The cannabis industry within the USA: the influence of gender on cannabis policy and sales

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Abstract

Purpose – Motivated by upper echelon theory, this paper aims to examine the association between gender and the cannabis industry in the USA from both policy and an organizational perspective.

Design/methodology/approach – This paper examines two novel data sets in two legal adult-use cannabis states. First, it examines how city council gender diversity relates to city opt-out measure decisions, barring cannabis operations and forgoing related tax revenues. Second, it examines how management gender diversity relates to organizational performance.

Findings – Results suggest that, from a policy perspective, cities with higher council gender diversity are less likely to propose an opt-out measure to city taxpayers. From an organizational perspective, results suggest that female representation at the highest level is associated with higher sales in the retail sector of the cannabis industry.

Research limitations/implications – Findings are somewhat limited by data availability and may not be generalizable to all adult-use legal states. While the study recognizes the possibility of self-selection bias in the results, robust analyses is performed to limit this possibility. Finally, while the study wholly recognizes that gender is not binary, it is limited to a binary gender variable based on the gender recognition software used in this study. It is also understood that this may not accurately capture the richness of a more inclusive examination of gender.

Practical implications – Results from this study inform communities on the impact of city council gender diversity on policy outcomes and related tax revenue levels. Further, results inform the adult-use cannabis industry on benefits derived from executive-level gender diversity.

Social implications – Evidence suggests that gender diversity has a significant impact on the adoption of legalized adult-use cannabis policy. Social benefits from legalization potentially include increased revenues from taxes, decreased spending on cannabis enforcement, decreased health costs and decreased drug-related violence. Many of these benefits substantially impact communities disproportionally burdened by former prohibition. Additionally, the results indicate that gender is associated with the level of sales within cannabis organizations, generating debate about the possibility of economic performance in the absence of historical executive gender barriers.

Originality/value – This paper provides an initial empirical examination of gender diversity within and around the rapidly evolving adult-use cannabis industry in the USA.

Keywords Gender, Social policy, Cannabis, Marijuana

Paper type Research paper

"I think it's a chance for women to make the rules", Foster said. "The industry offers its workers more flexibility than something like finance", she said, "and there are fewer glass ceilings because everyone is 'figuring it out simultaneously'". Perhaps because of their shared experiences in less-accommodating fields, the female leaders in the cannabis industry told me that they tend to be supportive of each other as they navigate what is still a relatively new market (Deruy, 2016, p. 1, quoting Becca Foster, independent with in-home cannabis shop Healthy Headie).

1. Introduction

The development of, and operations within, the USA cannabis industry is unique from other countries, based both on governmental policy and regulatory approach (Cohen, 1997; Uitermark, 2004; Dwyer, 2016; Collett, 2017; S.N., 2017; Halperin, 2017; Romi *et al.*, 2019). While US states continue to legalize adult-use cannabis[1], this industry exists under gray-market status as it remains illegal under federal law, creating great tension between state and federal authorities (Romi *et al.*, 2019). In this environment, those involved in cannabis operations, whether directly or indirectly, can operate legally within their state while also facing potential incarceration from federal authorities (Romi *et al.*, 2019). Additionally, the USA has a long history of cannabis opposition, based on arguments of morality and religiosity, stemming from decades of propagandized misinformation dissemination by the US government's "war on drugs." These efforts resulted in cannabis prohibition laws that were disproportionally burdensome to marginalized communities.

As the number of states legalizing adult-use cannabis within the USA grows, the amount of related tax revenues, what factors may influence the amount of tax revenues and how these tax dollars should benefit the state continue to be a major topic of discussion. Cannabis tax revenues are not insignificant. In 2017, OR received $82.2mn in tax revenues (Danco, 2018), CO $247mn (Awad, 2018), WA $314.8mn (Statista, 2018a), and California received $60.9mn in the first quarter of 2018 alone (Peters, 2018). Further, a new study finds that legalizing cannabis nationwide would create at least $132bn in *federal* tax revenue and more than a million new jobs across the USA in the next decade (Zezima, 2018). Given that almost 66 per cent of US states are currently facing substantial budget shortfalls (McNichol and Waxman, 2017) and that tax revenues from cannabis substantially outperform competing products (i.e. alcohol and tobacco) (Borchardt, 2017), what might influence the adoption of cannabis in non-legal states and what factors might affect the level of tax revenues collection from each state are important accounting questions. Anecdotal evidence suggests that one factor significant to the cannabis industry is the influence of women in both extensive organizational representation and in shaping the industry's direction and consumer sales (McVey, 2017a, 2017b; Astre, 2018). Given prior research (Saltzstein, 1986; Cooper *et al.*, 1994; Rosa *et al.*, 1996; Fasci and Valdez, 1998; Du Rietz and Henrekson, 2000; Bowling *et al.*, 2006; Anzia and Berry, 2011; Bjørna, 2012; D'Agostino, 2015; Shimeld *et al.*, 2017; Damak, 2018) finds that gender plays a role in policy decisions and organizational success, we attempt to investigate the association between gender[2] and the growth of the cannabis industry in the USA from both a policy and an organizational perspective.

Readily available public data does not yet exist as the cannabis industry remains underdeveloped (Williams, 2018; Romi *et al.*, 2019). Through a combination of hand collection, record requests and a private data agreement, we use two proprietary data sets in two different cannabis adult-use legal states within the USA for our analyses. Specifically, we examine the influence of gender on "opt-out" decisions by city governments in the state of Oregon, and sales performance of cannabis businesses in the state of Washington. Given that states implementing legalized cannabis operations do not incorporate uniform laws, this twofold approach (i.e. evidence from two different states) allows us to better understand what influence gender may have on the industry with respect to both legal adult-use cannabis adoption and organizational success.

As a gray-market industry, cannabis policymakers (city council members and mayors) and industry participants (producers, processors and retailers) face many risks and uncertainties (Romi *et al.*, 2019). Yet, even in the face of such risks, the consequence of adoption and success provide significant economic and social benefits to states, including tax revenue for public school funds and construction; police; local transportation services;

substance-abuse prevention, research and education; health care, including public health and mental health programs; affordable housing; combating illegal markets; filling state budget gaps; infrastructure; and supporting other social programs (Senate, Washington State, 2015; Dills *et al.*, 2016; Crombie, 2017; Roberts, 2018; Whittenberg, 2018). In 2017, the legal adult-use cannabis market in the USA was worth an estimated \$7.7bn (Zhang, 2017) with annual sales expected to grow to more than \$24bn by 2025 (New Frontier, 2017). Furthermore, the cannabis industry is expected to create 250,000 US jobs by 2025, if it remains in its current form (Sheenan, 2018). As sales in 2018 are predicted to reach more than \$10bn (Statista, 2018b), it is an important accounting question how gender might influence tax revenues earmarked toward the aforementioned social benefits.

Interestingly, as this industry grows, so grows evidence pointing to a higher number of female owners and executives as compared to US businesses as a whole (McVey, 2017b, 2017c). From a policy perspective, US city councils, tasked with governing cannabis policies in their respective cities, have experienced a significant upsurge in female representation over the past few decades as well, surpassing that found in the private sector (Ferreira and Gyourko, 2014). Prior research provides conflicting evidence concerning the influence of gender on policy (Hindera, 1993; Bowling *et al.*, 2006; Celis, 2006; Bjørna, 2012; Amore and Garofalo, 2016; Byoun *et al.*, 2016; Al-Rahahleh, 2017) and operations (Jianakoplos and Bernasek, 1998; Eckel and Grossman, 2002; Fellner and Maciejovsky, 2007; Mínguez-Vera and Martin, 2011; Robb and Watson, 2012). The combination of female representation in the cannabis industry within the USA and conflicting evidence with respect to the influence of gender on policy decisions and organizational operations, provides a unique opportunity to examine our research questions.

We use hand-collected data from 219 cities in Oregon, consisting of city council decisions to propose an opt-out provision on the State of Oregon's Measure 91. Measure 91 reflects the statewide vote allowing the sale of adult-use cannabis throughout the state. Should the statewide vote result in cannabis legalization, city councilors and mayors are responsible for deciding whether or not to "opt out" of legalization in their respective cities. We use Oregon because of availability of data, familiarity with the state's cannabis program and familiarity with the state's city governments. We predict and find that cities with female council representation are less likely to propose an opt-out measure, increasing the available cannabis tax revenues for their respective cities. From an organizational performance perspective, we use a novel data set that provides proprietary cannabis transaction data for the state of Washington. We examine the influence of organizational leadership gender on business-specific sales (i.e. increased tax revenues) and find that female representation in governing membership and female presidents are associated with higher sales. Overall, it does appear, at least in the early phases of the gray-market cannabis industry within the USA, that gender plays a significant role in forming the industry and increasing tax revenue used toward social programs. It also appears that women in the cannabis industry, in some ways, perform contrary to prior literature, displaying an increased appetite for uncertainty and risk common in this gray-market industry.

