The War on Who?
An Analysis of Drug Possession Arrests in Four U.S. Cities

by

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B.A., University of California Los Angeles (2016)

Submitted to the Department of Urban Studies and Planning
in partial fulfillment of the requirements for the degree of

Master in City Planning

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

May 2022

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Abstract:

For over half a century, the "War on Drugs" has entailed strict control and policing of illicit drug use in American cities. Despite this policy of criminalization and punishment, large numbers of Americans from all backgrounds continue to use illegal substances, despite the risk of arrest or incarceration. However, the burden of enforcement is not borne evenly across different demographic groups. In particular, black men appear to suffer from disproportionate levels of arrest for drug possession.

This thesis seeks to contribute to the existing understanding of inequities in drug possession arrests, especially as related to race, while explicitly addressing the role of the distribution of illicit drug use across different groups in determining patterns of arrests for possession. By combining drug possession arrest data from four U.S. cities (Los Angeles, Chicago, New York City, and Dallas) with national survey data estimating illicit drug use and population data, I create a series of multiple linear regression models that estimate the relationship between the propensity of arrest for drug possession and age, sex, racial background, and estimated illicit drug use. I find that, even after controlling for the estimated distribution of illegal drug use, along with demographic factors, significant disparities continue to exist in all four cities studied – specifically, black men are most likely to be arrested. These results provide further evidence that differences in use by identity cannot explain relative levels of arrest, lending support to theories that attribute these disparities to either police bias or differences in social or neighborhood context. I also find evidence suggesting that specific policy changes in two cities – Proposition 47 and 64 in Los Angeles and the end of Stop-and-Frisk in New York City – appear to have significantly reduced the magnitude of disparities in drug possession arrests. This further evidences the salience of enforcement strategy in driving disparate outcomes and implies that further changes in illicit drug enforcement policy have the potential to ameliorate existing inequities.

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I. Introduction:

Since the 1970s, the American "War on Drugs" has been characterized by strict enforcement of drug-related criminal offenses, including illegal drug possession, in American cities. This policy choice has generated racial and socioeconomic disparities in policing, arrests, and incarceration. Stark disparities in demographic composition exist among those arrested for drug crimes, leading critics to charge that drug enforcement policy has unfairly criminalized minority groups and the poor. Specifically, communities of color, including primarily black and African-American communities, have been disproportionately affected by the criminalization of drug use. Despite representing only 13% of the population, black Americans comprise 40% of the incarcerated population. This is, in no small part, a result of the illicit drug enforcement policy. In the U.S., which has the highest per capita incarceration rate in the world, 1 of every 5 incarcerated people is locked up for a drug-related offense. (Sawyer and Wagner 2022) In defense of this strict drug control regime, one could attempt to rationalize these resulting disparities as a product of variation in levels of illicit drug use across various groups. However, this thesis intends to demonstrate that this is a misguided hypothesis, implying that other factors beyond patterns of drug use, whether potentially related to racial bias in policing or social and neighborhood context, may, instead, be at play.

Research Questions:

This thesis attempts to contribute to the existing understanding of disparities in arrests for illicit drugs, especially as related to racial or ethnic identity. I hypothesize that there are disparities in arrests for drug possession in American cities and that these disparities in arrest are, in fact, not the result of relative differences in the level of illegal drug use across various demographic groups. This may suggest that current American drug enforcement policy is ineffective and misguided. The analysis will focus on select large U.S. cities, representative of various regions around the nation, including Los Angeles, California, New York City, New York, Chicago, Illinois, and Dallas, Texas.

Specifically, this thesis will seek to answer the following research questions:

How do demographic characteristics affect the propensity of being arrested for drug possession in American cities, after controlling for patterns of illicit drug use? How does racial or ethnic identity, along with age and sex, affect the likelihood of being arrested for drug possession in American cities? Are patterns of drug possession arrests associated primarily with the actual distribution of illicit substance use among different groups? Or is the likelihood of being arrested instead associated with individual demographic characteristics, above and beyond the propensity of each group to use? If such disparities do, indeed, exist, what is their magnitude and how do they vary across different cities in different regions? How can policy changes influence existing disparate outcomes in cities?

This thesis also intends to contribute to the existing literature through application of some novel methodological decisions. In order to isolate the inequities related to the criminalization of drug use, specifically, this thesis will consider only arrests for drug possession, as opposed to drug offenses, generally, which also include drug sale, intent to sell, or trafficking. I argue that drug possession acts as a better proxy for those arrested for the use of illicit substances, rather than those who are involved in other criminal activity or are supplying drugs to others for financial gain. Many prior studies have also largely relied on longitudinal studies, which follow one cohort of respondents over time, as opposed to examination of arrests data, as is done in this analysis. This, in some cases, provides more detailed demographic and spatial information of the study population. However, this thesis intends to investigate the issue from the perspective of the ultimate outcomes, i.e., actual arrests. Prior research has examined the issue from an upstream perspective – i.e., determining which drug users are more likely to be arrested. Instead, I attempt to demonstrated whether those arrested for possession are actually more likely to be drug users. This thesis also analyzes four different specific urban areas, representing four regions of the country, rather than simply analyzing a nationwide representative sample. This should provide insight into regional and city-to-city variation in arrest disparities, as well as allow for targeted investigation of the impact of specific policy changes.

This thesis is organized into the following sections. First, I provide a high-level background of the history of drug enforcement in the United States over the past century to set the stage and define the issue. Next, I conduct a literature review of research regarding patterns of American drug use and drug arrests, in order to situate the results of this analysis within the existing understanding and various theoretical frameworks. I then outline the data used for this thesis. In the following section, I outline the methodology employed to analyze the possession arrests and illicit drug usage data. Next, I present the results and findings generated from my analysis, which appear to confirm the presence of significant disparities in drug possession arrests in the four cities studied, particularly along racial lines. Finally, I conclude the thesis with a brief discussion of my interpretation of the results and possible implications for future policy.

II. Background: The History of U.S. Drug Enforcement

For nearly all of human history, countless people across the globe have used mind-altering substances or drugs. The pursuit of altered states consciousness is such a pervasive feature of myriad societies that some scholars have argued that seeking intoxication is a basic human drive or even that sobriety is not a natural human state. (R. Siegel 1989; Davenport- Hines 2001; as cited in Mosher and Akins 2014, p. 19) Notwithstanding the validity of these theories, the fact remains that the consumption of intoxicating substances has been and remains ubiquitous. These substances are numerous and include, but are not limited to: tobacco, alcohol, marijuana, pain relievers, hallucinogens, tranquilizers, sedatives, cocaine and other stimulants, amphetamines, inhalants, and heroin and other opioids. Some of these substances are medically or scientifically useful, while others run the gamut from generally socially acceptable to taboo and categorically outlawed. In addition, some may present significant dangers to health or may be especially addictive or habit-forming for users. Therefore, governments around the world have stepped in to regulate the production, distribution, and consumption of this spectrum of substances, ostensibly with the goal of protecting public safety. In the U.S., substances deemed to be "illicit drugs" and thus strictly prohibited by law are those that do not include explicit exceptions for research and those diverted from their intended medical purpose. (Sacco 2014) Despite this, illicit drugs are still relatively widely used and addiction remains a salient social issue in the United States. This may indicate that the puritanical legal regime governing illicit drugs in the country has not been totally effective..

Despite the criminalization of most drugs aside from tobacco, alcohol, or prescription medications, a significant portion of the population continues to use intoxicating or mind-altering substances. According to the 2020 National Survey on Drug Use and Health (NSDUH), 21.4% of Americans aged 12 or older, or 59.3 million people, used one or more illicit drugs – marijuana, cocaine (including crack), heroin, hallucinogens, inhalants, methamphetamine, prescription – or misused one or more prescription substances – stimulants, tranquilizers, sedatives, or pain relievers. The most popular illicit drug was marijuana, which 49.6 million people used during the year or 17.9% of the population. However, millions of others also used "harder" drugs: 15.5 million people or 7.3% misused prescription drugs (pain relievers,

tranquilizers, sedatives, or stimulants), 7.1 million or 2.6% used hallucinogens, and 5.2 million or 1.8% used cocaine. Young adults between the ages 18 and 25 tended to use illicit drugs at higher rates than the overall population, with 37% using during the year, followed by 19.9% of adults 26 or older and 13.8% of adolescents between the ages of 12 and 17. Illicit drug use also varies by race, although less so than is often widely presumed: 32.5% of Native Americans or Alaskan Natives, 23.2% of blacks, 22.5% of whites, 19% of Hispanics or Latinos, 9.7% of Asians, and 8% of Native Hawaiians and Other Pacific Islanders used illicit drugs in 2020. Men also tend to use illicit drugs at slightly higher rates than women, with 23.1% using illicit drugs in 2020, as opposed to 19.8% of women. A significant number of users of illegal substances, as well as alcohol, also suffer from substance use disorders or addiction. In 2020, 40.3 million people aged 12 or older, or 14.5%, had a substance use disorder. This includes 21.9 million who had alcohol use disorder, which is a legal intoxicant. A further 11.9 million people reported having an illicit drug use disorder and 6.4 million people reported both an alcohol and an illicit drug use disorder. These dire statistics reflect a notable social and public health issue of which there has been much discussion in popular media and culture. Thus, illicit drug use and addiction, although by no means universal, are still trends seen in a sizable plurality of the American public.

U.S. Drug policy and enforcement has changed considerably over the past century. In the late 19th and early 20th century, drug use was generally treated as a private matter and not actively controlled by the state. However, in the first couple decades of the 20th century, federal, state, and local government began to regulate and police the use of substances among the population, for instance, the fleeting prohibition of alcohol in 1919. These early steps launched an era of criminalization and strict control that lasted largely through the mid-1960s. New attitudes towards drug use emerged following this period, including waning support for severe punishment, countercultural support of substance use, and a view that drug abuse could be treated medically. However, this reflected only a brief détente. The "War on Drugs" that launched in the 1970s and 1980s produced a renewed focus on aggressive enforcement regimes. This aptly named War helped bring about an era of mass incarceration, particularly of racial minorities, those of lower socioeconomic status, and other marginalized groups. Despite the easing of some of the more hardline policies and punishments and the adoption of a more

comprehensive approach to drug control, the legacy of these policies endures today and the overall strict enforcement strategy essentially remains intact. In recent years, the country has also seen the decriminalization of some previously prohibited substances, especially marijuana, at the state level. Crucially, through the entire history of substance use in the U.S., race and racial bias have played an outsized role in justifying or generating policy decisions that have resulted in conspicuous disparities.

Prior to the turn of the century, drug use in America was typically a private or medical matter. In fact, during the 19th century, there existed virtually no effective regulation of narcotics in the United States. (Gerstein and Harwood 1992) A variety of now-illicit substances, especially opiates and cocaine, were widely accessible via purchase or prescription in Victorian America. Moreover, the ease with which these substances could be procured, along with the lack of understanding of the dangers of their use or abuse, resulted in "a narcotic problem of considerable dimensions, with perhaps as many as 300,000 opiate addicts at the turn of the century, plus an unknown number of irregular users." Per capita, narcotic abuse was as bad, if not worse, in Victorian America than it is today. (Gerstein and Harwood 1992) This growing problem, along with a dearth of federal or other government agencies tasked with regulating medical or pharmaceutical practice, fed growing public concern that would ultimately inform future policy. (Sacco 2014) Notably, despite the laissez-faire drug policy environment during this period, there were notable exceptions to the general rule. The consumption of alcohol became a focus of fervent reformers, due to the perceived social ills associated with drunkenness, which would culminate in its prohibition by constitutional amendment in 1919. Alcoholism also became widely associated with the lower classes and black or immigrant communities, as a result of racial bias and animus. The smoking of opium was also frowned upon, primarily due to a largely racialized understanding of its usage: hardcore users of opium were typically assumed to be Chinese immigrant laborers or white criminals. For both of these exceptions, "who the narcotic users were was as important as how they acted." While many addicts during this period were of higher social and economic status (users of liquid opiates, in particular), those who preferred alcohol or opium belonged to "objectionable" groups and, accordingly, their substances of choice were also objectionable. Nevertheless, these early concerns would spread to other

substances in the coming decades, culminating in a "virtual consensus on the need to suppress narcotic addiction." (Gerstein and Harwood 1992)

Beginning in the first two decades of the 20th century, American attitudes towards drug use and its regulation shifted significantly. The fallout from widespread addiction, particularly in the country's urban areas, coupled with changing perceptions of who used drugs, accelerated this shift. As previously noted, drug abuse had become precariously ubiquitous in the U.S. during the preceding decades. This trend was accompanied by a range of social problems and threats to public health and safety. A shift in the composition of drug users from the higher-status "medical addicts" of the Victorian period to a cohort of "generally younger, less sympathetic users" who had begun experimenting with drugs in decidedly nonmedical establishments, such as brothels and saloons, intensified hostility towards users. Ultimately, drug abuse came to be seen as a societal affliction in need of remedy and addiction went from being viewed as a "pathetic condition" to instead being a "stigmatized one". (Gerstein and Harwood 1992) In response, domestic law enforcement became the primary means of controlling the nation's substance abuse problems. In 1914, the federal government passed the Harrison Narcotics Act, which, "required importers, manufacturers, and distributors of cocaine and opium to register with the U.S. Department of the Treasury (the Treasury), pay a special tax on these drugs, and keep records of each transaction." (Sacco 2014) The detailed transaction records required by the Harrison Act effectively ensured that any person who was found to be in possession of such drugs that were not "prescribed in good faith by a physician, dentist, or veterinary surgeon" could be subject to arrest, prosecution, and possible incarceration. In effect, unsanctioned possession of hard drugs had been criminalized in the United States. The year 1919 also brought about Prohibition nationwide, banning the manufacture and sale of alcoholic beverages in the country. During this short-lived era, numerous people continued to drink, while alcohol prices rose, bootleggers and speakeasies proliferated, and criminal gangs achieved notoriety and infamy chasing the profits of a new underground market. Just 14 years later, in 1933, the experiment had failed. The 18th Amendment was repealed through the passage of the 21st Amendment. Nonetheless, any lessons learned were not transferred to the handling of other substances and their use. The absence of a comparable political movement against the criminalization of drugs was due, in large part, to the marginalization of drug addicts and the "social and moral connotations" of drug addiction, which

ensured that the legal regime initially implemented by the Harrison Act remained in place. (Gerstein and Harwood 1992) Another motivating factor reflected a pattern seen in previous decades: racial bias deeply informed drug policy. Just as the anti-opium laws of the 19th century targeted Chinese immigrants, the first anti-cocaine laws in the early 20th century targeted black men in the South and the first anti-marijuana laws in the 1910s and 1920s targeted Mexican migrants and Mexican-Americans in the Midwest and the Southwest. (Drug Policy Alliance) The racialized nature of perceived drug use was thus key in driving the early laws banning drug use and possession in early 19th century America.

Following Prohibition, the American drug enforcement apparatus continued to take form. The Federal Bureau of Narcotics ("FBN") was established in 1930 to independently handle narcotic enforcement with Commissioner Harry Jacob Anslinger at its helm. Anslinger, who served in this post until the 1960s, was a virulent opponent of recreational drug use, often associating drug users with violence, insanity, and crime. In testimony submitted to Congress Anslinger, in no uncertain terms, maintained that, "The major criminal in the United States is the drug addict; that of all the offenses committed against the laws of this country, the narcotic addict is the most frequent offender." (Sacco 2014) The leader of the nascent FBN therefore vehemently supported supply-reduction strategies that jailed sellers and compulsorily confined addicts in institutions. The Marijuana Tax Act of 1937 was passed shortly thereafter, effectively banning marijuana in the country. The Act imposed a high-cost transfer tax stamp, issued by the federal government for every marijuana sale; however, these stamps were rarely issued. Not long after the legislation was passed, all states also made possession of marijuana illegal. (Sacco 2014) Further legislation of this kind would follow in the coming decades, including the Boggs Act of 1951 – which established mandatory prison sentences for some drug offenses and the 1956 Narcotic Control Act, which further increased drug offense penalties and instituted the death penalty for selling heroin to youth. The laissez-faire policies of the past in regards to drug use and abuse were no more. The U.S. had entered a "classic era of narcotic control", in which "few avenues of treatment were open to addicts, and American narcotic policy was unprecedentedly strict and punitive", both in comparison with other Western countries and with the standards of today. (Gerstein and Harwood 1992) The recurring trend of racial animus driving public policy towards drugs also persisted. The 1937 Marijuana Tax Act was largely

justified by racist myths regarding the drug's usage by "Mexicans" (a category which included deeply-rooted Americans of Hispanic/Mexican descent). Further, as a result of the demographic change in urban centers fueled by the Great Migration and World War II, the white middle-class began to associate drug abuse with minority groups, especially with blacks in the urban ghetto. These views developed, in part, from misinformation peddled by those like Harry Anslinger. However, there was some underlying truth as well, as drug use among minority groups did increase during this period. However, the increase was primarily associated with increasing urbanization and the distinct discrimination faced by blacks and other groups newly occupying American cities, rather than any inherent racial characteristics. Despite this, stereotypes fueled local enforcement policy, leading to disproportionate arrest rates, which then recursively re-informed the beliefs and policies that led to the same disparities initially. "Rightly or wrongly, the black junkie became a stereotype, and that made a difference." (Gerstein and Harwood 1992)

The 1960s brought about substantial and far-reaching societal change. Attitudes towards substance use shifted unmistakably, giving rise to a concomitant shift in policy. As "the mass media, the youthful counterculture, and skeptical "new class", white intellectuals who were disenchanted by the status quo" began to question traditional values and optimistically pondered a better future, society became more permissive towards the use of mind-altering drugs and less supportive of the existing system of strict narcotic control, which was increasingly seen as antithetical to social and political liberation. (Gerstein and Harwood 1992) Instead, support for a new system centered on the treatment of drug abuse using a medical approach gained steam. Organizations like the American Bar Association spoke out against harsh punishments for drug offenders. Methadone maintenance emerged as an acceptable response to heroin dependence. Federal policy likewise seemed to loosen. The 1963 Presidential Commission on Narcotic and Drug Abuse issued a report recommending "more funds for narcotic research, less strict punishment for drug offenses, and the dismantling of the FBN." Congress responded to the Commission's report, creating the Bureau of Drug Abuse Control and passing the Narcotic Addict Rehabilitation Act, which "declared its support for rehabilitation through treatment." (Sacco 2014) However, these seismic shifts in the national understanding of how to address the issue did not lead to an abandonment of the law enforcement-led approach or the criminalization of drug use. The same Presidential Commission that had emphasized the new approach had also

recommended an increase in federal drug enforcement personnel and the transfer of drug enforcement functions from the Treasury to the Department of Justice (DOJ), via the merge of the FBN with the newly created Bureau of Drug Abuse Control. The federal enforcement apparatus was reformed rather than simply dismantled. (Sacco 2014) Ultimately, much of the momentum of the 1960s reframing the conversation around drug abuse proved to be illusory, as the coming decades would see the birth of a reactionary policy environment that further solidified an unsympathetic, enforcement-first strategy.

