement priorities, state and local law enforcement would largely be left to address marijuana-related activity. The Cole Memo concluded by indicating that it did not guarantee that CSA violations that did not contravene the DOJ’s enforcement priorities would be immune from prosecution.”); see also Brad Auerbach, *How Cannabis Entrepreneurs Feel About Sessions’ Reversal of the Cole Memo*, FORBES (Mar. 3, 2018, 7:32 PM), <https://bit.ly/2t8yZiK>; Hilary Bricken, *Reading the Pot Leaves: What the Sessions Memo Means for Marijuana in the U.S.*, ABOVE LAW (Jan. 8, 2018, 4:20 PM), <https://bit.ly/2D73Mck>; Sadie Gurman, *Pot stocks plummet as Sessions takes aim at cannabis*, BNN BLOOMBERG (Jan. 4, 2018), <https://bit.ly/2St2CK8>; Nick Wing & Ryan J. Reilly, *Marijuana Industry Not Freaking Out Over the Threat of Federal Crackdown*, HUFFINGTON POST (Jan. 8, 2018), <https://bit.ly/2Rnrldz>.

b. The Sessions Memo

In January 2018, then-Attorney General Jefferson B. Sessions issued a new marijuana-related memorandum (“Sessions Memo”) in order to rescind the guidance set forth in the Cole Memo and to reaffirm the validity of the CSA.¹²² Above all, the Sessions Memo reflected a “return to the rule of law”¹²³ and reiterated that marijuana is still a harmful substance that is closely connected to violent crime and gang-related enterprises.¹²⁴ The Sessions Memo also reminded U.S. Attorneys to uphold current federal drug laws, even when differing state law exists.¹²⁵ Although the Sessions Memo suggested that state marijuana legislation would no longer be permitted, the memo’s impact has varied across states and even spurred bipartisan congressional support for state marijuana legislation.¹²⁶

At the time of this writing, different forms of state marijuana legislation and prosecutorial inconsistency still exist among the states.¹²⁷ The Sessions Memo also remains valid, even though the desire to prosecute state-compliant marijuana-related activity is uncommon and often unclear.¹²⁸ To supplement existing scholarship involving state marijuana legislation,¹²⁹ this Comment utilizes game theory to evaluate

122. Memorandum from Jefferson B. Sessions, Att’y Gen., U.S. Dep’t of Justice for all United States Att’y’s (Jan. 4, 2018) [hereinafter *Sessions Memo*]; see also Dep’t of Justice Press Release Memorandum from Jefferson B. Sessions, Att’y Gen., U.S. Dep’t of Justice for all United States Att’y’s (Jan. 4, 2018), <https://bit.ly/2CV2etq> (rescinding prior DOJ guidance and explicitly directing the renewed enforcement of federal marijuana laws) [hereinafter *Sessions Guidance Summary*].

123. *Sessions Guidance Summary*, *supra* note 122.

124. See *id.* (“This return to the rule of law is also a return of trust and local control to federal prosecutors who know where and how to deploy Justice Department resources most effectively to reduce violent crime, stem the tide of the drug crisis, and dismantle criminal gangs.”).

125. See *id.*; see also Wick Sollers et al., *DOJ Issues Updated U.S. Attorneys’ Manual*, A.B.A. (Feb. 5, 2019), <https://bit.ly/38ykvMq> (noting that the Sessions Memo can be found in Section 1-17.000 of the revised Justice Manual, which solidifies the DOJ’s “commitment to this approach”).

126. See, e.g., *Chronic Dispute: What The Sessions Marijuana Memo Means For Employers*, FISHER PHILLIPS (Jan. 5, 2018), <https://bit.ly/2OZZfr1> (“[T]he legality of marijuana use remains confusing, to say the least: it is dependent on the state you are in”); Senator Cory Gardner, *Gardner Defends States’ Rights on Senate Floor*, YOUTUBE (Jan. 4, 2018), <https://bit.ly/2Rrb1y2>; Elizabeth Wittemyer, *The Sessions Memo: Its Legal and Financial Implications*, MARIJUANA EDUC. INITIATIVE, <https://bit.ly/39Dbhyr> (last visited Feb. 16, 2020).

127. See *supra* notes 84–92 and accompanying text; see also LAMPE, *supra* note 76, at 23–29 (discussing the current “marijuana policy gap”); THE MARIJUANA POLICY GAP AND THE PATH FORWARD, *supra* note 72, at 11–20.

128. See Tom Firestone, *The Sessions Memorandum: Two Years Later*, BAKER MCKENZIE: GLOBAL CANNABIS COMPLIANCE BLOG (Jan. 6, 2020), <https://bit.ly/2yb8eQu>.

