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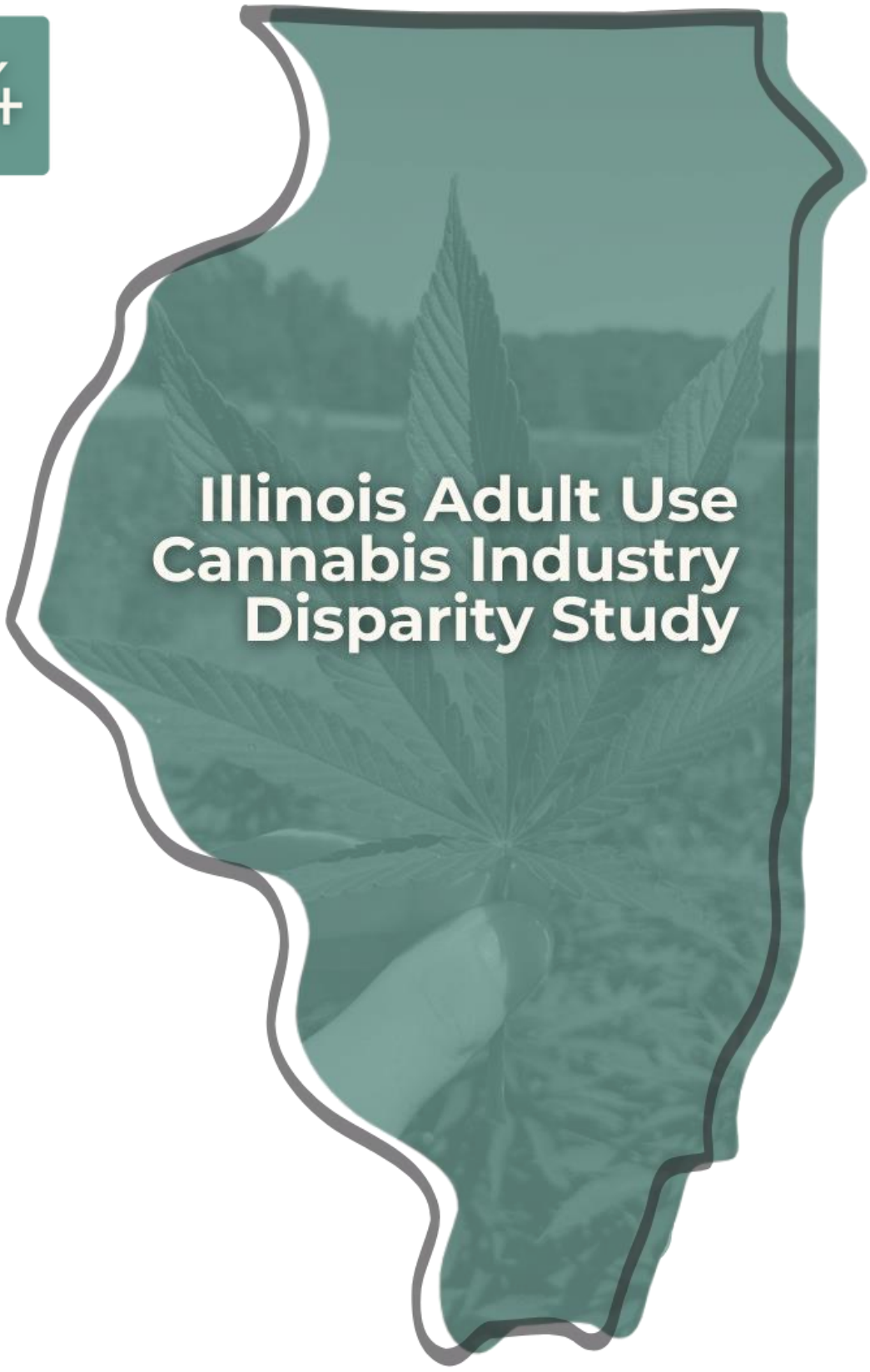

Illinois Adult Use Cannabis Industry Disparity Study

ILLINOIS CROO
CANNABIS REGULATION OVERSIGHT OFFICE

NEREVU

Illinois
Adult Use Cannabis Industry Disparity Study Report

- 2024 -

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The Study Team

Nerevu Group (pronounced {nay-RAY-voo}) is a data analytics firm that helps organizations uncover the insights hidden in their real-time data. With a focus on development, data intelligence, and data strategy, Nerevu ushers its clients into the data-driven future. By automating manual processes, simplifying business analytics, and integrating data silos, Nerevu empowers its clients to improve their operations and drive growth.

CW Financial and Management Group, is an Illinois-based service-disabled veteran-owned small business (SDVOSB). A State of Illinois' Central Management Services Minority Owned Small Business, CWFM Group helps customers solve complex challenges and create the outcomes they desire. With expertise in accounting, budgeting, auditing, process design and improvement, healthcare administration, financial analytics, Supply Chain Management, and many other areas of administration, CWFM Group served as the project manager for the Illinois Adult Use Cannabis Industry Disparity Study.