When Richard Nixon ascended to the presidency, he quickly established eliminating drug abuse as a top priority for his administration. Riots in cities across the country, largely in African-American communities, had generated widespread fear and backlash. In campaign commercials, Nixon had promised to end the "domestic violence" that plagued the nation, thereby bringing "order" back to the United States. (Austin et al. 2016) The Nixon Administration, considered drugs to be public enemy number one; getting users and dealers off the street was crucial to addressing this rising urban crime nationwide. In 1971, the now-president coined a phrase that would have reverberating impacts for a generation, describing his policies to eliminate substance abuse nationwide as the "War on Drugs". The declaration of this so-named war represented a "succession of executive-sponsored domestic and transnational punitive campaigns spanning the postwar era through today" and initiated a "conflict without end." (Murch 2015) A top aide to Nixon, John Ehrlichman, would also later admit the true motivation behind these zero tolerance policies: the Nixon White House "had two enemies: the antiwar left and black people…by getting the public to associate the hippies with marijuana and blacks with heroin, and then criminalizing both heavily", the administration could "disrupt those communities." (Drug Policy Alliance)

Key to carrying out the drug war was the passage of the Controlled Substances Act in 1970 (Title II of the Comprehensive Drug Abuse Prevention and Control Act). The CSA established the statutory framework for the federal government to regulate the production, possession, and distribution of controlled substances, which were classified under five "schedules". These schedules were intended to be determined by the perceived danger presented by each substance and its addictive potential, offset by any possibility of a "legitimate medical

use". (Sacco 2014) For example, by this logic, marijuana and heroin were categorized as Schedule I drugs, while cocaine and methamphetamine, which had recognized medical uses at the time, were categorized as Schedule II substances. A federal agency, the Drug Enforcement Administration (DEA), was authorized by Nixon shortly thereafter, in 1973, to enforce the new counterdrug policies now existing under the legal framework established by the CSA. Originally comprising 1,470 special agents and a $74.9 million annual budget, the DEA would swell in size to an agency of over 9,000 full-time employees with an annual budget of approximately $2.0 billion by 2014. (Sacco 2014)

The DEA continues to be the primary enforcer of federal controlled substances laws in the United States, with the majority of drug crimes being dealt with at the state level by state or local law enforcement. State and local governments also began to ramp up strict drug enforcement during the 1970s. New laws "dramatically lengthened sentences for many crimes, and also created entirely new crimes". (Austin et al. 2016) Notable among these were the Rockefeller Drug Laws passed in New York in 1973, named after then-governor Nelson Rockefeller. The "nation's most punitive drug laws" established severe mandatory minimum sentences for drug possession and other drug-related crimes and, along with an accompanying change in policing practices, "yielded a major increase in drug-related incarceration in New York" in coming decades. The emergence of new policing practices was key to deciding the impact of such laws on rates of incarceration. "The rise of "proactive", "order maintenance", and "problem-oriented" policing paradigms in the mid-to-late 1970s (recast as "broken windows" policing in the early 1980s) provided an intellectual rationale for street-level enforcement." (Williams 2021) Hence, the War on Drugs was brought to the streets of American cities, where it remains entrenched today.

The presidency of Ronald Reagan in the 1980s would ensure the preservation of the tough-on-crime policies of the previous decade and further accelerate the national crusade against drug use. The rise of a crack cocaine epidemic led to a "renewed demand from the American public that something be done about American drug abuse." (Sacco 2014) Reagan, like Nixon before him, championed "law and order" and a zero-tolerance approach to drug policy. First Lady Nancy Reagan also began a highly-publicized anti-drug campaign, epitomized

by the slogan "Just Say No" in 1981, further contributing to the "political hysteria" surrounding drugs. (Drug Policy Alliance) Public discourse again reflected racialized understandings of drug abuse, as the Reagan administration "invoked African American suffering—with the "crack baby" as its most potent trope—to rationalize a new and vastly intensified carceral regime." (Murch 2015) At the local level, the supposed epidemic generated a never-before-seen mobilization of police resources. The War on Drugs, and against crack in particular, necessitated the militarization of local police departments in order to effectively ramp up arrests of supposed out-of-control users and dealers.

The Reagan administration oversaw a "national punishment campaign", which included tactics such as "saturation policing, eradication of youth gangs, asset forfeiture, federalization of drug charges, and strict enforcement of mandatory minimum sentencing." (Murch 2015) At the time, this approach garnered support from across the political spectrum. Congress also passed further legislation solidifying the strict, enforcement-centered strategy. The Comprehensive Crime Control Act of 1984 enhanced penalties under the CSA, established criminal forfeiture provisions for certain drug felonies, and provided the authority to the Attorney General to temporarily schedule substances, such as synthetic drugs. The Anti-Drug Abuse Act of 1986 allowed for the treatment of synthetic drugs as Schedule I substances and established criminal penalties for simple possession of a controlled substance, including two tiers of mandatory minimum prison terms based on the quantity and type of drug involved in the offense. (Sacco 2014) Due to an "atmosphere where overheated political rhetoric fed on, and in turn fed, a public frenzy over drug crimes and violence", lawmakers soon followed with the Anti-Drug Abuse Act of 1988, which "went far beyond its 1986 predecessor in attacking the drug problem with more stringent penalties and a vast array of enforcement and prevention programs." (Russell-Einhorn, Ward, and Seeherman 2000)

In the 1988 Act, Congress established the Office of National Drug Control Policy (ONDCP), created the post of Director of National Drug Control Policy (aka the "drug czar"), and further added to the growing list of new criminal penalties and mandatory minimum sentences for drug crimes. Mandatory sentences under the 1988 Act were severe – for example, defendants with two or more prior state or Federal drug felony convictions were now sentenced

to life in prison. US drug policy during this era thus evolved significantly in two major ways. First, the focus of enforcement shifted from international drug producers and traffickers to include mid- and low-level dealers and users. Second, policy further moved away from "alternative drug control mechanisms (e.g., drug use prevention, drug treatment, harm reduction)" to instead rely heavily on "punitive criminal justice sanctions" to discourage drug use and the drug trade. (Mitchell and Caudy 2015)

The Reagan presidency and the 1980s marked the beginning of a "long period of skyrocketing rates of incarceration." The legacy of the expansion of the drug war in the decade would be a ballooning population of those imprisoned for nonviolent drug offenses from just 50,000 in 1980 to over 400,000 by 1997. (Drug Policy Alliance) Decisions made in the 1970s and '80s have contributed significantly to the fact that, presently, the country has "an incarceration rate five times higher than in the mid-1970s, with vast racial disparities." (Austin et al. 2016) Further doubling-down around the turn of the 21st century would further solidify this unfortunate pattern.

Spanning from the last decade of the 20th century into the first decade of the 21st, the federal government, along with state and local partners, persisted with "supply reduction" strategies that relied primarily on law enforcement. The rise in popularity of synthetic compounds, like methamphetamine and MDMA, generated new targeted legislation and obliged the temporary and eventually permanent scheduling of these substances and others. Additionally, the crime rate continued to surge in the early 1990s, reaching its peak in 1991. This continued to generate relatively broad political support for harsher punishments for crime in general, including for drug crimes. Notably, this period witnessed the proliferation of "three-strikes-and-you're-out" laws, which came with automatic prison sentences, including life without parole, for those convicted of a felony for the third time. Half of U.S. states passed three strikes laws between 1993 and 1995 alone. (Austin et al. 2016) These "three strikes" laws provided even more fuel for the engine of mass incarceration in the United States, particularly in the form of drug users, dealers, and traffickers. Crucially, most drug arrests were made by state and local law enforcement and were for possession rather than sale or manufacture. (Sacco 2014) This meant that a large number of those imprisoned for long periods under the new harsh laws tended to be

those simply in possession of drugs; drug addiction now came with the risk of life imprisonment. Federal felony drug convictions, which are more likely related to "major national and international drug trafficking activity rather than simply mid- to upper-level dealers operating principally in particular urban neighborhoods" are and were relatively rare, as opposed to convictions for state and local drug crime. In 1996, convictions for high-level trafficking "represented a very small (4.9 percent) proportion of the total felony drug convictions." (Russell-Einhorn, Ward, and Seeherman 2000) Due to policy choices initiated during the 1980s and hardened during the 1990s, most of drug crime arrestees during this period were lower-level offenders. This trend continues today, as drug possession arrests remain a notable feature of contemporary mass incarceration, despite recent changes in attitudes and policy.

The last two decades have seen continued reductions in crime rates and softening in public perceptions of drug use, which has translated into relatively radical policy shifts, particularly regarding the decriminalization of marijuana. However, the legacy of previous decades has ensured that a large number of people remain incarcerated and continue to be arrested for drug possession. As of 2016, crime nationwide was at historic lows and half of its 1991 peak; violent crime was effectively at 1970 levels, while property crime was at 1967 levels – crime rates had dipped below where they were during the early days of the War on Drugs. (Austin et al. 2016) At the same time, the U.S. has the highest per capita incarceration rate in the world, locking up 698 of every 100,000 residents. Drug arrests represent a significant portion of those incarcerated: 1 in 5 people incarcerated is a drug offender. Arrests for drug offenses also continue in earnest, as over 1 million drug arrests are made annually, of which 6 times as many arrests are for possession, as opposed to drug sales. (Sawyer and Wagner 2022)

Clearly, the War on Drugs has not ended, although the stated drug control policy of the U.S. has transitioned towards a comprehensive approach that focuses on prevention and treatment, along with enforcement. (Sacco 2014) Unfortunately, this era of so-called "mass incarceration", materially influenced by the ongoing domestic drug war, has been defined by glaring socioeconomic and racial inequalities. Compared to the overall U.S. population, those incarcerated are disproportionately poor, with median incomes around half of those not incarcerated. People of color are also "dramatically overrepresented in the nation's prisons and

jails" – black Americans are especially so, comprising 40% of those incarcerated despite representing only 13% of the population. (Austin et al. 2016) This environment belies the recent major shift in attitudes around drug use among lawmakers and the general public, specifically regarding the use of marijuana. Marijuana, long one of the main substances whose control and demonization was a key feature of the War on Drugs, has been decriminalized or legalized at the state level across the country, despite remaining illegal federally. A variety of novel therapeutic applications and scientific evidence indicating relatively minimal dangers or harms of moderate consumption of marijuana or cannabis use have been crucial to this recent development. (National Academies of Sciences, Engineering, and Medicine 2017) Medical use of cannabis has, presently, been allowed by 37 states and 4 territories, while 18 states, two territories and Washington D.C. have enacted legislation allowing the non-medical or recreational use of cannabis. (National Conference of State Legislatures 2022) However, the underlying effects of the drug war in relation to marijuana have not instantaneously subsided. As recently as 2010, 52% of all drug arrests in the U.S. were for marijuana-related offenses and nearly 8 million people were arrested on marijuana charges in the preceding 10 years. (Mosher and Akins 2014) 700,000 Americans are still arrested for marijuana offenses each year and almost 500,000 individuals remain incarcerated for drug law violations. (Drug Policy Alliance)

The War on Drugs in the United States which began in earnest in the 1970s and 1980s, originated in the early 20th century, largely as a result of stigmatization of marginalized groups and growing fear of crime amongst the general public. The federal government, along with its state and local partners, instituted increasingly severe punishments and enforcement systems with seemingly immaterial effect on the number of Americans who continued to use illicit drugs. In fact, this environment of strict control essentially criminalized and incarcerated a large swath of the population, primarily racial minorities and the poor, without treating the root causes of substance abuse or effectively choking off the available supply of illicit drugs. Today, even as public opinion has swung in favor of reform, hundreds of thousands continue to be arrested for drugs in American cities.

III. Literature Review

Patterns of Illegal Drug Use

As this thesis intends to explore the relevance of illegal drug use patterns on arrests for drug offenses, it is crucial to understand how the consumption of illicit substances is distributed among the U.S. population. Consistent with my empirical work, in this section I focus on consumption, rather than on dealing or trafficking. Literature has found variation in illicit drug use by age, sex, racial or ethnic identity, and social class. Illegal drug use has been shown to be most common in late adolescence and early adulthood. Illegal drugs are also more commonly used by males than by females. Drug use is also found to vary by racial or ethnic identity, albeit not in the patterns typically expected by the media or public; whites use illegal drugs at largely comparable rates to members of racial or ethnic minority groups. Social class, including socioeconomic status and educational attainment, also has an important role in explaining rates of illegal drug use, especially in the ways it appears to interact with racial identity.

Patterns of Illegal Drug Use by Age

The frequency of illegal drug use generally tends to increase rapidly during adolescence, peak in early adulthood or mid-20s, and decline steadily thereafter. Recent national survey data from the University of Michigan's Monitoring the Future study shows that both the annual and 30-day prevalence of the use of any illicit drug peaks between the ages of 23 and 24 and begins to decline at an increasing rate in the late 20s. As of 2020, the estimated annual prevalence of drug use by Americans in their mid-20s is more than double that of those between the ages of 50 and 60. (Schulenberg et al. 2021)

Adolescence is a period in which individuals begin to spend less time with family and, instead, more time with peers, as they begin to exercise the agency and freedoms of their emerging young adulthood. As family involvement decreases for adolescents, it has been found that the number of drug-using peers increases; a greater number of drug-using peers is associated with a significant increase in marijuana use for both younger and older adolescents, although

these peer effects are weaker for older adolescents. (Hoffmann 1994) Stress and boredom among teenagers has also been found to contribute to substance use. Teenagers reporting high stress levels are twice as likely as those with low reported stress to use drugs. Teenagers who report being bored "often" are also more likely to use drugs; those teens who are "often" bored are almost one and a half times as likely to have tried marijuana than those who are "not often" bored. (CASA 2004) Exposure to images of other teens using substances via social networking sites is also leads to increased risk of teenage drug use. (CASA 2011)

Immediately following adolescence, young adulthood generally represents a further period of increasing independence from parental authority without the major responsibilities of family or career that come later on. Certain contexts or experiences following high school, such as living independently or attending college, have been found to contribute to a relative increase and delayed decrease in substance use. Evidence suggests that this period of emerging adulthood is therefore a time of temporary experimentation, elevated willingness for risk-taking, and/or limited influence of constraining social influences (i.e., parents or spouse), which contributes to higher rates of substance use. (Schulenberg et al. 2004) Changes in family roles between the ages of 18 and 28, such as marriage, divorce, and parenthood, are also found to be strongly associated with changes in substance use. Changes in school or work roles have also been found to have effects on substance use, albeit weaker effects than those of changes in family roles during this period in one's lifecourse. (Staff et al. 2010)

Drug use, both legal and illegal, then tends to decline as people age past their mid- to late-20s, primarily due to constraints on behavior related to associated life changes. Following college-age years, adults tend to become more established in their family and work roles; they often complete their education, begin their careers, get married, and have children (although this is not a universal experience that can be influenced by class differences). Assuming these social roles is typically paralleled by a decline in illicit drug use. (Kandel 1980)

Although drug use generally declines with age, research has shown an uptick in drug use among elderly populations. This trend is partially attributed to the aging of the "baby boomer" generation, who were young adults during the broad social changes and shift in attitudes around

the use of illicit drugs of the 1960s and 1970s. It is therefore suggested that, as baby boomers age, a larger number of elderly persons will be found to use or abuse illicit drugs than previous cohorts. (Patterson and Jeste 1999) Additionally, a majority of those who abuse substances after the age of 65 are "late onset abusers". These users typically begin their substance abuse in response to a negative life event, such as the death of a spouse, undesired retirement, decline in social status, or health setbacks. (Benshoff, Harrawood, and Koch 2003)

Therefore, for the purposes of this analysis, it will be assumed that younger adults, including teenagers through those in their mid-to-late-20s, will be more likely to use illegal drugs, as is supported by the current literature. Those over the age of 65 will also be assumed to be slightly more likely to be users of illegal drugs. Those not falling into either of these groups, including middle-aged adults, can be assumed to be least likely to be illegal drug users.

Patterns of Illegal Drug Use by Gender

Males generally use and abuse illegal drugs more than females. Per the 2020 NSDUH, 52.4% of males older than 12 years old used illicit drugs in their lifetime versus 47.8% of females in the same age group, a gap of 4.6%. However, this gender gap in illicit drug use varies over the course of life. As of 2020, lifetime illicit drug use for females is estimated to be 4.1% *higher* than males for those aged 12 to 17 and 3.9% *higher* than males for those aged 18 to 25[1], yet 7.2% *lower* for those older than 26 years old. (SAMHSA 2022)

Therefore, there is an apparent pattern in this gender gap, which becomes increasingly skewed towards male illicit drug use into adulthood, past the point of peak use in the mid-20s. This pattern has been attributed to stronger perceived consequences for and stigmatization of drug use by women as they age. Literature exploring gender differences in attitudes towards drug use has found that females are more likely to overstate the effects of biological or environmental factors on drug abuse, perceive drugs as more powerful, overestimate the prevalence of substance abuse, and underestimate the effectiveness of drug abuse prevention and treatment.

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[1] Per 2019 estimates, male use was instead 0.2% higher than female use – effectively equal for this age group.

(Kauffman, Silver, and Poulin 1997) Thus, illegal drugs are perceived as more dangerous and riskier by females, as opposed to males, which may moderate the extent of female use.

Further literature has found differences in the type of illegal substances consumed by males and females. One study in Appalachia found that more men than women report using illegal "street" drugs, including heroin, crack cocaine, methamphetamine, marijuana, and hallucinogens. Men participating in the study also reported first using marijuana and hallucinogens at a significantly younger age than the female participants. (Shannon et al. 2011) Other studies have found that women are more likely to report misuse or abuse of prescription drugs. This especially includes the use and abuse of prescription opioids. (Merline et al. 2004; Green et al. 2009) These differences have been attributed to the distinctive experiences of men and women within their social environments, including variation in the influence of interpersonal relationships by gender. For example, initial use of heroin by women has been found to be highly influenced by the heroin use of a sex partner, but not so for men. Other gendered differences in behaviors leading to narcotics use appear to be related to traditional expectations about gender roles in American society. (Hser, Anglin, and McGlothlin 1987)

Based on this current understanding from the literature, females will be considered less likely to use illegal drugs than males for the purposes of this analysis. This assumption is well-supported by current data, as well as research exploring likely explanations for this gender difference.

Patterns of Illegal Drug Use by Race or Ethnicity

Patterns of illicit drug use vary to some extent by racial or ethnic identity. However, common assumptions of the nature of these patterns are typically divergent from the exact reality. It is typically assumed that non-whites, especially blacks, as well as Latinos, use illegal drugs at higher rates than whites; however, this is largely inconsistent with the findings revealed by research.

Recent and past studies and surveys have shown relatively low levels of illegal drug use by non-white adolescents. (Bachman et al. 1991; Miech et al. 2020; Center for Behavioral Health Statistics and Quality 2021) African-American high school students, often perceived to use drugs at higher rates than whites, were found, in 2019, to have exceptionally low levels of use of any illicit drug other than marijuana, while, by the 12th grade, white students tended to have the highest level of use of hallucinogens, narcotics other than heroin, amphetamines, Adderall, tranquilizers, and prescription drugs. Marijuana use among 12th grade students was not found to differ significantly by race or ethnicity. (Miech et al. 2020) Controlling for parental socioeconomic status provides the same results: at age 17, blacks were found to be significantly less likely to use hard drugs than whites of the same age, while the prevalence of marijuana use did not differ significantly between the two groups. (Lee et al. 2010) Asian and African-American college students were also less likely than white students to report drug use and abuse prior to coming to college and during college. (McCabe et al. 2007)

Averages of survey data, collected from 2015 to 2019, show that blacks, whites, Hispanics or Latinos, and Native Hawaiians or other Pacific Islanders aged 12 or older used illicit drugs at similar rates: 20.8% of blacks, 19.6% of whites, 17.4% of Hispanics or Latinos, and 16.9% Native Hawaiians or other Pacific Islanders aged 12 or older used an illicit drug in the past year. Past year illicit drug use by those aged 12 or older was highest for those of two or more races and American Indians or Alaska Natives: 28.5% and 25.9%, respectively, used illicit drugs. Only 9.8% of Asian-American respondents included in the survey used illicit drugs in the past year, the lowest of any group. (Center for Behavioral Health Statistics and Quality 2021) Therefore, although white adolescents and young adults tend to use illegal drugs at higher rates, this pattern does not continue throughout adulthood. Rather, rates of use for adults tend to be comparable across most major racial or ethnic groups.