129. See, e.g., Chemerinsky et al., *supra* note 6, at 116–20 (discussing the utilization of “cooperative federalism”); Kreit, *supra* note 82, at 699–711 (offering three proposals to “solve the conflict between state and federal marijuana laws”).

state conduct and to discuss why interstate cooperation should be a critical priority going forward.¹³⁰

C. Game Theory

Game theory refers to “a theoretical framework to conceive social situations among competing players and produce optimal decision-making of independent and competing [rational] actors in a strategic setting.”¹³¹ In practical terms, game theory is a “science of strategy” that makes assumptions and attempts to determine the optimal decision in an otherwise difficult situation.¹³²

Game theory cannot predict the future, but the repetitive use of game theory models can be used to identify actor “identities, preferences, and available strategies and how these strategies affect the outcome” of complex social situations.¹³³ For example, game theory principles can offer insights into human decision-making¹³⁴ and a variety of other practical topics including “psychology, evolutionary biology, war, politics, economics, and business.”¹³⁵

130. See *infra* Section II.C.

131. See Adam Hayes, *Game Theory*, INVESTOPEDIA (June 25, 2019), <https://bit.ly/3bCIqfw>; Daniel McNulty, *The Basics of Game Theory*, INVESTOPEDIA (Nov. 13, 2019), <https://bit.ly/2joiVVu> [hereinafter *McNulty Basics*]; see also Kenneth Chang, *Explaining a Cornerstone of Game Theory: John Nash's Equilibrium*, N.Y. TIMES (May 24, 2015), <https://nyti.ms/2yPT80z> (highlighting that game theory is “essentially the study of how to come up with a winning strategy in the game of life — especially when you do not know what your competitors are doing and the choices do not always look promising”).

132. Hayes, *supra* note 131 (suggesting that game theory leads to strategic decision-making that can resolve issues irrespective of the conduct of “competing actors”).

133. See *id.* (explaining that game theory “helps to predict *likely outcomes* when [actors] engage in certain behaviors”) (emphasis added); see also G. Owen, *Game Theory*, in INTERNATIONAL ENCYCLOPEDIA OF THE SOCIAL AND BEHAVIORAL SCIENCES 5863, 5868 (Neil J. Smelser & Paul B. Baltes eds., 2001); Angela M. Koos, *Game theory and its practical applications* 6–7 (May 1, 1997) (unpublished Presidential Scholars Thesis, University of Northern Iowa) (on file with the University of Northern Iowa Honors Program) (noting that the Prisoner’s Dilemma “is a universal concept that has practical applications to biology, psychology, sociology, economics, law, and other disciplines where a conflict of interests may exist”); John Cassidy, *The Triumph (and Failure) of John Nash's Game Theory*, NEW YORKER (May 27, 2015), <https://bit.ly/2ALBhJm>; Dana Trexler Smith & Gary H. Levin, *The Benefits of Game Theory in Negotiations and Mediations*, LEGAL INTELLIGENCER (Oct. 6, 2015, 12:00 AM), <https://bit.ly/33AErN0>.

134. *McNulty Basics*, *supra* note 131 (defining a “game” as “[a]ny set of circumstances that has a result dependent on the actions of two or more decision-makers (players)”).

135. See Hayes, *supra* note 131; see also MARTIN J. OSBORNE, AN INTRODUCTION TO GAME THEORY 22 (2009) (explaining that game theory can be used to understand “firms competing for business, political candidates competing for votes, jury members deciding a verdict, [and even] long-term relationships”); Randal C. Picker, *An Introduction to Game Theory and the Law* 2 (Coase-Sandor Institute for Law and Economics, Working Paper No. 22, 1994) (“Game theory is a set of tools and a language for describing and predicting strategic behavior.”); Elvis Picardo, *How Game Theory Strategy Improves Decision Making*, INVESTOPEDIA (May 19, 2019), <https://bit.ly/2wnuANZ>; Jesus Rodriguez, *Game*

In contrast to the proposed benefits of game theory, critics argue that game theory offers minimal practical value because it relies upon unrealistic assumptions that cannot apply in modern society.¹³⁶ Some critics even question whether cooperation is necessary at all.¹³⁷ However, such criticisms inappropriately focus on the limitations of game theory without recognizing the practical value that can be gleaned from its use. Game theory cannot predict the future, nor is it a formal “scientific theory” like those used in scientific laboratories.¹³⁸ In reality, game theory is a practical tool that offers social benefit by helping to “determine the most likely outcomes” in real-life situations involving “known payouts or quantifiable consequences.”¹³⁹

1. Basic Assumptions

Several different game theories exist.¹⁴⁰ This Comment solely considers the principles of non-cooperative game theory to understand why “rational individuals make decisions” to achieve their own goals.¹⁴¹ Non-cooperative games can implicate a range of situations, from a childhood game “Rock-Paper-Scissors,” to international conflicts, to collective state actions seeking to avoid nuclear proliferation.¹⁴² Despite

Theory for Data Scientists, TOWARDS DATA SCI. (Jan. 17, 2019), <https://bit.ly/31XEQlq> (“The history of game theory is attached to the history of computer science.”).

136. See ANTHONY KELLY, *DECISION MAKING USING GAME THEORY 1* (2003) (explaining that game theory models do not reflect “the social reality of decision making”); see also McNulty *Basics*, *supra* note 131 (discussing the need for basic assumptions like “rationality” and “maximization”).