The Dorsey Law Office, P.C. (DLO) is an Illinois-certified Business Enterprise Program MBE which concentrates its practice on providing government clientele with policy development and regulatory implication analysis. DLO assists both select public and private organizations with feasibility analysis, property retention, acquisition and conveyance, and relationship management services that facilitate clients' goals and objectives. Through its principal, it is a part of the Illinois State Bar and is licensed in the Federal District Court of Central Illinois. With extensive experience, DLO provided the analysis instrumental to the accurate articulation of issues fundamental to the formulation and implementation of appropriate legal strategies.

Tanoma Consulting, LLC is a national consulting firm providing transformative culturally responsive research, evaluation, and capacity-building services to advance health, education, and workforce equity through a lens of racial justice and equity by emphasizing holistic, upstream, trauma-informed, and empathy-building. Led by Lisa Aponte-Soto, Ph.D., MHA, Tanoma's disparity research team included Ana Herrera, Ph.D., MPH, Emely Medina-Rodríguez, Ph.D., MA, Mislael Valentín-Cortés, MPH, MSW, Ph.D., Maya Diaz, MA, Haley Beck, MA, Paola Torres, MPH, Riley Coesens, and Javier Arellano.

Applied Economics Clinic (AEC) is a mission-based non-profit consulting group offering expert services in the areas of energy, environment, consumer protection, and equity. AEC's team, under the guidance of Elizabeth A. Stanton, Ph.D., included, Bryndis Woods, Ph.D., Tanya Stasio, Ph.D., Jordan Burt, Deja Garraway, Nayantara Biswas, and Alannah Shute.

Richard M. Juang, J.D., is an attorney with the Law Office of Richard M. Juang.

Jean Lacy is a policy expert, independent consultant, and the Founder of the Illinois Psychedelic Society, advocating for safe access and sensible, equitable drug policy in Illinois.

Acknowledgments

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I. EXECUTIVE SUMMARY

In June 2019, Illinois passed the Cannabis Regulation and Tax Act (CRTA) to provide benefits and business opportunities "to individuals most directly and adversely impacted by the enforcement of cannabis-related laws who are interested in starting cannabis business establishments."[1] Acknowledged by the Governor and General Assembly, the disproportionate impact of cannabis prohibition on racial and ethnic minoritized communities fueled the drafting of the CRTA and a policy to promote equity and investment in these communities.[2] The race-neutral policy, known as social equity, included provisions for community reinvestment, funding and support for new entrants to the cannabis market, and expungement of criminal records related to cannabis possession up to certain amounts.[3,4]

The CRTA legalized adult use cannabis sales beginning at the start of 2020. By the end of 2022, the State of Illinois awarded over 550 adult use cannabis licenses to over 400 businesses, the majority of which were owned by women or racial and/or ethnic minorities.

Pursuant to the CRTA, the Cannabis Regulation Oversight Officer (CROO) selected Nerevu Group (Nerevu) to conduct a disparity study to evaluate "whether there exists discrimination in the State of Illinois' cannabis industry" and if so, "evaluate the impact of such discrimination" and provide "recommendations for reducing or eliminating any identified barriers to entry in the cannabis market."[5]

We analyzed all five adult use cannabis license types—dispensing organizations, craft growers, infusing organizations, transporting organizations, and cultivation centers—across all licensing rounds within the study period of January 1, 2020, to January 31, 2023. This thorough analysis provided insights into the distribution and disparities within the cannabis industry's licensing process in Illinois.

A. Legal Framework

As mandated by the CRTA, this disparity study conforms to the legal foundations established by the U.S. Supreme Court, which are outlined in federal guidelines and applied in previous State of Illinois disparity studies.[6] Under the Equal Protection Clause of the Fourteenth Amendment to the U.S. Constitution, no state shall deny any person within its jurisdiction the equal protection of the laws. Generally, government policies must withstand "strict scrutiny" or "intermediate scrutiny" to

[1] Illinois General Assembly, "410 ILCS 705/7-1 Cannabis Regulation and Tax Act," June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.
[2] State of Illinois, "Gov. Pritzker Signs Most Equity-Centric Law in Nation to Legalize Adult-Use Cannabis," June 25, 2019, accessed December 11, 2023, https://www.illinois.gov/news/press-release.20242.html.
[3] Chapter III BACKGROUND provides a detailed history of the CRTA.
[4] Chapter IV CANNABIS REGULATION IN ILLINOIS provides a detailed review of the CRTA's social equity provisions.
[5] Illinois General Assembly, "410 ILCS 705/5-45(e) Cannabis Regulation and Tax Act," June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.
[6] Chapter II DISPARITY STUDY LEGAL STANDARDS provides a detailed description of the legal framework applicable to the study.

survive constitutional challenges regarding race- or gender-based discrimination. In *City of Richmond v. J.A. Croson Co.,* the Supreme Court outlined the "strict scrutiny" standard for reviewing race-based government policies, which requires a compelling government interest in adopting such a policy and a narrowly tailored remedy for furthering that government interest.[7] Gender-based policies face an “intermediate scrutiny” analysis, demanding an exceedingly persuasive justification and substantial relationship between the policy and its objective.[8] For this study, we employ a rigorous analysis akin to strict scrutiny for both race and gender aspects, ensuring a comprehensive examination of disparities and informing corrective measures within the Illinois cannabis industry. Additionally, we discuss rational basis scrutiny and its applicability to classifications, such as Social Equity Applicants (SEAs), that are unrelated to race, ethnicity, religion, national origin, or gender.