Immigration status, which can often be associated with racialized or politicized stereotypes regarding drugs and crime, also does not appear to increase the chance of illegal drug use. In fact, undocumented immigrants, many of whom tend to be Latino, are significantly less likely to use illicit substances or commit crime. Arrest data from 36 major cities between 2000 and 2002 shows that noncitizens were actually 55% less likely than citizens to test positive for illicit

substances and 14% less likely to be arrested on drug charges. (Kposowa, Adams, and Tsunokai 2010) Arrest data from Maricopa County, Arizona in 2007 to 2009 shows that, compared to both illegal and legal immigrants, U.S. citizens were approximately two times more likely to report use of and test positive for any illicit drug other than powder cocaine. (Katz, Fox, and White 2011)

However, recent figures show that those of Native American descent typically use illegal drugs at much higher rates than those of other racial backgrounds. This is especially true for American Indian or Alaska Natives between the ages of 12 and 49. (Center for Behavioral Health Statistics and Quality 2021) This pattern has been attributed to the fact that more Native Americans tend to live in poverty, have poorer emotional health, experience more stressful life events, and have more friends or parents that abuse drugs or alcohol. (Akins et al. 2003) Further research found that socioeconomic status or parental education, in particular, helped explain the higher levels of adolescent substance use by Native Americans. (Wallace, and Bachman 1991)

Asian-Americans have typically been found to have relatively lower levels of illegal drug use, although this can vary by sub-group. Some research has found evidence that perhaps this pattern is a result of cultural factors; some young Asian-American drug users expressed that their drug use was unique or exceptional, given their identities. (Hunt, Moloney, and Evans 2011) Further research has shown protective effects from substance use disorders related to neighborhood safety and family cohesion for Asian-Americans, who tend to be first- and second-generation immigrants. The same study, however, also showed risks for substance abuse related to acculturation, which further suggests the potential influence of cultural factors, along with family conflict and discrimination. (Savage and Mezuk 2014) However, Asian-Americans comprise a diverse cohort, including a variety of ethnicities and national origins, despite often being essentialized as one "model minority". A study of Asian-American youths in Dallas found significant variation in cumulative drug use among those of Korean, Southeast Asian, Vietnamese, Filipino, Japanese, and Indian origin, for example. (Yang and Solis 2002) Nonetheless, overall illegal drug use tends to be lower among Asian-Americans as a whole.

Therefore, this analysis will expect that, within the American cities examined, illegal drug use should not vary substantially between most racial groups, other than perhaps Native Americans or Asian-American individuals, who are more and less likely to use, respectively. It is thus expected that relative racial composition of neighborhoods should not have a significantly material impact on the expected rates of illegal drug use.

Patterns of Illegal Drug Use by Neighborhood, Class, or Socioeconomic Status

Social and economic circumstance also appears to influence relative rates and patterns of illegal drug use. Neighborhood disorganization and social capital have been determined to be associated with drug use and dependence after controlling for individual- and family-level characteristics. (Winstanley et al. 2008) However, much like racial stereotypes have led to flawed assumptions, class-based stereotypes have not always been found to align with actual patterns of use.

The material disparities resulting historically from segregation and discrimination may help to explain racial differences in drug use. After controlling for the social and environmental risks associated with neighborhood, including the availability of drugs, no significant differences in crack cocaine use were found for blacks, Hispanics, and whites in one analysis. (Lillie-Blanton, Anthony, and Schuster 1993) Higher rates of illegal drug use by Native Americans, as previously mentioned, have also been attributed to the effects of poverty and disadvantaged social context. (Akins et al. 2003)

Structural disadvantage was also found to have a significant effect to influence patterns of illegal drug use and also appears to interact with race. Black and Latino arrestees were found to be more likely than Whites to test positive for marijuana, cocaine, and opiates than for methamphetamine. However, whites in less disadvantaged areas were more likely than Blacks of similar status to test positive for methamphetamine than marijuana, cocaine, and opiates. (Cooper, Fox, and Rodriguez 2012) Another analysis identified a significant interactive effect between race or ethnicity and structural disadvantage to predict methamphetamine use. White

arrestees who lived in both disadvantaged and advantaged areas were more likely than similarly situated blacks to test positive for methamphetamine. (Fox and Rodriguez 2014)

The combination of neighborhood racial composition and individual race was not found to be a significant predictor of most types of substance use for African American boys, suggesting that neighborhood environment may be less influential for African-American versus white adolescents. To the contrary, those in predominantly white, upper-income neighborhoods tended to report a higher prevalence of substance use, suggesting that privilege and/or affluence is a risk factor for adolescent substance use, rather than disadvantage. (Cronley et al. 2012) Additionally, higher adolescent socioeconomic status, measured by parental education and income, has been found to be associated with higher rates of marijuana and cocaine use in early adulthood by white non-Hispanics. (Humensky 2010)

For the purposes of this thesis, social and economic factors are not considered in the analysis, primarily due to data constraints. Nevertheless, as the current literature finds mixed results for the influence of socioeconomic or neighborhood context on rates of drug use, it is not believed that this limitation will significantly impact the interpretation of the results. First, research shows an interactive effect with racial identity, so inclusion of that variable will partially explain some of the relevant impact. Secondly, as both upper-class and lower-class groups have been found to have higher rates of drug use or to use different substances at higher rates, there should be an offsetting effect at the city level when reviewing the results of the analysis.

Disparities in Rates and Patterns of Drug Arrests

The main goal of this thesis is to investigate potential disparities in arrests for drug possession, as opposed to trafficking or dealing[2]. Accordingly, a review of existing literature on such disparities is highly relevant in order to contribute to the current understanding. Prior research has revealed disparities in arrests for drug crimes, particularly with regard to racial or

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[2] The focus on possession represents the intention to investigate the criminalization of drug users, who typically are arrested for possession of smaller quantities of substance for personal use. Those arrested for intention to sell/distribute/traffic drugs will typically be arrested while possession larger quantities and are charged with distinct crimes, as a result.

ethnic identity. Generally, these disparities are seen in a disproportionate number of black and Hispanic arrestees. Various theories seek to explain why this may be the case, broadly focusing on either the extent or nature of drug offending across racial groups or racial bias in policing. Some limited additional literature has focused on the gender gap in drug arrests, which has been decreasing over time.

Disparities in Rates and Patterns of Drug Arrests by Gender

Per 2019 data collected by FBI's Uniform Crime Reporting (UCR), approximately three times as many males were arrested as females for drug abuse violations. However, this represented a reduced gender gap when compared to 2010, in which almost four times as many males were arrested as females for the same crimes. This was the result of a 26.3% increase in female arrests for drug abuse violations, as opposed to a 7.6% decrease in such arrests of males from 2010 to 2019. (FBI 2019) Thus, although substantially more men are arrested than women for drug crimes, this gap appears to be closing rapidly. Research shows that male and female arrestees employ different strategies to obtain drugs; notably, women appear to rely on a more limited set of social contacts when acquiring drugs, engage in more noncash transactions, or engage in sex in exchange for drugs. (Rodriguez and Griffin 2005) These distinctive behaviors could be argued to impact the propensity to be arrested for illicit drug possession. However, recent critical literature argues that structural explanations are more plausible for the closing gender gap in drug arrests. Citing FBI statistics between 1959 and 2005, David Merolla (2008) argues that the expansion of the War on Drugs has played a critical role in ramping up arrests of females for drug crimes. Specifically, he points to evidence that the gender gap in drug arrests between males and females declined significantly from 1980, when the drug war was initiated, until 2004. He also points to the ever-increasing number of females arrested for drug crimes as a proportion of all females arrested between 1959 and 2004. Merolla also notes that since 1970, total female arrests less than doubled, while female arrests for drug crimes more than tripled, with the most rapid increase in female arrests beginning the year following the Anti-Drug Abuse Act of 1986. (Merolla 2008) Nonetheless, the gender gap in drug arrests persists, for the time being, despite this trend. Gender has been found to have a measurable effect on drug arrests:

even after controlling for the incidence of drug use or drug dealing and demographics, males were more likely to be arrested. These results may suggest that gendered perceptions of drug offending may influence law enforcement behavior. (Koch, Lee, and Lee 2016)

Understanding the current tendency, identified in prior research, for males to be arrested more frequently than females, will inform this analysis, which seeks to control for gender of those arrested. Despite the closing gender gap, it will nonetheless continue to be assumed that females are less prone to arrest in the U.S. cities examined here.

Disparities in Rates and Patterns of Drug Arrests by Race or Ethnicity

Substantial literature explores the relationship between racial or ethnic identity and the propensity to be arrested for drug crimes. Generally, research has found that blacks and, to a lesser extent, Latinos or Hispanics tend to be disproportionately arrested for drugs. One study, for example, found that, even after controlling for incidence of drug use and other socio-demographic variables, blacks and Hispanics were more likely than whites to be arrested for drug offending. Unlike this thesis, this was a nationwide longitudinal study that investigated drug offenses, generally, rather than simply use and possession. Overall, 15.8% of blacks in the study population were arrested for drug use and 8.9% for drug dealing, as compared to 10.5% of Hispanics and 10.0% of whites arrested for drug use and 3.9% of Hispanics and 2.4% of whites arrested for drug dealing. Additionally, although whites were found to use more marijuana and hard drugs, as well as sell more drugs, African-Americans were still found to be more likely to be arrested after controlling for incidence of drug dealing. On the other hand, when all other variables in the analysis were accounted for, including education and employment status, race did not appear to have a measurable effect on arrests for drug use. The authors of the study warn, however, that within the study population, race largely overlapped with these other factors. (Koch, Lee, and Lee 2016)

Three major theories are typically offered to explain racial disparities in drug arrests, which relate primarily to either the extent of drug offending by race, the nature of drug offending by race, and racial bias in policing. (Mitchell and Caudy 2015) These theories can be otherwise

termed the Differential Involvement Hypothesis, the Social Disorganization Theory, and the Differential Selection and Processing Hypothesis. (Schleiden et al. 2019)

The Differential Involvement Hypothesis suggests that inherent differences in criminal behaviors across racial groups, such as illegal drug use or possession, account for disparities in arrests. According to this theory, if more minorities are being arrested and incarcerated, it is the result of more minorities committing more crimes. If this theory holds true, disparities in arrests could be justifiable. (Schleiden et al. 2019; Piquero 2008) Generally, this theory also rests on the assumption that racial inequality has made minorities more vulnerable to drug use and addiction and the financial incentives of participation in the illicit drug economy. (Mitchell and Caudy 2015) The extent of drug offending by race thus should explain the number of drug arrests. However, existing research does not, thus far, appear to support this explanation. One analysis showed black were more likely to have ever been arrested than whites, even after controlling for delinquent behaviors (property crime, violent crime, drug use and associated crime, and truancy), along with individual, home, school, and community characteristics. These disparities only disappeared after controlling for neighborhood racial composition. (Gase et al. 2016) Mitchell and Caudy (2015) found that, African-Americans and Hispanics in their study sample from the National Longitudinal Survey of Youth 1997 (NLSY97) were equally or less likely to be involved in drug offending than whites, yet white-black disparities in arrests remained. (Mitchell and Caudy 2015) Another study found evidence that behaviors did, in fact, differ by race, but the resulting pattern of arrests[3] ran counter to what would be expected under the Differential Involvement Hypothesis. In emerging adulthood, blacks used less alcohol and drugs, but had similar rates of delinquency as whites, yet were arrested almost seven times more after these behaviors were controlled for along with contextual factors (neighborhood disadvantage, exposure to violence, and parent-child bond). Blacks also experienced a greater increase in the number of arrests than whites between emerging and young adulthood. (Schleiden et al. 2019) Therefore, despite actually engaging in less criminal behavior, blacks were nonetheless arrested at a higher rate.

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[3] This study reviewed arrests, generally, rather than considering arrests for just drug possession or drug offenses.

An alternative explanation, the Social Disorganization Theory, instead suggests that variation in the social context experienced by individuals of different racial or ethnic backgrounds influences rates of crime and arrests. Social context refers mainly to the extent of social networks, parental involvement or supervision, or organizational participation within a community. These factors are either mediated or impaired by socioeconomic features of communities; socioeconomic disadvantage can breed isolation and disconnection and limit resource access for communities. (Schleiden et al. 2019; Gase et al. 2016; Sampson and Groves 1989) Socially disorganized communities are typically assumed to be economically and otherwise disadvantaged neighborhoods. As the legacy of residential segregation in the U.S. has generally resulted in people of color being more likely to reside in lower-income, higher crime communities, this could explain why more members of these groups tend to be arrested, per this theory. In these communities, the nature of drug offending will also be distinct from more privileged areas: access to private space is relatively limited, necessitating public drug use and dealing; drug dealing is more frequent and occurs between strangers; criminals or gangs are more likely to be involved in the drug trade; and police attention will be more concentrated in these neighborhoods. (Mitchell and Caudy 2015) Existing research finds mixed results when assessing the significance of social context or neighborhood factors on rates of drug crime arrests. Schleiden et al. (2019) find only partial support for the Social Disorganization Theory; specifically, the authors of the study note that, although blacks were more exposed to neighborhood disadvantage and violence, they maintained higher average parent-child bonds than the white population in the study. Even after controlling for these contextual differences, along with behavioral factors (drug and alcohol use and delinquency), blacks were nonetheless observed to be arrested seven times more than whites. (Schleiden et al. 2019) Another study reached similar conclusions: after controlling for residence in inner-city gang neighborhoods, African-American drug offenders (all drug charges, not simply possession) still were more likely to be arrested for drugs and that the magnitude of this effect grew with age. The results showed that neighborhood context could only explain a small portion of the racial disparity in arrests. (Mitchell and Caudy 2015) However, other research suggests that neighborhood context does, in fact, play a role in drug arrest rates. One study in Delaware from 2013 to 2017 found that neighborhood factors, including economic disadvantage and racial composition, created distinct patterns of arrests. Blacks were arrested more often for drug offenses in disadvantaged

communities that were more racially diverse and had higher crime rates, while whites were arrested more often in disadvantaged communities that were more racially homogenous and had frequent overdose calls. Neighborhood economic disadvantage had a less pronounced effect on the rate of drug arrests for whites than blacks in the study population. Additionally, blacks tended to be arrested more often for "traditionally policed" substances, like marijuana or cocaine, while whites were arrested more often for heroin-related offenses. Nonetheless, this study showed higher rates of arrests than whites in Delaware. (Donnelly et al. 2019) Another study in Chicago revealed multiple layers of neighborhood disadvantage faced by black youths, which worked together to create differences in arrests. Blacks studied tended to reside in neighborhoods with higher concentrations of poverty, lower levels of collective efficacy, and lower levels of residential stability. Individual and family demographic features, including socioeconomic status, immigrant status, and family structure were also found to be associated with rate of arrest. However, even after accounting for neighborhood, family, and individual characteristics, substantial residual differences remained in arrest rates between black youths and youths of other racial identities. (Kirk 2008) Crucially, this study, despite finding some evidence in support of the impact of neighborhood context on arrests, did not specifically look at drug-related arrests.

The third possible explanation proposed for racial disparities in drug arrests is the Differential Selection and Processing Hypothesis, which highlights the role of the police and justice system. This hypothesis suggests that justice system policy and processes, racial bias in policing, and the perception of racial differences in criminal behavior by those tasked with drug enforcement can all influence relative rates of arrest for illicit drugs (Schleiden et al. 2019; Piquero 2008; Gase et al. 2016) The role of police officers is especially salient, as they are tasked with carrying out arrests. Conscious and unconscious racial biases and stereotypes held by police officers, some argue, influence who they decide to arrest. This is especially relevant in the ongoing era of strict drug control initiated in the late 1970s and early 1980s with the War on Drugs. (Mitchell and Caudy 2015; Alexander 2020) Existing research appears to affirm, or at least provide persuasive evidence in support of, this explanation. One study of police and probation officers found that unconscious racial stereotypes influenced their judgments about offenders' culpability, negative traits, likelihood of recidivism, and deserved punishment. (Graham and Lowery 2004) Another study examining 100 million traffic stops around the U.S.

found that black drivers were less likely to be stopped after sunset, when a "veil of darkness" masked their race from officers, suggesting persistent racial bias in stop and search decisions by officers. The authors also noted that the bar for searching blacks and Latino drivers for contraband was lower than that for searching white drivers. These disparities, however, were largely mitigated as a result of the legalization of marijuana. (Pierson et al. 2020) Stop-and-frisk, a widespread policing strategy in New York City until it was declared unconstitutional in 2013, has also been shown to have been plagued by implicit racial bias. When assessing data from 2002 to 2012, Black and Latino pedestrians were more likely to be frisked and subjected to non-weapon force after controlling for other demographic and individual characteristics. (Levchak, 2021) Finally, research on arrests in Seattle argues that racialized imagery surrounding drugs, crack cocaine, in particular, have shaped drug enforcement policy and practice. The authors showed that racial disparities in arrests of blacks and Latinos were largely a consequence of law enforcement focus on arresting crack users. This belies a lack of concurrent focus by law enforcement on race-neutral characteristics of crack-related offending, such as the frequency of exchange or concentration of outdoor sales. Results showed that black and Latinos were overrepresented in arrests in comparison with a variety of measures of drug use. (Beckett et al. 2005) Finally, as previously mentioned, Schleiden et al. (2019) and Mitchell and Caudy (2015), both found that neither behavioral nor neighborhood or contextual racial differences are able to fully explain racial disparities in arrests. Both sets of national-level results lend support for the Differential Selection and Processing Hypothesis, as neither of the other two widely discussed explanations appears to be supported by analysis. However, neither study is able to fully validate this explanation, rather they produce findings that simply appear to be consistent with it.

This thesis, by controlling for race, gender, age and illicit drug use, will chiefly seek to contribute to the literature that seeks to disprove the Differential Involvement Hypothesis as a plausible explanation for drug possession arrest disparities. Additionally, the analysis will seek to lend further limited evidence in support of those that theorize regarding the key role of police bias or differential selection in explaining these disparities. However, due to data limitations that inhibit the capacity to include neighborhood effects or socioeconomic variables in the analysis, this thesis will be unable to speak directly to Social Disorganization Theory as related to drug possession arrests. However, this thesis will produce results regarding spatial variability in arrest

disparities at the city or regional level. Overall, the results of this analysis will attempt to show that the distribution of drug use among urban populations in the U.S. is not the determining factor in generating the patterns of drug possession arrests. This implies that socioeconomic or contextual factors or bias in enforcement are more than likely creating an inequitable system of drug possession enforcement.

IV. Data:

<u>*Data Sources*</u>

The National Survey on Drug Use and Health (NSDUH)

A product of the Substance Abuse and Mental Health Services Administration (SAMHSA), the NSDUH is the leading source of statistical information on the use of illicit drugs, alcohol, and tobacco and mental health issues in U.S. Conducted by the federal government since 1971, the NSDUH provides national, state, and substate[4] estimates of legal and illegal substance use and mental illness, as well as helps to identify the extent of substance use and mental illness among different subgroups, monitor substance use trends over time, and estimate the need for treatment services, and inform public health policy.

Some questions answered by survey respondents include lifetime, annual, and past-month use of illicit drugs[5], tobacco, and alcohol. The survey also covers substance use treatment history, perceived need for treatment, and other questions than can be used to help diagnose substance abuse disorders or other mental health issues. Demographic and other personal characteristics are also included in the survey, such as race or ethnicity, age, sex or gender, personal and family income, health care access, criminal history, education, employment status, veteran status, household composition, population density, and more.

The population of the NSDUH is the general American population 12 years old and above in all 50 states and Washington D.C. This includes residents of noninstitutional group quarters such as college dormitories, group homes, shelters, rooming houses, and civilians living on military installations, along with more typical households. Certain respondents are excluded from the survey population, such as unsheltered homeless individuals, active military personnel, and residents of institutional group quarters (i.e., jails, nursing homes, mental institutions, and

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[4] Publicly available response data that includes the age, sex, and racial or ethnic identifying information needed for this analysis, however, is only available at the national level, although estimates for smaller geographies are available by age group.

