

The Complex Business of Marijuana:

An Interdisciplinary Examination of the Consequences and Benefits of Legalization

Honors Project

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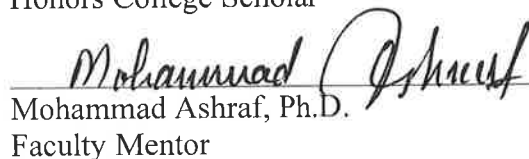
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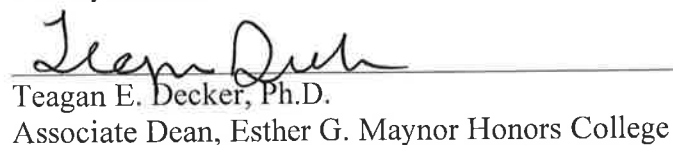
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ABSTRACT

The Complex Business of Marijuana:

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This research explores the potential unknown and unintended consequences of the United States' legalization of cannabis, or marijuana, and considers the impact through an integration of business and social science principles. Furthermore, the potential impacts are derived from an analysis of consumer behavior with respect to drug use, market supply and demand factors, and the pricing strategies employed by both domestic and international drug suppliers. This research studies the effect of legalization on tax policy, society, organizational structure of drug terror organizations (DTO), and the resulting potential DTO actions in Mexico. This research attempted to determine whether legalization of drugs force illegal businesses into legal business through an understanding of the similarities and differences between legal and illegal business. Illegal drug organizations share many more similarities with legal businesses than first assumed at the start of this research. However, this analysis suggests an illegal drug business differs from legal businesses in three distinct ways: (1) a highly decentralized organizational structure characterized by strong social or familial relationships; (2) significant barriers to exit exist resulting from a carefree lavish lifestyle or the perception of physical harm; and, not surprisingly,

(3) the application of violence in the conduct of business. While there are similarities, the differences between legal and illegal business combined with emerging drug market evolution trends suggest illegal businesses diversify and innovate to compete, but may do so in creative and undesirable ways.

1. Introduction

In recent years, several political movements have opened the debate on issues ranging from fiscal policy to the role of government. One of the most profound movements regarding fiscal policy is the growing conversation regarding decriminalization, the law enforcement practice of inflicting little to no punishment, and subsequent legalization of marijuana. The debate has proponents and opponents on all sides of the political spectrum, but legalization is now a reality in some parts of the United States. As the marijuana legalization debates continue in the United States, suppliers of illegal drugs will reevaluate their decisions as their marginal costs and marginal revenue structures change like those of any legal business due to increasing competition. As a result, illegal drug suppliers, like their legal business counterparts, can be expected to diversify, change their product mix, and find ways to compete in a changing market. This growing debate on legalization of marijuana has produced mixed yet interesting results that may, in principle, lead to additional legalization nationally, but at costs yet to be fully understood.

An examination of current legalization movements and public opinion in several states coupled with current DTO efforts suggests that the domestic market for marijuana has shifted dramatically. In response to millions of dollars in lost revenue, the DTOs must cut losses and explore other endeavors to regain and maintain profit margins and operating income. It is often assumed that legalizing drugs forces illegal drug dealers into legal business endeavors. To many low level dealers and users of drugs, turning one's life around is plausible. There are numerous examples of heavy drug users and street dealers becoming upstanding citizens. However, while individual users and low-level dealers are able to escape a life of crime, the ability to do so decreases as the dealer rises up the ranks of the organization.

There are barriers to exiting a drug smuggling organization that are not removed simply through legalization. Mexican DTOs highlight the differences between legal and illegal business, and these organizations address the ability to transition from illegal to legal business. The abundance of available research and media coverage allow clearly defined comparison and contrast of DTOs and legal business. While there are numerous forms of illegal businesses, DTOs form the basis of the argument that legalized drugs will not force illegal business owners into legal business endeavors. As it pertains to DTOs, there exists a large amount of circumstantial evidence that, when analyzed collectively, form a compelling case to support the thesis. However, the absence of clear quantitative evidence makes uncovering the “smoking gun” difficult. To fill the quantitative gap, this research makes several informed assumptions about the behavior of illegal business owners by overlaying psychological and criminal justice research. An integration of psychology provides a keen insight into the behavior of an illegal business owner, and it provides an added layer of understanding to fill gaps that economics cannot answer. For instance, a legal business owner would not consider violence in the conduct of daily commerce, but for an illegal business owner, violence is often a part of doing business. Legal business owners eliminate their competition by offering better products or lower priced products; however, illegal businesses often eliminate the competition in other ways. The understanding of psychological and criminal justice research forms a general understanding of the decision making processes illegal drug dealers use to guide their businesses and avoid imprisonment.

Human behavior does not merely revolve around the concept of price and employment of resources; it is far more complex. The research question, “does legalization of drugs force illegal businesses into legal business,” attempts to provide an explanation using economic theory. However, this research cannot be answered using only economic and business principles. These

economic principles invoke assumptions of rationality and therefore speak to how individuals “should choose but not how they do choose” (Shell 64). Economist Richard Thaler points out that individuals act in ways contrary to prevailing economic theory, and “in these situations, economic theory will make systematic errors in predicting behavior” (Thaler). While the economic theory of *homo economicus* answers questions based in logic, decision making is often “less a matter of weighing evidence and calculating probabilities than it is of reconciling new information with old familiar patterns” (Shell 62).

2. Literature Review

There is extensive existing literature on general drug use, its impacts to the human body, and the dependency and psychology of addiction. Literature pertaining to the business of drug dealers from the macro to micro levels is far less extensive than that of psychology and addiction. Most existing literature on transnational drug organizations comes from a government source tasked with enforcing drug laws and offer limited unbiased information. This is supported by empirical studies collected from first hand interviews with inmates at various prisons throughout the United States. In the absence of solid research, it is often assumed that the business of drugs and other illegal business opportunities are governed by generally accepted business principles. Existing business research pertaining to the illegal drug trade is often confined to the study of economics. This is a result of limited information to form assumptions on the inner workings of DTOs and illegal business since it is difficult to study a DTO from a management perspective. One of the most notable authors of literature pertaining to drug legalization is Jeffery Miron, a Harvard economics professor and a Fellow at the Cato Institute.

Miron uses evidence from depression era alcohol prohibition to suggest that the impact of legalization (as opposed to prohibition) is negligible to the overall use of drugs. Considered in concert with research on this topic, Miron's perspective appears valid. He analyzes crime and health statistics before and after alcohol prohibition during the 1930's by examining cirrhosis deaths and alcohol related arrest records after the repeal of prohibition. Miron's examination shows negligible impact of repeal decades after to cirrhosis deaths and alcohol related arrests. In the context of illegal drugs, Miron argues that money spent on the policing of drugs is better spent on other policing efforts pertaining to violent crimes. Miron contends legalization of drugs shifts the costs of policing illegal drugs to the legal business owner in the form of advertising and marketing. He suggests policing has little impact on deterring existing drug users, and this is supported by the vast body of research available on drug organization and use. However, Miron's research diverges from other research in that it does not analyze the potential for new users based on decreased policing or the absence of the "forbidden fruit" effect, but he does contend that legalization may spur "more casual use because the penalties would be gone and social penalties would diminish" (Miron 68). As further research studies point out, the primary effort of policing and prohibition is to disrupt the operations of DTOs; however, its secondary effects are meant to deter consumption. While prohibition does not deter existing consumers from consumption, research on price elasticities of demand suggests policing (Ruggeri et al) does deter drug experimentation and initial drug use especially among adolescents.

There is a bevy of available economic research pertaining to the price elasticity of demand and the relative effect of policing on the demand for marijuana based on these assumptions. Several studies segment these elasticities by user category based on dependency (Pacula et al). Another study segments users based on age and analyzes price elasticity based on

average age of the user ignoring the relative dependency (Ruggeri). The two studies suggest that prohibition does not deter existing drug users, but they do show that prohibition acts as a deterrent for new users. Pacula analyzes Chaloupka stating that prohibition “was not associated with frequency of use, suggesting that the legal risk deters initiation but does not deter consumption once someone starts to use” (Pacula). Pacula suggests that illegal drugs deter initial use, and legal drugs remove that deterrence potentially driving more towards experimentation. Ruggeri’s data shows decreases in the price elasticity of demand for marijuana in states with relaxed possession laws versus more stringent enforcement. This data shows a decrease in the price elasticity of demand in states where punishment for use is not as severe. Users in these states are not as sensitive to price changes when punishment for use or possession exists. The price elasticity of demand in states where marijuana use and possession was deemed criminal showed an increase of .3 across two of three age categories. The price elasticity of demand enables an understanding of consumer demand at a given price, but in the absence of laws prohibiting drug use, experimentation, and possession, the elasticity decreased suggesting increased price coupled with prohibition forces some consumers toward legal substitutes. Both studies also suggest policing acts as a far greater deterrent to adolescent use than it does to adult use. Furthermore, Ruggeri’s analysis of elasticities for age groups suggest adults over age 26 are far less impacted by the effects of policing and price. The elasticity of demand for marijuana only describes a factor that influences consumer drug use, but it fails to address the impact to supply side strategies. Additional research outlined further analyzes how DTOs address market demand changes.