As further defined in Chapter II. DISPARITY STUDY LEGAL STANDARDS, it is crucial to distinguish between disparity and discrimination. Disparity refers to one or more quantifiable difference(s) between two or more defined groups.[9] Within the context of this research, we examined disparities among different participant groups to ascertain whether the market composition accurately mirrors the diversity of ready, willing, and able market participants.[10]

Discrimination is the unjust or prejudicial treatment of people based on race, ethnicity, religious beliefs, military status, gender identity, etc.[11] This includes systemic barriers, explicit policies, and the absence thereof, which can lead to unequal access to opportunities, services, systems, and resources, thereby producing a disparate impact, such as the inequitable distribution of licenses.[12]

In this study, we gathered extensive quantitative data from various sources—federal, state, and private. We then analyzed the demographics of the Illinois cannabis and related industries and identified disparities by race, ethnicity, and/or gender in the Illinois cannabis industry relative to suitable comparison groups. We complemented this analysis with qualitative data from 200 industry leaders, cannabis licensees, and cannabis license applicants who participated in a series of interviews and focus groups.

We also analyzed survey results from cannabis licensees and applicants to identify whether disparities were the result of discrimination. The analysis incorporates over 200 survey responses from the 2023 CROO Diversity Survey and a separate cannabis applicant survey, totaling 216 responses. Overall, the data from the CROO Survey involved 156 responses, while the Nerevu Survey included 60 responses, each contributing to a comprehensive overview of the cannabis industry as of 2023.

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[7] *City of Richmond v. J. A. Croson Co*., 488 U.S. 469 (1989), accessed December 19, 2023, https://supreme.justia.com/cases/federal/us/488/469.
[8] *United States v. Virginia*, 518 U.S. 515 (1996), accessed December 19, 2023, https://supreme.justia.com/cases/federal/us/518/515/.
[9] *Merriam-Webster.com Dictionary*, s.v. “disparity,” accessed March 30, 2024, https://www.merriam-webster.com/dictionary/disparity.
[10] See §V.D. Availability for further explanation.
[11] *Merriam-Webster.com Dictionary*, s.v. “discrimination,” accessed March 30, 2024, https://www.merriam-webster.com/dictionary/discrimination.
[12] See §II.A. Legal Definitions and Tests for additional details.

B. Utilization, Availability, and Disparity Analysis

We analyzed licensing and sales data for Illinois Department of Professional and Financial Regulation (IDFPR) and Illinois Department of Agriculture (IDOA) adult use cannabis licenses awarded from January 2020 through January 2023. We additionally analyzed medical cannabis data for the same period.[13] The resulting Final License Data File (FLDF) contained 559 awarded adult use licenses, 76 medical licenses, $4,553,033,743 in adult use sales, and $2,475,119,940 in medical sales over the study period.

Table I-1 provides a breakdown of awarded adult use licenses and sales by license type. During the study period, only dispensaries and cultivation centers recorded any sales. Early approval adult use licensees generated a significant portion of the dispensary sales (see Table V-16). Early approval adult use licenses were issued to existing medical cannabis dispensaries and cultivation centers in 2020 and 2021. Although craft grower, infuser, and transporter licensees were issued during the study period, they did not generate revenue during the study period as the first new entry adult use licensees did not become operational until October 2022 (near the end of the study period).

Table I-1. Distribution of Adult Use Cannabis Licenses and Sales (Jan 2020–Jan 2023)

License Type	Awarded Licenses	Percent Awarded Licenses	Total Adult Use Sales ($ millions)	Percent Total Sales
Dispensary	308	55.1%	$3,725.05	81.8%
Craft Grower	88	15.7%	$0.00	0.0%
Infuser	56	10.0%	$0.00	0.0%
Transporter	86	15.4%	$0.00	0.0%
Cultivation	21	3.8%	$827.98	18.2%
Total	**559**	**100.0%**	**$4,553.03**	**100.0%**

Source: Nerevu analysis of IDFPR and IDOA data. Few to no craft grower, infuser, and transporter licensees were operational during the study period and thus had no revenue or sales.

Table I-2 provides a breakdown of awarded medical licenses and sales by license type.

Table I-2. Distribution of Medical Cannabis Licenses and Sales (Jan 2020–Jan 2023)

License Type	Total Licenses	Pct Awarded Licenses	Total Medical Sales ($ millions)	Pct Total Sales
Dispensary	55	72.4%	$1,142.68	46.2%
Cultivation	21	27.6%	$1,332.44	53.8%

[13] To conduct the analysis, we constructed missing fields (e.g., zip codes and demographic information) where necessary in IDFPR and IDOA data.