[5] Including marijuana, cocaine (including crack), hallucinogens, heroin, inhalants, tobacco, pain relievers, tranquilizers, stimulants, and sedatives

long-term care hospitals). Crucially, NSDUH estimates are based on sample survey data rather than on data for the entire American population, which means that the data must be weighted in order to obtain unbiased estimates that are representative of the complete population, rather than simply the included sample. The survey, as of 2014, uses a process of independent multistage area probability sampling to achieve a representative sample. Sampling begins at the state level, before drilling down by census tracts, census block groups, area segments (i.e., a collection of census blocks), dwelling units, and, finally, residents.

Nonetheless, despite being a well-designed, representative survey which provides high quality estimates, the NSDUH has some limitations. The survey relies on self-reported data from respondents, which could lead to some under- or overreporting. The NSDUH is also a cross-sectional, rather than longitudinal survey, meaning that individuals are only interviewed once without follow up in subsequent years. Therefore, the estimates represent the prevalence of drug use at a specific point in time instead of how drug use may change over time for specific individuals. Finally, the target population of the survey excludes a small proportion, around 3%, of the total American population; namely, unsheltered homeless individuals, active-duty military members, and those residing in institutional group quarters (i.e., hospitals, prisons, nursing homes, and treatment centers). As these excluded populations may have different patterns of substance use and mental health issues than the rest of the population, the overall estimates may be slightly inaccurate, as a result.

For the purposes of this analysis, NSDUH microdata from the years 2015 to 2020 were used. The microdata includes individual-level responses to the survey, which comprises a variety of relevant substance use, mental health, and demographic information for each respondent. The NSDUH underwent a partial redesign in 2015, so that is the farthest year in the past to which the current data is comparable. More than one year of data is used in order to more accurately temporally align the estimated drug use data with the arrests datasets, which represent multiple years of data. Additionally, there may be some level of variation in the estimates between years, which may be smoothed out when employing multiple years of survey estimates. (SAMHSA)

Los Angeles Police Department (LAPD) Arrest Data from 2010 to 2019

The arrests dataset for the City of Los Angeles is available to the public via Open Data Portal, the city's repository for data created to "support the free flow of information and contribute to the democratic process through nonconventional forms of community engagement such as data-sharing." (Los Angeles City Planning) The data includes arrest incidents in the City of Los Angeles from 2010 through 2019. It was transcribed from original LAPD arrest reports typed on paper, which means there could be some inaccuracies or missing fields within the data. In other words, the dataset is only as accurate as the original data in the arrest report database. Data was anonymized, as no personal information beyond demographic characteristics was included and address fields were only provided to the nearest hundred block. Variables present in the data include:

- Report ID (unique identifier)
- Arrest Date and Time
- Booking Date, Time, and Location
- LAPD Area and Reporting District of Arrest
- Sex of Arrestee
- Descent Code of Arrestee (race or ethnicity)
- Charge Group Code and Description
- Charge, Charge Group, and Charge Description
- Geographic Information of Arrest (Address / Cross Street, Latitude/Longitude)

For this analysis, a publicly available filtered view of only arrests for drug possession-related charges was used. This filtered view included only arrests with the charge statute beginning with "11350" or "11377", which are the relevant statutes for drug possession (not including sale or manufacture) under the California Health and Safety Code. (California State Legislature)

Los Angeles Police Department (LAPD) Reporting Districts Shapefile

This spatial dataset reflects the boundaries of the LAPD's Reporting Districts in the City of Los Angeles. It was available through the city's GeoHub, a public platform developed to improve communications across citywide departments and agencies via access to geospatial data, which map health, safety, transportation, and other topics that inform local decision making. (Los Angeles City Planning) As the arrests dataset reflects only data related to the jurisdiction of the LAPD, it was necessary to define the appropriate boundaries for the analysis.

Chicago Police Department (CPD) Arrest Data from 2014 to present[6]

Available through the City of Chicago's Open Data Portal, which was authorized is required under an Executive Order signed by Mayor Rahm Emanuel in 2012, this dataset includes arrest information from the CPD sourced from the CPD Automated Arrest application, an electronic application used to process arrests Department-wide. The data is limited to arrests of those aged 18 years or older and excludes expunged arrest records. Each arrest record includes up to four charges, ordered by severity, which means that for those with more than four charges upon arrest, some information may not be included. Data is anonymized to protect the privacy of those arrested for the publicly available dataset – however, for this analysis, access to an authorized-access-only version was provided by the Chicago Open Data Team, which includes significantly more personal information about those arrested. None of the most sensitive information present was used in this analysis to protect privacy. Variables present in the data include:

- Central Booking Number (unique identifier)
- Records Division Number
- Arrest Date and Time

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[6] Updated daily; last accessed April 11, 2022

- Full Name of Arrestee (Authorized-access-only version)

- Age of Arrestee

- Sex of Arrestee

- Race of Arrestee

- Address of Arrest

- CPD District and Beat

- Charges Statutes, Types, Classes, Codes, and Descriptions

Chicago Police Department (CPD) Police Districts Shapefile

This spatial dataset reflects the current CPD Police District boundaries in the City of Chicago. It was also available through the city's Data Portal. As the arrests dataset reflects only data related to the jurisdiction of the CPD, it was necessary to define the appropriate boundaries for the analysis.

New York Police Department (NYPD) Arrest Data from 2006 through 2020

Available through New York City's Open Data, free public data published by city agencies and other partners, this dataset lists every arrest by the NYPD from 2006 through the end of the previous calendar year, which is currently 2020. This data is manually extracted quarterly, reviewed by the City Office of Management Analysis and Planning, and posted on the NYPD website. The data included is accurate as of the date it was queried from the system of record, but, due to arrest revisions and updates, should be considered a close approximation of current records. Some null values and some small data inconsistencies due to errors in transcription may, therefore, be present. Arrests involving multiple charges are classified according to the top charge, which suggests that some charges relevant to this analysis may actually have been dropped from the dataset. Data was anonymized, as no personal information beyond demographic characteristics was included. Variables present in the data include:

- Arrest Key (unique identifier)

- Arrest Date

- Offense Description and Classification

- Charge Code, Category, and Description

- Borough of Arrest

- NYPD Police Precinct of Arrest

- Jurisdiction of Arrest

- Age Group of Arrestee

- Sex of Arrestee

- Race of Arrestee

- Geographic Information of Arrest (X & Y Coordinates, Latitude/Longitude)

New York Police Department (NYPD) Police Precincts Shapefile

This spatial dataset reflects the current NYPD Police Precinct boundaries in New York City. It was also available through the city's Open Data Portal. As the arrests dataset reflects only data related to the jurisdiction of the NYPD, it was necessary to define the appropriate boundaries for the analysis.

Dallas Police Department (DPD) Arrest Data from 2014 to present[7]

Available through the City of Dallas' Open Data Portal, a product of the Office of Data Analytics and Business Intelligence (DBI), this dataset includes arrest information from the DPD. Per Dallas City Manager, Mr. T.C. Broadnax, the purpose of DBI is "to harness the City's data, to enhance essential service delivery, and to affect systemic policies which directly impact the residents of Dallas." (City of Dallas) Arrest data is sourced from the DPD's Records Management System (RMS), which was launched in 2014. This dataset, unlike that seen for other cities examined, includes a significant amount of personal information about those arrested, which presents substantial privacy concerns considering it is publicly available. None of the most sensitive information present was used in this analysis to protect privacy. Variables present in the data include:

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[7] Updated daily; last accessed April 11, 2022

- Incident & Arrest Number (unique identifier)

- Arrest Date, Year, and Time

- Booking Date

- Arrest Address / Location / Premises

- Police Beat, District, and Sector

- Arrested with or without a weapon

- Whether resisted arrest

- Full Name, Nickname, and Alias of Arrestee

- Birth Place of Arrestee

- Age of Arrestee (at time of arrest and current)

- Home Address of Arrestee

- Height, Weight, Hair Color, Eye Color, Clothing, and Tattoos of Arrestee

- Race and Ethnicity of Arrestee

- Sex of Arrestee

- Occupation and Employer of Arrestee

- Drug included in Arrest (if relevant)

- Whether Arrest was expunged

Dallas Police Department (DPD) Arrest Charges Data from 2014 to present[8]

Charges for each arrest in Dallas were included in a separate dataset. Also available through the Open Data Portal and sourced from the DPD's RMS, this data includes each individual charge for every arrest since 2014. Variables present in the data include:

- Incident & Arrest Number (unique identifier)
- Arrest Date, Year, and Time
- Booking Date, Year, and Time

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[8] Updated daily; last accessed April 11, 2022

- Charge Code, Description, Severity, and Statute

- Warrant Number, Type, and Agency

- National Incident-Based Reporting System (NIBRS) Category and Code

Dallas Police Department (DPD) Police Beat Shapefile

This spatial dataset reflects the current DPD Police Beat boundaries in the City of Dallas. It also included the larger police geographies called Divisions. The dataset is based on data from DBI and is hosted by the Dallas Enterprise GIS website. As the arrests dataset reflects only data related to the jurisdiction of the DPD, it was necessary to define the appropriate boundaries for the analysis.

American Community Survey (ACS) 2016-2020 5-Year Estimates

The American Community Survey (ACS), produced by the U.S. Census Bureau, is an annual survey, conducted every month each year, that provides information about the United States and its population. The survey, unlike the decennial Census that attempts to count every individual in the nation, is sent to a sample of around 3.5 million addresses in all 50 states, Washington D.C., and Puerto Rico. Topics of the survey include estimates of total population, demographic information, education, employment, housing, health, and transportation, among others. These topics tend to overlap substantially with those included in the U.S. Census, but the ACS tends to provide estimates of a wider variety of topics and is more current, as it is not only completed every ten years.

Local, state, and federal decisionmakers depend heavily on the results of the survey, so the data collection, sampling, and estimation process is robust and reliable. The ACS 5-year estimates from the ACS represent data collected over a period of five years. Using multiyear estimates provides increased statistical reliability of the data for less populated areas and small

population subgroups. These 5-year estimates are typically available for all Census geographies down to the block group level[9].

Due to the COVID-19 pandemic, the Census Bureau refined their methodology for the ACS to reduce the impact of nonresponse bias. The methodology improves the 2020 data collected by comparing characteristics for responding and nonresponding households using administrative, third-party and decennial Census data. The 2020 data was then integrated with the prior 4 years of data, which were processed using the standard ACS methodology.

2020 TIGER/Line Shapefiles

TIGER/Line Files and Shapefiles are spatial datasets produced by the U.S. Census Bureau that contain geographic entity codes (GEOIDs) that can be linked to the U.S. Census Bureau's demographic data (i.e., the ACS estimates).

The Shapefiles are extracted from selected geographic and cartographic information from the Census Bureau's Master Address File (MAF)/Topologically Integrated Geographic Encoding and Referencing (TIGER) Database (MTDB). The shapefiles include information for all 50 states, Washington D.C., Puerto Rico, and other U.S. Territories. The shapefiles include polygon boundaries of geographic areas and features, linear features including roads and hydrography, and point features. (US Census Bureau)

Data Preparation

Refer to **Appendix B** for details regarding the process of preparing the final datasets for analysis.

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[9] Data at the census tract level was utilized for this analysis

V. Methods:

Linear regression models attempt to estimate the relationship between a set of independent variables, or inputs, and a single dependent variable, or output. These models assume a linear relationship and, therefore, result in linear equations, which are determined by using the Ordinary Least Squares (OLS) method. The OLS method minimizes the sum of the squares of the differences between the actual values observed for the dependent variables in the data and those predicted by the linear regression equation for the independent variable. Generally, the equations for these models can be expressed as:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \ldots + \beta_n x_n + \varepsilon$$

Where:

y = dependent variable

x_i = independent variables

β_i = regression coefficients

n = number of independent variables

ε = random error term

A series of multiple linear regression analyses were conducted in order to assess how the likelihood of arrest for drug possession in the four cities studied is related to the actual use of illicit substances and/or demographic factors, particularly race or ethnicity, sex, or age. For each city, the dependent variable is the average propensity of drug possession arrests during the period studied as a percentage of the total population for each group under consideration (as previously noted, each final dataset included this estimate of propensity to be arrested for drug possession for each combination of demographics or bin). The input variables employed in the analyses included the dummy variables for each possible racial category, sex, and age category of those arrested, along with the estimated percentage of illicit drug use in the past month per the NSDUH. We can, therefore, separate the effects of the propensity to consume illegal substances by socio-demographic group on arrests from the impact of other group characteristics that may affect the propensity to be detained (e.g., race).

To reiterate, the observations are at the city-bin level: that is, I have the average drug possession arrest rates for each group in each city. I also have the national estimated drug use by demographic bin (e.g., Latina females, 35-64 years old). The number of observations throughout corresponds to the number of demographic bins in each city: 84 bins for Los Angeles and Dallas, 72 bins for Chicago, and 60 for New York City. This corresponds to the number of combinations between all group characteristics.

In order to create a baseline case for comparison, the following variables were excluded from each model: bins comprised of the dummy variables for white, middle-aged, and female. This decision was made in order to create a baseline case for those who are ostensibly least likely to be arrested, per findings from previous literature regarding illicit drug use and drug arrests. The models created for each of the four cities studied are outlined below.

Multiple Linear Regression Models

The baseline case used for comparison in the analysis for Los Angeles, Chicago, and Dallas was arrestees who were white, between the ages of 35 and 64 years old, and female. For New York City, due to how the arrest data was grouped by age category, the baseline case for comparison was arrestees who were white, between the ages of 45 and 64 years old, and female. Middle-aged, white women were chosen as the comparison case, as those with these demographic characteristics tend to either use fewer illicit drugs or are less likely to be arrested, as suggested by prior research. The regressions tend to follow a triangular structure: I start controlling for a few bin characteristics, and then increase their coverage.

Model I:

The first model assessed the relationship purely between the racial identity of each demographic grouping and the estimated propensity of being arrested for drug possession (arrests over the study period normalized by population). The equation is as follows:

$$y = ß_0 + ß_B x_B + ß_N x_N + ß_P x_P + ß_A x_A + ß_O x_O + ß_H x_H$$

Where:
y = propensity of being arrested for drug possession by socio-demographic group
x_i = independent variables
$ß_i$ = regression coefficients
B = Group is Black (Non-Hispanic)
N = Group is Native American / Alaska Native (Non-Hispanic)
P = Group is Pacific Islander / Hawaiian Native (Non-Hispanic)
A = Group is Asian (Non-Hispanic)
O = Group is of Other Race
H = Group is Hispanic or Latino

Model II:

The second model assessed the relationship between the racial identity of a socio-demographic group and estimated use of illicit drugs in the last month and the estimated propensity of being arrested for drug possession. The equation is as follows:

$$y = ß_0 + ß_B x_B + ß_N x_N + ß_P x_P + ß_A x_A + ß_O x_O + ß_H x_H + ß_U x_U$$

Where:
y = propensity of being arrested for drug possession by socio-demographic group
x_i = independent variables
$ß_i$ = regression coefficients
B = Group is Black (Non-Hispanic)
N = Group is Native American / Alaska Native (Non-Hispanic)
P = Group is Pacific Islander / Hawaiian Native (Non-Hispanic)[10]
A = Group is Asian (Non-Hispanic)[16]
O = Group is Other Race
H = Group is Hispanic or Latino
U = est. percentage of illicit drug use in the past month by socio-demographic group

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[10] Due to race groupings present in the New York City and Chicago arrests datasets, for the analysis of those cities, the Asian and Pacific Islander categories were combined.

By controlling by the specific consumption of each characteristic socio-demographic group, one should not find any differences in arrest rates between groups absent racial, gendered, or age-related dynamics.

Model III:

The third model assessed the relationship between the racial identity, age, and sex of the group and the estimated propensity of being arrested for drug possession. The equation is as follows:

$$y = ß_0 + ß_B x_B + ß_N x_N + ß_P x_P + ß_A x_A + ß_O x_O + ß_H x_H + ß_M x_M + ß_I x_I + ß_{II} x_{II} + ß_{III} x_{III} + ß_{IV} x_{IV}$$

Where:
y = propensity of being arrested for drug possession by socio-demographic group
x_i = independent variables
$ß_i$ = regression coefficients
B = Group is Black (Non-Hispanic)
N = Group is Native American / Alaska Native (Non-Hispanic)
P = Group is Pacific Islander / Hawaiian Native (Non-Hispanic)[11]
A = Group is Asian (Non-Hispanic)[15]
O = Group is Other Race
H = Group is Hispanic or Latino
M = Group is Male
I = Group is 17 years old and under
II = Group is 18 to 24 years old
III = Group is 25 to 34 years old (or 25 to 44 years old for NYC)
IV = Group is 65 years old and over

Note that if differences in consumption between racial groups were solely driven by their other sociodemographic characteristics (e.g., Latinos tend to be younger), the groups' age fixed effects should take care of such confounding effects.

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[11] Due to race groupings present in the New York City and Chicago arrests datasets, for the analysis of those cities, the Asian and Pacific Islander categories were combined.

Model IV:

The fourth model assessed the relationship between the racial identity, age, sex, and estimated use of illicit drugs and the estimated propensity of being arrested for drug possession. The equation is as follows:

$$y = \beta_0 + \beta_B x_B + \beta_N x_N + \beta_P x_P + \beta_A x_A + \beta_O x_O + \beta_H x_H + \beta_M x_M + \beta_I x_I + \beta_{II} x_{II} + \beta_{III} x_{III} + \beta_{IV} x_{IV} + \beta_U x_U$$

Where:
y = propensity of being arrested for drug possession by socio-demographic group
x_i = independent variables
β_i = regression coefficients
B = Group is Black (Non-Hispanic)
N = Group is Native American / Alaska Native (Non-Hispanic)
P = Group is Pacific Islander / Hawaiian Native (Non-Hispanic) [16]
A = Group is Asian (Non-Hispanic)[16]
O = Group is Other Race
H = Group is Hispanic or Latino
M = Group is Male
I = Group is 17 years old and under
II = Group is 18 to 24 years old
III = Group is 25 to 34 years old (or 25 to 44 years old for NYC)
IV = Group is 65 years old and over
U = Group is est. percentage of illicit drug use in the past month

Model V:

The fifth model simply assessed the relationship purely between the estimated use of illicit drugs and the estimated propensity of being arrested for drug possession (arrests over the study period normalized by population). The equation is as follows:

$$y = \beta_0 + \beta_U x_U$$

Where:
y = propensity of being arrested for drug possession by socio-demographic group
x_i = independent variables
β_i = regression coefficients
U = est. percentage of illicit drug use in the past month by socio-demographic group

My aim here is to check how much of the overall variance in arrest rates for drug consumption can be solely explained by effective differences in drug use, in order to benchmark the previous regressions.

Limitations

Although this analysis attempts to be as comprehensive as possible in terms of predicting how drug use and demographic background affect the propensity of arrest for drug possession, it nonetheless suffers from a handful of limitations. These limitations primarily result from the structure and content of the original datasets employed for analysis.

The models employed here do not consider the location of drug possession arrests below the city level. This means that potential neighborhood effects that influence drug arrests within each city are not accounted for. As there may be substantial variability in the frequency of arrests throughout a metropolitan area, resulting from neighborhood characteristics, such as relative drug use, crime rate, income level, extent of unsheltered homelessness, or police presence, this potentially represents a gap in the models' ability to provide absolute clarity on the drivers of arrest. Although each dataset does include geographic information at a higher resolution than the city level (i.e., police reporting geography, census tract, or even actual location of arrest), this limitation results from a qualitative mismatch between the ACS population dataset and the individual arrests datasets. The ACS estimates provide information concerning where people live, while the arrests data reflects only where people are arrested. For this analysis, it is reasonable to assume that those arrested within the boundaries of a city likely live in that city, so the two datasets can be combined in order to normalize the arrests by population. However, it is far less reasonable to make the assumption that someone who is arrested in a certain neighborhood or police geography also lives in that area – there is far more mobility within smaller geographies in an urban area. Therefore, any spatial characteristics below the city level were excluded.