There is a general assumption that illegal businesses function in a manner similar to that of legal businesses. However, other research (Decker, Chapman) suggests a contradictory view.

Most available research on drug smuggling is confined to analyzing data collected by those tasked with policing. The vast majority of academic research does not study the effects of policing, drug interdiction and disruption strategies on the drug dealers it is intended to combat, but Decker and Chapman's research does just that. They speak to the relative secrecy of these organizations and the lack of available academic resources to analyze the effects of policing on the function of the business. They highlight the efforts of policing strategies by several government and local authorities, and address the efforts illegal suppliers take to reduce the risks associated with capture and seizure. Furthermore, their work uses firsthand accounts to understand the operations of international drug organizations. The research and first hand interviews collected suggest splintered decentralized organizations with few barriers to entry and significant upward mobility into mid-level management and distribution operations within a drug organization. Furthermore, Decker and Chapman's research mirrors other work (subsequently addressed) in that entry requirements are classified as socially driven, more so than purely business driven, characterized by "little in the way of technical requirements, specific skills, and apprenticeships prior to ascending to higher levels of [illegal] drug sales" (Chapman, Decker).

Decker and Chapman draw considerable information from a similar analysis performed in 1989 by Peter Reuter and John Haaga. Reuter and Haaga conducted interviews with 40 low to high level smugglers and dealers. Their research mirrors Decker and Chapman's research in many ways in that it notes there are few barriers to entry, a splintered or decentralized organizational structure, and opportunity for upward mobility. Furthermore, Reuter and Haaga's data states that policing's number one aim to disrupt operations does little to actually incapacitate the overall function of the organization. Firsthand testimony speaks to the ability to fill the void created by policing's efforts, and it asserts that "there is too little differentiation between low-

and high level dealers to suggest that raising the rate at which experienced higher-level dealers are incarcerated or otherwise incapacitated could disrupt the markets” (Reuter, Haaga). However, Reuter and Haaga contend that this does not mean high-level enforcement is not worth the resources invested. They assert that without enforcement “the price of drugs would be lower and greater quantities would be consumed if the risks faced by high-level dealers were not as great” (Reuter, Haaga). Furthermore, contrary to Miron’s analysis of alcohol prohibition versus legalization as a basis for comparison, Reuter and Haaga suggest that there is “no basis for comparison among different types of enforcement programs in terms of their effectiveness in reducing drug consumption” (Reuter, Haaga). Reuter and Haaga also make a key assertion in that policing accomplishes the goal of making a drug dealer’s life riskier and increases their likelihood of arrest and incarceration.

Sociologist Patricia Adler provides one of the most significant contributions to this research and its validity. As described in the book *Wheeling and Dealing: An Ethnography of an Upper-Level Drug Dealing and Smuggling Community*, Adler documented an association with drug contacts throughout the late 1970s. The data they collected suggests a lavish carefree lifestyle funded by drug sales akin to a Hollywood movie. It also documents the complex nature of the illegal drug trade, and the conduct of dealers across a span of more than six years. Adler was immersed in the drug subculture and suggests that illegal drug operations at higher levels are governed by a vast network of associations built on a certain mutual trust and loose friendship rather than a purely business relationship. To a degree, Adler’s accounts of mainstream marijuana in the 1970’s are similar to today’s national legalization efforts. Furthermore, she describes the hierarchy of a drug organization as one built on prestige by an “individuals’ dealing styles and their adherence to the community’s informal norms and conventions” (Adler 10).

Adler's research points out that leaving the illegal drug subculture at the uppermost levels of its hierarchy is difficult and the barriers to exit are significant. Significant barriers to exit and a lavish carefree lifestyle support a key element of this research; higher levels of illegal businessmen and women are less likely to trade a life they are accustomed to living to operate within the confines of legitimate business.

3. National Benefits of Legalization

The basic premise of this research grew from national marijuana legalization efforts; this section analyzes and weighs fiscal data generated from legal marijuana sales in Colorado. The

Status of marijuana laws in the United States

Legend: Legalized (dark grey), Medical (medium grey), Decriminalized (light grey), Medical and decriminalized (black), Fully illegal (white)

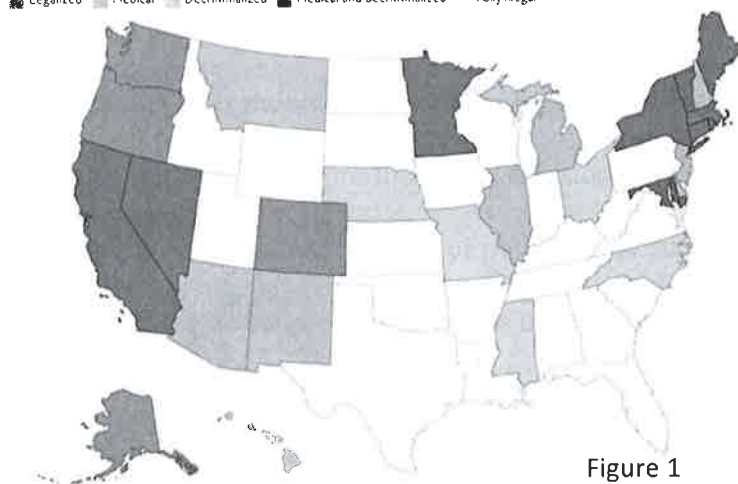


Figure 1

Source: NORML Drug Policy Analysis and the Marijuana Policy Project

growing national debate over legalization of marijuana has caused voters in Colorado, Washington, Oregon, the District of Columbia, and most recently Alaska to legalize for recreational and medicinal use even as the federal government's drug policy laws contradict the will of voters in those states. Furthermore, marijuana is now legal, in some form, in 23 states (Figure 1), and there are efforts in 17 more states to decriminalize possession (www.norml.org, 2015), or minimize the punishments associated with possession below a prescribed amount. The legal marijuana debate, and its impact to the market, has its merits, and there is increasing evidence to suggest initial hypotheses on the economic and safety benefits derived from legalization may in fact prove true as efforts to legalize continue.

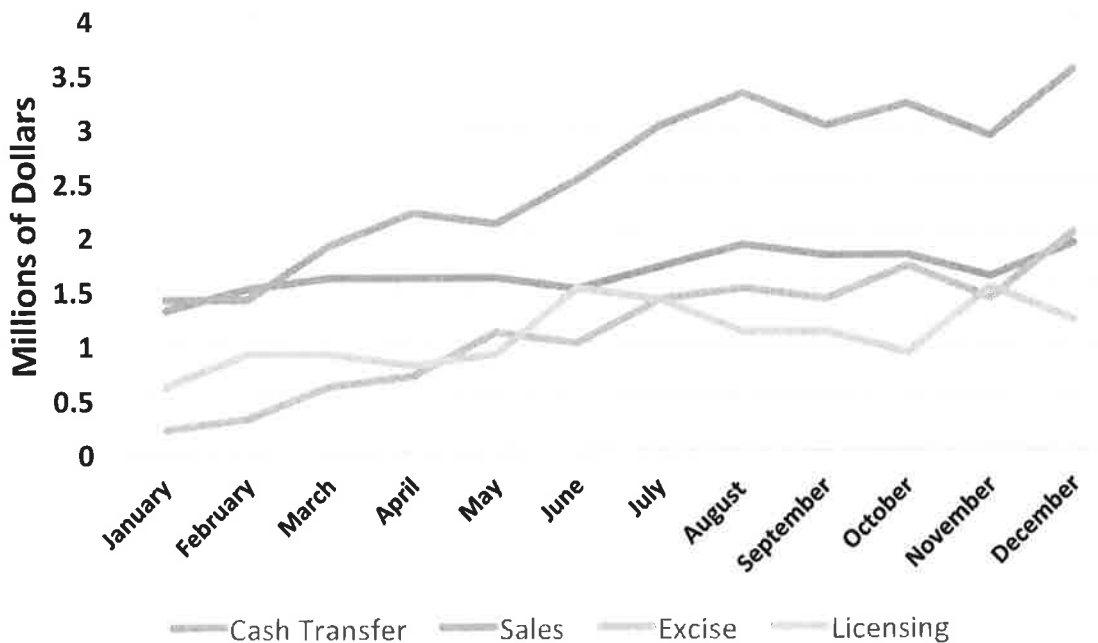
Empirical evidence suggests that current legal market prices of wholesale marijuana exceed illegal prices from the height of the illegal market by 1,000 - 1,500% using conservative estimates (www.colorado.gov/cs/Satellite?blobcol=urldata, 2015). This vast and unexpected difference in price between illegal and legal wholesale product seems to suggest that the cost of doing business has increased markedly even as consumer prices have plunged for several reasons including: improved product research and superior growing techniques, the effect of government taxes and fees, and a streamlined supply and distribution network with far fewer intermediaries when compared to illegal grower and supplier networks. The increase in marijuana wholesale prices following legalization highlight the potential risk premium involved in illicit drug sales since wholesale prices in Mexico reached as high \$250 per pound. The legal wholesale price of marijuana per pound has decreased \$515 (www.colorado.gov/cs/Satellite?blobcol=urldata, 2014) using month over month data from the first year of legalization, and Colorado has recently begun allowing wholesalers to produce. This infusion of product will likely drive down the wholesale price in the long run, but because of point of sale taxes and inelastic demand, the consumer is unlikely to see decreased supply prices translated to a markedly cheaper product they purchase locally.