License Type	Total Licenses	Pct Awarded Licenses	Total Medical Sales ($ millions)	Pct Total Sales
Total	**76**	**100.0%**	**$2,475.12**	**100.0%**

Source: Nerevu analysis of IDFPR and IDOA data. IDOA and IDFPR awarded medical licenses between 2015 and 2020.

Racial and/or ethnic Minority- and Woman-owned Business Enterprises (M/WBEs) received over 50% of the newly issued adult use cannabis licenses using the social equity policies adopted in the CRTA (see Table I-3).[14,15] Cultivation centers, which are not part of these new licenses, are less diverse at 14% M/WBE ownership (see Table I-3).

In this study, we performed "weighted" and "unweighted" utilization, availability, and disparity analyses. Weighted analysis adjusts for sales, whereas unweighted analysis only considers the count of license holders, licenses, or applications (see §V.C. Quantitative Methodology for further explanation and calculations).

In calculating utilization and availability rates, we assigned firm demographics by majority-ownership (50% or more) by specific racial, ethnic, and gender groups. This approach accurately assesses the representation of these groups within the industry and ensures the analysis reflects true ownership and control dynamics. §V.E. Utilization provides the complete utilization results and analysis.

[14] The term "Minority-and-Women-Owned Business Enterprise" refers to businesses where more than 50% ownership is held by individuals or groups identifying as female, Hispanic, Latino, Spanish, or belonging to a non-White racial category. We define "non-White" in accordance with the U.S. Census Bureau's classification which includes Black or African American, American Indian or Alaska Native, Asian, and Native Hawaiian or Other Pacific Islander races. We also include as non-White individuals who have identified their race as "Other."

[15] US Census Bureau, “About the Topic of Race,” Census.gov, March 1, 2022, accessed December 11, 2023, https://www.census.gov/topics/population/race/about.html.

Table I-3. Utilization Rate #1 [Unweighted] Adult Use Cannabis License Holder Distribution[16,17,18]

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	37.7%	5.5%	0.0%	4.4%	6.0%	53.6%	5.5%	59.0%	35.5%	5.5%
Craft Grower	45.1%	1.2%	0.0%	6.1%	8.5%	61.0%	2.4%	63.4%	26.8%	9.8%
Infuser	26.8%	8.9%	0.0%	10.7%	8.9%	55.4%	5.4%	60.7%	32.1%	7.1%
Transporter	54.8%	4.8%	1.2%	7.1%	1.2%	69.0%	4.8%	73.8%	20.2%	6.0%
Cultivation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	14.3%	76.2%	9.5%

Source: Nerevu analysis of IDFPR and IDOA data. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake. Shares are calculated by aggregating the license holder count by majority ownership demographics and dividing by the total number of licensed companies. E.g., five majority Black-owned licensed dispensaries out of a total 10 licensed dispensaries would equate to 50% utilization.

Table I-4 presents weighted utilization as measured by sales disaggregated by race, ethnicity, gender, and M/WBE status for adult use dispensaries and adult use cultivation centers. As further described below, the sales for adult use dispensaries and adult use cultivation centers during the study period are almost exclusively attributed to early approval licensees. Craft grower, infuser, and transporter license types are not shown because they received no revenue or sales during the study period.

Table I-4. Utilization Rate #2 [Sales-Weighted] Adult Use Cannabis Sales Distribution

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	0.02%	4.89%	0.00%	0.00%	1.15%	6.06%	6.44%	12.50%	77.79%	9.71%
Cultivation	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.57%	8.57%	90.97%	0.00%

Source: Nerevu analysis of IDFPR and IDOA data. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake. Shares are calculated by aggregating 2022 adult use sales by majority ownership demographics and dividing by the total 2022 adult use sales. E.g., $5 in 2022 adult use sales by majority Black-owned licensed dispensaries out of a total $10 in 2022 adult use sales by all licensed dispensaries would equate to 50% utilization.

We estimated various availability rates (unweighted and weighted) using applicant, license, sales, and other data. For brevity, we only present results for three of the six availability rates (Table I-5 through Table I-7). §V.D. Availability provides the complete availability results and analysis.

[16] In tables throughout this report the Non-M/WBE column refers to White men, and Black women are included in the Black column.
[17] In this report, we use the term “Hispanic” to refer to individuals who identify as Hispanic, Latino/a, or Spanish origin.
[18] In this report, we use the term "Indigenous" to refer to individuals of American Indian, Alaska Native, Native Hawaiian, or Other Pacific Islander origin.