Our study is important for many reasons. To our knowledge, this is the first paper to examine the association between gender and a gray-market industry, specifically the cannabis industry. This supports prior research calling for a focus on the potential role of gender in strategizing, decision-making and operating within organizations (Parker, 2008). Second, we add to a very small set of cannabis research in business-related articles that investigate this rapidly growing and innovative industry. Therefore, our paper provides a springboard for future research in the area. Third, we contribute to the accounting literature by providing an understanding of how city council gender impacts tax policy and how

gender influences tax revenues toward social programs, and by providing an exploratory analysis of the emerging cannabis industry and the tension between the state and federal governments. Finally, our findings contribute to calls for policy research on gender in local government (Bjørna, 2012; Bowling *et al.*, 2006) and provide contradictory findings to prior research examining women in local government (Ferreira and Gyourko, 2014; Khlif and Achek, 2017, p. 647).

The remainder of the paper is structured as follows. Section 2 presents the background of the cannabis industry. Section 3 provides the theoretical foundation and hypotheses development. Section 4 discusses sample selection and methodology. Section 5 discusses the results. Section 6 provides our conclusion.

2. Background

2.1 History of cannabis within the United States of America

Cannabis has a long history within the USA, appearing in formal medical books until 1942 (Hudak, 2016). Prior to this time-period, cannabis was legal, regulated as part of the Federal Food and Drug Act and was not taxed (Hudak, 2016). The broader American public was introduced to cannabis in the 1900s through 1920s as Mexican immigrants flooded into the USA. As an intentional governmental strategy to combat increasing immigration, the spread of propaganda related to cannabis and its association with violence, crime and deviant behaviors resulted in the plant's prohibition in 29 states around 1931 (Hudak, 2016), quickly followed by the federal Marihuana Tax Act of 1937 (The Act of 1937). The Act of 1937 fundamentally restricted cannabis possession to those paying excise taxes for medical and industrial purposes, and effectively criminalized the plant. The combination of intentional propaganda and heavy taxation ultimately led to a socially constructed stigmatization, associating cannabis synonymously with immoral behavior (Romi *et al.*, 2019). It was not until the mid-1940s that contrary evidence surfaced lending support to the idea that cannabis did not induce violence, crime or deviancy but instead made users more timid, drowsy and passive (Hudak, 2016). In the 1970s, the Schafer Commission, appointed by US President Richard Nixon, called for the decriminalization of cannabis possession, concluding that cannabis did not pose widespread danger to society and that its use was similar to that of alcohol. Ignoring the Schafer Commission's recommendations, the Act of 1937 was replaced with the Controlled Substances Act in 1976, establishing cannabis as a Schedule I drug. This classification defines cannabis as having "no currently accepted medical use and high potential for abuse," and is also applied to heroin, LSD and ecstasy (United States Drug Enforcement Administration, 2019).

Although cannabis was federally illegal, states faced increasing pressure from citizens to legalize the plant, initially under the guise of cannabis as a medical treatment. In 1996, CA was the first state to approve the use of cannabis for medicinal purposes through an initiative process, pointing to cannabis' 5,000-year history as a therapeutic treatment across many cultures. Since 1996, 33 US States and the District of Columbia have followed California's lead and legalized medical cannabis. In addition to the increasing legality of medical cannabis, adult-use cannabis hit the market in 2012 through statewide ballot measures in Washington and Colorado. Over the following six years, eight additional states and the District of Columbia legalized adult-use cannabis, the most recent of which was Michigan in 2018. The development of the cannabis industry within the USA is different from other countries based on government policy and/or regulatory approach. As an example, The Netherlands has federal illegal status for all forms of cannabis, with a formal "tolerating" policy to enforce existing rules only when there is a risk or actual occurrence of individual or social harm. These rules began ambiguously, but have become more specific in

response to a growing politically conservative population and infractions over time (Cohen, 1997; Uitermark, 2004; S.N., 2017), leaving cannabis operators in a continuously ambiguous state. Canada, on the other hand, has just legalized adult-use cannabis. In Canada, implementation is assigned to the province level. Unlike the USA, Canada is only allowed to sell the flower in its natural state (i.e. no edibles, oils, etc.) (Halperin, 2017). Finally, Australia also considered adult-use cannabis, and thereby federally legalizing medical cannabis in 2016 with much stricter physician-approved access compared to that of the USA (Dwyer, 2016; Collett, 2017).

While states continue to legalize adult-use cannabis, the plant remains illegal under federal law, resulting in a "gray-market" (Romi *et al.*, 2019). This has created great tension between state and federal authorities as cannabis operators and peripheral organizations are operating legal businesses according to state law, while simultaneously facing threats from federal authorities which could result in immediate cessation of their business and potential incarceration. Even in the face of this tension and risk, there were four additional states with measures on the November 2018 general ballot for some form of cannabis legalization (Mitchell, 2018).

2.2 Opposition to and support for cannabis

While the support for cannabis legalization within the USA is at an all-time-high of 66 per cent (McCarthy, 2018), opposition remains. The culmination of intense propaganda in the USA toward lobbying for cannabis prohibition, combined with consistent dissemination of misinformation throughout the illegal time-period, led to the association between cannabis and immoral behavior. Within religions communities, this opposition is even greater (i.e. among those who attend religious services regularly, 63 per cent oppose legalization) (Galston and Dionne, 2013). In addition to the main opposition of morality and religiosity (Galston and Dionne, 2013; Stylianou, 2004; Warner, 1991), research indicates there are potential costs to cannabis legalization, including:

- increased costs for new forms of cannabis enforcement and drugged driving regulation;
- productivity losses at work because of cannabis-related accidents;
- potential health concerns, both physical and mental;
- impacts on public safety (e.g. operating heavy machinery);
- uptake in additional drug use; and
- failure to eliminate the black market (Evans, 2013; Hajizadeh, 2016; McGinty *et al.*, 2017).

Recognizing there is some overlap between the costs and benefits of cannabis legalization (e.g. reduced productivity at work from cannabis use, while also increasing productivity from a lack of cannabis-related incarcerations), the motivations to legalize cannabis are wide and varying, including:

- estimated savings from reduced spending on the criminal justice costs of cannabis law enforcement;
- increased revenues from additional taxes and streams of income available for social programs;
- reduced cannabis-related hospital admissions because a vast majority of referrals come from the criminal justice system;

- productivity gains at work from reduced unemployment, employee turnover and absenteeism related to involvement with the criminal justice system;
- value improvements in family stability and socioeconomic mobility within marginalized communities (communities disproportionally burdened by prohibition laws) because of a reduction in incarcerations;
- decreased health-care costs resulting from a substitution of cannabis for addictive drugs (e.g. pain killers);
- easier access for medical use, and
- decreased drug-related violence (Warner, 1991; Evans, 2013; Gavrilova *et al.*, 2015; Hajizadeh, 2016; Dragone *et al.*, 2017; McGinty *et al.*, 2017; Grucza *et al.*, 2018).

Regarding the most cited benefit to social programs from cannabis legalization, Borchardt (2017) argues that states are "addicted" to cannabis taxes, generating higher tax dollars than long-standing alcohol taxes (Borchardt, 2015). The most evident of these motivations is the potential for significant and ongoing tax revenues to the state for education; law enforcement; and illegal drug prevention, intervention and treatment systems; as well as to the state's local governments and other social programs. Since implementation of their adult-use cannabis programs, average monthly tax revenues for Colorado, WA and Oregon were $14,834,892, $5,090,917 and $6,475,050, respectively (according to each state's Department of Revenue website). The vast majority of adult-use cannabis states have implemented either an excise tax or sales tax on the product, whereas only a few have implemented a local tax option, resulting in an effective cannabis tax rate range of between 10 and 47.1 per cent (includes excise tax and state and local sales tax). Each state has developed its own taxing statutes and tax allocation plan, some of which include disbursements to the state's city governments on top of and separate from the city tax option. In addition to state taxes, even in the face of federal illegality, cannabis businesses are required to pay federal taxes. According to the 280E tax code, *retail* operators cannot deduct anything from their sales for federal income tax purposes except cost of goods sold, making their federal taxes extremely punitive (Romi *et al.*, 2019) and dissimilar from businesses in other industries. However, tax revenue is not the only financial benefit. While revenues serve to offset the cost of regulation of the new market, the state also saves from reduced cannabis law enforcement (e.g. less police patrol and processing of criminals, less incarceration).