Despite the fact that income or poverty characteristics have been shown to influence the rate of illicit drug use and drug arrests, these factors were not incorporated into the regression models. This was due to the fact that this analysis relies on actual arrest data from the Open Data Portals of the four cities studied, rather than a longitudinal study that follows a particular cohort of participants over time, as is often seen in other prior work. Arrest data, generally, does not include any information regarding the income level of arrestees. Thus, although the ACS and NSDUH datasets can include information regarding income or poverty, there is no direct method of including this same information for those arrested. However, in the future, it may be possible to estimate this factor indirectly, if the prior limitation mentioned, related to the spatial resolution of the population data, was to be addressed – neighborhood can often serve as an acceptable proxy for relative poverty or income level. If future work was able to find an acceptable method of increasing the spatial resolution of the analysis to the neighborhood or even census tract level, reasonable assumptions likely could be made regarding the relative income of those arrested.

Another key limitation with the methods employed here is due to the nature of the population studied for the NSDUH. Unsheltered homeless individuals are not included in the survey population. Research has shown that the homeless population have higher rates and greater severity of drug use and are frequently arrested for substance use offenses. (Doran et al. 2018; Gonzalez et al. 2018) Therefore, although the arrests datasets employed here undoubtedly include a not-insignificant number of unhoused individuals, the estimates of relative illicit drug use used do not include this particular population. Generally, even in cities with large numbers of unsheltered individuals, this nonetheless represents a fraction of the overall population. Thus, for this analysis, this limitation was not directly addressed. Possible further research could attempt to control for this oversight by excluding geographies within urban areas that tend to have higher homeless populations, although that is not considered here.

The methodology constructed here assigns national-level survey estimates from the NSDUH to each of the four cities studied. Although the dataset was filtered for only responses from large metro areas, which should help increases its applicability, there remains a possible gap between the estimates used and the reality in each particular place. The extent of illegal drug use may vary substantially across regions, states, cities, or neighborhoods, which could suggest

that the NSDUH estimates will not always be a perfect indicator of the actual level of illicit drug use within a city. Additionally, the arrests datasets may suffer from selection bias, as some individuals could be heavy users of illicit drugs and could be arrested multiple times than others with similar demographic characteristics. Future research could incorporate the NSDUH Restricted Use data, which includes the state and county of respondents, data points which are not available as part of the public use data. (SAMHSA) For this thesis, I was unable to access this data, as it is only available via access of the National Center for Health Statistics (NCHS) Research Data Center (RDC) network or any of the Federal Statistical Research Data Centers (FSRDC).

These models also do not disaggregate the data by the particular illicit substance involved in the arrests. Although NSDUH data does include detailed, disaggregated estimates by individual substance, arrests data is not necessarily as detailed, depending on the structure of the criminal code or charges in a specific city. Unless the arrestee is charged for the possession of a specific substance, rather than under a statute for drug possession generally, it is nearly impossible to determine from the data which particular illegal drug was present. Variability in use and arrest patterns across various substances could create differences in the ultimate results, so this element should be considered for future study.

Finally, this thesis only focuses on arrests for illegal drug possession. This is due to the assumption that simple drug possession should be the criminal charge that is most directly rated to the illegal drug use, rather than other related charges like drug sale or intent to sell. However, many of those arrested for drug possession may not necessarily be drug users and many of those arrested for other drug crimes may, in fact, be users. Thus, arrest for drug possession is not a perfect proxy for the overall intention of the government to police the consumption of illicit substances. Nonetheless, it is believed that narrowly focusing on drug possession arrests is the best strategy for assessing the criminalization of drug use across different groups.

VI. Results:

Los Angeles Analysis Results

The results of the multiple linear regression models produced for Los Angeles suggest that those arrested for drug possession between 2010 and 2019 are more likely to be African-American and male, even after for controlling for the use of any illicit drug in the past month. The estimated level of illicit drug use within a group is related to the propensity of arrest for possession, but the magnitude of this effect is only marginal.

Model I, which incorporates only the racial characteristics of those arrested, suggests that blacks were over 4% more likely to be arrested for drug possession, relative to whites. This correlation was also found to be highly statistically significant. Other significant findings were that Native American and Asian Angelenos were both actually approximately 1.9% less likely than whites to be arrested for drug possession. The remainder of the variables had non-significant p-values greater than 10%, so there was insufficient evidence to conclude any correlation with propensity of arrest.

When additionally controlling for the estimated use of illicit drugs in the past month, along with race, in Model II, it is apparent that the statistically significant relationship between African-American racial identity and propensity of arrest for drug possession continues to hold; the estimated level of illicit drug use among the population has only a marginal, yet statistically significant, effect on the additional likelihood of being arrested: for each percentage point of estimated use in the past month, the additional propensity of being arrested increases by only approximately 0.1%. No other variables were found to be statistically significant in this model, beyond the catch-all category of "Other Race". Those arrestees in this category were over 2.1% less likely to be arrested than whites for drug possession. Interpretation of this result, however, is complicated and should proceed with caution, as those included in this category may either be unclassified in the original datasets or be of mixed-race heritage.

Model III, which controls for sex and age, along with race, further suggests that black males, in particular, were 5.8% more likely than white females to be arrested for drug possession during the observation period. Males, generally, appear to be 1.7% more likely to be arrested for possession than females in Los Angeles. Native Americans, Pacific Islanders, and Asians were found to have been 1.9% less likely, 1.7% less likely, and 1.9% less likely, respectively, to be arrested than whites. Finally, age appeared to have a significant effect in this model, as those aged 17 years old and under or 65 years old and older were approximately 2.0% and 1.8% less likely to be arrested for drug possession than middle-aged Angelenos. The remainder of the variables in this model were not statistically significant.

When the estimated level of use for each group is also controlled for, along with all previously noted demographic factors (age, sex, and race), in Model IV, major findings from the previous models are confirmed. Black males continue to be over 5.2% more likely to be arrested than white females. Native Americans and those of "Other" race are less likely than whites to be arrested, by 1.9% and 2.1%, respectively. Again, these particular findings are complicated, as Native Americans represent a very small overall segment of the population and the "Other" category may be an artifice of classification. Those under the age of 17 also continue to be less likely to be arrested than middle-aged individuals. Finally, although use of an illicit substance within the last month has a statistically significant effect on drug possession arrests, this effect still appears to be marginal in terms of its magnitude: for each percentage point of estimated use in the past month, the additional propensity of being arrested increases by only approximately 0.1%. The remainder of the variables in this model were not statistically significant.

Model V only tested the relationship between illicit drug use in the past month and additional propensity of being arrested for possession, finding a marginal, yet statistically significant relationship. However, this model only appears to explain a limited amount of the variability in arrests, with an R-squared value of only 0.1.

Los Angeles (2010 - 2019)	Model I	Model II	Model III	Model IV	Model V
Intercept	1.9073**	0.1167	1.6127*	0.4827	-0.0205
	-0.7702	-0.8483	-0.8251	-1.0113	-0.5683
Black (Non-Hispanic)	4.1311***	4.0429***	4.1311***	4.0511***	
	-1.0892	-1.0033	-0.9762	-0.9607	
Native American / Alaska Native (Non-Hispanic)	-1.8818*	-1.9507*	-1.8818*	-1.9443**	
	-1.0892	-1.0032	-0.9762	-0.9603	
Pacific Islander / Hawaiian Native (Non-Hispanic)	-1.6981	-1.2706	-1.6981*	-1.3101	
	-1.0892	-1.0091	-0.9762	-0.9819	
Asian (Non-Hispanic)	-1.8853*	-0.7224	-1.8853*	-0.8298	
	-1.0892	-1.0476	-0.9762	-1.1133	
Other Race	-1.5224	-2.1838**	-1.5224	-2.1227**	
	-1.0892	-1.0176	-0.9762	-1.0119	
Hispanic Or Latino	-0.1161	0.5375	-0.1161	0.4771	
	-1.0892	-1.0173	-0.9762	-1.0107	
Male			1.7031***	1.2477**	
			-0.5218	-0.5678	
17 years old and under			-1.9673**	-1.7506**	
			-0.7827	-0.7781	
18 to 24 years old			0.266	-1.2499	
			-0.7827	-1.1175	
25 to 34 years old			0.171	-0.8766	
			-0.7827	-0.9517	
65 years old and over			-1.8112**	-1.0694	
			-0.7827	-0.8656	
Any Illicit Drug used in the past month		0.1232***		0.1119*	0.1167***
		-0.032		-0.0598	-0.0355
R-squared	0.381	0.4819	0.535	0.5569	0.1163
R-squared Adj..	0.3328	0.4342	0.464	0.482	0.1055
N = 84					

Standard errors in parentheses.

* p<.1, ** p<.05, ***p<.01

Chicago Analysis Results

The results of the multiple linear regression models produced for Chicago also suggest that those arrested for drug possession between 2014 and April 2022 are more likely to be African-American and male, even after for controlling for the use of any illicit drug in the past month. The estimated level of illicit drug use appears to only have a marginal effect on propensity of possession arrest and this effect is not statistically significant when controlling for all demographic features of arrestees.

Model I, controls for only the race of those arrested, suggests that blacks were 6.7% more likely to be arrested for drug possession, relative to whites. This correlation was also found to be highly statistically significant. The remainder of the variables had non-significant p-values greater than 10%.

In Model II, which also controls for the estimated use of illicit drugs in the past month, along with race, the statistically significant relationship between African-American racial identity and propensity of arrest for drug possession is still apparent. The estimated level of illicit drug use in the past month has only a marginal, yet statistically significant, effect on the additional likelihood of being arrested: for each percentage point of estimated use in the past month, the additional propensity of being arrested increases by only approximately 0.2%. No other variables were found to be statistically significant in this model.
Model III, which controls for race, sex and age, further suggests that black males, specifically, were 9.3% more likely than white females to be arrested for drug possession during the observation period. Males, generally, are 2.6% more likely to be arrested for possession than females in Chicago from 2014 to the present. The remainder of the variables in this model were not statistically significant.

When the estimated level of use for each group is also controlled for, along with age, sex, and race, in Model IV, black males continue to be over 8.4% more likely to be arrested than white females. The use of an illicit substance within the last month, interestingly, was not found to have a statistically significant effect on drug possession arrests, after controlling for race, sex,

and age of arrestee. The remainder of the variables in this model were also not statistically significant.

Model V only tested the relationship between illicit drug use in the past month and additional propensity of being arrested for possession, finding a marginal, yet statistically significant relationship. However, this model only appears to explain a limited amount of the variability in arrests, with an R-squared value of only 0.1.

Chicago (2014 - present)	Model I	Model II	Model III	Model IV	Model V
Intercept	0.6439	-2.1324	-0.5439	-2.1298	-0.5359
	-1.184	-1.3287	-1.3433	-1.7917	-0.8993
Black (Non-Hispanic)	6.6785***	6.5417***	6.6785***	6.5673***	
	-1.6744	-1.5385	-1.5511	-1.5438	
Native American / Alaska Native (Non-Hispanic)	-0.4724	-0.5792	-0.4724	-0.5592	
	-1.6744	-1.5383	-1.5511	-1.5429	
Asian or Pacific Islander / Hawaiian Native (Non-Hispanic)[12]	-0.5007	1.2427	-0.5007	0.9166	
	-1.6744	-1.611	-1.5511	-1.8753	
Other Race	-0.6193	-1.6449	-0.6193	-1.4531	
	-1.6744	-1.5637	-1.5511	-1.6646	
Hispanic Or Latino	0.771	1.7842	0.771	1.5947	
	-1.6744	-1.563	-1.5511	-1.6618	
Male			2.5783***	1.8295*	
			-0.8955	-1.0537	
17 years old and under			-1.7214	-1.271	
			-1.3433	-1.3775	
18 to 24 years old			1.7444	-0.2894	
			-1.3433	-2.0323	
25 to 34 years old			0.9139	-0.5211	
			-1.3433	-1.7179	
65 years old and over			-1.5449	-0.3064	
			-1.3433	-1.6288	
Any Illicit Drug used in the past month		0.1911***		0.1553	0.1629***
		-0.0525		-0.117	-0.0549
R-squared	0.3036	0.4213	0.4477	0.4634	0.1118
R-squared Adj.	0.2508	0.3679	0.3571	0.365	0.0991
N = 72					

Standard errors in parentheses.

* p<.1, ** p<.05, ***p<.01

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[12] As Asian and Pacific Islanders were included in the same category per the original arrests dataset, this combined identity category was used for the analysis, as well.

New York City Analysis Results

The results of the multiple linear regression models produced for New York City also suggest that those arrested for drug possession between 2006 and 2020 are more likely to be African-American and male, even after for controlling for the use of any illicit drug in the past month. The results from the models generated for New York City also demonstrate an even higher magnitude of effect for this specific population than the other cities studied. The estimated level of illicit drug use appears to have a relatively marginal effect on propensity of possession arrest and this effect is not statistically significant when controlling for all demographic features of arrestees.

Model I, incorporating only the race of those arrested, suggests that blacks were 17.0% more likely to be arrested for drug possession, relative to whites. This correlation is found to be statistically significant with a p-value of less than 5%. The remainder of the variables had non-significant p-values greater than 10%.

When controlling for both the estimated use of illicit drugs in the past month and race, in Model II, the statistically significant relationship between African-American racial identity and propensity of arrest for drug possession is still apparent. The estimated level of illicit drug use among the population has a relatively marginal, yet statistically significant, effect on the additional likelihood of being arrested: for each percentage point of estimated use in the past month, the additional propensity of being arrested increases by approximately 1.1%. Hispanics or Latinos were found to be 12.3% more likely to be arrested for drug possession than whites in New York City. No other variables were found to be statistically significant in this model, beyond the catch-all category of "Other Race". Those arrestees in this category were over 10.7% less likely to be arrested than whites for drug possession. Interpretation of this result, however, is complicated and should proceed with caution, as those included in this category may either be unclassified in the original datasets or be of mixed-race heritage.

Model III, which includes demographic variables only (race, sex, and age), further suggests that black males were 29.5% more likely than white females to be arrested for drug

possession during the observation period – an extremely large gap in the propensity of arrest. Males, generally, appear to be 12.4% more likely to be arrested for possession than females in New York City. Age also appeared to have a significant and sizable effect in this model, as those aged 18 to 24 years old were approximately 17.0% more likely to be arrested for drug possession than middle-aged New Yorkers. The remainder of the variables in this model were not statistically significant.

In Model IV, which controls for the estimated level of illicit drug use, along with demographic factors (age, sex, and race), the main results of the previous models are corroborated. Black males continue to be over 26.6% more likely to be arrested than white females. Again, the magnitude of this effect is much larger than is seen in the other cities, likely due to the longer time period studied in New York City and the effects of the "Stop-and-Frisk" policy, which will be addressed later in this section. The use of an illicit substance within the last month, as is seen in the analysis of Chicago, was not found to have a statistically significant effect on drug possession arrests, after controlling for race, sex, and age of arrestee. The remainder of the variables in this model were also not statistically significant.
Model V only tested the relationship between illicit drug use in the past month and additional propensity of being arrested for possession, finding a relatively marginal, yet statistically significant relationship. However, this model only appears to explain a limited amount of the variability in arrests, with an R-squared value of only 0.2.

New York City (2006 - 2020)	Model I	Model II	Model III	Model IV	Model V
Intercept	5.7118	-9.0876*	-2.951	-7.3217	-2.557
	-5.2008	-5.1147	-5.6346	-6.9192	-3.3203
Black (Non-Hispanic)	17.0235**	16.1801***	17.0235***	16.6028***	
	-7.355	-6.0298	-5.8851	-5.8873	
Native American / Alaska Native (Non-Hispanic)	-1.7459	-1.1886	-1.7459	-1.4679	
	-7.355	-6.0286	-5.8851	-5.8801	
Asian or Pacific Islander / Hawaiian Native (Non-Hispanic)[13]	-3.2922	5.8839	-3.2922	1.2849	
	-7.355	-6.2774	-5.8851	-7.2333	
Other Race	-5.0853	-10.6956*	-5.0853	-7.8837	
	-7.355	-6.1222	-5.8851	-6.4163	
Hispanic Or Latino	7.138	12.2555**	7.138	9.6907	
	-7.355	-6.1065	-5.8851	-6.3285	
Male			12.4301***	10.0489**	
			-3.3978	-4.0403	
17 years old and under			-3.7251	-3.3965	
			-5.3723	-5.3713	
18 to 24 years old			17.0039***	8.7222	
			-5.3723	-9.331	
25 to 44 years old[14]			4.1337	-0.0762	
			-5.3723	-6.6201	
65 years old and over			-5.1741	-2.1143	
			-5.3723	-6.0596	
Any Illicit Drug used in the past month		1.0794***		0.5384	0.8546***
		-0.2062		-0.4965	-0.2125
R-squared	0.1923	0.4675	0.5307	0.542	0.218
R-squared Adj..	0.1175	0.4073	0.435	0.437	0.2045
N = 60					

Standard errors in parentheses.

* p<.1, ** p<.05, ***p<.01

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[13] As Asian and Pacific Islanders were included in the same category per the original arrests dataset, this combined identity category was used for the analysis, as well.

[14] Population for the two ACS categories spanning ages 25 to 64 were combined to match the datasets for analysis.

Due to the noticeably higher magnitude of the results generated from the models of New York City, another relevant causal factor must have been present during the observation period. This factor was identified as the New York City Police Department's "Stop-and-Frisk" policy, which allowed NYPD officers to stop, interrogate, and search pedestrians with little justification beyond "reasonable suspicion" of a crime. This policy was found unconstitutional by a federal judge in late 2013. (Thompson 2013) Previous research has also found that being black or Latino in New York City was associated with being more likely to be stopped and frisked by police while the policy was in effect. (Levchak 2021) Thus, it is reasonable to assume that this policy, which effectively targeted blacks and Latinos for search, could have caused a major increase in the number of arrests for simple drug possession within those groups. In order to exclude the impact of this policy, the dataset for New York City was filtered for drug possession arrests taking place only after 2013. Although the same racial and sex disparities continue to exist, their magnitude is significantly smaller, lending evidence to support the presumption of added inequities generated by Stop-and-Frisk.

Model I suggests that blacks post-Stop-and-Frisk were still around 3.4% more likely to be arrested for drug possession, relative to whites. This correlation was also found to be statistically significant with a p-value of less than 10%. The remainder of the variables had non-significant p-values greater than 10%.

In Model II, the statistically significant relationship between African-American racial identity and propensity of arrest for drug possession is still clearly evident after controlling for the estimated level of illicit drug use, which has a relatively marginal, yet statistically significant, effect on the additional likelihood of being arrested: for each percentage point of estimated use in the past month, the additional propensity of being arrested increases by approximately 0.3%. Hispanics or Latinos were found to be 3.2% more likely to be arrested for drug possession than whites in New York City post-Stop-and-Frisk. No other variables were found to be statistically significant in this model, beyond the catch-all category of "Other Race". Those arrestees in this

category were approximately 2.8% less likely to be arrested than whites for drug possession. Interpretation of this result, as previously noted, is complicated and should proceed with caution.