A critical difference between the illegal and legal marijuana industries is the improved quality and technologically superior growing techniques that have arisen from legal markets. According to interviews with several Colorado dispensary owners, much of the product sold in Colorado is grown indoors to maintain optimal conditions until cultivation. As a result, legal product quality far exceeds the illegal market quality accounting for the increase in pricing. Licensed dispensaries now compete against each other for “best bud” awards; furthermore, hybrid marijuana flowers are bred and cultivated for their various wide ranging properties. There

are also underlying government factors that artificially increase prices, and these factors are a result of regulation inflating market prices (Barron et al). For instance, state laws require that all marijuana sold in Colorado must be grown in Colorado, and close to thirty cents of every dollar spent by the consumer goes to the state government in the form of excise and sales taxes (<https://www.colorado.gov/pacific/revenue/colorado-marijuana-tax-data> , 2015). Colorado has served as the example to implement a domestic marijuana policy. Their state regulations were implemented through statewide ballot initiatives, and all taxes on marijuana were voter approved. Economically, legalization has proven to be a booming business generating \$76 billion (Figure 2) in tax revenue for 2014 (<https://www.colorado.gov/pacific/revenue/colorado-marijuana-tax-data>, 2015) on 74 tons of product (\$73.5 million through July 2015).

Colorado’s legalization for recreational use has existed for a full year causing the new industry to be placed under a microscope nationally, and many use Colorado as the example of

2014 Colorado Marijuana Tax Revenue



Source: <https://www.colorado.gov/pacific/revenue/colorado-marijuana-tax-t> Figure 2

how to implement the legalization movement in other states. Proponents of the legalization of marijuana argue that legal marijuana forces illegal suppliers into legal business and reduces crime. However, it appears that only the latter has, at least initially and on the surface, proven true. Crime in Denver, Colorado fell 10.1% and violent crimes fell 5.2% in 2014

(www.drugpolicy.org, 2014), but these numbers can be interpreted in several ways; is the decrease in crime a result of legalization; a byproduct of an improving national economy; a combination of both; or a completely unrelated factor? The most likely factor is that all factors have contributed to a decrease in crime, and there is sound evidence suggesting that a strong national economy decreases crime (Corman, Mocan). Additionally, crime has generally been trending downward in Colorado and nationally leading into 2014

(<http://www.fbi.gov/news/stories/2014/november/crime-statistics-for-2013-released/crime-statistics-for-2013-released>, 2013) suggesting that other factors are playing a role. Furthermore, factors that cause and influence crime, discussed in further subsequent details, go well beyond economics and drug legalization alone.

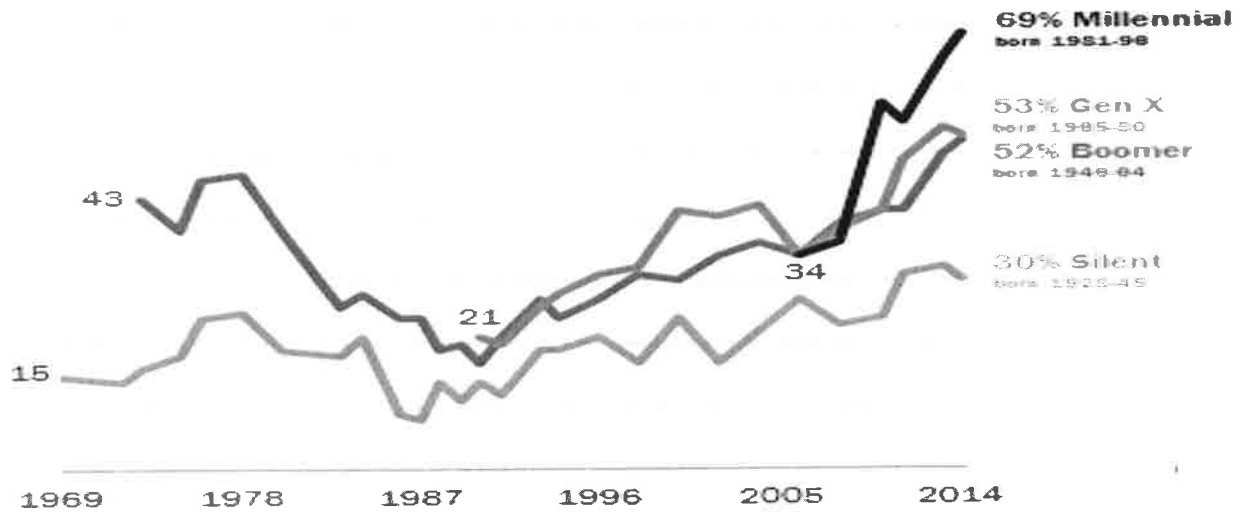
4. The Effect of Policing on Drug Seizures and Arrests

This section highlights the efforts and strategies of various government counter-narcotic agencies, and analyzes drug seizure and arrest data to understand the potential impacts of marijuana legalization on marijuana seizures, other drugs, and policing or arrests. It is important to note that policing can be defined in several ways; however, in the context of illegal drugs, the intended effect of policing is that drug seizures and arrests disrupt drug organizations. The United States Drug Enforcement Agency (DEA) lists national drug seizure and arrest data for their agency over the last 29 years beginning in 1986. The data is segmented to highlight five

major drug classifications and the respective amounts seized in pounds of: marijuana, cocaine, heroin, methamphetamine, and hallucinogens, and it includes the number of arrests for those years. The data was analyzed to compile the mean and median quantities seized for each drug classification versus the number of arrests for the same year and analyzed to determine trends year over year. One of the critical points of this research is that a significant shift in the illegal drug market occurred since 2008 stemming from the changing societal perceptions toward marijuana (Figure 3). The research, while not conclusive, suggests this shift occurred as secondary or tertiary responses to the United States' legalization of marijuana. Furthermore, this research contends marijuana legalization drives drug peddlers to deal in far more dangerous drugs.

Growing Support for Marijuana Legalization

% saying use of marijuana should be made legal



Note: Generational lines shown when significant sample is available.

Source: Pew Research survey, Feb. 12-28, 2014; 1979-2009 data from General Social Survey; 1969 and 1972 data from Gallup

Figure 3

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To understand the potential effects of marijuana legalization, arrests for the entire 29 year DEA record dissected in several ways. Mean, standard deviation, and correlation analysis were performed to assess changes to the market for illegal drugs with respect to total arrests (Table 1).

Table 1		<u>DEA Seizures 1986 – 2014</u>				
	Marijuana	Methamphetamine	Cocaine	Hallucinogens	Heroin	Arrests
Mean (\bar{X})	324,622	1,494	57,487	5,211,458	681	29,226
Median (M)	272,120	1,347	55,528	2,832,084	669	29,934
Sample Std Dev (s)	177,582	1,111	25,357	6,100,726	235	5,339

The analysis yielded a strong correlation (.67) between number of arrests and all drugs seized in pounds for the respective 29 year sample. Furthermore, the same data noted a significant correlation between pounds seized of two of the five drug classifications with number of arrests. The most striking connection of this research was the strong correlation between pounds of

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$$

heroin and methamphetamine seized, and when these two drugs were analyzed over the same 29 year span the correlation (.51) suggests these two drugs may be close substitutes. Methamphetamine and heroin are largely manufactured drugs; are inexpensive to produce; fetch a very cheap street price; are adulterated to maximize quantity; and also represent a substantial increased likelihood of dependency relative to harm to the body. The lack of significant correlation relating to marijuana and cocaine suggest that over the 29 year DEA record these drugs do not represent the bulk of policing efforts nationally. While it is likely these drugs contributed to arrests, the absent correlation suggests arrests for marijuana and cocaine are minimal in the context of the other three drug categories.