137. See, e.g., Emily Singer, *Game Theory Calls Cooperation into Question*, QUANTA MAG. (Feb. 11, 2015), <https://bit.ly/2OZLZTf>; KELLY, *supra* note 136, at 174–80 (offering a critique of game theory assumptions).

138. See Cassidy, *supra* note 133 (“[Game theory] is an intellectual tool—a way of organizing our thoughts systematically, applying them in a consistent manner, and ruling out errors. Like Marshallian supply-and-demand analysis or Bayesian statistics, it can be applied to many different problems, and its utility depends on the particular context.”); see also Bryn Farnsworth, *Game Theory and Human Behavior: Introduction and Examples*, iMOTIONS: BLOG (Aug. 21, 2018), <https://bit.ly/2vzxwqv>.

139. See *supra* note 131 and accompanying text.

140. See Hayes, *supra* note 131 (noting that various game theory types exist, including: symmetric/asymmetric, simultaneous/sequential, cooperative/non-cooperative).

141. *Id.* (“Noncooperative game theory deals with how rational economic agents deal with each other to achieve their own goals.”); see also AVINASH K. DIXIT & BARRY J. NALEBUFF, *THE ART OF STRATEGY: A GAME THEORIST’S GUIDE TO SUCCESS IN BUSINESS AND LIFE* 12 (2008) (predicting how people will behave by assessing choices in a presumed non-moral and non-ethical context); GRAHAM ROMP, *GAME THEORY: INTRODUCTION AND APPLICATIONS 1-2* (1997) (requiring assumptions about individualism, rationality, and mutual interdependence).

142. See Hayes, *supra* note 131; see also Peter Revesz, *A Game-Theoretic Analysis of the Nuclear Non-Proliferation Treaty 97–98* (Nov. 1, 2014)(unpublished manuscript)(on file with the University of Nebraska-Lincoln Library system); Andreas Kluth, *The Risk of Nuclear Proliferation (and War) Is Growing*, BLOOMBERG OPINION (Jan. 9, 2020, 2:00 AM), <https://bloom.bg/2wtxGjU>.

the name, non-cooperative game theory does not assert that cooperation is impossible.¹⁴³ Instead, non-cooperative game theory merely presumes that insufficient incentives make cooperation highly unlikely.¹⁴⁴

Importantly, the success of non-cooperative game theory requires users to have a sufficient understanding of actor goals and priorities.¹⁴⁵ Accordingly, three basic presumptions must be considered to properly apply non-cooperative game theory to modern marijuana legislation: individualism, rationality, and mutual interdependence.¹⁴⁶ Individualism refers to the notion that non-cooperative game theory best applies to situations involving parties who act out “of their own [self] interest,” regardless of the impacts on others.¹⁴⁷ Non-cooperative games also assume that players will always act rationally in order to avoid jeopardizing their self-interests.¹⁴⁸ Finally, mutual interdependence refers to the presumption that “the welfare of any one individual in a game is, at least partially, determined by the actions of other players in the game.”¹⁴⁹

2. The Nash Equilibrium

When game theory models evaluate the potential conduct of relevant actors under specific conditions, that analysis results in an interactive

143. See E. van Damme, *Game Theory: Noncooperative Games*, in INTERNATIONAL ENCYCLOPEDIA OF THE SOCIAL & BEHAVIORAL SCIENCES 5873, 5873 (Neil J. Smelser & Paul B. Baltes eds., 2001) (“A game is said to be noncooperative if there are no possibilities for commitment (unilateral or multilateral) outside the rules of the game. In contrast, in cooperative games, players can form coalitions with the possibilities for doing so not being explicitly modeled within the rules of the game.”); see also *Non-Cooperative Games*, SYSTEMS INNOVATION, <https://bit.ly/2uPNyMO> (last visited Feb. 16, 2020).

144. See *Non-Cooperative Games*, *supra* note 143.

145. See Martin Shubik, *Game Theory, Law, and the Concept of Competition*, 60 U. CIN. L. REV. 285, 300 (1991) (“A better understanding of key concepts, such as competition, collusion, efficiency, inside information, fair division, and fiduciary responsibility is where the contribution of game theoretic thought can be significant. The contribution of game theory to the law comes in the form of a new language to aid in the understanding of conflict, competition, collusion, and cooperation.”).

146. See ROMP, *supra* note 141, at 1–4 (noting that assumptions are only problematic “if the results based on [those] assumption[s] are found to be unhelpful”); see also Russell B. Korobkin & Thomas S. Ulen, *Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics*, 88 CAL. L. REV. 1051, 1057 (2000); Brian Martin, *The Selective Usefulness of Game Theory*, 8 SOC. STUD. OF SCI. 85, 91–94 (1978) (discussing the underlying values of game theory); Cassidy, *supra* note 133 (“[T]he Nash criteria doesn’t necessarily give the correct answer, [but] it often rules out a lot of implausible [answers], and it usually helps pin down the logic of the situation.”).