Model III, further suggests that black males were 6.5% more likely than white females to be arrested for drug possession post-Stop-and-Frisk. Males, generally, appear to be 3.1% more likely to be arrested for possession than females during this period in New York City. Age appeared to have a significant and sizeable effect in this model, as those aged 18 to 24 years old were approximately 4.1% more likely to be arrested for drug possession than middle-aged New Yorkers. The remainder of the variables in this model were not statistically significant. When the estimated level of use for each group is also controlled for, along with all previously noted demographic factors (age, sex, and race), in Model IV, major findings from the previous models are corroborated. Black males continue to be over 6.0% more likely to be arrested than white females. The magnitude of this effect is now much more comparable to what was seen in the other cities, as the effects of the "Stop-and-Frisk" policy were removed from the data.. The use of an illicit substance within the last month was not found to have a statistically significant effect on drug possession arrests, after controlling for race, sex, and age of arrestee. The remainder of the variables in this model were also not statistically significant.

Model V only tested the relationship between illicit drug use in the past month and additional propensity of being arrested for possession, finding a relatively marginal, yet statistically significant relationship. However, this model only appears to explain a limited amount of the variability in arrests, with an R-squared value of only 0.2.

New York City - Post Stop-and-Frisk (2014 - 2020)	Model I	Model II	Model III	Model IV	Model V
Intercept	1.5365	-2.0869*	-0.5365	-1.2895	-0.4393
	-1.2059	-1.1502	-1.2215	-1.5068	-0.752
Black (Non-Hispanic)	3.3742*	3.1677**	3.3742**	3.3017**	
	-1.7054	-1.356	-1.2758	-1.2821	
Native American / Alaska Native (Non-Hispanic)	-0.2174	-0.0809	-0.2174	-0.1695	
	-1.7054	-1.3557	-1.2758	-1.2805	
Asian or Pacific Islander / Hawaiian Native (Non-Hispanic)	-0.5772	1.6694	-0.5772	0.2113	
	-1.7054	-1.4117	-1.2758	-1.5752	
Other Race	-1.3922	-2.7658**	-1.3922	-1.8743	
	-1.7054	-1.3768	-1.2758	-1.3972	
Hispanic Or Latino	1.9034	3.1563**	1.9034	2.3431*	
	-1.7054	-1.3732	-1.2758	-1.3781	
Male			3.1122***	2.7019***	
			-0.7366	-0.8798	
17 years old and under			-1.1838	-1.1272	
			-1.1647	-1.1697	
18 to 24 years old			4.1246***	2.6979	
			-1.1647	-2.032	
25 to 44 years old			1.0385	0.3132	
			-1.1647	-1.4416	
65 years old and over			-1.3946	-0.8675	
			-1.1647	-1.3196	
Any Illicit Drug used in the past month		0.2643***		0.0928	0.2007***
		-0.0464		-0.1081	-0.0481
R-squared	0.1669	0.4835	0.5769	0.5833	0.2306
R-squared Adj..	0.0898	0.425	0.4906	0.4878	0.2173
N = 60					

Standard errors in parentheses.

* p<.1, ** p<.05, ***p<.01

Overall, the evidence is consistent with disparate treatment of African Americans and Latinos that cannot be explained by their differential drug use rates. In addition this disparate treatment is shown to be much higher during the stop-and-frisk period, compared to subsequent years. Based on prior understanding of the racial underpinnings of the stop-and-frisk policy, it is evident from these results that drug possession arrests were more than likely heavily influenced by police bias in New York City – as soon as the enforcement strategy, which has been shown to have been plagued by inequitable application across racial lines, was modified, the disparities were drastically reduced.

The results of the multiple linear regression models produced for Dallas also suggest that those arrested for drug possession between 2014 and April 2022 are more likely to be African-American and male, even after for controlling for the use of any illicit drug in the past month. However, perhaps surprisingly based on common conceptions of law enforcement in Texas versus the rest of the country, the magnitude of this relationship is smaller than what was found for the other three cities studied[15]. Pacific-Islanders were also found to be more likely to be arrested for drug possession than Whites in Dallas. The estimated level of illicit drug use appears to have a relatively marginal effect on propensity of possession arrest and this effect is not statistically significant when controlling for all demographic features of arrestees.

Model I, controlling for race only, suggests that blacks were approximately 1.8% more likely to be arrested for drug possession, relative to whites. This correlation was also found to be statistically significant with a p-value of less than 5%. The remainder of the variables had non-significant p-values greater than 10%.

Model II additionally controls for the estimated use of illicit drugs in the past month, along with race, and again demonstrates a statistically significant relationship between African-American racial identity and propensity of arrest for drug possession; the estimated level of illicit drug use in the last month has only a marginal, yet statistically significant, effect on the additional likelihood of being arrested: for each percentage point of estimated use in the past month, the additional propensity of being arrested increases by only approximately 0.1%. Pacific Islanders were also found to be 1.5% more likely to be arrested for drug possession than whites in Dallas. No other variables were found to be statistically significant in this model.

Model III, controlling for race, sex, and age, further indicates that black males were more likely than white females to be arrested for drug possession – over 3.0% more likely in Dallas

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[15] The arrests dataset for Dallas also included fewer records than the other three cities, which could potentially signal that the dataset could be incomplete or that there is some other nuance in policing or recordkeeping in Dallas that was not identified in this thesis.

between 2014 and the present. Males, in general, are 1.3% more likely to be arrested for possession than females in Dallas. Pacific Islanders were also found to have been 1.2% more likely to be arrested than whites. Finally, age appeared to have a significant effect in this model, as those aged 18 to 24 years old and 25 to 34 years old and older were approximately 1.5% and 1.7% more likely to be arrested for drug possession than middle-aged people in Dallas. The remainder of the variables in this model were not statistically significant.

Model IV, which layers in a control for estimated level of use in each demographic group appears to confirm the major findings from the previous models. Black males are approximately 2.8% more likely to be arrested than white females in Dallas per this model. The magnitude of this effect appears to be slightly smaller than the other cities studied, a fact that could possibly indicate the need for further future research or even possible gaps in the arrests dataset pulled from the Dallas Open Data Portal. The R-squared values for each model of Dallas possession arrests were also somewhat lower than those for the models built for the other cities studied, potentially implying the presence of another exogenous factor driving possession arrests that was not incorporated into the models used here. Pacific Islanders were also found to have been 1.4% more likely to be arrested than whites per Model IV. The use of an illicit substance within the last month, as is seen in the analysis of Chicago and New York City, was not found to have a statistically significant effect on drug possession arrests, after controlling for race, sex, and age of arrestee. The remainder of the variables in this model were also not statistically significant.

Model V only tested the relationship between illicit drug use in the past month and additional propensity of being arrested for possession, finding a marginal, yet statistically significant relationship. However, this model only appears to explain a limited amount of the variability in arrests, with an R-squared value of only 0.2.

Dallas (2014 - present)	Model I	Model II	Model III	Model IV	Model V
Intercept	0.5944	-1.0770*	-0.4566	-1.0138	-0.3421
	-0.5789	-0.6063	-0.5944	-0.7359	-0.3612
Black (Non-Hispanic)	1.7918**	1.7095**	1.7918**	1.7519**	
	-0.8187	-0.7145	-0.7014	-0.699	
Native American / Alaska Native (Non-Hispanic)	-0.3016	-0.3659	-0.3016	-0.3327	
	-0.8187	-0.7144	-0.7014	-0.6987	
Pacific Islander / Hawaiian Native (Non-Hispanic)	1.2091	1.4925**	1.2023*	1.3734*	
	-0.8371	-0.7326	-0.7184	-0.7278	
Asian (Non-Hispanic)	-0.4685	0.617	-0.4685	0.0579	
	-0.8187	-0.7468	-0.7014	-0.8114	
Other Race	-0.5888	-1.2062	-0.5888	-0.8882	
	-0.8187	-0.725	-0.7014	-0.7368	
Hispanic Or Latino	0.2133	0.8233	0.2133	0.5091	
	-0.8187	-0.7247	-0.7014	-0.7359	
Male			1.2555***	1.0219**	
			-0.3775	-0.4182	
17 years old and under			-0.4352	-0.3271	
			-0.5623	-0.5663	
18 to 24 years old			1.5397***	0.7837	
			-0.5623	-0.8159	
25 to 34 years old			1.7147***	1.1922*	
			-0.5623	-0.694	
65 years old and over			-0.2791	0.0716	
			-0.578	-0.6379	
Any Illicit Drug used in the past month		0.1150***		0.0558	0.0913***
		-0.0231		-0.0438	-0.0225
R-squared	0.1588	0.3681	0.4233	0.4364	0.1696
R-squared Adj.	0.0924	0.3091	0.334	0.3398	0.1594
N = 84					

Standard errors in parentheses.

* p<.1, ** p<.05, ***p<.01

Arrests for drug possession, as demonstrated by the analysis in this thesis and previous literature, are plagued by substantial disparities along demographic lines, especially as related to race and sex. However, policy decisions may be able to address such disparities. One such example is Proposition 47 in California ("the Safe Neighborhoods and Schools Act), which, in 2014, implemented major changes to drug possession felony arrests in the state. Certain drug possession offenses were reclassified from felonies to misdemeanors under this law and those previously arrested or sentenced were also given relief from their prior felony charges. (California Courts) Previous research has shown that the passage of this law corresponded with an absolute decrease in drug-related arrests in the state, as well as a decrease in the relative disparities in arrests for drugs between blacks and whites. (Mooney et al. 2018) Additionally, in late 2016, California also passed Proposition 64 ("The Adult Use of Marijuana Act"), which effectively legalized personal use and cultivation of marijuana by those aged 21 years old and older. (California Courts) Taken together, these two major policy shifts would appear to have significant implications for the rate of arrests in Los Angeles for drug possession, especially as relates to the possession of cannabis.

In order to assess this finding and the potential of such policies, the models created for Los Angeles were modified to only include arrests after 2014 and the variable estimating illicit drug use was modified to exclude marijuana use. As seen in the results table below, this change substantially alters the results of the models. The additional propensity to be arrested for black males is reduced by almost 75% and the majority of the regression coefficients approach zero, suggesting relatively comparable levels of arrest for drug possession across different demographic groups, as compared to the white, middle-aged, female baseline. Further research is needed in order to confirm these findings, but these initial results suggest that policies such as Prop. 47 and 64 could help to reduce the racial and gender gaps in U.S. drug possession arrests. The disproportionate rates of arrests of African-Americans, especially, produced by the War on Drugs, can potentially be addressed via the enactment of policies, such as these, that run counter to the orthodoxy of strict control of drug possession.

Los Angeles - Post Proposition 47 (2015 - 2019)	Model I	Model II	Model III	Model IV	Model V
Intercept	0.6131***	0.1281	0.4830**	0.2997	0.1011
	-0.2155	-0.2384	-0.2236	-0.2717	-0.1471
Black (Non-Hispanic)	0.9498***	1.1007***	0.9498***	1.0177***	
	-0.3048	-0.2851	-0.2646	-0.2701	
Native American / Alaska Native (Non-Hispanic)	-0.6096**	-0.4796*	-0.6096**	-0.5511**	
	-0.3048	-0.2844	-0.2646	-0.2685	
Pacific Islander / Hawaiian Native (Non-Hispanic)	-0.5238*	-0.3696	-0.5238*	-0.4544*	
	-0.3048	-0.2852	-0.2646	-0.2704	
Asian (Non-Hispanic)	-0.6054*	-0.3162	-0.6054**	-0.4752	
	-0.3048	-0.2927	-0.2646	-0.286	
Other Race	-0.4862	-0.5479*	-0.4862*	-0.5140*	
	-0.3048	-0.2827	-0.2646	-0.2649	
Hispanic Or Latino	-0.0207	0.1451	-0.0207	0.0539	
	-0.3048	-0.2857	-0.2646	-0.2714	
Male			0.5402***	0.4871***	
			-0.1414	-0.148	
17 years old and under			-0.5545**	-0.4997**	
			-0.2122	-0.2166	
18 to 24 years old			0.0197	-0.1063	
			-0.2122	-0.2369	
25 to 34 years old			0.1871	0.0729	
			-0.2122	-0.2326	
65 years old and over			-0.4922**	-0.3573	
			-0.2122	-0.2405	
Any Illicit Drug **Other Than Marijuana** used in the past month		0.1102***		0.0496	0.0982***
		-0.0296		-0.042	-0.0342
R-squared	0.3483	0.4486	0.5407	0.5495	0.0914
R-squared Adj.	0.2975	0.3978	0.4705	0.4734	0.0803
N = 84					

Standard errors in parentheses.

* p<.1, ** p<.05, ***p<.01

VII. Conclusion:

The results of this thesis provide evidence that disparities continue to exist within drug possession enforcement in U.S. cities, even after controlling for the distribution of drug use throughout the population. Black men are found to be most likely to be arrested for possession in all four of the cities studied: Los Angeles, Chicago, New York, and Dallas. This lends credence to common conceptions of pervasive inequities within the American criminal justice system and aligns with the findings of prior literature around drug use and crime. The impact of policy change in select cities also shows that decisions made by law enforcement have more than likely played a key role in producing disparities.

Drug possession is, ultimately, a nonviolent criminal offense, yet often carries with it similar or even harsher penalties than violent or white-collar crime. Moreover, many drug users may suffer from substance abuse disorders that require medical intervention or treatment that can be complicated by criminalizing their plight. If the goal of illicit drug policy is truly to prevent the use of particular substances to protect the public, then the distribution of illegal substance use should be the most pertinent factor driving arrests, rather than demographic characteristics, like race. It is critical to ensure that, while illicit drug-use remains criminalized in the country, enforcement of drug offenses is executed effectively and in good faith, rather than in ways that generate substantial inequities. The law should not be wielded so as to guarantee an unfair and racist status quo in our cities.

Urban policymakers and planners have an opportunity to play a key role in addressing the causes and effects of inequitable drug possession enforcement. As neighborhood social or economic context likely plays some role in drug use and offending, it is important to continue to address the drivers of neighborhood disadvantage and inequality within cities. This includes enacting plans and policies that bring investment to historically disinvested neighborhoods or help to reduce the ongoing residential segregation by race and class within U.S. cities. Planners should also rethink zoning practices to provide more extensive affordable housing opportunities citywide. Local policing strategies need to be reworked significantly, as it is clear from the results of this thesis that decisions made by those tasked with enforcement have been highly relevant to disparate outcomes. An evidence-based, treatment-oriented approach would be a

more apt strategy to employ, if the desired policy outcome is truly to reduce the consumption of illicit substances rather than to inequitably criminalize users. For those cities that do pursue a strategy of decriminalization, as many cities or states have recently in regards to marijuana possession, historically harmed populations should be included in the resulting benefit. For example, licenses for legal cannabis businesses should be prioritized by municipalities for members of historically marginalized groups who were most affected by disproportionate drug arrests.

In order to undo the deleterious legacy wrought by the War on Drugs, reform is clearly needed. Already, as seen in this thesis, some recent policy changes have managed to moderate the unequal rates of arrest, namely the end of Stop-and-Frisk in New York City and the passage of Proposition 47 and Proposition 64 in California. The reclassification of possession to a misdemeanor in California, especially, serves as a hopeful example, as almost all of the disparities in arrests seemed to evaporate. Other cities and states in the U.S. should look to these examples, among others, as they reconsider how to grapple with the issue of drug use. Over five decades of strict drug control have not prevented Americans from using illegal substances, but has instead criminalized large numbers of marginalized people, while the more privileged apparently flout the law. Therefore, going forward, addressing this issue with an evidence-based approach that centers justice and fairness is imperative. The current status quo is untenable, contributes to ever-mounting inequity, and delegitimizes our justice system.

VIII. Appendix A: Summary Tables

National Survey on Drug Use and Health (2015 - 2020) - Summary by Race or Ethnicity

Race or Ethnicity	Average Use of Any Illicit Drug (past month)	Average Use of Any Illicit Drug (past year)	Average Use of Any Illicit Drug Other Than Marijuana (past month)	Average Use of Any Illicit Drug Other Than Marijuana (past Year)
Asian (Non-Hispanic)	6.4%	12.6%	2.0%	6.1%
Black (Non-Hispanic)	15.6%	24.9%	3.0%	8.4%
Hispanic Or Latino	12.2%	21.5%	3.6%	10.2%
More Than One Race	20.4%	31.8%	5.8%	15.1%
Native American / Alaska Native (Non-Hispanic)	20.5%	32.5%	5.0%	13.8%
Pacific Islander / Hawaiian Native (Non-Hispanic)	12.5%	22.0%	3.7%	10.6%
White (Non-Hispanic)	14.3%	24.2%	4.3%	11.6%

National Survey on Drug Use and Health (2015 - 2020) - Summary by Sex

Sex	Average Use of Any Illicit Drug (past month)	Average Use of Any Illicit Drug (past year)	Average Use of Any Illicit Drug Other Than Marijuana (past month)	Average Use of Any Illicit Drug Other Than Marijuana (past Year)
Male	11.5%	25.7%	4.5%	12.0%
Female	8.8%	21.8%	3.5%	9.9%

National Survey on Drug Use and Health (2015 - 2020) - Summary by Age

Age	Average Use of Any Illicit Drug (past month)	Average Use of Any Illicit Drug (past year)	Average Use of Any Illicit Drug Other Than Marijuana (past month)	Average Use of Any Illicit Drug Other Than Marijuana (past Year)
12 to 17 years old	8.7%	17.3%	2.5%	8.1%
18 to 25 years old	23.4%	38.0%	6.3%	17.9%
26 to 34 years old	17.7%	28.8%	5.1%	13.5%
35 to 49 years old	11.8%	19.4%	3.5%	8.5%
50 to 64 years old	8.9%	14.6%	2.5%	6.0%
65 years old and over	3.3%	6.1%	0.7%	2.4%

National Survey on Drug Use and Health (2015 - 2020) - Summary

Sex	Race or Ethnicity	Age	Average Use of Any Illicit Drug (past month)	Average Use of Any Illicit Drug (past year)	Average Use of Any Illicit Drug Other Than Marijuana (past month)	Average Use of Any Illicit Drug Other Than Marijuana (past Year)
Female	Asian (Non-Hispanic)	12 to 17 years old	3.9%	8.9%	1.6%	5.2%
		18 to 25 years old	11.0%	21.3%	3.3%	9.6%
		26 to 34 years old	5.7%	12.3%	1.9%	6.2%
		35 to 49 years old	2.4%	5.7%	0.6%	2.5%
		50 to 64 years old	1.4%	3.7%	0.2%	1.4%
		65 and over	1.3%	1.7%	0.7%	1.0%
	Black (Non-Hispanic)	12 to 17 years old	8.0%	17.5%	2.5%	7.6%
		18 to 25 years old	22.2%	34.7%	3.1%	10.0%
		26 to 34 years old	16.1%	25.3%	2.6%	8.2%
		35 to 49 years old	9.7%	16.9%	2.1%	5.5%
		50 to 64 years old	7.1%	11.8%	2.8%	5.6%
		65 and over	2.0%	4.5%	0.3%	1.9%
	Hispanic Or Latino	12 to 17 years old	9.1%	18.7%	3.2%	9.1%
		18 to 25 years old	18.0%	31.5%	4.8%	13.8%
		26 to 34 years old	10.4%	19.0%	3.0%	8.5%
		35 to 49 years old	5.3%	10.0%	2.0%	5.7%
		50 to 64 years old	3.4%	7.5%	1.3%	4.0%
		65 and over	1.4%	5.1%	0.2%	2.9%
	More Than One Race	12 to 17 years old	13.2%	23.5%	4.6%	12.2%
		18 to 25 years old	28.6%	47.0%	7.3%	22.1%
		26 to 34 years old	21.6%	33.9%	5.8%	15.5%
		35 to 49 years old	17.1%	24.9%	5.0%	9.6%
		50 to 64 years old	11.3%	18.5%	3.2%	7.2%
		65 and over	2.2%	6.2%	0.4%	3.5%
	Native American / Alaska Native (Non-Hispanic)	12 to 17 years old	17.7%	29.7%	3.2%	11.3%
		18 to 25 years old	22.0%	40.2%	4.6%	17.5%
		26 to 34 years old	18.8%	31.0%	4.4%	13.5%
		35 to 49 years old	20.6%	27.8%	6.1%	12.0%
		50 to 64 years old	7.2%	14.5%	1.4%	3.9%
		65 and over	2.0%	5.0%	1.0%	4.0%
	Pacific Islander / Hawaiian Native (Non-Hispanic)	12 to 17 years old	10.8%	22.3%	3.6%	12.0%
		18 to 25 years old	14.2%	28.9%	4.3%	12.8%
		26 to 34 years old	12.9%	23.0%	5.0%	14.4%
		35 to 49 years old	4.9%	10.9%	1.6%	7.6%
		50 to 64 years old	7.1%	10.7%	3.6%	7.1%
		65 and over	3.8%	3.8%	0.0%	0.0%
	White (Non-Hispanic)	12 to 17 years old	8.7%	17.8%	2.5%	8.3%
		18 to 25 years old	22.0%	38.2%	6.5%	18.8%
		26 to 34 years old	15.8%	28.0%	4.9%	13.6%
		35 to 49 years old	10.6%	18.8%	3.3%	8.3%
		50 to 64 years old	7.9%	13.3%	2.3%	5.7%