DEA seizure data was synthesized in several ways to understand the effects of policing and interdiction operations over time. First, the data was segmented in 15- and 7- year segments to understand changes relative to the 29 year total sample (Table 2, 3). The 15- and 7- year data set was analyzed to understand shifting DEA drug seizure priorities and the agency's focus from one year to the next. The mean and standard deviations for the 15- and 7- year samples generally

	Marijuana	Methamphetamine	Cocaine	Hallucinogens	Heroin	Arrests
Mean (\bar{X})	380,277	2,239	61,119	6,591,632	774	31,384
Median (M)	328,275	1,804	58,674	3,745,560	713	30,691
Sample Std Dev (s)	189,599	1,042	29,498	7,555,745	180	2,729

showed increases with respect to the 29 year sample. The 15- year seizure versus arrest analysis yielded a very drastic increase in correlation between arrests and all five drug categories between

	Marijuana	Methamphetamine	Cocaine	Hallucinogens	Heroin	Arrests
Mean (\bar{X})	481,248	2,917	36,855	2,909,186	870	30,854
Median (M)	575,972	2,561	33,770	2,605,997	1,010	31,058
Sample Std Dev (s)	243,725	1,190	10,144	3,230,268	212	1,338

2001 and 2008. The data was synthesized further to analyze the period over the last seven years.

This research highlights marijuana legalization efforts, and the 7 year marijuana, methamphetamine, and heroin analysis is important to note since record highs and lows for seizures of these drugs occurred within this 7 year sample. The correlation between heroin and

methamphetamine remained consistent under the 29 year sample until this period where the correlation diverges (Figure 5); however, this period noted a substantial negative shift in the seizures of marijuana versus heroin (Figure 4) and, to a lesser

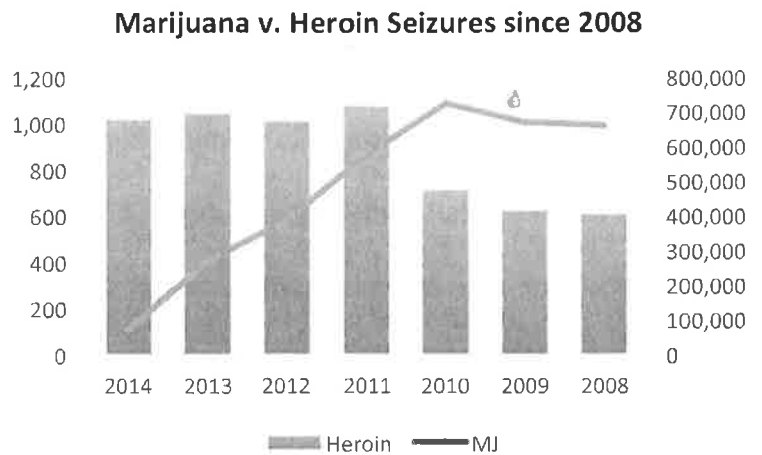


Figure 4

degree, methamphetamine. Heroin and methamphetamine seizures were analyzed versus marijuana seizures together and individually. The analysis noted a significant correlation (.722) between decreasing seizures of marijuana and increasing seizures of heroin. This trend was also noted in seizures of methamphetamine versus marijuana producing a similar correlation (.615).

An analysis of the data outlined previously suggests that the illegal drug market is responding to and adapting to threats from law enforcement corresponding to a societal shift in marijuana's acceptance; this suggests the market is evolving based on the changing perception of marijuana use. The significant negative correlation between both methamphetamine and heroin

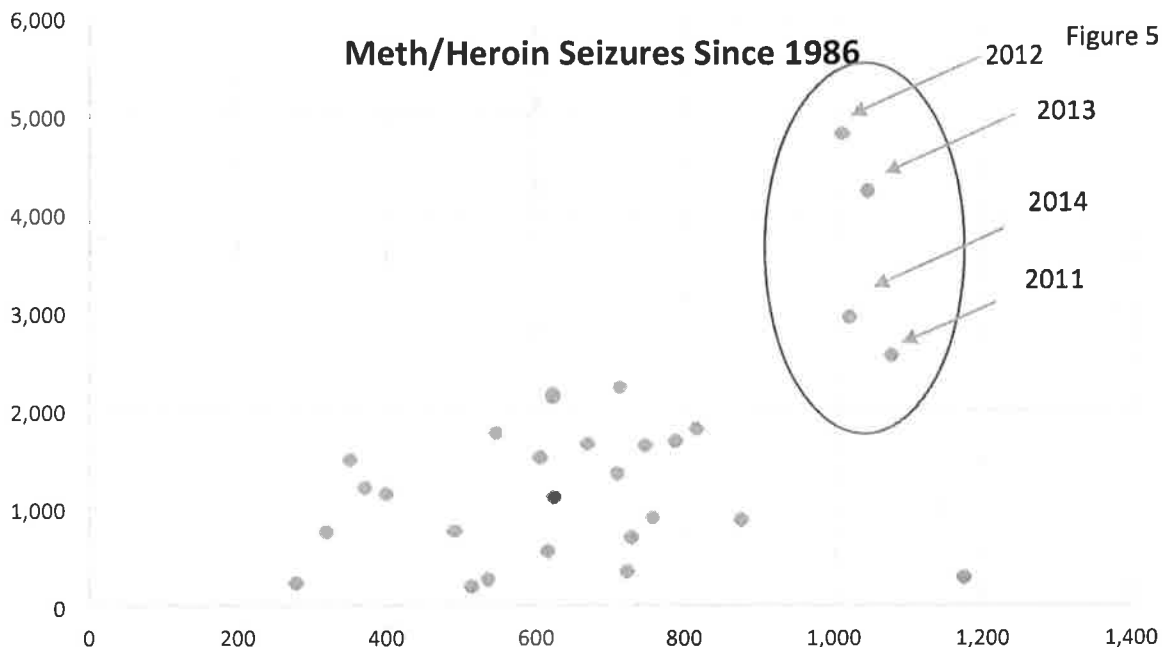


Figure 5

versus marijuana suggests that the DEA has exerted more effort on heroin and methamphetamine. Heroin and methamphetamine, with respect to the 29, 15, and 7 year data, had considerable impact on the correlation of total number of arrests. However, marijuana has had little effect on the correlation of arrests ($<.02$) with respect to the total number of arrests for the last 29, 15 and 7 years. As evidenced by marijuana's absent correlation to arrests, the DEA has not shifted priorities in light of legalization or increased their policing efforts toward other drugs since marijuana legalization efforts. Rather, the connection between marijuana seizures with respect to heroin and methamphetamine seizures suggests the market concentration of heroin and methamphetamine has increased over the last seven years. This seven year period from 2008 to 2014 supports testimony from DEA agents and media reports that instances of heroin and methamphetamine seizures and usage have increased.

As the generational shift towards marijuana legalization increases and seizures decrease, the data suggests a trend in use towards more addictive drugs to counter law enforcement and society's acceptance of marijuana as a result. Furthermore, this analysis, supported by DEA interviews, suggests that heroin and methamphetamine could be filling the hole in the illegal market created by acceptance of marijuana by mainstream America. The subsequent analysis on marijuana legalization's effects on the illegal drug market in the next sections supports the limited statistical evidence addressed previously.

5. The Shifting Marijuana Market

This section addresses the changing illegal drug market by analyzing several media outlets and supply side implications that potentially arose from marijuana legalization. One of the basic principles of marketing is that of product mix. According to Panner, DTOs are adapting

to changing market conditions in the United States. The DTO's response to this changing market "toward prescription drugs and legalized marijuana" suggests that "organized crime is much more than the business of shipping drugs to the United States" (Panner) than it was in past years.

As highlighted previously in the DEA analysis, the height of the illegal marijuana smuggling trade occurred from 2009 to 2010. The period exemplifies the societal shift in marijuana acceptance depicted previously in figure 3. Additionally, 40% of the 23 states that have legalized marijuana have legalized since 2010. This period is characterized by the highest wholesale prices in market history, and the largest quantities seized by law enforcement agencies. According to DEA seizure figures since 2010, total seizures of marijuana have decreased 90% to a paltry 160,000 pounds as of 2014 (<http://www.dea.gov/resource-center/statistics.shtml>). Simultaneously, as domestic marijuana seizures began to decrease in 2010, a Mexican wholesale grower of marijuana received an average of \$100 to \$125 per kilogram for his product. This price has plunged to, by many estimates, less than \$25 per kilogram in 2014 (O'Hara).