147. See Theodore L. Turocy & Bernhard von Stengel, *Game Theory* 4–7 (London Sch. of Econ., Working Paper No. LSE-CDAM-2001-09, 2001), <https://bit.ly/2ycS7Ac>; see also ROMP, *supra* note 141, at 19 (noting that actors assume that unselfish behavior will offer “no incremental benefit” because everyone else will naturally act in selfish ways).

148. See Picker, *supra* note 135, at 2 (explaining how game theory originates from classical microeconomics, which presumed that individual decisionmakers would seek to “maximize[] utility or profits subject to constraints”).

149. *Id.* at 4.

evaluation called a “game.”¹⁵⁰ Although innumerable variables can exist and impact real life situations, every game eventually results in an outcome where no player can improve his or her payoff through a unilateral change in conduct.¹⁵¹ This eventual outcome is referred to as the “Nash Equilibrium,” in honor of its inventor, the American mathematician John Nash.¹⁵²

Importantly, the Nash Equilibrium is not realized by simply waiting for a situation to play out.¹⁵³ Instead, deliberate steps must be taken to “find” the Nash Equilibrium and to thereby derive meaning from the game for future application in real-life situations.¹⁵⁴ Although the Nash Equilibrium is best known as an economic tool,¹⁵⁵ the Nash Equilibrium is a “decision-making theorem” that applies to a host of different real-life situations¹⁵⁶ and also enjoys popularity through modern film¹⁵⁷ and its practical value when applied to situations best described as a “Prisoner’s Dilemma.”¹⁵⁸

150. Hayes, *supra* note 131; KELLY, *supra* note 136, at 1 (“[G]ames like chess and bridge fall within the ambit of game theory, but so do many other social situations which are not commonly regarded as games in the everyday sense of the word.”).

151. See Hayes, *supra* note 131 (“It can also be thought of as ‘no regrets,’ in the sense that once a decision is made, the player will have no regrets concerning decisions considering the consequences.”); see also James Chen, *Nash Equilibrium*, INVESTOPEDIA (Feb. 3, 2020), <https://bit.ly/2yR1rJh> (“Nash equilibrium is a concept within game theory where the optimal outcome of a game is where there is no incentive to deviate from their initial strategy.”).

152. See *John Nash – American Mathematician*, ENCYCLOPEDIA BRITANNICA (June 9, 2019), <https://bit.ly/2xCIf1m> (offering an overview of John Nash and his accomplishments within the field of economic game theory); see also Charles A. Holt & Alvin E. Roth, *The Nash equilibrium: A Perspective*, 101 PROC. NAT’L ACAD. SCI. U.S. 3999, 4000 (2004).

153. Daniel McNulty, *Game Theory: Beyond the Basics*, INVESTOPEDIA (June 25, 2019), <https://bit.ly/3dlzkVu>.

154. See *id.* (providing a standard three-step process to “find” the Nash Equilibrium).

155. See Chen, *supra* note 151; see also John Wooders, *John Nash and his contribution to Game Theory and Economics*, CONVERSATION (May 26, 2015, 3:13 AM), <https://bit.ly/2Q4iRcb>.

156. See Chen, *supra* note 151.

157. See *A Beautiful Mind*, IMDB, <https://imdb.to/2HvsGgq> (last visited Feb. 16, 2020); see also Patricia Bauer, *A Beautiful Mind*, ENCYCLOPEDIA BRITANNICA (Sept. 13, 2017), <https://bit.ly/2qg8s1R> (offering a synopsis of the film and John’s innovative work despite prolonged mental illness); Chang, *supra* note 131 (explaining that one infamous scene in the film, “A Beautiful Mind,” is when John Nash conceived the Nash Equilibrium by realizing that unselfish cooperation could allow a group of young men to gain the attention of a beautiful, blonde female and her friends in a local bar).

158. See Chen, *supra* note 151; see also Ben Duronio, *7 Easy Ways to Use Game Theory to Make Your Life Better*, BUS. INSIDER (Apr. 4, 2012, 2:43 PM), <https://read.bi/2DILMWk> (listing practical uses for the Nash Equilibrium, such as salary negotiations, purchasing a car, making money in stock markets, real estate negotiations, fantasy sports, poker games, and auctions); S.K., *What is the Nash equilibrium and why does it matter?*, ECONOMIST (Sept. 7, 2016), <https://econ.st/2RIIZ3k> (“[The Nash Equilibrium] helps economists work out how competing companies set their prices, how

3. The Prisoner's Dilemma Game

The Prisoner's Dilemma game refers to "a paradox in decision analysis in which two individuals acting in their own self-interests do not produce the optimal outcome."¹⁵⁹ Additionally, the Prisoner's Dilemma game is often used to analyze situational decision making, especially when actors are confronted with imperfect information.¹⁶⁰ When applying the Nash Equilibrium to the Prisoner's Dilemma, both parties "will make the move that is best for them individually but worse for them collectively."¹⁶¹ In other words, both players will betray each other out of self-interest, rather than cooperating to achieve more superior results.¹⁶²