2.3 Oregon cannabis history
Medicinal cannabis became legal in the state of Oregon in 1998 but it was not until the 2014 general election that voters passed Measure 91, allowing for adult-use and distribution of cannabis to persons 21 years of age or older. At this time, the State imposed a 17 per cent state tax, ten per cent of which is allocated to cities, while the cities and counties may levy an additional tax of three per cent on retail sales (Brownsberger, 2018). Starting January 1, 2017, cities that did not allow *all* types of cannabis licensees to operate within their limits were preempted from receiving either state tax distributions or city-levied taxes.

Although Measure 91 passed state-wide, cities and counties that reached a 55 per cent "no" vote on Measure 91 were allowed to immediately pass an ordinance prohibiting cannabis operations within their limits without voter input, whereas jurisdictions that did not meet the 55 per cent threshold were allowed to propose their own prohibition measure (opt-out measure) or their own measure to reaffirm the industry (opt-in measure) for voter consideration. To date, all but two of these "opt-out" measures were put to voter

deliberation. Out of the 241 cities in Oregon, 13 achieved the 55 per cent "no" vote benchmark and chose to immediately opt-out of allowing cannabis operations, 47 proposed an opt-out measure and 5 proposed an opt-in measure.

2.4 Washington state cannabis history

Washington has a long history of legal cannabis programs and, in 2012, along with Colorado, became one of the first states to legalize adult-use cannabis use and sales. This shift toward a more lenient state policy began in 1971 when it was deemed that possession of less than 40 g of cannabis would be a misdemeanor rather than an offense punishable by prison time and hefty fines (Dills *et al.*, 2016). Initiative 692, which proposed use, sale, possession and cultivation of cannabis by qualifying patients or caregivers for medicinal purposes, was approved in November 1998, with 59 per cent of voters in favor (Senate, Washington State, 2015). In November 2012, 55.7 per cent of voters approved Initiative 502, which legalized adult-use cannabis and deemed that the tax revenue would be used for substance-abuse prevention, research, education and health care (Senate, Washington State, 2015). The first retail store opened on July 8, 2014, and as of June 27, 2018, the state had issued more than 500 retail licenses. Currently, WA has a 6.5 per cent state tax and a 1-3.9 per cent local sales and use tax, with an additional 37 per cent excise tax on retail sales (Brownsberger, 2018).

The Washington State Liquor and Cannabis Board (WSLCB) controls the number of licenses issued, and obtaining a license is dependent mainly on the population and a lottery system, rendering a semi-random selection of operators (Washington State Liquor and Cannabis Board, 2015). The lottery system is interesting in that it essentially eliminates a barrier to entry into the industry. Typically, the "glass ceiling" is theorized as a barrier to top management roles and salary parity for women, along with "think-manager-think-male" (Sabharwal, 2015) and the "Old Boys' Club" (Ezzedeen *et al.*, 2015) themes. In the lottery, everyone has an equal shot of obtaining a license; it simply depends on applying, meeting the requirements and luck of the draw. This unique setting has likely facilitated the number of women joining the industry.

For any given license, a person is required to be listed as a licensee according to the business structure of the applicant/owner. The WSLCB outlines these "true parties of interest" in the cannabis statute. In general, members, partners, stockholders, officers, any person who stands to receive a profit and their spouses are listed as licensees (Washington State Liquor and Cannabis Board, 2015). A licensee can also be designated as a member. Members hold a title and are in control of governance. These titles include president, vice-president, secretary, treasurer and stockholder. Our analysis focuses on these members, analogous to the management team of a corporation.

2.5 Gender and cannabis history

While approximately 38 per cent of women suffer from chronic diseases, only four per cent of research and development funds are used toward women's health-care products and services, leaving women to seek out alternative therapies (Stukin, 2018). Given that women make up about 85 per cent of all consumer purchasing decisions and 85 per cent of health-care decisions, women are central to the currently semi-legal developing cannabis market (Oliver and Bolivar, 2016; Bolivar, 2017). The impact of this gender influence is not lost on the industry as the cannabis industry has moved away from the sexualized tradition of trade shows in other industries, focus more on health, wellness and education (Oliver and Bolivar, 2016; Bolivar, 2017). This focus likely results from findings in prior research related to the

unique health and wellness benefits of cannabis for women (Bottorff *et al.*, 2011), which includes, but is not limited to:

- pain relief and treatment for complications from menstruation, childbirth and other gynecological conditions;
- treatment for premenstrual and menopausal symptoms;
- treatment for facilitation of lactation;
- treatment for tetanus, asthma and uterine disorders;
- treatment for spasticity, pain, tremor, fatigue and autonomic dysfunction associated with disorders such as multiple sclerosis; and
- treatment for endometriosis (Russo, 2002; Petro, 2002; Stukin, 2018).

The fact that females are consuming cannabis at higher rates than ever before (Galston and Dionne, 2013; Bolivar, 2017), have enormous purchasing power related to health and wellness decisions (Stukin, 2018) and are embracing cannabis as a wellness product (Astre, 2018), combined with a lack of historical data concerning cannabis markets (Evans, 2013; Romi *et al.*, 2019), makes the cannabis industry within the USA an important setting to examine our research questions.

3. Theoretical foundation and hypotheses development

3.1 Theory

Upper echelon theory suggests that organizational outcomes are viewed as reflections of the values and cognitive biases of powerful actors within organizations (Hambrick and Mason, 1984). Powerful actors include top executives and the board of directors, collectively known as the top management team (TMT). With respect to the upper echelon of the public sector, the TMT consists of city council members, who act as policy managers for the city at large (Kemp, 2007), and the mayor, who is the organizational head of the council. Hambrick and Mason (1984) identify several manager characteristics that can influence an organization's performance, including age, education, socioeconomic roots, financial position and other career experiences. Similar to prior research, it is under the socioeconomic umbrella that we examine gender as a managerial characteristic (Carpenter *et al.*, 2004; Krishnan and Park, 2005; Bamber *et al.*, 2010; Ge *et al.*, 2011; Minguez-Vera and Martin, 2011; Robb and Watson, 2012; Francis *et al.*, 2015; Hoobler *et al.*, 2018). We argue that female mayor/councilor policy outcomes do not necessarily reflect the government's constituency, but instead are more reflective of the mayor/councilor's personal attributes.

3.2 Gender and cannabis policy

Bjørna (2012, p. 63) states that "local governments are vital democratic arenas that deal with the everyday concerns of their communities, as well as challenges pertaining to social, economic, and culture development." Cities and towns in the USA are controlled by city councils comprised of officials elected from the city population, by the city population, to represent the city population. Although women remain significantly underrepresented on city councils, they are represented in a greater percentage than in private industry (Ferreira and Gyourko, 2014). Despite this, research on diversity in US city councils remains scant.

Extant literature provides conflicting evidence as to the impact of board gender diversity on policy outcomes. Anzia and Berry (2011) find that women who succeed in public office elections (Congress) exert more effort to be taken seriously (overcome bias) and are, therefore, likely harder working, more qualified and more talented than their male

counterparts, significantly improving their respective districts' performance. Furthermore, D'Agostino (2015) similarly finds that women in federal agencies improve performance in comparison to men. Alternatively, Ferreira and Gyourko (2014) examine the impact of mayoral gender on policy outcomes in US local governments (cities and towns) and find that a female mayor has no impact on the composition of the government's expenditures, local crime rates or the size of the government, concluding that leadership gender does not affect short- or long-term policy outcomes in US cities.

While somewhat distinct from policy outcomes, women pursue different policies and issues than men. Specifically, gender-diverse boards are more likely to pursue redistributive policies, social issues and women's issues. Bjørna (2012) finds that following a shift from male- to female-governed and majority-populated Australian local councils, there is a resulting increase in policy aims addressing issues of maternity, care for weaker groups, helping other women and helping other female politicians. Bowling et al. (2006) examine female agency heads in all 50 US states from 1970-2000 and find that women administrators are more likely to head social service, health and education organizations. Furthermore, Kaufmann and Petrocik (1999) find that social welfare issues are a principal correlate of the gender gap in presidential voting.

Not only are women more likely to pursue general social issues, but they have also been shown to address and advance issues specific to women in many environments, which is reasonably expected as public officials advocate for groups to which they belong (Hindera, 1993). The extant literature indicates that women are more likely to pursue social justice (Meier et al., 2006) and women-friendly agendas (Saidel and Loscocco, 2005), and use "caring" skills (Guy, 1992; Stivers, 1993). Female mayors have been shown to enhance female representation in employment through either demanding the removal of hiring and promotion barriers, or actively promoting the hiring of women (Saltzstein, 1986) while large numbers of female representatives are said to influence women's potential to represent women (Mansbridge, 1999; Celis, 2006). Chiang (1999) finds that female Congressional law makers are more likely to sponsor women's issues, such as health care and welfare policies. The preponderance of evidence suggests that women not only impact policy outcomes, but pursue more socially responsible initiatives with a focus on women's issues.