The data suggests that Mexican growers have abandoned growing marijuana, and instead, large scale marijuana growing operations appear to have migrated north of the Rio Grande since current wholesale prices make Mexican growing operations unprofitable. The change in the supply side of the marijuana market caused a net loss of up to 20% (Longmire) of the DTO's estimated \$39 billion annual profit (Krache Morris). In the face of extreme financial losses, any business leader, regardless of industry, would quickly search for and embrace alternative sources of profit to preserve a comfortable margin. In an effort to regain revenue lost from marijuana sales, this research suggests that DTOs have vertically integrated and embraced other forms of profit in an effort to diversify. The most striking is the rising belief that DTOs have become a

black market UPS, of sorts, employing their vast distribution network to smuggle more potent drugs, other goods, and even people in the form of sex workers and illegal immigrants. In the wake of a changing market, “logistics, then, are the DTOs’ main source of revenue, and illegal drugs are but one of the products they offer” (Krache Morris).

The Mexican Cartels provide a fix to millions of addicts in the United States each year, and Mexico represents “the transit point for approximately 90% of all cocaine consumed in the United States and is the primary source of foreign marijuana and methamphetamine, and a major source of heroin to the United States” (Cordero). This information suggests that the DTOs are concentrating and increasing efforts on other drugs that are far more harmful to the body than marijuana. DEA efforts to stem the flow of drugs into the United States through Mexico have had little impact to the DTO’s efforts to increase penetration of heroin into United States markets. In previously unaffected under-marketed areas of the United States, the “hardest hit places have been rural areas in Vermont and New Jersey. These states have reported an eight-fold increase in demand for opiate-addiction treatment at state run facilities, and a doubling rate of overdose deaths” (Vesey). The inexpensive street price of heroin, “often selling for only six dollars a bag” (Vesey) makes it an ideal and attractive drug of choice for many. Heroin seizures increased 30% from 2010 to the present as marijuana seizures began to decrease during the same period (Figure 4). Increased reports of heroin and methamphetamine use represent a growing enterprise opportunity for DTOs. The revenue generated by the drug trade suggests that United States marijuana legalization coupled with increased seizures of methamphetamine and heroin nationally mean marijuana smuggling is no longer sufficient to maintain profit margins at 2010 levels.

Increased heroin penetration and smuggling into the United States is only a small portion of the cartel efforts, and there is evidence of vertical integration. Mexican cartels are high jacking and smuggling other products unrelated to drugs. The existing cartel supply network infrastructure makes transitioning to dealing and smuggling of other products easier. Western Mexico's Knights Templar Cartel, seemingly the most creatively diverse and violent of the DTOs, was implicated by numerous outlets in smuggling of iron ore shipments out of seaports in Western Mexico to China, and Mexican government officials suggest that "illicit ore shipments from the port had become the Knights Templar's principal source of revenue" (Yap). Furthermore, beginning in 2011, the Knights Templar seized majority control over lime crops, growers, and shipments to monopolize the industry and increase market prices "to diversify their business interests, using kidnappings and violence to terrorize and extort those involved with lime export" (Pursell).

This information presents very compelling evidence to suggest a concerted effort to expand beyond the drug trade by employing violence, a clear requirement to hijack and smuggle goods. Many would argue these activities are done in concert to support the sale of drugs, and the drug trade is the primary source of DTO revenue. However, increasing evidence suggests that secondary sources of DTO income are a function of United States legalization and decriminalization of marijuana to supplement lost income rather than support drug activities. It becomes increasingly important to understand the relationship between drug seizures and arrests in combating illegal drugs; however, understanding DTOs is essential to curbing their efforts. Arrests and seizures are pointless without clear knowledge of their operations.

6. The Business: Similarities and Differences

It is important to understand legal and illegal business to understand how a DTO may behave when presented with competition or shrinking product demand; this section showcases the similarities and differences between the two forms of business. Legal marijuana businesses highlight a very key point of this research; illegal business owners are at a severe disadvantage when their illegal business is faced with legal competition. Furthermore, illegal business owners are against significant barriers to exit and do not have the general understanding of basic formally recognized business principles to adequately apply these principles in a legal setting. The current legal marijuana business is not dominated by former illegal business owners; it is dominated by established members of the business community with degrees from some of the most prestigious business schools in the United States. Furthermore, there is an absence of evidence that suggests that illegal drug suppliers are attempting to pursue legitimate business opportunities.

Illegal and legal businesses share similarities in the way decisions are made in the conduct of business and daily life. Furthermore, it is often assumed that DTOs and illegal business, in general, behave in much the same way as legal businesses. This research reinforces that, indeed, illegal businesses do behave in many of the same ways as legal businesses. According to Fernandez DeCastro, legal and illegal businesses are “constantly innovating and adapting to compete in one of the fiercest capitalist markets of all: the transnational drug trade” (Fernandez De Castro). Thus, illegal businesses innovate and compete in much the same way as legal businesses. DTOs, the number one supplier of illegal marijuana prior to 2010, have quickly adapted to a changing market, not by opening dispensaries in Colorado, but by changing their product mix, diversifying, and adjusting their business models. Experts in Mexican foreign

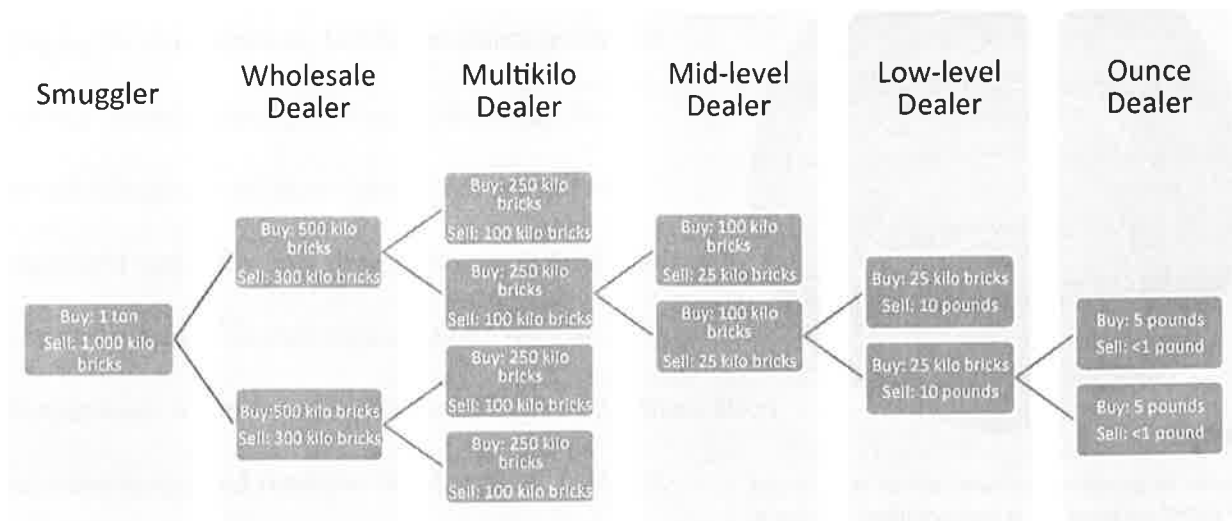
policy support this belief citing “the cartels have built a multibillion-dollar business in human trafficking, including the shipment of both illegal immigrants and sex workers” (Krache Morris). Illegal and legal businesses respond to external stimuli by adapting to changing market conditions. Efforts by the DTOs to diversify, adjust their product mix, and vertically integrate speak to these similarities.

The economic principle of rationality is often used to explain consumer and business behavior with respect to expenses, costs, and income. Business decisions are often made on marginal benefits to the organization based on expenses, cost of goods sold or sales, and income. The marginal benefits or marginal costs of doing business are often used to explain specific actions and decisions in the conduct of daily business. Economic theory suggests that rationality and marginal benefit drive decision making in any business or consumer purchase. While illegal businesses do not operate within the confines of law, they must often consider whether the marginal benefits of doing business outweigh the marginal costs. Legal and illegal businesses routinely base rational decisions on the bottom line or profit. Generally speaking, legal and illegal businesses analyze cost versus benefit tied to the relationship relative to cost versus profit. However, much of the similarity between the two forms of business end here.

Illegal businesses routinely act on basic business principles, but at the macro level, DTOs apply these business principles in far different ways than legal businesses. The difference between legal and illegal business is illustrated in the following way; a legal business owner would likely cut his or her losses and dismantle or sell a business when the marginal cost exceeds marginal benefit. Furthermore, one of the critical differences between legal and illegal business, supported by Adler et al, suggests accession increases the barriers to exit; “the money, the lifestyle it affords, and to a lesser extent the rush from not getting caught helped maintain

involvement” (Decker, Chapman 105). Additionally, when faced with competitors that undercut profits, a rational legal business owner would take steps to improve the business or the product produced. Illegal businesses are willing to employ tactics of intimidation and power that a legal business owner would not consider in order to survive. The concept of utility maximization helps to explain the reason illegal business owners resort to violence as a means to continue. The owner of an illegal business, such as that of a DTO, employs violence as a means of maximizing the utility of eliminating the competition. These DTOs, and to a degree their consumer’s, murder, smuggle, extort, kidnap, and rob. The list of illegal activities DTOs engage in goes far beyond selling and distributing drugs, and DTOs employ the use of an “increasingly sophisticated logistics” network, particularly those that operate from Mexico (Krache Morris).