		65 and over	2.3%	4.7%	0.8%	2.1%
Male	Asian (Non-Hispanic)	12 to 17 years old	4.1%	9.8%	1.8%	6.0%
		18 to 25 years old	12.9%	24.2%	3.3%	10.9%
		26 to 34 years old	9.3%	16.5%	3.4%	8.5%
		35 to 49 years old	4.2%	7.5%	1.3%	3.6%
		50 to 64 years old	2.8%	4.4%	0.5%	1.4%
		65 and over	1.3%	2.2%	0.9%	1.9%
	Black (Non-Hispanic)	12 to 17 years old	9.3%	17.6%	2.1%	6.5%
		18 to 25 years old	29.4%	42.7%	4.7%	13.7%
		26 to 34 years old	24.4%	34.1%	4.4%	11.9%
		35 to 49 years old	16.8%	24.7%	3.6%	7.6%
		50 to 64 years old	13.9%	21.5%	5.2%	9.9%
		65 and over	6.7%	11.2%	1.2%	3.5%
	Hispanic Or Latino	12 to 17 years old	8.3%	16.5%	2.1%	7.5%
		18 to 25 years old	23.8%	37.9%	6.5%	17.9%
		26 to 34 years old	16.8%	27.1%	5.2%	13.3%
		35 to 49 years old	9.7%	15.8%	3.5%	8.2%
		50 to 64 years old	5.6%	12.0%	2.1%	6.5%
		65 and over	3.4%	8.0%	1.0%	4.2%
	More Than One Race	12 to 17 years old	10.2%	19.3%	3.4%	9.4%
		18 to 25 years old	33.7%	47.5%	9.1%	24.2%
		26 to 34 years old	32.7%	43.7%	9.1%	20.6%
		35 to 49 years old	22.9%	33.1%	6.8%	13.9%
		50 to 64 years old	18.5%	24.0%	5.8%	9.1%
		65 and over	7.7%	9.3%	1.1%	3.8%
	Native American / Alaska Native (Non-Hispanic)	12 to 17 years old	12.3%	23.3%	3.5%	10.6%
		18 to 25 years old	29.9%	46.2%	6.0%	19.6%
		26 to 34 years old	35.2%	47.3%	9.4%	21.2%
		35 to 49 years old	25.5%	35.8%	7.9%	15.9%
		50 to 64 years old	14.1%	23.1%	3.8%	6.4%
		65 and over	10.1%	15.2%	1.3%	5.1%
	Pacific Islander / Hawaiian Native (Non-Hispanic)	12 to 17 years old	7.7%	18.0%	1.5%	5.2%
		18 to 25 years old	22.9%	33.5%	6.4%	14.7%
		26 to 34 years old	18.8%	33.1%	7.5%	17.3%
		35 to 49 years old	14.9%	20.3%	2.7%	9.5%
		50 to 64 years old	4.8%	6.5%	0.0%	3.2%
		65 and over	3.3%	3.3%	0.0%	0.0%
	White (Non-Hispanic)	12 to 17 years old	8.4%	16.4%	2.3%	7.9%
		18 to 25 years old	27.0%	41.7%	8.4%	22.6%
		26 to 34 years old	22.5%	35.3%	7.1%	17.6%
		35 to 49 years old	15.8%	24.7%	4.6%	11.1%
		50 to 64 years old	11.5%	18.0%	2.7%	6.5%
		65 and over	4.5%	7.6%	0.8%	2.4%

Los Angeles Drug Possession Arrests (2010 - 2019)

Sex	Race or Ethnicity	Age	Number of Drug Possession Arrests
Female	**Asian (Non-Hispanic)**	**18 to 24 years old**	6
		25 to 34 years old	4
		35 to 54 years old	10
	Total Asian (Non-Hispanic)		20
	Black (Non-Hispanic)	**17 years old and under**	15
		18 to 24 years old	479
		25 to 34 years old	1090
		35 to 54 years old	2568
		55 to 64 years old	559
		65 and over	63
	Total Black (Non-Hispanic)		4774
	Hispanic Or Latino	**17 years old and under**	154
		18 to 24 years old	1576
		25 to 34 years old	2169
		35 to 54 years old	1712
		55 to 64 years old	88
		65 and over	4
	Total Hispanic Or Latino		5703
	Native American / Alaska Native (Non-Hispanic)	**55 to 64 years old**	1
	Total Native American / Alaska Native (Non-Hispanic)		1
	Other Race	**17 years old and under**	8
		18 to 24 years old	180
		25 to 34 years old	256
		35 to 54 years old	236
		55 to 64 years old	17
		65 and over	1
	Total Other Race		698
	Pacific Islander / Hawaiian Native (Non-Hispanic)	**17 years old and under**	1
		35 to 54 years old	2
	Total Pacific Islander / Hawaiian Native (Non-Hispanic)		3
	White (Non-Hispanic)	**17 years old and under**	30
		18 to 24 years old	1214
		25 to 34 years old	2138
		35 to 54 years old	2677
		55 to 64 years old	229
		65 and over	11
	Total White (Non-Hispanic)		6299
Total Female			17498
Male	**Asian (Non-Hispanic)**	**17 years old and under**	1
		18 to 24 years old	11
		25 to 34 years old	27
		35 to 54 years old	46
		55 to 64 years old	5
	Total Asian (Non-Hispanic)		90

Black (Non-Hispanic)	**17 years old and under**	88
	18 to 24 years old	1846
	25 to 34 years old	3579
	35 to 54 years old	8521
	55 to 64 years old	3098
	65 and over	544
Total Black (Non-Hispanic)		17676
Hispanic Or Latino	**17 years old and under**	596
	18 to 24 years old	7855
	25 to 34 years old	10634
	35 to 54 years old	9000
	55 to 64 years old	853
	65 and over	116
Total Hispanic Or Latino		29054
Native American / Alaska Native (Non-Hispanic)	**18 to 24 years old**	2
	25 to 34 years old	2
	35 to 54 years old	1
Total Native American / Alaska Native (Non-Hispanic)		5
Other Race	**17 years old and under**	20
	18 to 24 years old	505
	25 to 34 years old	1200
	35 to 54 years old	1263
	55 to 64 years old	123
	65 and over	16
Total Other Race		3127
Pacific Islander / Hawaiian Native (Non-Hispanic)	**18 to 24 years old**	2
	25 to 34 years old	5
	35 to 54 years old	6
Total Pacific Islander / Hawaiian Native (Non-Hispanic)		13
White (Non-Hispanic)	**17 years old and under**	68
	18 to 24 years old	2070
	25 to 34 years old	4890
	35 to 54 years old	7469
	55 to 64 years old	1092
	65 and over	120
Total White (Non-Hispanic)		15709
Total Male		65674
Total		83172

Chicago Drug Possession Arrests (2014 - present)

Sex	Race or Ethnicity	Age	Number of Drug Possession Arrests
Female	Asian or Pacific Islander / Hawaiian Native (Non-Hispanic)	18 to 24 years old	5
		25 to 34 years old	8
		35 to 54 years old	2
	Total Asian or Pacific Islander / Hawaiian Native (Non-Hispanic)		15
	Black (Non-Hispanic)	18 to 24 years old	804
		25 to 34 years old	1073
		35 to 54 years old	2680
		55 to 64 years old	693
		65 and over	50
	Total Black (Non-Hispanic)		5300
	Hispanic Or Latino	18 to 24 years old	264
		25 to 34 years old	350
		35 to 54 years old	368
		55 to 64 years old	35
		65 and over	2
	Total Hispanic Or Latino		1019
	Native American / Alaska Native (Non-Hispanic)	25 to 34 years old	2
		35 to 54 years old	4
	Total Native American / Alaska Native (Non-Hispanic)		6
	Unknown or Refused Race	18 to 24 years old	3
		25 to 34 years old	3
		35 to 54 years old	1
	Total Unknown or Refused Race		7
	White (Non-Hispanic)	18 to 24 years old	252
		25 to 34 years old	585
		35 to 54 years old	529
		55 to 64 years old	31
		65 and over	4
	Total White (Non-Hispanic)		1401
Total Female			7748
Male	Asian or Pacific Islander / Hawaiian Native (Non-Hispanic)	18 to 24 years old	66
		25 to 34 years old	90
		35 to 54 years old	83
		55 to 64 years old	9
	Total Asian or Pacific Islander / Hawaiian Native (Non-Hispanic)		248
	Black (Non-Hispanic)	18 to 24 years old	10036
		25 to 34 years old	11592
		35 to 54 years old	14387
		55 to 64 years old	5293
		65 and over	689
	Total Black (Non-Hispanic)		41997
	Hispanic Or Latino	18 to 24 years old	2949
		25 to 34 years old	3170

		35 to 54 years old	2950
		55 to 64 years old	323
		65 and over	61
	Total Hispanic Or Latino		9453
	Native American / Alaska Native (Non-Hispanic)	**18 to 24 years old**	1
		25 to 34 years old	4
		35 to 54 years old	4
		55 to 64 years old	1
		65 and over	1
	Total Native American / Alaska Native (Non-Hispanic)		11
	Unknown or Refused Race	**18 to 24 years old**	13
		25 to 34 years old	29
		35 to 54 years old	12
		55 to 64 years old	4
	Total Unknown or Refused Race		58
	White (Non-Hispanic)	**18 to 24 years old**	869
		25 to 34 years old	1811
		35 to 54 years old	1715
		55 to 64 years old	225
		65 and over	30
	Total White (Non-Hispanic)		4650
Total Male			56417
Unknown	**Black (Non-Hispanic)**	**18 to 24 years old**	2
		25 to 34 years old	3
		35 to 54 years old	4
	Total Black (Non-Hispanic)		9
	White (Non-Hispanic)	**18 to 24 years old**	1
		25 to 34 years old	1
		35 to 54 years old	1
	Total White (Non-Hispanic)		3
Total Unknown			12
Total			64177

New York City Drug Possession Arrests (2006 - 2020)

Sex	Race or Ethnicity	Age	Number of Drug Possession Arrests
Female	Asian or Pacific Islander / Hawaiian Native (Non-Hispanic)	17 years old and under	101
		18 to 24 years old	585
		25 to 44 years old	610
		45 to 64 years old	119
		65 and over	5
	Total Asian or Pacific Islander / Hawaiian Native (Non-Hispanic)		1420
	Black (Non-Hispanic)	17 years old and under	2135
		18 to 24 years old	10853
		25 to 44 years old	23536
		45 to 64 years old	15594
		65 and over	310
		NA	3
	Total Black (Non-Hispanic)		52431
	Hispanic Or Latino	17 years old and under	1900
		18 to 24 years old	8696
		25 to 44 years old	14534
		45 to 64 years old	5972
		65 and over	131
		NA	3
	Total Hispanic Or Latino		31236
	Native American / Alaska Native (Non-Hispanic)	17 years old and under	8
		18 to 24 years old	29
		25 to 44 years old	46
		45 to 64 years old	24
	Total Native American / Alaska Native (Non-Hispanic)		107
	Other Race	17 years old and under	44
		18 to 24 years old	182
		25 to 44 years old	184
		45 to 64 years old	58
	Total Other Race		468
	White (Non-Hispanic)	17 years old and under	619
		18 to 24 years old	4807
		25 to 44 years old	8788
		45 to 64 years old	2716
		65 and over	35
	Total White (Non-Hispanic)		16965
Total Female			102627
Male	Asian or Pacific Islander / Hawaiian Native (Non-Hispanic)	17 years old and under	1493
		18 to 24 years old	7366
		25 to 44 years old	6340
		45 to 64 years old	731
		65 and over	13
	Total Asian or Pacific Islander / Hawaiian Native (Non-Hispanic)		15943

Black (Non-Hispanic)	**17 years old and under**	19031
	18 to 24 years old	85821
	25 to 44 years old	132801
	45 to 64 years old	79118
	65 and over	3106
	NA	12
Total Black (Non-Hispanic)		319889
Hispanic Or Latino	**17 years old and under**	15136
	18 to 24 years old	73382
	25 to 44 years old	103537
	45 to 64 years old	37855
	65 and over	1478
	NA	8
Total Hispanic Or Latino		231396
Native American / Alaska Native (Non-Hispanic)	**17 years old and under**	103
	18 to 24 years old	478
	25 to 44 years old	365
	45 to 64 years old	79
	65 and over	3
Total Native American / Alaska Native (Non-Hispanic)		1028
Other Race	**17 years old and under**	426
	18 to 24 years old	2333
	25 to 44 years old	2292
	45 to 64 years old	461
	65 and over	7
Total Other Race		5519
White (Non-Hispanic)	**17 years old and under**	4215
	18 to 24 years old	26460
	25 to 44 years old	39613
	45 to 64 years old	12930
	65 and over	370
	NA	4
Total White (Non-Hispanic)		83592
Total Male		657367
Total		759994

Dallas Drug Possession Arrests (2014 - present)

Sex	Race or Ethnicity	Age	Number of Drug Possession Arrests
Female	Asian (Non-Hispanic)	18 to 24 years old	4
		25 to 34 years old	3
	Total Asian (Non-Hispanic)		7
	Black (Non-Hispanic)	18 to 24 years old	157
		25 to 34 years old	274
		35 to 54 years old	257
		55 to 64 years old	43
		65 and over	5
	Total Black (Non-Hispanic)		736
	Hispanic Or Latino	18 to 24 years old	181
		25 to 34 years old	171
		35 to 54 years old	87
		55 to 64 years old	4
	Total Hispanic Or Latino		443
	Native American / Alaska Native (Non-Hispanic)	25 to 34 years old	4
		35 to 54 years old	1
	Total Native American / Alaska Native (Non-Hispanic)		5
	Pacific Islander / Hawaiian Native (Non-Hispanic)	25 to 34 years old	1
	Total Pacific Islander / Hawaiian Native (Non-Hispanic)		1
	Unknown	18 to 24 years old	1
	Total Unknown		1
	White (Non-Hispanic)	18 to 24 years old	86
		25 to 34 years old	200
		35 to 54 years old	180
		55 to 64 years old	22
		65 and over	1
	Total White (Non-Hispanic)		489
Total Female			1682
Male	Asian (Non-Hispanic)	18 to 24 years old	16
		25 to 34 years old	17
		35 to 54 years old	14
		55 to 64 years old	1
	Total Asian (Non-Hispanic)		48
	Black (Non-Hispanic)	18 to 24 years old	1478
		25 to 34 years old	1951
		35 to 54 years old	1596
		55 to 64 years old	328
		65 and over	55
	Total Black (Non-Hispanic)		5408
	Hispanic Or Latino	18 to 24 years old	1588
		25 to 34 years old	1247
		35 to 54 years old	686
		55 to 64 years old	41
		65 and over	3

	Total Hispanic Or Latino		3565
	Native American / Alaska Native (Non-Hispanic)	**18 to 24 years old**	1
		25 to 34 years old	3
		35 to 54 years old	2
	Total Native American / Alaska Native (Non-Hispanic)		6
	Pacific Islander / Hawaiian Native (Non-Hispanic)	**18 to 24 years old**	3
		25 to 34 years old	4
		35 to 54 years old	1
	Total Pacific Islander / Hawaiian Native (Non-Hispanic)		8
	Unknown	**25 to 34 years old**	1
		35 to 54 years old	1
		55 to 64 years old	1
	Total Unknown		3
	White (Non-Hispanic)	**18 to 24 years old**	306
		25 to 34 years old	533
		35 to 54 years old	630
		55 to 64 years old	89
		65 and over	11
	Total White (Non-Hispanic)		1569
Total Male			10607
Unknown	**Black (Non-Hispanic)**	**25 to 34 years old**	1
	Total Black (Non-Hispanic)		1
	Unknown	**18 to 24 years old**	1
	Total Unknown		1
Total Unknown			2
Total			12291

IX. Appendix B: Data Preparation

The methodological approach employed for this analysis required that several disparate datasets be manipulated and joined in order to be tested. A general description of the steps involved to produce the final datasets for analysis is, therefore, outlined here.

National Survey on Drug Use and Health (NSDUH) Data Preparation

In an attempt to include a representative picture of the distribution of illicit drug use in the United States, 5 years of NSDUH survey microdata, which included all individual responses and data records from 2015 through 2020, were concatenated together into one single dataset. This yielded a dataset with 56,136 observations. Only variables relevant to this analysis were preserved, including:

- Respondent Unique Identifier ("QUESTID2")
- Any Illicit Drug: Used or did not use in the past month ("ILLMON")
- Any Illicit Drug: Used or did not use in the past year ("ILLYR")
- Illicit Drug Other Than Marijuana: Used or did not use in the past month ("ILLEMMON")
- Illicit Drug Other Than Marijuana: Used or did not use in the past year ("ILLEMYR")
- Age Category of Respondent ("AGE2")
- Sex of Respondent ("IRSEX")
- Race or Hispanic Ethnicity of Respondent ("NEWRACE2")
- Population Density of 2009 Core Based Statistical Area (CBSA) ("PDEN10")
- County Metropolitan/Nonmetropolitan Status ("COUTYP4")

In order to improve the applicability of the national-level survey data to the four large cities studied, the dataset was filtered to only include responses from counties that segments in a CBSA with 1 million or more persons (based on 2010 Census data) and "Large Metro" classification (based on the 2013 Rural/Urban Continuum Codes).

Dummy variables were created for each response related to age category, race or ethnicity, and sex. Due to mismatches between the age categories coded in the survey data and those coded in the population (i.e., ACS) and arrest datasets that needed to be joined for analysis, the following age groups were created:

- Respondents aged 12 to 17 years old were coded as 17 years old and under
- Respondents aged 18 to 25 years old were coded as 18 to 24 years old
- Respondents aged 26 to 34 years old were coded as 25 to 34 years old[16]
- Respondents aged 35 to 49 years old were coded as 35 to 54 years old[2]
- Respondents aged 50 to 64 years old were coded as 55 to 64 years old[2]
- Respondents aged 65 years old and over were coded as 65 years old and over

Variables for each of the following racial or ethnic identities were then created:

- White (Non-Hispanic)
- Black (Non-Hispanic)
- Native American / Alaska Native (Non-Hispanic)
- Pacific Islander / Hawaiian Native (Non-Hispanic)[17]
- Asian (Non-Hispanic)[3]
- More than One Race (Non-Hispanic) was coded as "Other"
- Hispanic

Dummy variables for male and female gender or sex were also created (only these two options were present in the survey response data).

Finally, the resulting dataset was grouped by bins[18] of race, sex, and age category (e.g., "Black (Non-Hispanic), Male, and 18 to 24 years old"). The mean of each substance use dummy variable was calculated per bin in order to determine the percentage of those who did use illicit

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[16] Due to age groupings present in the New York City arrests dataset, for the analysis of that city, those aged 26 to 49 years old in the survey data were coded as 25 to 44 years old, while those aged 50 to 64 years old were coded as 45 to 64 years old.