As it relates to the cannabis industry, in 2017, women made up approximately 27 per cent of executive-level roles (national average of 23 per cent), 42 per cent of ancillary cannabis businesses and 35 per cent of executive-level positions in cannabis dispensaries (Marijuana Business Daily, 2017). The industry's infancy may allow women to make the cannabis industry the first to reach 50 per cent female representation on every level (Gordon, 2018). Anecdotally, women continue to enter the cannabis market not only because of its monetary potential and fast-growing nature (Livni, 2017), but also because of the lack of patriarchal norms that are in other businesses (Livni, 2017; Picillo and Devine, 2017; Erickson, 2018), and the ability to advocate for medicinal cannabis uses (Livni, 2017; Astre, 2018).

Existing research also supports the idea that women have more liberal ideological leanings on fiscal policy matters and social and moral policy issues (Norrander, 1997; Bowling et al., 2006). Health and employment benefits to women, social benefits and outright left leaning tendencies of women are three possible motivators for female city councilors to support cannabis operations within their cities. In addition, potentially increasing city revenues also serves as a significant driving factor. As previously stated, the tax revenues to Colorado, WA and Oregon have been quite extensive and may be used to fill city budget gaps (Stecklein, 2017; Gerda, 2018).

However, the riskiness of the cannabis industry may offset female tendencies toward social benefits. To that end, women executives, managers and board members have been found to be consistently more risk-averse than men (Jianakoplos and Bernasek, 1998; Eckel and Grossman, 2002; Fellner and Maciejovsky, 2007; Croson and Gneezy, 2009; Francis *et al.*, 2015; Faccio *et al.*, 2016). The cannabis setting itself is a risky endeavor not only for industry operators and employees, but also for peripheral industries, investors, states and cities (Romi *et al.*, 2019). While cannabis remains federally illegal, the industry faces heightened scrutiny under today's federal administration. For instance, the former Attorney General, Jeff Sessions, imposed directives instructing US Attorneys to enforce federal regulations as they see fit, threatening the organizational and personal safety of those within the cannabis industry. In addition, regardless of federal interference, cannabis businesses operate in a controversial industry, facing lower funding opportunities, regulatory obstruction and a specialized consumer base, often resulting in higher organizational failure rates (Romi *et al.*, 2019). Given the risky nature of the industry, women might be expected to opt-out of allowing cannabis operations within their cities in an effort to avoid a tumultuous situation in the future.

Overall, we hypothesize that the social and economic benefits of cannabis operations will outweigh the risks of the industry, making women mayors and city councilors more inclined to allow adult-use cannabis operations within their cities (i.e. less inclined to opt-out). Formally stated:

H1. Cities with more females on the city council will be less likely to place a cannabis opt-out measure on the ballot, thus allowing for adult-use cannabis operations.

3.3 Gender and cannabis business performance

The role of the TMT is vital for any organization, but the smaller size of both the organization and TMT of small-to-medium enterprises (SME) gives each actor more significant influence, where control is more centralized and concentrated at the top of the organization (Davis *et al.*, 2010). The size and diversity of the TMT also lend to the performance of the organization. A larger TMT allows for greater diversity in knowledge, experience and skill (Yang *et al.*, 2011), and reduces the likelihood of a homogenously gendered group. A TMT that is diverse is more open to innovation because of the many alternatives that are considered with group heterogeneity (Chuang *et al.*, 2009). Lack of diversity in a group can lead to groupthink, and consequently inferior decision-making (Hambrick and Mason, 1984) and the tendency to make riskier decisions (Mínguez-Vera and Martin, 2011). On the flip side, a homogenous TMT does have advantages, such as better and more frequent communication, less time required for meeting preparation and less conflict than that in diverse groups (Smith *et al.*, 2006; Mínguez-Vera and Martin, 2011).

The evidence surrounding firm performance and TMT diversity is inconclusive. Research in the area of small business and new ventures suggests female-led firms underperform those led by men (Loscocco *et al.*, 1991; Rosa *et al.*, 1996; Chaganti and Parasuraman, 1997; Fasci and Valdez, 1998; Honig, 1998; Du Rietz and Henrekson, 2000; Bosma *et al.*, 2004). Overall, certain evidence suggests that gender plays a role in performance (Cooper *et al.*, 1994; Rosa *et al.*, 1996; Fasci and Valdez, 1998; Du Rietz and Henrekson, 2000; Shimeld *et al.*, 2017; Damak, 2018), whereas others assert that gender has no impact on performance (Kalleberg and Leicht, 1991; Fischer *et al.*, 1993; Anna *et al.*, 2000; Watson, 2002; Watson and Robinson, 2003; Johnsen and McMahon, 2005). However, none of these studies take place in a gray-market industry.

Given the mixed evidence, it is not clear if cannabis business performance is affected by the gender of its governing member(s). This industry faces many risks, so it would appear logical that women would be less attracted to it given their more risk-averse nature. On the other hand, women could be drawn in by its innovative nature and "newness" if the risk is at a controllable level (Mitchelmore and Rowley, 2013; Picillo and Devine, 2017). The industry is growing quickly, yet is still in the early stages, making it easier for women to get involved. Dwyer *et al.* (2003) find that organizations with gender-diverse management in high growth industries perform better than in low-growth industries. As Jane West, founder of a cannabis lifestyle brand posed:

> The legal cannabis industry doesn't have the entrenched patriarchal power structures that dominate most of professional life, and the sector is growing fast, so jump in and find a way to apply your skill set (Livni, 2017).

Unlike in the technology industry, built by the "Founding Fathers" and stereotypically male, in the cannabis industry, women have the chance to be the ones to set things in motion as to not be left behind (Livni, 2017; Picillo and Devine, 2017). Additionally, anecdotal evidence suggests that female representation within the cannabis industry is predominately found in the less risky ancillary organizations such as law firms, marketing agencies and accounting firms representing or servicing cannabis clients (McVey, 2017a). This, in turn, may result in no influence on organizational-specific cannabis sales. This unique tension creates a setting ripe for exploration into the question, does performance differ between women- and men-led cannabis businesses? To address this question, we test the following hypothesis, stated in the null form:

H2. There is no difference in performance between female- and male-led cannabis businesses.

4. Sample selection and methodology

In an unconventional approach, we examine the effect of gender on cannabis implementation and sales based on two separate samples, from both a policy- and an organization-specific aspect. We initially developed our two research questions and developed a plan for data collection and analysis. One of our co-authors was formerly involved in cannabis policy development in one adult-use legal state, providing us familiarity and access to policy data within that particular state, but we were unable to gain access to individual cannabis organizational data. During our research, we developed a proprietary agreement with a data company, which allowed us access to another state's sales-specific data. While relying on data from only two of the ten adult-use legal states (including Washington, DC) might normally lead one to question the generalizability of results, each and every legal cannabis state in the USA operates under different tax rates, regulatory structures, mandates, operational requirements, tracking systems, etc. Therefore, isolating our two empirical questions to two specific states actually lends to a better understanding than if we included all states and had to account for, or control for, all the differences between those states. In the following sections, we provide our sample selection, methods and results separately for each of our research questions to ease interpretation.

4.1 Policy analysis

To examine the influence of gender diversity on the proposition of a cannabis opt-out measure, we investigate council composition of all cities in Oregon. City councilor information was hand-collected for all cities through county election records (36 counties) for all elections from

January 2010 through November 2016 (general, special and recall elections). When election records were unavailable from county websites, public records requests were issued. After obtaining all election information and reconciling councilors in place at any point between 2012 and 2018, city websites and the League of Oregon Cities (LOC) directory (as of June 5, 2018) were examined to confirm and cross-reference the list of current councilors. In instances where the reconciled listing of councilors, LOC directory and city website did not match, city clerks and administrators were contacted to verify the reconciliation. Councilor gender was identified using Gender.API, an online platform that determines an individual's gender by first name and country. This platform also provides an estimated gender-accuracy rate, which we require to be at or above 80 per cent for both of our samples.

Table I, Panel A, provides the results of our sample selection process for policy analysis. Statewide, the analysis resulted in 2,945 individual councilors from 241 states. We remove observations where city councilor or mayor gender accuracy is below 80 per cent; cities without accessible city councilor information or city variables; opt-in cities; cities that disincorporated; and mayors and city councilors who were not in office at the time of the proposed ballot measure (November 8, 2016), resulting in the final sample of 2,519 city councilors and mayors in 211 cities.

Our variable of interest includes three proxies to indicate city council gender diversity:

(1) if the mayor of the city council is a female;

(2) if at least one woman is on the city council; and

(3) the proportion of females on the city council.

City councils are required to vote to refer ballot measures to city voters at least 60 days prior to the election and, therefore, all three proxies are measured as of 60 days prior to the date of the potential opt-out measure. All variable definitions are presented in Appendix 1.