One area of stark contrast between illegal and legal business is that of organization and hierarchy. Because of the clandestine nature of the drug trade, forming assumptions on its inner



Source: Adler, Patricia. *Wheeling and Dealing: An ethnography of an Upper-Level Drug Dealing and Smuggling Community*

Figure 6

workings is difficult. However, several sociological studies suggest that the drug business is heavily splintered, and at higher levels, the barriers to exit are significant, making withdrawing difficult. In her analysis, Adler goes a step further. Her research suggests a drug organization’s

hierarchy resembles that of a pyramid scheme to describe the organizational structure of a legal business (Figure 6). This structure “was characterized by an abundance of people involved at the points of origin and disbursement, but by relatively few at the delicate and dangerous point of importation” (Adler 33). The geographic barrier, the Mexico/United States border, acts as both a choke point for the transit of drugs, and a choke point in the business hierarchy. The smuggler is the hierarchical choke point, and the illegal entrepreneur tasked with moving product from Mexico, the Caribbean, and Latin America to the United States. The smuggler serves as the first step in domestic distribution process; assumes the most risk within the entire operation; and realizes a profit of \$100,000 to \$180,000, adjusted for inflation, smuggling by air on the domestic end of the network in terms of the late 1970’s (Adler 38).

A legal business is built on a foundation based in structure and organization; however, DTOs operate and recruit based on social circles and trust (Figure 7). Furthermore, DTOs are characterized as having “sophisticated planning, technology, and communications, yet they themselves are not well organized vertically, and they appear to exhibit few characteristics of formal organizations such as permanence, a command structure, effective communication between ranks, and resource management” (Decker, Chapman 11). Additionally, a drug operation is built on a loose network that “can cut across a variety of political, linguistic, legal, and geographic barriers in ways that formal organizations cannot” (Decker, Chapman 16). Meanwhile, a legal business operates on structure, often with a clearly defined hierarchy, and business relationships

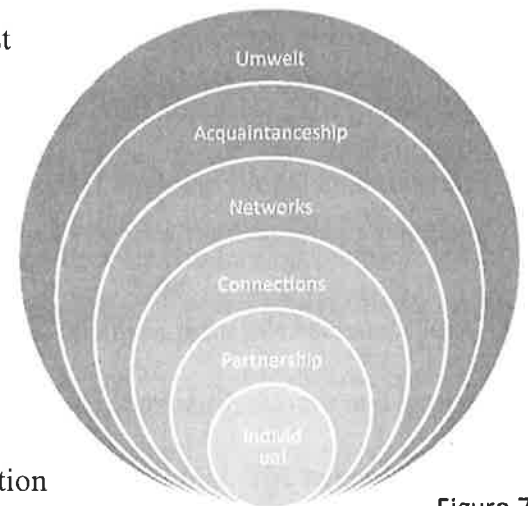


Figure 7

Source: Adler, Patricia. *Wheeling and Dealing: An ethnography of an Upper-Level Drug Dealing and Smuggling Community*

Drawing on evidence from legalization movements nationally, the legal marijuana market is composed of a new group of entrepreneurs from diverse backgrounds. Citing a story that aired on 60 Minutes, Mindful is one of the largest producers and sellers of cannabis in Colorado, and its Chief Executive Officer, Meg Sanders, exemplifies this new breed of cannabis industry entrepreneurs. The story highlights Sanders' background "as a suburban mother driven to push marijuana into the mainstream" (Whitaker). Sanders "left a private equity firm to run Mindful, a chain of four retail stores that sells recreational and medicinal pot" (Whitaker). The legal marijuana market is dominated by entrepreneurs like Sanders and others like her with degrees from some of the top business schools in the country.

The fundamental principles of business are grounded in economics, marketing, marginal decisions, and rationality. These fundamentals form the basic principle understanding of decision making in business today; these decisions are largely universal across all forms of business. Many decisions are based on questions of production, capacity, cost, and price. The principle of scarcity speaks to this as we allocate and employ our resources. Legal and illegal businesses employ resources and make many of the same decisions governed by the same principles, but there are instances where the application of these recognized business principles separate legal and illegal businesses. One of the ways illegal businesses rationalize their behavior and apply these principles in a flawed manner is through the use of violence as a tool. The next section depicts that violence acts as a means to end to continue business without regard for its consequences.

7. Violence: The Marginal Cost of Illegal Business

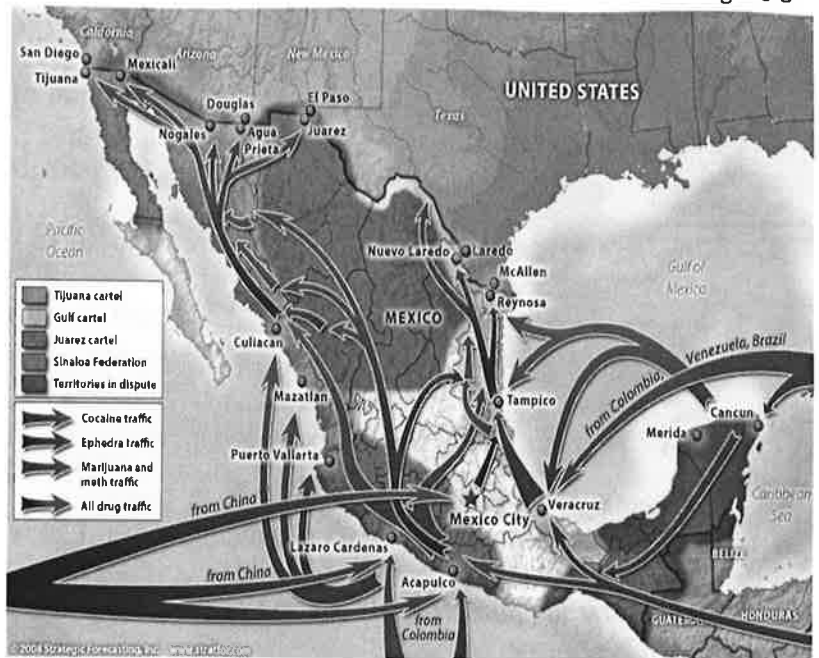
This section introduces one area of stark difference between legal and illegal businesses, and the resulting potential violent implications of legalization of marijuana domestically and internationally. Merriam Webster defines a criminal as “a person who has committed a crime or who has been proved to be guilty of a crime by a court,” and, assuming the criminal is guilty of the crime for which they are arrested, applying this definition suggests an illegal business owner is a criminal. Illegal business owners commit crimes, sometimes violent, in the daily operation of their business, and thus, a criminal and illegal business owner carries a different interpretation of socially acceptable behavior in relation to the conduct of business. The term *criminal* and the conduct of crime is often applied to a wide range of illegal activities. Trafficking of illegal goods, extortion, murder, and kidnapping are violent crimes to which the term criminal applies. Furthermore, illegal businesses are defined by their ethical decision making process surrounding behavior in relation to violence. In the context of the illegal business, violent activities are the marginal costs of the drug trade. To an illegal business owner, violence is a rational behavior, and to Joaquin “El Chapo” Guzman, the head of Mexico’s Sinaloa Cartel, violent and intimidation activities are one of the principle functions of an illegal business.

One of the critical assertions of this research is the connection between the transnational drug trade and the propensity for violence. However, academic research regarding violence as a function of the transnational drug is inconclusive. Decker et al point out that violence, while addressed in their research, was difficult to quantify. They address this error in their sample data as a function of the criminals they were afforded access to study and question. However, fear of retribution was cited as one reason potential interviewees declined to comment on their activities. It is difficult to highlight a strong case to support a claim that legalized marijuana increases

violence; however, there is strong media evidence to suggest that violence, specifically in the border regions and major drug transit routes in Mexico, increased in conjunction with marijuana's impact to the overall drug market evolution. According to Krache Morris, there is a clearly established the link between violence and the drug trade: "violence, in other words, is not a function of the drug trade specifically. It is how the cartels manage everything from marketing to public relations to human resources" (Krache Morris).