Table I-5 (Availability Rate #1 [Unweighted] Adult Use Cannabis License Applicants) presents the demographic breakdown of entities that applied for an adult use cannabis by race, ethnicity, gender, and M/WBE status. This data is unweighted. This data represents one pool of potential available businesses that could have been awarded a license, and is used for calculating disparity ratio #1. Cultivation centers did not have any applications during the study period and are marked as N/A.[19]

Table I-5. Availability Rate #1 [Unweighted] Adult Use Cannabis License Applicants

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	43.3%	5.4%	0.0%	7.5%	8.5%	64.8%	2.8%	67.6%	22.0%	10.4%
Craft Grower	37.7%	5.1%	0.0%	6.7%	3.5%	53.1%	4.9%	58.0%	24.0%	18.1%
Infuser	44.8%	1.7%	0.0%	5.2%	6.9%	58.6%	5.2%	63.8%	22.4%	13.8%
Transporter	33.3%	2.9%	0.0%	3.9%	3.9%	44.1%	2.0%	46.1%	11.8%	42.2%
Cultivation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Nerevu analysis of IDFPR and IDOA data. Shares are calculated by aggregating the application count by majority ownership demographics and dividing by total applications. E.g., five majority Black-owned dispensary applications out of a total 10 dispensary applications would equate to 50% availability.

Table I-6 (Availability Rate #2 [Unweighted] Adult Use Cannabis Licensed Companies) presents a demographic breakdown of adult use cannabis licensed companies by race, ethnicity, gender, and M/WBE status. This data is unweighted. This rate represents the companies that received adult use licenses, and is used for calculating disparity ratio #2.

Table I-6. Availability Rate #2 [Unweighted] Adult Use Cannabis Licensed Companies

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	37.7%	5.5%	0.0%	4.4%	6.0%	53.6%	5.5%	59.0%	35.5%	5.5%
Craft Grower	45.1%	1.2%	0.0%	6.1%	8.5%	61.0%	2.4%	63.4%	26.8%	9.8%
Infuser	26.8%	8.9%	0.0%	10.7%	8.9%	55.4%	5.4%	60.7%	32.1%	7.1%
Transporter	54.8%	4.8%	1.2%	7.1%	1.2%	69.0%	4.8%	73.8%	20.2%	6.0%
Cultivation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	14.3%	76.2%	9.5%

Source: Nerevu analysis of IDFPR and IDOA data. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake. Shares are calculated by aggregating the license holder count by majority ownership demographics and dividing by the total number of licensed companies. E.g., five majority Black-owned adult use licensed dispensaries out of a total 10 adult use licensed dispensaries would equate to 50% availability.

[19] Early approval dispensary licenses, which did undergo an application process, were awarded prior to the study period and therefore also not represented in the table.

Table I-7 (Availability Rate #6 [Sales-Weighted] Medical Cannabis Sales) presents a demographic breakdown of sales by medical cannabis licensees by race, ethnicity, gender, and M/WBE status. This data is weighted by sales. This rate represents cannabis sales for medical licensed companies, and is used for calculating disparity ratio #5.

Table I-7. Availability Rate #6 [Sales-Weighted] Medical Cannabis Sales

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	0.0%	1.1%	0.0%	0.0%	2.4%	3.6%	7.3%	10.8%	78.7%	10.5%
Cultivation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.5%	6.5%	87.6%	5.9%

Source: Nerevu analysis of IDFPR and IDOA data. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake. Shares are calculated by aggregating 2022 medical sales by majority ownership demographics and dividing by the total 2022 medical sales. E.g., $5 in 2022 medical sales by majority Black-owned licensed dispensaries out of a total $10 in 2022 medical sales by all medical licensed dispensaries would equate to 50% utilization.

Dividing utilization (as evidenced by the number of M/WBE license holders) by availability (as evidenced by the number of M/WBE entities that were ready, able and willing to obtain a license) gives us the disparity ratio as shown in *Equation I-1*. The disparity ratio measures whether M/WBE licensee utilization is higher or lower than expected compared to the M/WBE availability in a comparison group.[20] A ratio under 100% indicates underutilization.

Equation I-1. Disparity Ratio

$$DisparityRatio = \frac{Utilization}{Availability}$$

A weighted disparity ratio accounts for the volume of sales by the M/WBE entity, whereas an unweighted disparity ratio only looks at the number of M/WBEs. We use both analyses to accurately capture disparities and apply substantive and statistical significance tests to confirm if observed disparities are meaningful and not due to chance. This approach comprehensively views M/WBE representation in the Illinois cannabis industry.

For this study there were not enough operational licensees to adequately compare their sales to other businesses. Therefore, the weighted disparity ratios represent an unfair comparison at this time. Once the licensees have been operational for a longer period of time, future studies may be better able to rely on weighted disparity ratios to assess the relative business outcomes.

[20] We conducted various types of disparity analyses which are presented in more detail throughout the body of this report.

We use the term substantively significant disparity to refer to a disparity ratio equal to or less than 80%.[21] A statistically significant disparity means there is high level of confidence the observed difference did not occur by chance alone. We report statistical significance at the 0.05 level or above which equates to at least a 95% probability the disparity is not due to chance. For more details, see §V.C.2. Disparity Ratio.

Since the CRTA's enactment, the Illinois cannabis industry has seen diversity in dispensary, craft grower, infuser, and transporter applicants and adult use licensees. We explore this diversity through various disparity ratios, and present three of them in Table I-8 through Table I-10. §V.F. Disparity Findings provides the complete disparity results and analysis.