Our first measure, *FemaleMayor*, represents the top position in city government, especially in cities under the mayor-council form of government. Generally speaking, a mayor holds more power than a city councilor and the existence of a female mayor is expected to imply more significant gender-related variation in policy outcomes (Kemp, 2007). We measure the existence of a female mayor with a dichotomous variable equal to one if the mayor is female, zero otherwise. We expect the coefficient on *FemaleMayor* to be negative, indicating that female mayors are less likely to propose a cannabis opt-out measure (i.e. more inclined to allow cannabis operations within the city).

The second measure, *WomanCouncilor*, measures a subtler level of council gender diversity. While not as powerful as a mayor, a female city councilor is still expected to add diversity to the city council in policy outcomes. We measure the existence of at least one female city councilor with a dichotomous variable equal to one if there is at least one female councilor on the city council, zero otherwise. We also expect the *WomanCouncilor* coefficient to be negative.

Finally, our third measure, *%WomenCouncilors*, is used to identify the existence of a possible tipping-point in female representation. Prior research finds greater public policy outcomes associated with a higher proportion of female representation in public office (Bjørna, 2012; Swiss *et al.*, 2012; Fernandez-Feijoo *et al.*, 2014). Overall, we expect a higher percentage of female council members to have a more pervasive impact on city council policy outcomes, rendering a negative expectation for *%WomenCouncilor* in relation to the proposition of an opt-out measure.

We estimate the following empirical model, alternating among the three gender proxies, with eight control variables using a logit regression with robust standard errors clustered by county:

$$Opt\_Out = \beta_0 + \beta_1 GenderProxy + \beta_2 CC\_Size + \beta_3 GovType + \beta_4 Meas91\_Yes$$
$$+ \beta_5 TaxRate + \beta_6 AveTaxReceipts + \beta_7 Political + \beta_8 UE\_Rate$$
$$+ \beta_9 Fin\_Sit + \varepsilon \tag{1}$$

Our dependent variable is a dichotomous variable measured as one if a city proposed a cannabis opt-out measure on the 2016 general election ballot, zero otherwise. Opt-out measures were identified across all years examined using the LOC listing of all city measures. *CC_Size* represents the size of the city council and the number of city council members as set by city charter and was obtained from the LOC directory. *CC_Size* controls for the dispersion of city policy control among the city councilors.

GovType is a categorical variable equal one if the municipality has a commission form of government, two if the city has a council-manager form, three if the city has a mayor-council form, four if the city has a strong-mayor form and zero if the city's form of government was indeterminable. The *GovType* variable controls for government form differences in the centralization of power and was obtained from LOC directory. For instance, in a mayor-council form, the mayor has more control over city policy, whereas in the council-manager form, mayoral power is diffused among the mayor and city council (Kemp, 2007). In a strong-mayor form, a subset of mayor-council form, a mayor is expected to have more power than in a general mayor-council form (also referred to as weak-mayor form), whereas in a commission form of government, the mayor will have the least amount of individual control of all forms in the sample (Kemp, 2007).

Meas91_Yes is the percentage of "yes" votes within city limits for the initial Measure 91 statewide vote that took place November 16, 2014. Measure 91 votes were obtained from individual county election records and are used in the primary analysis to control for the city's overall voter opinion on allowing cannabis operations within the city because female city councilors may be more likely to vote on a ballot measure in line with their constituents' preferences. *TaxRate* consists of each city's permanent tax rate per \$1,000 of assessed property value, controls for the city's cost of living and was obtained from the Portland State University College of Urban and Public Affairs. High tax rate cities likely have a higher cost of living and are therefore more conservative than their low tax rate neighbors. *AveTaxReceipts* is average monthly cannabis tax receipts received and is used to control for the city's fiscal incentive to not opt-out of allowing cannabis operations in city limits (i.e. allow cannabis operations in city limits). Cannabis tax receipts data were obtained from the Oregon Department of Revenue (ODOR) and are log-transformed for data analysis.

Political represents an approximation of each city's political stance and is measured as the 2016 General Election Presidential results for each city's respective county. Cities in counties where a majority of voters voted for Hillary Clinton were considered Democratic and assigned an indicator variable of one, whereas cities in counties where a majority of voters voted for Donald Trump were considered Republican and assigned an indicator variable of zero. An additional county measure, *UE_Rate*, represents the average unemployment rate for each county and is used to control for each city's economic environment. Unemployment data were obtained for 2016 from the Oregon Bureau of Labor Statistics. The final control variable, *Fin_Sit*, measures city budget constraint, and consists of the city's general fund revenue divided by general fund ending fund balance for the year ended June 30, 2016, obtained from each city's annual financial statements.

4.2 Cannabis business performance
To examine the influence of gender on cannabis business performance, we begin with a proprietary data set of all cannabis transactions in the state of Washington. This data set

includes sales and excise tax information from every cannabis organization location by license for the period January 2014 through September 2017. Based on the data available, we use sales (i.e. tax revenues) as our measure of business performance. Licensee information obtained through a public records request with the WSLCB offers information at the license level beginning in March 2014, including licensee names, issuance dates, company name and title (if the licensee is a governing member). While useful, these data provide only the *names* of the licensees, not the *gender*. To obtain gender, we again use the Gender.API platform. We obtain population and election data from public records published on the Washington Office of Financial Management and Washington Secretary of State websites, respectively.

Table I, Panel B, provides an overview of our final sample for business-specific cannabis sales. For each observation, we aggregate location-level monthly sales and taxes due for each unique license. We average city-level population and county-level political party information as some licenses have multiple locations in different cities/counties. We require each observation to have positive sales and at least one member with an identifiable gender. Our final sample consists of 13,808 license-month observations. We also perform the analysis on a subset of 1,690 observations with a president named, which represents 12 per cent of the original sample.

Table I, Panel C, illustrates that sales and both the number of members and female members increase monotonically over the sample period. However, the per cent of female

	Mayors/councilors	Cities
Panel A: Policy analysis		
Total observations as per county election results (2010-2018)	2,945	241
Less: missing names or variables	(259)	(24)
Less: gender accuracy below 80%	(99)	—
Less: member not in office at date of opt-out measure	(33)	—
Less: disincorporated cities	(7)	(1)
Less: opt-in cities	(28)	(5)
Total observations – final sample	2,519	211
Panel B: Cannabis sales		
NCS sales information (by license/month)	37,243	
Less: missing gender information	(2,973)	
Less: missing location type	(201)	
Less: sales less than or equal to 0	(10,595)	
Less: gender accuracy less than 80%	(760)	
Less: observations with no governing members	(4,973)	
Less: observations with missing variables	(3,933)	
Total license-month observations	13,808	
Subsample		
Observations with a listed President	1,690	

Panel C: Cannabis sales with gender detail

Year	Sales (in millions)	Total members	Female members	% Female	Total presidents	Female presidents	% Female
2014	33.50	263	77	29	13	0	0
2015	343.35	795	216	27	43	4	9
2016	702.83	1,298	333	26	66	7	11
2017	709.98	1,413	372	26	66	10	15
Total	1,789.66						

Table I.
Sample attrition

members decreases from 29 to 26 per cent from 2014 to 2017, in line with the trend noted by McVey (2017a, 2017c) and Cabot (2018). The number of licenses that name a president also increases monotonically over our sample period, as does the number of female presidents. The per cent of female presidents in 2017 reached 15 per cent, which is far above the US national average of approximately five per cent (Catalyst, 2018).

To determine the association between gender and the cannabis industry, we incorporate the following least squares regression using robust standard errors:

$$Lnsales_t = \beta_0 + \beta_1 Representation_{t-1} + \beta_2 Locations_{t-1} + \beta_3 Lnavgpop_{t-1}$$
$$+ \beta_4 Avgparty_{t-1} + \varepsilon \qquad (2)$$

Variable definitions are provided in Appendix 2. *LnSales* is our dependent variable, representing the total sales for each license in the state of Washington. Each individual receiving a cannabis license is allowed to operate three different forms of business, producer, processor and/or retailer, and there are differences in their tax rates. We run our analyses on the Retailer group separate from the Non-retailer (producers and processors) because the Retail businesses are selling to customers as opposed to other cannabis businesses. We use sales as opposed to taxes paid because, according to our sample, females in the cannabis industry are more associated with retail stores than producing or processing organizations and retail stores pay a much higher tax rate. Using taxes paid would bias our analysis toward finding confirmatory results. More sales will create more taxes for the state, albeit at different levels, providing a clearer picture of the influence of gender on taxes generated for the state. *Representation* is our variable of interest, for which we analyze five proxies in our model. First, *FemaleMembers* consists of the number of female members listed for each license-month observation. Second, *Members* is the number of members listed for each license-month observation. Though not a gendered variable, we are interested to see how a larger TMT impacts sales. From the *FemaleMembers* and *Members* variables, we calculate our fourth proxy, *%FemaleMembers*, which is the number of female members divided by total members. We also measure *FemaleMember*, which takes a value of one if there is at least one female member listed, and zero otherwise. Finally, we measure *FemalePresident*, which takes a value of one if a listed president is a female, and zero otherwise. This variable is used only on the subset of observations with a listed president.