Legalization proponents argue that legal drugs decrease the marginal benefit of violence as it relates to DTOs. To illustrate this, violence, specifically in the border regions of Mexico, increased markedly from 2010 – 2013 (Cordero 289). Furthermore, Krache Morris's belief will apply even as the United States continues to realize the financial benefits of legalized marijuana. Furthermore, drug violence in Mexico more often resembles tactics employed by militant groups or revolutionaries. Krache Morris suggests "the most brutal DTO battles are not over customers or suppliers but over ports and trade routes" (Figure 8). Mexico's drug violence highlights that major drug routes and DTO boundaries statistically have the largest murder rates in Mexico concentrated near the United States-Mexican

CARTEL TERRITORIES AND DRUG ROUTES Figure 8



Source: Fred Burton and Ben West, *When the Mexican Drug Trade Hits the Border*, Stratfor Global Intelligence, April 15, 2009, http://www.stratfor.com/weekly/20090415_when_mexican_drug_trade_hits_bord

border transit point (Figure 9). The low income and high corruption in Mexico enables the DTOs to move with relative ease throughout the region, and their main fears are not capture by Mexican Law Enforcement officials but victimization by rival DTO members.

The drug market transition that occurred beginning in 2009 coincides with increased murder rates as the Mexican cartels struggle for internal control. To an American, the definition of drug violence does not have the same meaning as it does in Mexico. Drug violence is largely confined to larger United States cities as street dealers maintain territory and collect on unpaid drug debt, and addicts resort to robbery or burglary to fund their habit. Drug violence in Mexico has subsided since 2013, but from 2007 to 2010 the number of drug related murders increased fourfold (Figure 10). Furthermore, research suggests that violence in DTO controlled areas of Mexico

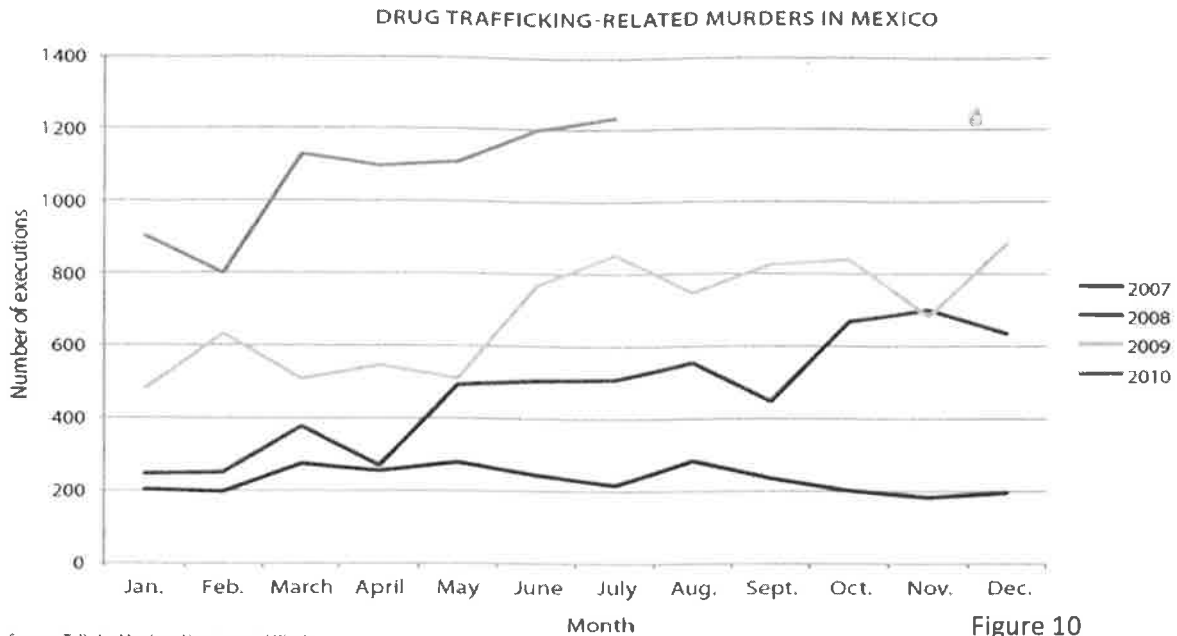


Figure 9

Source: Congressional Research Service

escalated to such an extreme that “with 3,097 homicides in 2010, Juarez was not only one of the most violent cities in the world, but its murder rate alone was on par with violence in Afghanistan” (McGee).

Recently, one of most prolific DTO heads, the Sinaloa Cartel’s Joaquin “El Chapo” Guzman, escaped from a high security Mexican prison; this was Guzman’s second escape from prison in the last 15 years. Furthermore, this suggests that anything is possible in Mexico for the right price, and several media outlets estimate Guzman paid millions to escape. Winslow estimates that Guzman’s 2001 escape cost him \$2.5 million, and media reports speculate that Guzman was imprisoned to weather the storm only to escape and resume control of a



government backed organization. The Guzman example continues to support evidence of a changing illegal drug market. Additionally, several sources have corroborated a belief that the Mexican government chose sides in the struggle for control of the Mexican transnational drug trade (Winslow). It is often believed that the Mexican government aligns with certain DTOs, and interviews with several experts suggest a “prevailing perception that the political and legal systems are in the thrall of the cartels” (Krache Morris). This perception suggests the government of Mexico picks the winners and the losers in the drug trade, and as the dust settles, fewer options for revenue and decreased drug competition will strengthen the remaining DTOs in Mexico with the pseudo backing of the government.

8. Conclusion

There is little evidence to support the belief that legal marijuana forces DTOs into legal business, and a complete answer to this research is elusive. More questions emerged offering significant opportunities to continue this research well into the future. As the national

evidence to support marijuana's legalization continues to grow, this initial research suggests the economic benefits will continue to surpass initial beliefs; legal marijuana prices will continue to fall; the DTOs will continue to expand to recover lost revenue; and other more potent drugs will fill the void created by legal marijuana. The DTOs have increased production of methamphetamine; furthermore, as depicted by media reports of heroin increases in rural America, there has been an effort to increase the market penetration of heroin to counter marijuana legalization efforts by DTOs. Furthermore, every national economic decision involving millions of dollars changing hands has its unintended consequences, and the impact of United States legalization of marijuana will continue to impact in a myriad of ways not yet completely understood.

The entrepreneurs in the transnational drug industry act as any legal business owner would when faced with competition. Through knowledge gained from this research, the DTOs allow a comparison of basic business principles versus the application of these principles. These companies innovate, diversify, and integrate, and while they are distinctly similar in terms of decision making, their structure and operations behavior more resemble an organization like Amway than Berkshire Hathaway. Furthermore, barriers to entry and exit offer a great contrast to many forms of legal business; there is little capital required for entry and a significant personal threat for leaving. DTOs exhibit a strong social structure based on family ties. The ability to "break" into the business increases according to factors based in ethnicity and nepotistic behavior. Trust is an important aspect of acceptance that is based in social relationships and adherence to informal norms rather than formally accepted business behavior.

Research supports the belief that legalization increases use, and while not the primary purpose, prohibition deters new users. While there is considerable evidence that

legalization is financially beneficial from a business and tax perspective, the societal costs of legalization require a thorough analysis beyond the scope of this paper. Recent media reports suggest new users of marijuana have increased, and existing research on the economics of drug use suggest that policing and inflated price exert influence as a deterrent to initial drug use specifically among adolescents. Furthermore, the marijuana market shift toward legalized product forces those that profit from illegal drugs into other avenues to generate revenue. Marijuana legalization is a complex issue, and \$76 million in tax revenue on roughly \$600 million in sales complicates the issue even further. While fostering a definitive connection between legalized marijuana as the cause of fundamental changes to the illegal drug market are not conclusive from a quantitative perspective, the mere convenience and timing of an illegal drug market shift suggests national legalization efforts beginning in 2009 had more than a negligible impact. Furthermore, a key element of this research is the consideration between monetary gain at the expense of our norms and values as a society. Is the revenue generated from legal marijuana sales worth the potential societal impacts highlighted in this research, and will large scale legalization efforts drive those that profit from illegal drug sales to embrace other more harmful tactics in response?