Similar to other game theory games, the Prisoner's Dilemma involves a set of basic assumptions and stereotypes that do not always reflect the reality of modern society.¹⁶³ However, the use of stereotypes and assumptions to predict actor behavior is a critical step in the process.¹⁶⁴ When proper assumptions are used to evaluate real-life social issues like state marijuana legislation, game theory games will not specifically predict how particular states will act, but they can help better understand why states act in particular ways today and how those aggregated decisions will lead to likely outcomes in the future.¹⁶⁵

II. COMPARATIVE ANALYSIS

Both federalism and the Constitution presume that disagreements between state and federal law will occur,¹⁶⁶ but neither topic explains how to resolve the tensions that arise when states blatantly ignore existing federal law.¹⁶⁷ Additionally, increasing social support for the use and

governments should design auctions to squeeze the most from bidders and how to explain the sometimes self-defeating decisions that groups make.").

159. See Jim Chappelow, *Prisoner's Dilemma*, INVESTOPEDIA (May 23, 2019), <https://bit.ly/2RQJjZv>.

160. Hayes, *supra* note 131 ("Consider the example of two criminals arrested for a crime. Prosecutors have no hard evidence to convict them. However, to gain a confession, officials remove the prisoners from their solitary cells and question each one in separate chambers. Neither prisoner has the means to communicate with each other. Officials present four deals, often displayed as a 2 x 2 box."); see also DOUGLAS G. BAIRD ET AL., *GAME THEORY AND THE LAW* 312-13 (2d ed. 1995).

161. See Hayes, *supra* note 131; see also Elvis Picardo, *The Prisoner's Dilemma in Business and the Economy*, INVESTOPEDIA (Jan. 22, 2020), <https://bit.ly/2yPLnrq> ("[The] Prisoner's dilemma basically provides a framework for understanding how to strike a balance between cooperation and competition, and is a very useful tool for strategic decision-making.").

162. See Hayes, *supra* note 131.

163. See *id.*

164. See ROMP, *supra* note 141, at 1-4.

165. OSBORNE, *supra* note 135, at 13 (noting that actors are affected by the actions of all other related actors, which can lead to aggregate change over time).

166. See *supra* Section II.A.

167. See *supra* Section II.B.3.

possession of marijuana does not change the fact that state marijuana legislation directly contradicts the CSA.¹⁶⁸ Although state marijuana legislation is currently tolerated by the federal government, the legalization of marijuana still creates tensions that neither federalism, nor the Constitution, can adequately address alone.¹⁶⁹

The disparity between state and federal law is not all bad. Importantly, the confusion caused by state marijuana legislation can lead to positive social change if handled correctly. With that belief in mind, this Comment argues that states must utilize game theory to better understand complex social situations and to also identify effective solutions in the future. When used to evaluate state marijuana legislation, the effective use of game theory can lead to a better understanding of state and federal priorities, which in turn offers predictability and incentivizes interstate cooperation in the future.

The Prisoner's Dilemma game is also particularly relevant to this discussion because state marijuana legislation is a non-cooperative social situation that involves self-interested conduct, inadequate information, and a "zero-sum" mentality.¹⁷⁰ The Prisoner's Dilemma is also well-suited to address other complex interstate issues involving similar social and legal complexities.¹⁷¹ Ultimately, state marijuana legislation is not just about the legalization of marijuana.¹⁷² Instead, the use of marijuana raises a number of legal, political, social, economic, and medical interests that can either help or hurt modern American society.¹⁷³ Thus, this Comment utilizes the Prisoner's Dilemma to demonstrate that the current lack of cooperation between states must be improved in order to better address complex social issues in the future.¹⁷⁴

168. See *supra* Section II.B.2.

169. See *supra* Sections II.A–B; see also Angela Dills et al., *Dose of Reality: The Effect of State Marijuana Legalizations*, CATO INST. (Sept. 16, 2016), <https://bit.ly/3b2Bjfn> (discussing initial legislative predictions and how views have changed over time); Sarah Trumble & Nathan Kasai, *America's Marijuana Revolution*, THIRD WAY (Aug. 24, 2017), <https://bit.ly/3aV3RY7>.

170. See *supra* Section II.C.3; see also Kenton, *supra* note 27.

171. See Stearns, *supra* note 53, at 6–7; see also Richard H. McAdams, *Beyond the Prisoners' Dilemma: Coordination, Game Theory, and Law*, 82 S. CAL. L. REV. 209, 210–11 (2009) (arguing that "legal scholars are nearly obsessed with the Prisoners' Dilemma, . . . [while] virtually ignoring other equally simple games offering equally sharp insights into legal problems.").

172. See *Status Report*, *supra* note 87.

173. See Liberty Vittert, *Opinion: Here's what the numbers show about the impact of legal marijuana*, MKT. WATCH (Apr. 19, 2019, 7:54 AM), <https://on.mktw.net/2Ua1eeg>; see also Judith Grisell, *Pot Holes: Legalizing Marijuana is Fine, But Don't ignore the Science on its Dangers*, WASH. POST (May 25, 2018), <https://wapo.st/2xJCj9X>; Dan Hyman, *When the Law Says Using Marijuana Is O.K., but the Boss Disagrees*, N.Y. TIMES (July 19, 2019), <https://nyti.ms/2WeBCzl>.