[17] Due to race groupings present in the New York City and Chicago arrests datasets, for the analysis of those cities, the Asian and Pacific Islander categories were combined.

[18] 84 bin groupings to match Los Angeles and Dallas, 72 for Chicago, and 60 for New York City.

substance per each combination of demographic characteristics or, in other words, the average illicit drug use per bin.

American Community Survey (ACS) Data Preparation

The ACS 2020 (5-Year Estimates) population data was first filtered for only those geographies relevant to the subject cities of this analysis:

- All census tracts in Los Angeles County, California
- All census tracts in Cook County, Illinois
- All census tracts in Bronx County, New York
- All census tracts in Kings County, New York
- All census tracts in New York County, New York
- All census tracts in Queens County, New York
- All census tracts in Richmond County, New York
- All census tracts in Dallas County, Texas

Additionally, only the following tables representing cross-tabulated information on the age, sex, and race or ethnicity of the population, were included:

- B01001B. Sex By Age (Black Or African American Alone)
- B01001C. Sex By Age (American Indian And Alaska Native Alone)
- B01001D. Sex By Age (Asian Alone)
- B01001E. Sex By Age (Native Hawaiian And Other Pacific Islander Alone)
- B01001F. Sex By Age (Some Other Race Alone)
- B01001H. Sex By Age (White Alone, Not Hispanic Or Latino)
- B01001I. Sex By Age (Hispanic Or Latino)

Two of the available tables were specifically **not** used for the analysis:

- B01001A. Sex By Age (White Alone)
- B01001G. Sex By Age (Two Or More Races)

These tables were not used due to nuances in how the U.S. Census Bureau reports race and Hispanic origin data. As Hispanics are not considered to be a racial group, those of Hispanic origin may also belong to more than one classification, unless explicitly stated otherwise. Additionally, those reporting "Two Or More Races" will be included in multiple classifications, along with that particular category (i.e., a mixed-race person will show up in at least 3 classification categories). (US Census Bureau) Therefore, even in the remaining data, there will be some duplicative effect that will influence the final test results, albeit a limited one.

Finally, the ACS dataset was joined with the geographic information present in the TIGER/Line shapefiles of the relevant census Tracts based on the geographic entity codes (GEOIDs). The resulting geographies were overlaid with the respective police department geographies (LAPD Reporting Districts[19], Chicago Police Districts, NYPD Police Precincts, and Dallas Police Divisions) via the intersection of geometries. The areas of all the resulting new geometries and the original census tract geometries were calculated and the ratio of the two was applied to the population estimates in order to proportionally divide the population information and remove all extraneous data outside of city police boundaries. This allowed for estimating the total population within just the geographies included within the arrest datasets[20].

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[19] Smaller geographies from the original dataset were dissolved into the larger LAPD Reporting Districts prior to merging datasets.

[20] The resulting populations of each city dataset were compared to current estimates the respective city's population in order to confirm that the proportional split was relatively in line with actual population. As mentioned previously, as some mixed-race people will be double-counted in the ACS figures, the resulting population estimates were higher than the total population in each city.

Los Angeles Initial Data Preparation

The City of Los Angeles drug possession arrests dataset was filtered for only variables relevant to this analysis, including:

- Arrest Report ID (unique identifier)
- Arrest Date
- Age of Arrestee
- Sex of Arrestee
- Descent Code of Arrestee (race or ethnicity)
- LAPD Reporting District of Arrest

No further filter needed to be applied, as the original dataset is already a filtered view including solely arrests for drug possession (charge statute starts with 11350 or 11377). The variables were re-coded in order to match the format of the NSDUH survey data, as well as the ACS data, which needed to be joined for the analysis. Specifically, the ages of the arrestees were re-coded into the same categories listed above for the NSDUH dataset, which match the available groupings per the ACS population data. The sex of the arrestees did not need to be re-coded. The racial or ethnic identities present in this dataset were more specific than the categories provided in other data and, thus, were grouped as such:

- White (Non-Hispanic): "White"
- Black (Non-Hispanic): "Black"
- Native American / Alaska Native (Non-Hispanic): "American Indian/Alaskan Native"
- Pacific Islander / Hawaiian Native (Non-Hispanic): "Guamanian", "Pacific Islander", "Hawaiian", "Samoan"
- Asian (Non-Hispanic): "Chinese", "Cambodian", "Filipino", "Japanese", "Korean", "Laotian", "Vietnamese", "Asian Indian", "Other Asian"
- Other: "Other", "Unknown"
- Hispanic: "Hispanic/Latin/Mexican"

Chicago Initial Data Preparation

The City of Chicago Arrests dataset was filtered for only variables relevant to this analysis, including:

- Central Booking Number (unique identifier)
- Arrest Date
- Age of Arrestee
- Sex of Arrestee
- Race of Arrestee
- CPD District of Arrest

As the original dataset included arrests in general, it was further filtered in order to solely include arrests for drug possession. This was accomplished by review of the Illinois Controlled Substances Act and the Illinois Compiled Statutes (ILCS). (Illinois General Assembly) First, charges were filtered for those that contained the relevant statutes for drug possession offenses:

- 720 ILCS 550.0/4
- 720 ILCS 570.0/402

Next, as many arrestees were charged with multiple crimes, any individuals who were also charged for possession with intent to sell or deliver drugs were excluded. Therefore, any arrests including the following statute were excluded:

- 720 ILCS 550.0/5
- 720 ILCS 570.0/401

The variables were re-coded in order to match the format of the NSDUH survey data, as well as the ACS data, which needed to be joined for the analysis. Specifically, the ages of the arrestees were re-coded into the same categories listed above for the NSDUH dataset, which match the available groupings per the ACS population data. The sex of the arrestees did not need to be re-

coded. The racial or ethnic identities present in this dataset needed to be aligned with the most closely matched group per the ACS and NSDUH data and, thus, were grouped as such:

- White (Non-Hispanic): "White"
- Black (Non-Hispanic): "Black"
- Native American / Alaska Native (Non-Hispanic): "Amer Indian / Alaska Native"
- Asian (Non-Hispanic) or Pacific Islander / Hawaiian Native (Non-Hispanic)[21]: "Asian / Pacific Islander"
- Other: "Unknown / Refused"
- Hispanic: "White Hispanic", "Black Hispanic"

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[21] As Asian and Pacific Islanders were included in the same category per the original arrests dataset, this combined identity category was used for the analysis, as well.

New York City Initial Data Preparation

The New York City Arrests dataset was filtered for only variables relevant to this analysis, including:

- Arrest Key (unique identifier)
- Arrest Date
- Age of Arrestee
- Sex of Arrestee
- Race of Arrestee
- NYPD Police Precinct of Arrest

As the original dataset included arrests in general, it was further filtered in order to solely include arrests for drug possession. First, the general offense description was filtered for only arrests for "DANGEROUS DRUGS". In order to ensure that the remaining arrests then only included those solely related to drug possession, the charge descriptions were filtered so that no charges containing the following terms were still included (i.e., any arrests for drug crimes beyond simple possession):

- Does not contain INTENT
- Does not contain PARAPHERNALIA
- Does not contain PROCURSERS
- Does not contain SALE
- Does not contain SELL
- Does not contain SALE
- Does not contain MANUFACT MATERIAL
- Does not contain HYPODERMIC

Upon review, only arrests with the following charge descriptions remained in the dataset, after the filter was applied:

- "CONTROLLED SUBSTANCE, POSSESSION 7"
- "MARIJUANA, POSSESSION 1, 2 & 3"
- "MARIJUANA, POSSESSION 4 & 5"
- "CONTROLLED SUBSTANCE, POSSESSI"
- "CONTROLLED SUBSTANCE,POSSESS."
- "CONTROLLED SUBSTANCE,POSSESS. 3"
- "DRUG, INJECTION OF"
- "CONTROLLED SUBSTANCE, POSSESSION 5"
- "CONTROLLED SUBSTANCE, POSSESSION 4"
- "CONTROLLED SUBSTANCE,POSSESS. 2"
- "CONTROLLED SUBSTANCE,POSSESS. 1"

The variables were re-coded in order to match the format of the NSDUH survey data, as well as the ACS data, which needed to be joined for the analysis. As the original dataset provided its own age groupings, the ages of the arrestees were re-coded into the following categories to match the available groupings per the ACS population data:

- Respondents in the 18 years old and under group were coded as 17 years old and under
- Respondents aged 18 to 24 years old were coded as 18 to 24 years old
- Respondents aged 25 to 44 years old were coded as 25 to 44 years old[22]
- Respondents aged 45 to 64 years old were coded as 45 to 64 years old[7]
- Respondents aged 65 years old and over were coded as 65 years old and over

The sex of the arrestees did not need to be re-coded. The racial or ethnic identities present in this dataset needed to be aligned with the most closely matched group per the ACS and NSDUH data and, thus, were grouped as such:

- White (Non-Hispanic): "White"
- Black (Non-Hispanic): "Black"

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[22] Population for the two ACS categories spanning ages 25 to 64 were combined to match the datasets for analysis.

- Native American / Alaska Native (Non-Hispanic): "American Indian/Alaskan Native"

- Asian (Non-Hispanic) or Pacific Islander / Hawaiian Native (Non-Hispanic)[23]: "Asian / Pacific Islander"

- Other: "Unknown", "Other"

- Hispanic: "White Hispanic", "Black Hispanic"

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[23] As Asian and Pacific Islanders were included in the same category per the original arrests dataset, this combined identity category was used for the analysis, as well.

Dallas Initial Data Preparation

The City of Dallas Arrests dataset comprised two separate datasets; one included all of the arrests, while another included every individual charge associated with each arrest. These datasets were joined by unique identifier, so that arrest information could be included alongside the relevant charges. This was then filtered for only variables relevant to this analysis, including:

- Incident Number (unique identifier)
- Arrest Date
- Age of Arrestee (at time of arrest)
- Sex of Arrestee
- Race of Arrestee
- DPD Division of Arrest

As the original dataset included arrests in general, it was further filtered in order to solely include arrests for drug possession. In order to ensure that the arrests only included those related to drug possession, the charge descriptions were first for incidents containing possession-related charges:

- "POSS CONT SUB NOT IN PEN GRP"
- "POSS CONT SUB PEN GRP 1 <1G"
- "POSS CONT SUB PEN GRP 1 <1G *DRUG FREE ZONE"
- "POSS CONT SUB PEN GRP 1 > OR EQUAL 1G<4G"
- "POSS CONT SUB PEN GRP 1 > OR EQUAL 400G"
- "POSS CONT SUB PEN GRP 1 > OR EQUAL 4G<200G"
- "POSS CONT SUB PEN GRP 1 >1G *DRUG FREE ZONE"
- "POSS CONT SUB PEN GRP 2 < 1G"
- "POSS CONT SUB PEN GRP 2 < 1G *DRUG FREE ZONE"
- "POSS CONT SUB PEN GRP 2 > OR EQUAL 1G<4G"
- "POSS CONT SUB PEN GRP 2 > OR EQUAL 400G"
- "POSS CONT SUB PEN GRP 2 > OR EQUAL 4G<400G"

- "POSS CONT SUB PEN GRP 2-A 2 OZ OR LESS"

- "POSS CONT SUB PEN GRP 2-A 4 OZ OR LESS BUT MORE THAN 2 OZ"

- "POSS CONT SUB PEN GRP 2-A < OR EQUAL 2 OZ"

- "POSS CONT SUB PEN GRP 3 < 28G"

- "POSS CONT SUB PEN GRP 3 < 28G *DRUG FREE ZONE"

- "POSS CONT SUB PEN GRP 3 > OR EQUAL 1G *DRUG FREE ZONE"

- "POSS CONT SUB PEN GRP 3 > OR EQUAL 200G<400G"

- "POSS CONT SUB PEN GRP 4 <28G"

- "POSS CONT SUB PEN GRP 3 > OR EQUAL 1G *DRUG FREE ZONE"

- "POSS CONT SUB PEN GRP 3 > OR EQUAL 200G<400G"

- "POSS CONT SUB PEN GRP 4 <28G"

- "POSS CONT SUB PEN GRP 4 > OR EQUAL 28G<200G"

- "POSS CONT SUB PEN GRP 4 > OR EQUAL 400G"

- "POSS MARIJUANA <2OZ"

- "POSS MARIJUANA <2OZ *DRUG FREE ZONE"

- "POSS MARIJUANA >2OZ< OR EQUAL 4OZ *DRUG FREE ZONE"

- "POSS MARIJUANA >4OZ< OR EQUAL 5LBS"

- "POSS MARIJUANA >4OZ< OR EQUAL 5LBS *DRUG FREE ZONE"

- "POSS MARIJUANA >50LBS< OR EQUAL 2,000LBS"

- "POSS MARIJUANA >5LBS< OR EQUAL 50LBS"

- "POSS OF DANGEROUS DRUG"

As many arrestees in the dataset were charged with more than one crime at the time of arrest, incidents that also included charges for non-possession drug crimes (i.e., delivery or sale, paraphernalia, etc.) were also filtered out:

- "MAN DEL CONT SUB PEN GRP 1 > OR EQUAL 4G<200G"
- "DELIVERY MARIJUANA < OR EQUAL 1/4 OZ REMUNERATION"
- "POSSESSION OF DRUG PARAPHERNALIA"
- "MAN DEL CONT SUB NOT IN PEN GRP"
- "MAN DEL CONT SUB PEN GRP 2 or 2-A > OR EQUAL 4G<400G"
- "MAN DEL CONT SUB PEN GRP 3/4 > OR EQUAL 28G<200G"
- "MAN DEL CONT SUB PEN GRP 3/4 <28G"
- "MAN DEL CONT SUB PEN GRP 1 <1G"
- "MAN DEL CONT SUB PEN GRP 2 or 2-A > OR EQUAL 400G"
- "MAN DEL CONT SUB PEN GRP 1 > OR EQUAL 1G<4G"
- "MAN DEL CONT SUB PEN GRP 2 or 2-A > OR EQUAL 1G<4G"
- "MAN DEL CONT SUB PEN GRP 1 > OR EQUAL 200G <400G"
- "MAN DEL CONT SUB PEN GRP 2 > OR EQUAL 4G<400G"
- "DELIVERY MARIJUANA >1/4 OZ< OR EQUAL 5LBS"
- "MAN DEL CONT SUB PEN GRP 1A > OR EQUAL 20<80AU"
- "MAN DEL CONT SUB PEN GRP 2 or 2-A < 1G"
- "MANIFESTING FOR SELLING DRUGS"
- "MAN DEL CONT SUB PEN GRP 3/4 > OR EQUAL 200G<400G"
- "MAN DEL CONT SUB PEN GRP 1 > OR EQUAL 400G"
- "MAN DEL CONT SUB PEN GRP 3/4 > OR EQUAL 400G"
- "DELIVERY MARIJUANA >5LBS< OR EQUAL 50LBS"
- "MAN DEL CONT SUB PEN GRP 1 > OR EQUAL 1G *DRUG FREE ZONE*"
- "MAN DEL CONT SUB PEN GRP 3/4 <28G *DRUG FREE ZONE*"
- "MAN DEL CONT SUB PEN GRP 2 < 1G *DRUG FREE ZONE*"
- "MAN DEL CONT SUB PEN GRP 2 > OR EQUAL 1G<4G"
- "FRAUD DELIVERS PRESCRIPTION FORMS SCHEDULE LLL,LV,V"
- "MAN DEL CONT SUB PEN GRP 2 > OR EQUAL 1G *DRUG FREE ZONE*"
- "MANIFESTING THE PURPOSE OF SELLING ILLEGAL DRUGS AND CHEMICALS"
- "MAN DEL CONT SUB PEN GRP 2 < 1G"
- "DELIVERY MARIJUANA < OR EQUAL 1/4 OZ"

Upon review, only arrests with the following charge descriptions remained in the dataset, after the filter was applied:

- "POSS MARIJUANA <2OZ"
- "POSS CONT SUB PEN GRP 2 < 1G"
- "POSS OF DANGEROUS DRUG"
- "POSS CONT SUB PEN GRP 1 > OR EQUAL 1G<4G"
- "POSS CONT SUB PEN GRP 2-A < OR EQUAL 2 OZ"
- "POSS CONT SUB PEN GRP 1 <1G"
- "POSS MARIJUANA >4OZ< OR EQUAL 5LBS"
- "POSS CONT SUB PEN GRP 3 < 28G"
- "POSS CONT SUB PEN GRP 1 > OR EQUAL 4G<200G"
- "POSS MARIJUANA >2OZ< OR EQUAL 4OZ"
- "POSS MARIJUANA >5LBS< OR EQUAL 50LBS"
- "POSS CONT SUB PEN GRP 2-A 2 OZ OR LESS"
- "POSS CONT SUB PEN GRP 4 <28G"
- "POSS CONT SUB PEN GRP 2 > OR EQUAL 1G<4G"
- "POSS CONT SUB PEN GRP 1 > OR EQUAL 200G<400G"
- "POSS CONT SUB PEN GRP 2 > OR EQUAL 4G<400G"
- "POSS MARIJUANA >50LBS< OR EQUAL 2,000LBS"
- "POSS CONT SUB PEN GRP 4 > OR EQUAL 400G"
- "POSS CONT SUB PEN GRP 2-A 4 OZ OR LESS BUT MO..."
- "POSS CONT SUB NOT IN PEN GRP"
- "POSS CONT SUB PEN GRP 3 > OR EQUAL 28G<200G"
- "POSS CONT SUB PEN GRP 4 > OR EQUAL 28G<200G"
- "POSS CONT SUB PEN GRP 1A <20AU"
- "POSS CONT SUB PEN GRP 1 > OR EQUAL 400G"
- "POSS CONT SUB PEN GRP 2 > OR EQUAL 400G"

Observations with duplicate incident numbers were also dropped, so that the resulting data only reflected individual arrests. Any arrests taking place outside of the city of Dallas were also excluded, to maintain comparability with the other three cities, as the DPD's jurisdiction appeared, per the dataset, to extend beyond the city limits. The variables were then re-coded in order to match the format of the NSDUH survey data, as well as the ACS data, which needed to be joined for the analysis. Specifically, the ages of the arrestees were re-coded into the same categories listed above for the NSDUH dataset, which match the available groupings per the ACS population data. The sex of the arrestees did not need to be re-coded. The racial or ethnic identities present in this dataset needed to be aligned with the most closely matched group per the ACS and NSDUH data and, thus, were grouped as such:

- White (Non-Hispanic): "White", "Middle Eastern"
- Black (Non-Hispanic): "Black"
- Native American / Alaska Native (Non-Hispanic): "American Indian or Alaska Native"
- Pacific Islander / Hawaiian Native (Non-Hispanic): "Native Hawaiian/Pacific Islander"
- Asian (Non-Hispanic): "Asian"
- Other: "Unknown"
- Hispanic: "Hispanic or Latino"

Final Datasets for Analysis

Using the same process as was performed for the NSDUH dataset, for each individual drug possession arrests dataset described above, dummy variables were created for each arrest for age category, race or ethnicity, and sex. Again, the resulting datasets were grouped by bins of combined race, sex, and age category. The total arrests were counted for each bin in order to determine the frequency of arrest for drug possession for each combination of demographic characteristics. Any bins that were not present in the arrest data, but were present in the ACS and NSDUH datasets were added with zero total arrests.

Finally, the arrests datasets were each merged individually with the ACS dataset and the NSDUH dataset by bin. The total arrests per bin were then divided by the total population (per the ACS) present in that bin. This resulted in an estimate of propensity to be arrested for drug possession for each combination of demographics (i.e., bin), by normalizing the frequency of arrests by the estimated population. The estimated illicit drug use for each bin, per the NSDUH, was also now included alongside the arrest frequencies.

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