Sources:

- "2 Markets for Drugs." *Understanding the Demand for Illegal Drugs*. Washington, DC: The National Academies Press, 2010.
- Ackerman, M. (2015, January 14). Marijuana Legalization Sparks Heroin, Meth Trade Increase with Mexican Cartels | The Fix. Retrieved April 11, 2015, from <http://www.thefix.com/content/marijuana-legalization-sparks-heroin-meth-trade-increase-mexican-cartels>
- Adler, P. (1985). *Wheeling and dealing: An ethnography of an upper-level drug dealing and smuggling community*. New York: Columbia University Press.
- Beith, M. (2013, September 24). The Current State of Mexico's Many Drug Cartels | Combating Terrorism Center at West Point. Retrieved April 11, 2015, from <https://www.ctc.usma.edu/posts/the-current-state-of-mexicos-many-drug-cartels>
- Benzing, J. (2015, January 12). Pot smuggling down, heroin waaaay up. Retrieved April 11, 2015, from <http://publicsource.org/from-the-source/pot-smuggling-down-heroin-waaaay-up#.VSlqxHITG00>
- Border officials report record number of meth seizures at US-Mexico border. (2015, January 5). Retrieved April 11, 2015, from <http://www.foxnews.com/us/2015/01/05/newspaper-report-meth-seizures-soar-at-us-mexico-border-in-fiscal-year-2014/>
- Bretteville-Jensen, A. L. (2006). To legalize or not to legalize? Economic approaches to the decriminalization of drugs. *Substance use & misuse*, 41(4), 555-565.
- Burnett, J. (2012, March 2). Mexican Drug Cartel Targets Australia. Retrieved April 11, 2015, from <http://www.npr.org/2012/03/02/147821195/mexican-drug-cartel-targets-australia>
- Castillo, E. (2014, March 17). Drug Cartel's Main Source Of Income Isn't What You Might Think. Retrieved April 11, 2015, from http://www.huffingtonpost.com/2014/03/17/drug-cartels-iron-ore_n_4978564.html.
- Chaloupka, F. (1999). *The economic analysis of substance use and abuse an integration of econometric and behavioral economic research*. Chicago: University of Chicago Press.

- Colorado Marijuana Tax Data. (n.d.). Retrieved April 11, 2015, from <https://www.colorado.gov/pacific/revenue/colorado-marijuana-tax-data>
- Cordero, C. F. (2012). Breaking the Mexican Cartels: A Key Homeland Security Challenge for the Next Four Years. *University of Missouri-Kansas City Law Review*, 81, 289-312.
- Corman, H., & Mocan, H. (2002). *Carrots, sticks and broken windows*. Cambridge, MA: National Bureau of Economic Research.
- Davidson, J. (2014, July 8). Price War Heats Up Between Legal Marijuana and the Black Market. Retrieved April 11, 2015, from <http://time.com/money/2965578/marijuana-price-war-heats-up/>
- DEA.gov / Statistics & Facts. (n.d.). Retrieved April 11, 2015, from <http://www.dea.gov/resource-center/statistics.shtml#seizures>.
- Decker, S., & Chapman, M. (2008). *Drug smugglers on drug smuggling lessons from the inside*. Philadelphia: Temple University Press.
- FBI: Crime Statistics. (2010, March 17). Retrieved April 11, 2015, from <http://www.fbi.gov/stats-services/crimestat>.
- Frosch, D. (2010, November 22). New Trade Group's Focus Will Be Marijuana Industry. Retrieved April 11, 2015, from http://www.nytimes.com/2010/11/23/us/23pot.html?_r=0
- Herro, C. (2015, January 20). Cartels are pushing meth, heroin—and that's not bad. Retrieved April 11, 2015, from <http://www.stanforddaily.com/2015/01/20/cartels-are-pushing-meth-heroin-and-thats-not-bad/>
- Krache Morris, E. (2013, December 4). Think Again: Mexican Drug Cartels. *Foreign Policy*.
- Lombardi, P. (n.d.). Criminal globalization. Retrieved April 11, 2015, from <https://criminalglobalization.wordpress.com/tag/drug-cartels/>
- Longmire, S. (2011). *Cartel: The coming invasion of Mexico's drug wars*. New York, NY: Palgrave Macmillan.
- Longmire, S. (2011, June 18). Legalization Won't Kill the Cartels. Retrieved April 11, 2015, from http://www.nytimes.com/2011/06/19/opinion/19longmire.html?_r=0

- Mcgee, N. (2013). Mexico, Drug Trafficking Organizations, Realism, and Human Security. *McNair Scholars Online Journal*, 7(1), 79-87. doi:10.15760/mcnair.2013.79
- Miroff, N. (2014, April 6). Marijuana growers in Mexico are switching to producing heroin poppies as pot prices drop in the U.S. Retrieved April 11, 2015, from http://www.washingtonpost.com/world/tracing-the-us-heroin-surge-back-south-of-the-border-as-mexican-cannabis-output-falls/2014/04/06/58dfc590-2123-4cc6-b664-1e5948960576_story.html
- Miroff, N. (2015, January 11). Measuring America's changing drug habits, on the border. Retrieved April 11, 2015, from http://www.washingtonpost.com/world/the-americas/losing-marijuana-business-mexican-cartels-push-heroin-and-meth/2015/01/11/91fe44ce-8532-11e4-abcf-5a3d7b3b20b8_story.html
- Miron, J. (2004). *Drug war crimes: The consequences of prohibition*. Oakland, CA: Independent Institute.
- Miron, J. (2014, October 23). Marijuana Policy in Colorado. Retrieved April 11, 2015, from <http://www.cato.org/publications/working-paper/marijuana-policy-colorado>
- Molloy, M. (2013, October 24). Mexico's national crime statistics show no significant decline in homicides and disappearances. Retrieved April 11, 2015, from <http://blog.chron.com/bakerblog/2013/10/is-drug-related-violence-in-mexico-on-the-decline/>
- Nemeth, J., & Ross, E. (2014). Planning for Marijuana: The Cannabis Conundrum. *Journal of the American Planning Association*, 80(1), 6-20.
- O'Hara, M. (2014, May 8). Legal Pot in the US Is Crippling Mexican Cartels | VICE News. Retrieved April 11, 2015, from <https://news.vice.com/article/legal-pot-in-the-us-is-crippling-mexican-cartels>
- Pacula RL, Lundberg R. Why changes in price matter when thinking about marijuana policy: a review of the literature on the elasticity of demand. *Public Health Reviews*. 2014; 35 (2): 1-18; Print.
- Panner, M. (2012). Latin American Organized Crime's New Business Model. *Revista*, 11(2), 6-9.
- Paulson, A. (2015, February 21). Legal marijuana experiment in two states: Has it worked? (video).

- Retrieved April 11, 2015, from <http://www.csmonitor.com/USA/2015/0221/Legal-marijuana-experiment-in-two-states-Has-it-worked-video>
- Potter, M. (2014, December 23). How Heroin Flows Over the Border and Into Suburbia. Retrieved April 11, 2015, from <http://www.nbcnews.com/storyline/americas-heroin-epidemic/how-heroin-flows-over-border-suburbia-n196911>
- Pursell, R.. (2014, May 5). How Mexican drug cartels have caused a rapid increase in lime prices, putting a squeeze on bars for Cinco de Mayo. Retrieved November 29, 2015, from <http://www.pbs.org/newshour/rundown/mexican-drug-cartels-caused-rapid-increase-lime-prices-putting-squeeze-bars-cinco-de-mayo-rp/>
- Reuter, P., & Haaga, J. (1989). *The organization of high-level drug markets: An exploratory study*. Santa Monica, CA (P.O. Box 2138, Santa Monica 90406): Rand.
- Ruggeri, D. (2013). *Marijuana Price Estimates And The Price Elasticity* (3rd ed., Vol. 2). Sayreville, NJ: International Journal of Trends in Economics Management and Technology.
- Saffer, H., & Chaloupka, F. (1995). *The demand for illicit drugs*. Cambridge, MA: National Bureau of Economic Research.
- Schwartz, E. (2014, November 7). Legalization Has Transformed Marijuana Demand. Retrieved April 11, 2015, from <http://www.econlife.com/legalization-changes-marijuana-demand/>
- Shell, E. (2009). Winner Take Nothing. In *Cheap: The High Cost of Discount Culture* (pp. 55-87). New York, NY: Penguin Press.
- Stamford, E. (2014, May 9). Drug cartel 'diversification' leads to arrest of bulker in Manzanillo. Retrieved April 11, 2015, from <http://www.tradewindsnews.com/weekly/337228/drug-cartel-diversification-leads-to-arrest-of-bulker-in-manzanillo>
- T, H. (2014, March 9). Why Mexican drug-traffickers started smuggling iron ore to China. Retrieved April 11, 2015, from <http://www.economist.com/blogs/economist-explains/2014/03/economist-explains-4>

- Thaler, R. (1980). *Toward a positive theory of consumer choice* (Vol. 1). S.I.: Journal of Economic Behavior and Organization.
- Vesey, J. (2014, May 20). Heroin seizures on the rise in Northeast. Retrieved April 11, 2015, from <http://www.pbs.org/newshour/rundown/heroin-seizures-rise-northeast/>
- Weeks, Katrina M., "The Drug War in Mexico: Consequences for Mexico's Nascent Democracy" (2011). *CMC Senior Theses*. Paper 143.
- Williams, P. (2012). The Terrorism Debate over Mexican Drug Trafficking Violence. *Terrorism and Political Violence*, 2(24), 259-278.
- Wong, M. (2014, July 8). Recreational Marijuana Legalization Lights Up Economic Policy Considerations. *Yale Economic Review*. Retrieved April 11, 2015, from <http://www.yaleeconomicreview.org/archives/259>