174. See *supra* Sections III.A–B.

A. *Modeling the Marijuana Prisoner's Dilemma*

The regulation of marijuana is a source of significant social and legal disagreement between American citizens, state governments, federal law enforcement agencies, and even Congress.¹⁷⁵ After years of federal criminalization, some state legislatures and even a few federal agencies, such as the U.S. Food and Drug Administration (“FDA”), now recognize the potential benefits of marijuana in modern society.¹⁷⁶ Additionally, rising public support for the medicinal and recreational use of marijuana suggests that both state and federal legalization is an inevitable reality at some point in the future.¹⁷⁷ Accordingly, the question is not whether marijuana will become legal, but how and when a sweeping change will occur.¹⁷⁸

State marijuana legislation also illustrates the issues that can arise when states function as solitary creatures within an inherently federal system.¹⁷⁹ More specifically, the fact that states often prioritize their individual goals to the detriment of neighboring states is concerning and often forecloses the possibility of social progress.¹⁸⁰ Consequently, the application of game theory can help to address state marijuana legislation, as well as the need for progressive social change through informed decision-making and strategic cooperation amongst states.¹⁸¹

1. General Assumptions

To accurately assess state marijuana legislation using the Prisoner's Dilemma game, two preparatory steps are required. The first step is to identify the actors. The second step is to make general assumptions regarding each actor's motivations and expected conduct.¹⁸² In this game, the first actor is a hypothetical state that supports the legal use of marijuana through state legislation (“State X”). The second actor is the local United States Attorney's Office, which is overseen by a U.S. Attorney who will prosecute federal marijuana crimes in State X based on guidance from the

175. See *supra* Section II.B.

176. See *State Marijuana Map*, *supra* note 86; see also *FDA Regulation of Cannabis and Cannabis-Derived Products, Including Cannabidiol (CBD)*, U.S. FOOD & DRUG AGENCY (Mar. 11, 2020), <https://bit.ly/2Jbr2kR>; *Several marijuana-related bills pending in Congress*, MARIJUANA POL'Y PROJECT (Jan. 13, 2020), <https://bit.ly/36mPRDM>.

177. See Kyle Jaeger, *Federal Marijuana Action Is An “Inevitability,” Trump FDA Chief Says*, MARIJUANA MOMENT (Nov. 19, 2018), <https://bit.ly/39bzLhy> (providing a clip of FDA Chief Scott Gottlieb's interview on CNBC); see also Hartig & Geiger, *supra* note 87.

178. Mona Zhang, *Marijuana legalization may hit 40 states. Now what?*, POLITICO (Jan. 20, 2020, 8:15 AM), <https://politi.co/3agoka0>.

179. See *supra* Sections II.A–B.

180. See *infra* Sections III.B–C.

181. See *infra* Section III.C.

182. See *supra* Section II.C.1.

Attorney General. Both actors will also act rationally, despite having incomplete information about the motivations and actions of the other side.

The next step is to determine the general motivations of each actor, including how each actor will attempt to satisfy their individual goals within the game. Because actual future conduct will be unknown, each party will presumptively act selfishly by seeking to achieve their respective goals without concern for the other side. This game will also assume that no marijuana legislation currently exists in State X, even though local citizens are supportive of laws that legalize the medicinal and recreational use of marijuana.

The final step is to consider the expected conduct of each actor. In this example, State X is presumptively aware of the CSA, but the officials of State X also want to appease their citizens who support the legalization of marijuana. Similar to modern state legislatures, State X is unsure how to draft state legislation that will appease marijuana advocates, while also protecting disinterested citizens from harm. State X also knows that other states have passed marijuana-related legislation without adverse results, but also remains unsure if the local U.S. Attorney will pursue marijuana-related crimes in the future.

Alternatively, the U.S. Attorney is presumptively aware of State X's plans to pass marijuana-related legislation in the future. Unbeknownst to State X, the U.S. Attorney also plans to enforce all federal laws in State X, including the CSA as discussed in the Sessions Memo.¹⁸³ The U.S. Attorney also understands that if State X does indeed pass marijuana legislation, then he or she must decide how to properly allocate manpower to effectively prosecute marijuana-related activities in State X.

2. Identifying the "Nash Equilibrium"

Based on the assumptions mentioned, a Prisoner's Dilemma exists because State X and the U.S. Attorney have conflicting goals and imperfect information regarding the plans of the other side.¹⁸⁴ Consequently, the critical next step is to determine the Nash Equilibrium, or the point at which both parties will have no incentive to deviate from their self-interested strategies.¹⁸⁵ Notably, State X and the U.S. Attorney could work together to find a reasonable solution that would meet individual and collective needs. Unfortunately, cooperation is unlikely because State X is accountable to its citizens and the U.S. Attorney must follow the mandate of the Attorney General. If State X declines to pass marijuana legislation, voters would likely remove current state politicians from office. Similarly, the U.S. Attorney serves at the pleasure of the

183. *See supra* Section II.B.4.b.