We do not predict a positive or negative relationship for these variables for two reasons. First, given the mixed extant evidence on performance and gender, it is unclear how prior findings would translate to the cannabis industry. Second, we are using data from one industry, which is an inherently risky business. With research showing no differences between women- and men-led firms once risk is controlled (Robb and Watson, 2012; Mitchelmore and Rowley, 2013), we anticipate finding little to no difference in our sample.

Given the lack of available cannabis industry data, control variables are few, but we are able to control for *Locations*, which consists of the number of locations under each license. As the number of locations increases, we predict a positive relationship with sales given a greater market presence, although saturation in any given market might alternatively cause a decrease in sales. Next, we control for *Lnavgpop*, which is the natural log of the average population of cities under a license, and predict a positive relationship with sales, as the higher the population, the higher the number of potential customers. Finally, we control for *Avgparty*, which represents the political affiliation of the location. For this variable, we pulled voting information for the 2016 presidential election by county. For those counties that voted primarily Democrat, we assigned a value of one. For those that voted Republican,

we assigned a value of zero. Because there can be multiple locations under one license, we average the score for counties to obtain a continuous variable. We predict a positive relationship with *Avgparty* and sales, as the Democratic Party tends to be more aligned with the legalization of the cannabis industry (Angell, 2018).

5. Results

5.1 Descriptive statistics

Table II, Panel A, presents descriptive statistics for our policy analysis sample. A total of 24 per cent of all cities have a female mayor, whereas over 87 per cent have a female councilor. At rates much higher than that of corporate boards, OR city council positions are 36 per cent female. In our sample, only 49 per cent of voters voted affirmatively for Measure 91 opposed to 56 per cent statewide (untabulated)[3]. Property tax rates average around 3.5 per $1,000 in assessed property value.

Table II, Panel B, presents the descriptive statistics for the full sample of Washington cannabis operators. Mean sales per month (in actual dollars) is $129,610 for the full sample. Although not included in our model, our sample exhibits average cannabis excise tax receipts of $31,128 per month. A license has, on average, one location, three licensees, two members and one female member. Of those licenses with a named president, 12 per cent have a female president. *Avgparty* has a mean of 0.524, indicating these businesses are in areas that lean very slightly Democrat.

Variable	N	Mean	Med	Minimum	Maximum	SD
Panel A: Policy analysis						
FemaleMayor	211	0.242	0	0	1	0.429
WomanCouncilor	211	0.872	1	0	1	0.335
% WomenCouncilors	211	0.363	0.333	0.000	1.000	0.254
CC_Size	211	6.483	7.000	5.000	10.000	1.034
GovType	211	2.431	2.000	0.000	4.000	0.616
Meas91_Yes	211	0.493	0.500	0.236	0.860	0.099
TaxRate	211	3.578	3.500	0.000	10.620	2.208
AveTaxReceipts	211	3,001.17	489.140	30.790	148,717.30	11,405.23
Political	211	0.275	0.000	0.000	1.000	0.448
UE_Rate	211	5.549	5.500	3.600	6.700	0.691
Fin_Sit	211	3.181	2.182	−1.984	39.883	4.763
Panel B: Cannabis sales						
Gross_sales	13,808	129,610	0	68,835	2,448,084	182,777
Excise_tax	13,808	31,128	(5,625)	–	771,898	60,950
FemaleMembers	13,808	0.642	0.000	0.000	11.000	1.238
Members	13,808	2.459	1.000	2.000	29.000	2.825
FemaleMember	13,808	0.432	–	–	1	0.495
%FemaleMembers	13,808	0.237	–	–	1	0.320
FemalePresident	1,690	0.117	0.000	0.000	1.000	0.321
Locations	13,808	1.017	1.000	1.000	4.000	0.140
Avgpop	13,808	120,677	210	33,510	713,700	199,291
Avgparty	13,808	0.524	–	1	1	0.497
Retailer	13,808	0.381	–	–	1	0.486
Licensees	13,808	3.398	1.000	2.000	53.000	4.241

Table II.
Descriptive statistics

Note: All variables are defined in Appendix 1

5.2 Correlations
Table III presents the sample correlations for our policy analysis (Panel A) and our organizational sales analysis (Panel B). Our three gender diversity proxies (*FemaleMayor*, *WomanCouncilor* and *%WomenCouncilor*) are negatively correlated with the existence of a city opt-out measure. All three gender diversity proxies are positively correlated with each other, indicating that these proxies may be measuring similar gender diversity aspects of the city council, or that such aspects are contagious. Average cannabis tax receipts (*lnAveTaxReceipts*) are positively correlated with the existence of an opt-out measure, indicating that larger cities are more apt to propose an opt-out measure to the voters. Interestingly, this also indicates that cities that propose an opt-out measure are those receiving relatively more tax dollars. Measure 91 voter support (*Meas91_Yes*) is significantly correlated with average cannabis tax receipts, more Democratic cities and lower unemployment rates, indicating that cities with higher "yes" votes for Measure 91 also receive more tax revenue, are more liberal and experience lower unemployment.

As indicated in Panel B, there appears to be no obvious relationship between gender and sales, as the correlations between *FemaleMembers* and *FemalePresident* and *Lnsales* are positive and significant, *FemaleMember* and *Lnsales* are significantly negatively correlated, whereas the correlation between *%FemaleMembers* and *Lnsales* is insignificant. *Members* and *FemaleMembers* are positively and significantly related to *Lnsales*, indicating an increase in sales as the number of members increases, regardless of gender. As expected, *Retailer* and *Lnsales* have a positive and significant relationship, indicating that retail locations produce higher sales. Again, while we do not rely on taxes in our regression analysis, *FemaleMembers*, *FemalePresident*, *FemaleMember* and *%FemaleMembers* are all positively correlated with taxes due, indicating that female leadership is generating more tax revenue for the state.

5.3 Regressions – policy adoption
We estimate our logit regression model examining the influence of female city leadership with cannabis policy implementation using robust standard errors, clustered by county. Table IV presents the results of a regression of city cannabis opt-out measure using all gender diversity proxies. In Column 1, the coefficient on *FemaleMayor* is significantly negative, indicating that cities with a female mayor reduce the odds of having a cannabis opt-out measure by 73 per cent ($=\exp(-1.319) - 1$), as expected. This evidence is supportive of the hypothesis that cities with more female representation on the city council are less likely to place a cannabis opt-out measure on the ballot (*H1*). City property tax rates (*TaxRate*) is positively related to an opt-out measure, indicating that opt-out cities typically have a higher cost of living than non-opt-out cities. Additionally, *lnAveTaxReceipts* is significantly positive, indicating that revenues generated from cannabis taxes prior to the opt-out measure are likely not a significant driver in the council decision to allow cannabis operations within city limits. This result is surprising and may indicate that alternative motivations unrelated to revenue generation are at play by female city councilors. Another factor that does not appear to be the underlying motivation is that of overall voter preference, as indicated by the lack of significance of *Meas91_Yes*. Female leadership does not seem to be influenced by the desires of citizens, but more by the social and economic benefits for the community they serve. This finding suggests that the upper echelon of city government is not likely to simply implement policies based on voter preference, rather they are potentially driven by their own preferences for what may benefit their city.