Table I-8 (Disparity Ratio #1: Adult Use License Holder Share vs Applicant Share) compares the demographic breakdown of adult use licensees to the demographic breakdown of the applicant pool over the study period (1/1/2020–1/31/2023) by race, ethnicity, and gender. It measures the extent to which the distribution of adult use licenses is representative of the adult use applicant pool. Acknowledging that applicants may fail to obtain licensure due to reasons like low scores or not being selected in the lottery, this measure aids in comprehending the broader context and potential obstacles in the licensing process. As shown in Table I-8, substantively and statistically significant disparities were identified in only four circumstances when comparing the diversity of licensees to the diversity of the applicants: Hispanic dispensary licensees, Asian craft grower licensees, White women craft grower licensees, and Black infuser licensees.

Table I-8. Disparity Ratio #1: Adult Use License Holder Share vs Applicant Share

License Type	Black	Asian	Indigenous	Hispanic	Total MBE	White Women	Total M/WBE	Non-M/WBE
Dispensary	87.0% ***	101.0% ***	N/A	58.3%‡***	82.7% ***	193.2% ***	87.3% ***	161.4% ***
Craft Grower	119.6% ***	23.8%‡***	N/A	90.5% ***	114.8% ***	50.3%‡***	109.4% ***	111.8% ***
Infuser	59.8%‡*	517.9% ***	N/A	207.1% *	94.4%	103.6%	95.2%	143.4%
Transporter	164.3% *	161.9%	N/A	182.1%	156.5% *	242.9% *	160.2% **	172.0% **
Cultivation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Source: Nerevu analysis of IDFPR and IDOA data; Hoovers. ‡ Indicates substantive significance (<80%). ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. The cells marked N/A indicate that no adult use applications were submitted by the given demographic group during the study period. Cultivation center license types are marked N/A because they were not open to applicants so those disparity ratios could not be calculated. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake.*

[21] Code of Federal Regulations, 29 C.F.R. §1607.4(D) (2010), "A selection rate for any race, sex, or ethnic group which is less than four-fifths (4/5) (or eighty percent) of the rate for the group with the highest rate will generally be regarded by the Federal enforcement agencies as evidence of adverse impact, while a greater than four-fifths rate will generally not be regarded by Federal enforcement agencies as evidence of adverse impact," https://www.law.cornell.edu/cfr/text/29/1607.4.

Table I-9 (Disparity Ratio #2: Adult Use Licensee Sales vs Adult Use License Holder Share) compares 2022 adult use licensee sales to adult use license holder counts by race, ethnicity, and gender. It measures the extent to which adult use licensee sales are representative of the distribution of adult use licenses. In this analysis, we focused exclusively on dispensary and cultivation center licenses, as these were the only license types with sales during the study period. Due to a lack of M/WBE sales, we observed substantively and statistically significant disparities for Black, Hispanic, Minority-owned Business Enterprise (MBE), and M/WBE adult use dispensary licensees; and for White women, and M/WBE cultivation center licensees (see Table I-9).

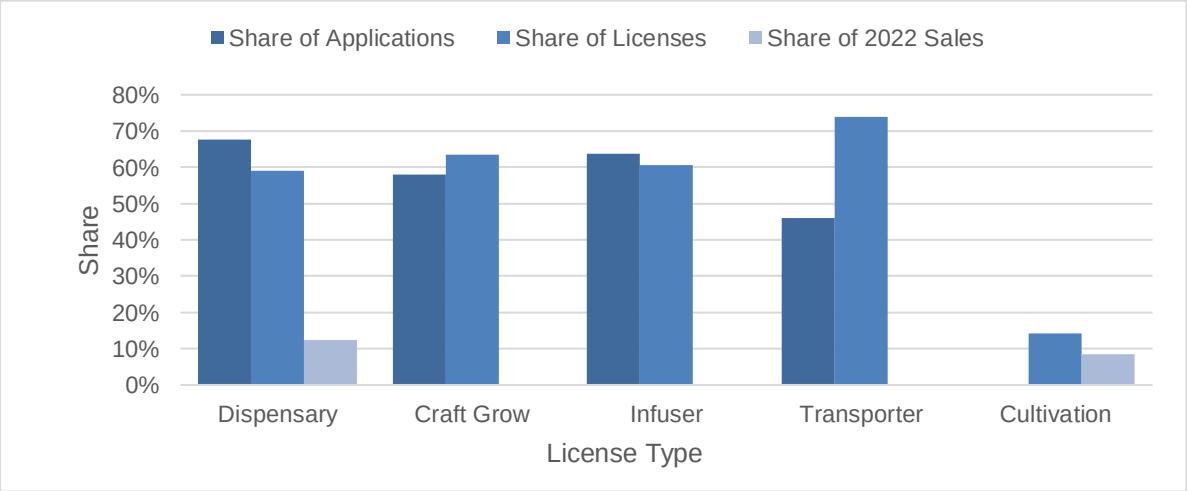
Table I-9. Disparity Ratio #2: Adult Use Licensee Sales vs Adult Use License Holder Share