184. *See supra* Section II.B.

185. *See supra* Section II.C.2.

Attorney General and could be removed from office for failing to follow the mandates set forth by the Attorney General.

According to the Prisoner's Dilemma, both actors will "betray" each other by prioritizing the goals of their relevant stakeholders without regard to the impact on the other side.¹⁸⁶ Because the potential benefit of compromise is overshadowed by the need to satisfy respective stakeholders, State X will prioritize the desires of its citizens over the risk of potential litigation by the U.S. Attorney. Similarly, the U.S. Attorney will prioritize the enforcement of federal law by prosecuting marijuana-related crimes until internal guidance is changed or until the CSA is modified. While the decisions of State X and the U.S. Attorney represent modern reality, neither approach is ideal. Additionally, the fact that cooperation is unlikely does not mean that a cooperative relationship cannot exist.

B. *Analyzing the Marijuana Prisoner's Dilemma*

The Prisoner's Dilemma game presumes that self-interest will prevail over cooperation.¹⁸⁷ In fact, all game theory models rely on assumptions that may not completely reflect the realities of "real-life."¹⁸⁸ In non-cooperative games, actors are presumed to make "rational" decisions that incentivize cooperation in specific circumstances.¹⁸⁹ In reality, the decision to cooperate is often more complex and unpredictable than game theory suggests.¹⁹⁰

As previously mentioned, this Comment does not argue that game theory can predict naturally unpredictable human behavior. In fact, the popular belief that game theory can solve difficult problems in a matter of minutes is utterly false. Instead, this Comment argues that game theory can provide an enhanced understanding of real-life social issues that can lead to new or improved solutions.

The hypothetical game between State X and the U.S. Attorney highlights the inherent unpredictability of human behavior, as well as the

186. See *supra* Section II.C.3.

187. See *supra* Section II.B.4; see also Hayes, *supra* note 131.

188. See *supra* Section II.C.1; see also McNulty Basics, *supra* note 131.

189. See *supra* Section II.C.1; see also ROMP, *supra* note 141, at 2-3. But see Jim Chappelow, *Paradox of Rationality*, INVESTOPEDIA (Oct. 1, 2019), <https://bit.ly/2vLQomA> (explaining that "players who make irrational or naive choices often receive better payoffs and that those making the rational choices . . . suggest[ing] that something more than purely rational individual choice is at work").

190. See, e.g., Max Nisen, *They Finally Tested The 'Prisoner's Dilemma' On Actual Prisoners — And The Results Were Not What You Would Expect*, BUS. INSIDER (July 21, 2013, 4:01 PM), <https://bit.ly/3bflvU4>; Picardo, *supra* note 161 ("The prisoner's dilemma shows us that mere cooperation is not always in one's best interests. In fact, when shopping for a big-ticket item such as a car, bargaining is the preferred course of action from the consumers' point of view.") (emphasis added).

need for certain assumptions.¹⁹¹ Even after careful preparation, this game cannot guarantee that actors will act rationally, nor can it ensure that expected outcomes will actually occur. Additionally, even if this game correctly predicts future conduct, there is no guarantee that the assumed motivations of the game are accurate. Consequently, the value of game theory is not in a perfect prediction of human behavior, but rather in the lessons gleaned from recurring models that offer both accurate and inaccurate results.¹⁹²

The hypothetical game discussed herein highlights two important realities of modern society.¹⁹³ First, the existence of rationality does not necessarily stop actors from pursuing self-interested strategies, even when there is a high risk of unknown consequences. Second, game theory relies on assumptions and imperfect information, which means that even the best games cannot perfectly predict how parties will act, regardless of whether their interests align. In the hypothetical game discussed herein, both State X and the U.S. Attorney made decisions that supported the interests of their respective constituents. State X acted in a way that would likely appease voters, while the U.S. Attorney sought to appease the Attorney General. Each actor's conduct also served deeper selfish interests. For example, State X knew that happy voters would re-elect current politicians to positions of power. Similarly, the U.S. Attorney sought to appease the Attorney General in order to retain his or her position of appointment. Although both actors shared similar goals, each actor still chose independent approaches rather than strategic collaboration. Even though the risk of potential failure could have been avoided through open communication and strategic collaboration, both actors still rationally chose to prioritize non-cooperative conduct in order to avoid limiting their potential payoffs.