Results in Column 2 indicate that having at least one female councilor (*WomanCouncilor*) on the city council influences the opt-out decision, and, according to Column 3, a greater percentage of women councilors (*%WomenCouncilors*) is significantly related to allowing

Table III.
Correlations

Variable	1	2	3	4	5	6	7	8	9	10	11	12
Panel A: Policy analysis												
1. *Opt_Out*	1											
2. *FemaleMayor*	−0.176**	1										
3. *WomanCouncilor*	−0.158**	0.216***	1									
4. *%WomenCouncilors*	−0.165**	0.131*	0.548***	1								
5. *CC_Size*	0.014	−0.071	0.056	−0.105	1							
6. *GovType*	0.009	−0.036	0.107	0.226***	−0.157**	1						
7. *Meas91_Yes*	−0.06	0.075	0.065	−0.066	0.004	−0.194***	1					
8. *TaxRate*	0.113	0.07	−0.11	−0.027	0.081	−0.132*	−0.002	1				
9. *lnAveTaxReceipts*	0.140**	−0.053	−0.099	−0.289***	0.303***	−0.431***	0.358***	0.156**	1			
10. *Political*	0.005	−0.075	0.013	−0.071	−0.062	−0.207***	0.445***	0.037	0.360***	1		
11. *UE_Rate*	0.041	0.015	−0.049	−0.041	0.056	0.129*	−0.118*	0.1	−0.131*	−0.478***	1	
12. *Fin_Sit*	−0.109	0.112	0.058	0.134*	0.069	−0.047	0.006	0.137**	−0.001	−0.032	0.004	1
Panel B: Cannabis sales												
1. *Lnsales*	1											
2. *FemaleMembers*	0.026**	1										
3. *Members*	0.048***	0.819***	1									
4. *%FemaleMembers*	−0.011	0.482***	0.067***	1								
5. *FemaleMember*	−0.025**	0.595***	0.288***	0.850***	1							
6. *FemalePresident*	0.052**	0.149***	−0.091***	0.578***	0.349***	1						
7. *Locations*	−0.001	0.011	−0.022**	0.056***	0.030***	0.174***	1					
8. *Avgpop*	0.158***	−0.070***	−0.001	−0.100***	−0.118***	0.004	0.054***	1				
9. *Avgparty*	0.211***	−0.014	0.056***	−0.089***	−0.115***	−0.036	0.036***	0.344***	1			
10. *Lntaxdue*	0.503***	0.037***	−0.073***	0.147***	0.079***	0.174***	0.041***	0.159***	0.204***	1		
11. *Retailer*	0.480***	0.043***	−0.082***	0.178***	0.099***	0.1990***	0.054***	0.152***	0.214***	0.914***	1	

Notes: Statistical significance at the 1, 5 and 10% levels is denoted by ***, ** and *, respectively. All variables are defined in Appendix 1 and Appendix 2

Variables	Predicted sign	(1)	(2)	(3)
FemaleMayor	−	−1.319***		
		(0.4806)		
WomanCouncilor	−		−0.7173*	
			(0.3952)	
%WomenCouncilors	−			−1.3649**
				(0.6493)
CC_Size	−	−0.1222	−0.0626	−0.1038
		(0.1463)	(0.1554)	(0.1441)
GovType	?	0.3539	0.4349	0.4839
		(0.3497)	(0.3298)	(0.3245)
Meas91_Yes	−	−3.5263	−3.5969	−3.64491
		(2.6583)	(2.4352)	(2.3347)
TaxRate	+	0.1794**	0.1387	0.1624*
		(0.0848)	(0.0907)	(0.0863)
lnAveTaxReceipts	−	0.3943*	0.3849*	0.3689*
		(0.2050)	(0.2078)	(0.2043)
Political	+	0.0160	0.1057	0.0553
		(0.5615)	(0.5152)	(0.4939)
UE_Rate	+	0.1490	0.1451	0.1141
		(0.3464)	(0.3360)	(0.3191)
Fin_Sit	+	−0.2415	−0.2422	−0.2287
		(0.1599)	(0.1599)	(0.1584)
Intercept		−3.0077	−2.9650	−2.7828
		(2.3960)	(2.3909)	(2.316)
N		211	211	211
Adj-R^2		0.115	0.095	0.098

Notes: This table presents the results from a logit regression in which the dependent variable is if the city council approved and submitted an opt-out ballot measure for the 2016 general election in Oregon. All variables are defined in Appendix 1. Robust standard errors clustered by county are presented in parentheses. Statistical significance (two-sided) at the 1, 5 and 10% levels is denoted by ***, ** and *, respectively

Table IV.
Regression results for the influence of gender on cannabis policy adoption

cannabis within a given city, albeit only at the 5 and 10 per cent levels, respectively. Specifically, cities with at least one female councilor are 51 per cent (exp(−0.7173) − 1) less likely to have an opt-out measure, whereas the likelihood that a city has an opt-out measure decreases as the number of female city councilors increases. Both results provide additional support for *H1*, and are consistent with the existence of a tipping-point in female representation.

An alternative explanation to our results is that female mayors and councilors are more likely to be elected in a city with a more liberal electorate and that such an electorate would also be more likely to allow cannabis. Therefore, we also incorporate a Heckman (1978) two-stage model in which the first stage models the likelihood that a municipality elects a female councilor/mayor based on political environment, which we use to extract the inverse mills ratio for the second-stage regressions. After controlling for potential selection bias, our results remain consistent.

5.4 Regressions – cannabis business performance
We estimate an OLS regression examining the influence of gender on cannabis sales using White's robust standard errors. Table V presents the results of this analysis by license type

Table V.
Regression results
for the influence of
gender on sales:
comparison by
license type

Variables	Pred. sign	Retailer					Non-Retailer				
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
FemaleMembers	?	−0.0629***					0.0665***				
		(0.0088)					(0.0112)				
Members	?		0.0011					0.0640***			
			(0.0044)					(0.0050)			
%FemaleMembers	?			−0.2895***					−0.5784***		
				(0.0353)					(0.0680)		
FemaleMember	?				−0.2395***					−0.1355***	
					(0.0290)					(0.0390)	
FemalePresident	?					0.4343***					−0.8001***
						(0.1041)					(0.1739)
Locations	+	−0.2548**	−0.2643**	−0.2192**	−0.2421**	−0.6148	−0.5877***	−0.5610***	−0.5209***	−0.5550***	−1.2119***
		(0.1047)	(0.1051)	(0.1049)	(0.1047)	(0.5044)	(0.1879)	(0.1878)	(0.1850)	(0.1866)	(0.2634)
Lnavgpop	+	0.1541***	0.1621***	0.1519***	0.1504***	0.1610***	0.0855***	0.0825***	0.0818***	0.0836***	0.0682***
		(0.0085)	(0.0084)	(0.0085)	(0.0086)	(0.0360)	(0.0114)	(0.0114)	(0.0114)	(0.0114)	(0.0242)
Avgparty	+	−0.0091	−0.0007	−0.0403	−0.0379	−0.2772***	0.3511***	0.3201***	0.3457***	0.3468***	0.9408***
		(0.0262)	(0.0262)	(0.0272)	(0.0269)	(0.0840)	(0.0417)	(0.0414)	(0.0413)	(0.0418)	(0.1173)
Constant		10.5561***	10.4270***	10.6087***	10.6757***	10.6073***	9.7210***	9.6090***	9.8442***	9.8025***	10.5662***
		(0.1425)	(0.1427)	(0.1415)	(0.1436)	(0.6358)	(0.2149)	(0.2148)	(0.2107)	(0.2132)	(0.2990)
N		5,266	5,266	5,266	5,266	574	8,542	8,542	8,542	8,542	1,116
Adj. R-sq.		0.081	0.076	0.086	0.089	0.033	0.028	0.039	0.034	0.027	0.082

Notes: This table provides the results of OLS regression where the dependent variable is Lnsales. Each regression is run for the Retailer group, and Non-retailer group (producers and processors). The variables of interest are FemaleMembers (Columns 1 and 6), Members (Columns 2 and 7), %FemaleMembers (Columns 3 and 8), FemaleMember (Columns 4 and 9), and FemalePresident (Columns 5 and 10). Locations, Lnavgpop and Avgparty serve as control variables. All variables are defined in Appendix 2. White's robust standard errors are presented in parentheses. Statistical significance (two-sided) at the 1, 5 and 10% levels is denoted by ***, ** and *, respectively

(Retailer vs Non-retailer). The evidence, though mixed, supports the rejection of the hypothesis that gender does not play a role in cannabis sales. Similar to our univariate results, Columns 6 and 7 report that greater numbers of *FemaleMembers* and greater numbers of overall members (*Members*) significantly improve cannabis sales in non-retail locations. However, greater numbers of *FemaleMembers* significantly hinder sales for *Retailer* locations (Column 1), whereas the number of *Members* has no impact (Column 2). With respect to the proportion of female members in cannabis organizations, results in Columns (3) and (8) indicate that a greater proportion of female members is associated with lower sales in all locations. Columns (4) and (9) suggest that just having a female member as part of an organization is not enough to increase sales, rather than simply having a female member is associated with less sales. Finally, *FemalePresident*, as presented in Column (5), is positively associated with 54 per cent ($\exp(0.4343) - 1$) greater sales in a retail setting, indicating that having a female president, similar to the CEO of a public firm, significantly improves sales. However, Column (10) suggests that non-retail businesses with a female president earn less than those with a male president.