License Type	Black	Asian	Indigenous	Hispanic	Total MBE	White Women	Total M/WBE	Non-M/WBE
Dispensary	0.1%‡***	89.4% ***	N/A	0.0%‡***	11.3%‡***	117.9% ***	21.2%‡***	219.0% ***
Cultivation	N/A	N/A	N/A	N/A	N/A	60.0%‡***	60.0%‡***	119.4% **

*Source: Nerevu analysis of IDFPR and IDOA data; Hoovers. ‡ Indicates substantive significance (<80%). ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively.*[22] *Craft grower, infuser, and transporter license types are not shown because they received no revenue or sales during the study period. The cells marked N/A indicate that no adult use licenses were held by the given demographic group during the study period. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake. Few to no MBE dispensary licensees were operational during the study period and thus had little to no sales.*

Although M/WBEs represent a significant portion of the adult use cannabis licensed companies, as shown in Figure 1, they had minimal 2022 sales. We attribute this disparity to M/WBE licensees becoming operational only in late 2022. In contrast, the primarily non-M/WBE early approval licensees started as early as 2020 and therefore had more time to realize sales.

Figure 1. M/WBE Application, License, and Sales Shares



Source: Nerevu analysis of IDFPR and IDOA data.

[22] We performed a chi-square test to determine the statistical significance of the disparity ratio.

Table I-10 (Disparity Ratio #5: Adult Use Sales vs Medical Sales) compares 2022 adult use licensee sales to 2022 medical licensee sales by race, ethnicity, and gender. It measures the extent to which adult use licensee sales are representative of medical licensee sales. In this analysis, we focused exclusively on dispensary and cultivation center licenses, as these are the only medical license types. As shown in Table I-10, we observed no substantively significant disparities.[23]

Table I-10. Disparity Ratio #5: Adult Use Sales vs Medical Sales

License Type	Black	Asian	Indigenous	Hispanic	Total MBE	White Women	Total M/WBE	Non-M/WBE
Dispensary	N/A	434.7% ***	N/A	N/A	170.0% ***	88.7% ***	115.5% ***	98.8% ***
Cultivation	N/A	N/A	N/A	N/A	N/A	131.6% ***	131.6% ***	103.8% ***

*Source: Nerevu analysis of IDFPR and IDOA data. ‡ Indicates substantive significance (<80%). ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively.[24] The cells marked N/A indicate that no medical licenses were held by the given demographic group during the study period. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake.*

Application processing and scoring difficulties, COVID-19 pandemic related challenges, and legal challenges caused considerable delay in the issuance of adult use licenses. As a result, most M/WBEs were non-operational during the study period and had minimal or no adult use sales. Therefore, as stated above, interpreting sales-weighted disparities requires careful nuance.

Given that these delays do not appear to be directly discriminatory toward any specific race, ethnicity, or gender, it is too early to determine the existence of discrimination, despite the substantively and statistically significant disparities identified for Hispanic dispensary licensees, Asian craft grower licenses, white women craft grower licensees, and Black infuser licensees. Consequently, we do not conclude that there is a discriminatory policy or practice warranting the implementation of race-based or gender-based policies at this time.

Instead, we suggest race- and gender-neutral policies such as enhancing access to capital, streamlining management, consolidating state agencies, unifying data systems, and expanding economic opportunities. These policies will benefit all businesses while supporting CRTA's equity objectives.

C. Qualitative Findings

For this study, we thoroughly investigated various aspects of the cannabis industry including licensing procedures, market engagement, and the economic impact on diverse demographic groups through interviews, focus groups, and surveys. The disparity results do not fully capture the real-life challenges in fostering equity and diversity within the cannabis industry. The

[23] While the medical dispensary licensees also have adult use licenses, not all adult use licensees have medical licenses. However, every adult use cultivation center licensee also has a medical license.
[24] We performed a chi-square test to determine the statistical significance of the disparity ratio.

qualitative investigation highlighted not just the hurdles in accessing finance and dealing with complex regulatory frameworks, but also illuminated a broader spectrum of operational challenges.

In interviews and surveys, M/WBE adult use cannabis licensees reported challenges accessing capital and financial support due to perceived race-, ethnicity-, or gender-based discrimination. These challenges underscore the difficulty for M/WBE groups in the burgeoning adult use cannabis industry, one only three years into its existence. Study participants also cited complex cannabis regulations and policies as significant challenges. To improve, they suggested consolidating administration, simplifying the application process, improving data collection practices, increasing funding options, and reducing various fees.

License specific suggestions included expanding canopy space for craft growers, permitting infusers to apply for processor licenses, mandating third-party oversight for transporters, and enabling adult use dispensary license holders to serve under the medical program. These insightful perspectives guided our industry analysis and bolstered the validity of our research findings.