The purpose of the hypothetical game is to highlight the limitations of game theory and the potential insights that game theory can offer. Even in a controlled environment, the motivations of State X and the U.S. Attorney are merely theories based on past conduct and current research. Additionally, the game suggests that the potential benefits of cooperation are often insufficient to encourage parties to prioritize strategic cooperation.¹⁹⁴ More broadly, the hypothetical demonstrates why game

191. See *supra* Section II.C.

192. See Owen, *supra* note 133, at 5868.

193. See *supra* Section III.B.

194. See Lisa Zyga, *Deceptive Behavior May (Deceivably) Promote Cooperation*, PHYS.ORG (Nov. 7, 2014), <https://bit.ly/2wrOVID> (“Naively, one would expect that, the better the radar of cooperators at identifying deceitful defectors, the better the conditions for cooperation to evolve. But it is not necessarily so. If the cost of hiding is moderate, then the extra cost of detection opens the door for even more defection.”); cf. Melissa L. Breger, *Making Waves or Keeping the Calm?: Analyzing the Institutional Culture of Family Courts Through the Lens of Social Psychology Groupthink Theory*, 34 LAW & PSYCHOL. 55, 56

theory should be embraced as a tool that, when used proactively, can increase understanding and potentially help avoid future issues before they arise.¹⁹⁵

C. *Recommendations Moving Forward*

Game theory cannot force social change. In reality, game theory can provide an increased understanding of complex individuals and situations, in order to incentivize strategic cooperation among naturally selfish and uncooperative parties.¹⁹⁶ Accordingly, the practical value of the Prisoner's Dilemma and the Nash Equilibrium is to demonstrate how and why intentional cooperation can be used to achieve individual and collective goals.¹⁹⁷ Although the complex nature of game theory can be daunting, true social change is not easy and cannot be achieved without significant preparation.¹⁹⁸ Similarly, a basic awareness of game theory will not offer lasting solutions to complex social issues.¹⁹⁹

In addition to preparation, states must also continue to act as "laboratories" of democracy, while also identifying interstate collaborative opportunities that will help to achieve individual and collective goals.²⁰⁰ Additionally, two more-specific recommendations should also be considered. First, federal and state legislators should communicate with one another to discuss how legislation affects local communities, states, and the nation. The distinction between state and federal law is not an impenetrable barrier. The Constitution also intrinsically ties independent governments together, which in turn implies that cooperation is sensible for both practical and political reasons.

(2010) (arguing that the social psychology principal "groupthink" contributes to an institutional courtroom culture that "too often stifles conversation and innovation, muffles the voices of the disenfranchised, and serves as a disincentive for zealous legal advocacy").

195. See McAdams, *supra* note 171, at 231 ("In a single equilibrium game, an economic model can claim to account for the influence of history and culture by making adjustments to the payoffs, which then uniquely determine how individuals will behave. But the surprising result of a coordination game, or any game with multiple equilibria, is that the payoffs, whatever they include, do not uniquely determine the behavior. Something else besides payoffs can and does influence how people act.").

196. See *supra* Section II.C.

197. See *supra* Section II.C; see also Stearns, *supra* note 53, at 5–8.

198. See McAdams, *supra* note 171, at 210–11.

199. See *id.*; see also Stearns, *supra* note 53, at 6–7 (discussing the fictional movie "bar scene [that] reveals a coordination difficulty that the men appeared to confront in their efforts to secure their individual objectives"); *A Beautiful Mind Quotes*, IMDB, <https://imdb.to/2QcWq4l> (last viewed Apr. 20, 2020) (offering a transcript of the film's fictional bar scene, which simplifies the Nash Equilibrium for everyday users by explaining: "If we all go for the blonde and block each other, not a single one of us is going to get her. So then we go for her friends, but they will all give us the cold shoulder because no one likes to be second choice. But what if none of us goes for the blonde? We won't get in each other's way and we won't insult the other girls. It's the only way to win").

200. See *supra* notes 54–56 and accompanying text.

Although state and federal collaboration may not change the priorities of Congress or current federal laws like the CSA, cooperation can lead to productive conversations that refocus political efforts on the social issues most pressing to the public majority.

Second, an interstate task force should be established to discuss cross-border social issues, especially topics involving differing state and federal laws. Involvement of the federal government should be considered, but is not necessarily required. The interstate task force should focus on a wide range of social issues that present current issues and future cooperative opportunities amongst diverse states. Above all, the interstate task force should be more than an academic body by attempting to resolve specific social issues that will, in turn, eventually allow states to reclaim basic rights and promised constitutional powers under the Tenth Amendment.

III. CONCLUSION

Game theory is a powerful tool, whose value can vary based upon the preparation and skill of the user. When properly applied to complex social situations, game theory can offer valuable insights into party motivations and potential future conduct.²⁰¹ Game theory can also help to explain why parties make non-cooperative decisions, which in turn can be used to employ strategies that avoid such an unnecessary result.

Game theory is also applicable to various facets of modern society. Game theory can develop and incentivize informed decision-making, including the desire to cooperate with diverse parties. This benefit is especially important in social situations where parties often fall prey to selfish, independent acts resulting in a Nash Equilibrium. Game theory can also increase social understanding, which in turn can mitigate the tensions posed by federalism and also promote interstate cooperation in the future. While there is no simple solution to address the tensions and uncertainties caused by state marijuana legislation, resolutions do exist if states are willing to cooperate to avoid the unnecessary consequences of a Prisoner's Dilemma.

201. Korobkin & Ulen, *supra* note 146, at 1067 (discussing how game theory applies to the old adage that “people usually act the way they do for a reason”).