Overall, our results indicate that the degree of influence gender plays in operations is dependent on the license type. There is initial support for the notion that female cannabis operators, when not facing the normal glass ceilings found in more established, less risky industries, are able to operate successfully in a cannabis retail environment. To address the possibility that a woman may self-select into the cannabis industry, specifically in a governing position, we use a two-stage Heckman analysis (Heckman, 1978). In the first stage, we use a probit model to determine the likelihood of female representation (*Femalemember* or *FemalePresident)*. We use the number of licensees (*Licensees*) as the additional exogenous variable in this first stage. The number of licensees should increase the likelihood of a female member or president as a member is also a licensee, but it should not be related to sales as licensees do not have a say in how the business is run. We use the inverse mills ratio from the first stage in the second stage to control for the self-selection bias, after which our results remain consistent. These findings support those found in Dwyer *et al.* (2003), whereby an organization with gender diversity in management performs better in a high-growth versus a low-growth industry. The findings also suggest that women should consider a more prominent position in the industry, despite the increased risk profile, over the more female-dominated ancillary positions (McVey, 2017a). As this industry grows, it will be interesting to see if there continues to be a rise in female occupation of the President position, or if we see a trend toward greater entry by men into these organizations.

6. Conclusion
As US states continue to face budget shortfalls, with decreasing federal economic support, significant tax revenues become more appealing. Within the USA, cannabis is one of the most highly taxed goods on the market, with economic benefits distributed only to legal states and jurisdictions. As individual states continue to legalize adult-use cannabis and other non-legal states witness these significant tax receipts and social program benefits, such as schools, infrastructure and health care, non-legal states will have to decide whether these benefits outweigh their struggles with the federal government. In the USA, where cannabis can only be legal at the state level, while remaining federally illegal and punishable by prison, it is an important accounting question what factors influence the decision to allow adult-use cannabis and what factors increase the tax revenues from cannabis sales.

One factor that potentially influences both decisions is gender. Anecdotal evidence suggests that women have greater representation in and influence on the development of the cannabis industry than in other, more established and less risky industries. Because of the

infancy of the industry, very little data are available for analysis, so we embark on an exploratory study to examine the influence of gender on cannabis policy implementation and sales. We approach our study by incorporating hand collection, records requests and a proprietary data set in two different adult-use legal states. Overall, our results indicate that, in states where cannabis is legal, but cities can still opt out of legalization, a female mayor and a city council with a greater percentage of female councilors are more likely to support cannabis legalization even when the option to opt out is available. We also find that once cannabis is legal, businesses with a greater number of female members are associated with greater sales, when that female member is in a cannabis organization related to producing or processing (i.e. not a retailer). Further, we find that cannabis producing and processing businesses with a greater number of members in general (i.e. both male and female) also experience greater sales, which supports the idea that a larger top management team is more productive within cannabis organizations. Finally, we find that cannabis retail organizations with female presidents experience greater sales. Our findings provide initial evidence that gender plays a role in generating greater tax revenues for states, which in turn provides more state finances toward social programs for children, those in need and for other state programs which have dissolved over the years because of inadequate funding.

Our results also appear contrary to prior literature that asserts females are risk-averse, displaying larger representation and influence in a very risky industry, which may indicate an appetite for uncertainty and risk common in the cannabis industry. Given the void in historical data for cannabis markets, especially as they relate to the norms, cultures and government and health-care structures in the USA, longitudinal analysis will be necessary to accurately measure the broader social implications from the influence of gender on cannabis legalization and we call on future research to examine these issues. Additionally, many of the social benefits from cannabis legalization substantially impact communities disproportionally burdened by former prohibition. We encourage future research to examine this issue more extensively, focusing on both the benefits to marginalized communities and the continued obstacles to cannabis industry participation, as disproportionate social benefits resulting from policy is an important issue globally, and to the SAMPJ community specifically. Finally, given the conflicting findings in our paper, we recognize there may be limits to existing theory with respect to gender in the cannabis industry and suggest further theoretical development as an another avenue for future research.

Our study is certainly not without limitations. First, the cannabis industry is in an infancy stage and the publicly available data for academic research is minimal given that public business-specific reporting is non-existent. While we somewhat overcome this obstacle with hand collection, records requests and proprietary agreements, there are numerous issues we cannot examine and factors for which we cannot control. As the industry develops and normalizes, this issue will likely resolve itself. Second, because of limited data, we are unable to completely control for endogeneity and self-selection bias, preventing us from drawing strong conclusions about the direction of causality. We have incorporated lagged independent variables when possible and Heckman analyses, which do provide some level of confidence in our results.

Third, we focus our research on the unique cannabis market within the USA. The recent country-level legalization within Canada provides an opportunity to examine similar gender issues within the Canada-specific legalized market. Canada, unlike the USA, is much more corporatized, with significant investment from big-business and mainstream economic participants. Canada does not face the same stigmatization as the USA and peripheral organizations (e.g. banks, insurance companies, plumbers) are allowed to enter transactions with cannabis operators without the fear of federal prosecution. It would be interesting to

determine whether women play a prominent role in the Canadian cannabis markets, and whether the female influence on policy decisions (e.g. Ontario has given local governments an opt-out choice similar to that in our study in the USA) and organizational economic performance that we find in the USA is persistent in Canada.

Fourth, we incorporate a binary variable in our analysis for gender. We recognize there are individuals who identify with gender in a non-binary way, yet we do not have the ability to make those determinations. If our gender variable were more inclusive and broader, our results might be different. Additionally, we recognize that gender, in a more general masculine and feminine continuum, might also be more informative, as individuals within gender categories do not act uniformly. Finally, as previously discussed, the cannabis industry is in such an early stage of its development that many things are likely to change over a short period of time. Evidence suggests that, while women have considerable representation at this time, those percentages are decreasing in some areas. We call on future research to re-examine these issues in the future, as states normalize their regulation and processes or when cannabis becomes federally legal and the fluctuations in female representation level out. It will be interesting to determine whether the glass ceiling found in so many other industries develops in the cannabis industry over time.

Notes

1. While in legal documentation, cannabis is often referred to as marijuana, the common nomenclature within the industry is cannabis (Romi *et al.*, 2019). Therefore, we use the term cannabis. Additionally, adult-use is also referred to as "recreational," or non-medicinal, allowing open sale and consumption without the need for a prescription (Romi *et al.*, 2019).

2. We use the term "gender" to refer to a person's biological status, categorizing them as female or male, though such a differentiation is formally called "sex" (Hardies and Khalifa, 2018).

3. This discrepancy arises from the loss of 14 city observations due to unobtainable Measure 91 results as many small cities compiled election results by precinct, not by city limits, making applicable vote determination impossible. This omission biases against finding results.

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Appendix 1

Variable name	Description
Opt_Out	An indicator variable equal to 1 if the city presented a measure to explicitly prohibit recreational cannabis operations within the city in the 2016 general election; 0 otherwise
FemaleMayor	An indicator variable equal to 1 if a female mayor was on the city council 60 days prior to the date of the potential opt-out measure (November 8, 2016); 0 otherwise
WomanCouncilor	An indicator variable equal to 1 if there was at least one female on the city council 60 days prior to the date of the potential opt-out; 0 otherwise
%WomenCouncilors	The percentage of women on the city council (excluding mayor) 60 days prior to the potential opt-out measure
CC_Size	Number of members on the city council (including the mayor)
GovType	Categorical variable representing the structural form of the city assigned as follows: 1 if commission form of government, 2 if council-manager form, 3 if mayor-council form, 4 if strong mayor form and 0 if indeterminable
Meas91_Yes	Proportion of city residents voting "yes" for Oregon State Measure 91 (Nov. 4, 2014)
TaxRate	The city's permanent property tax rate per $1,000 assessed value
AveTaxReceipts	Average monthly cannabis tax distributions to the city (10% of all state tax receipts) from the State of Oregon as of two months prior to the potential city initiated opt-out measure
Political	An indicator variable representing average political affiliation in the respective county, where Democrat is equal to 1 and Republican is equal to 0
UE_Rate	Average unemployment rate in the respective county
Fin_Sit	General fund revenue divided by general fund total fund balance

Table AI.
Variable definitions
for cannabis policy
adoption

Appendix 2

Variable name	Description
Lnsales	The natural log of *Gross_sales*
FemaleMembers	Number of female governing members
Members	Number of governing members
FemaleMember	Indicator variable = 1 if at least one female member, 0 otherwise
%FemaleMembers	Proportion of female governing members, female members/members (calculation)
FemalePresident	Indicator variable = 1 if listed president is female, 0 otherwise
Locations	Number of locations under a license
Retailer	Indicator variable = 1 if license is a retail license, 0 otherwise
Avgpop	Average city population of locations under a license. This is logged in the models: *Lnavgpop*
Avgparty	Average political affiliation, where Democrat = 1 and Republican = 0
Gross_sales	Gross cannabis sales
Excise_tax	Excise taxes due based on cannabis sales
Lntaxdue	The natural log of *Excise_tax*
Licensees	Number of licensees

Table AII.
Variable definitions for the influence of gender on cannabis sales

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