We also uncovered technological gaps across regulatory agencies, coupled with a pronounced lack of staff specialized in cannabis regulation, have also significantly exacerbated the challenges identified by cannabis business license holders. These gaps manifest not only in the insufficient technological infrastructure to handle the vast and complex nature of license processing and data management, but also in the inadequate provision of relevant information and technical assistance to applicants and business owners.

While we found instances of perceived discrimination, we could not meet the legal standard of attributing disparities to direct discrimination experienced by licensees or applicants. Barriers including complex application processes, unclear regulations, and the competitive advantage held by larger, more established companies, affect all applicants, regardless of race, ethnicity, or gender.

The qualitative findings also indicated timing was a significant contributing factor to the disparities. Timing includes delays related to processing and scoring thousands of license applications, navigating complex application requirements during the COVID-19 pandemic, and litigation leading to judicial injunctions that halted state license issuance. These insights led to the understanding that factors beyond direct or indirect discrimination may have also contributed to disparities in the cannabis industry.[25]

These challenges suggest that disparities may be rooted in systemic issues related to access to capital, regulatory complexities, and the operational difficulties of navigating the cannabis industry, rather than discrimination. This nuanced understanding calls for targeted policy interventions and support mechanisms to address the unique obstacles faced by M/WBEs in the cannabis sector.

[25] Specifically, COVID-19 and litigation delays negatively impacted all applicants, regardless of their race.

Such measures are imperative to ensure equitable opportunities are available to all, especially for M/WBEs which face the dual challenges of navigating a complex regulatory environment and overcoming the additional barriers posed by their racial and gender identities. Identifying and addressing these challenges is crucial for fostering an inclusive and equitable cannabis industry through well-considered policies and practices.

D. Economy-Wide Analysis

To provide context to the environment in which cannabis licensees operate, we performed a broad assessment of race, ethnicity, and gender disparities in cannabis-related industries and the entire Illinois economy. We assessed disparities in business ownership, business loan denial, wages, and business growth indicators in comparable industries.

While these analyses were not specific to the cannabis industry, the broader economic analysis across Illinois industries serves as a backdrop, allowing for a comparison of the cannabis sector with others, highlighting systemic challenges and structural barriers, especially for racial and ethnic minorities and women. This comprehensive review, focusing on indicators like employment and payroll, reveals disparities in business development crucial for success across sectors, including cannabis. It aids in identifying and tackling the multifaceted factors contributing to the cannabis industry's observed disparities.

For instance, wage disparities in non-cannabis industries highlight a foundational economic inequality likely contributing to the capital access issues observed in the cannabis industry. Similarly, the patterns of business loan denial across sectors reveal a broader trend of financial institutions' practices, which may disproportionately affect racial and/or ethnic minority and women entrepreneurs' ability to establish and expand businesses, including those in the cannabis sector.

Our results show, compared to White men, racial and/or ethnic minorities and women are less likely to be business owners and have less access to capital through either hourly wages or bank loans (see Table I-11). Specifically, compared to White men in the Illinois economy:

- Black, Asian, Hispanic, and women workers are less likely to own a business.
- Black loan applicants face higher bank loan denial rates.
- Black, Hispanic, additional raced[26], and women workers have lower wages.

Compared to White men in cannabis-related industries:

- Black, Hispanic, additional raced, and women workers are less likely to own a business.
- Black, Asian, Hispanic, additional raced, and women workers have lower wages.

[26] In this report, we use the terms "additional race", "additional races", and "additional raced" to refer to individuals identifying as Indigenous, bi/multi-racial, or "other". We also include "Asian" if it is not listed in the data set as a separate racial category.

Table I-11. Statistically Significant Adverse Disparity Detected in the Broader Illinois Economy and Cannabis-Related Businesses

Metric	Black	Asian	Hispanic	Additional Races	Women
Business Ownership Likelihood	Yes†‡	Yes†	Yes†‡	Yes ‡	Yes†‡
Loan Application Rate	No	No	No	No	No
Loan Denial Rate	Yes†	No	No	No	No
Hourly Wage	Yes†‡	Yes†	Yes†‡	Yes†‡	Yes†‡

Source: AEC analysis of 2021 ACS PUMS 5-Year Estimates, 2020–2022 SHED, and 2017–2020 Annual Business Survey. Cells marked Yes/No indicate the presence/lack of a statistically significant adverse disparity (defined as an unfavorable percentage point change in the given metric due to a person's race, ethnicity, or gender relative to White men). E.g., Black individuals are more likely than White men to be denied a loan. † Indicates the presence of a statistically significant adverse disparity in the Illinois economy for either gender at the 0.05 level or above. ‡ Indicates the presence of a statistically significant adverse disparity in one or more cannabis-related industries at the 0.05 level or above.

E. Recommendations

We formulated our following recommendations based on insights gleaned from extensive focus groups and consultations with state administrators. The challenges uncovered highlighted the need for standardizing and adjusting policy to enhance access to capital, streamlining state agency operations, and fostering economic growth for emerging enterprises. We designed our recommendations to create a fair and level playing field for all market participants, regardless of race or gender.

To cultivate a more inclusive and equitable industry we recommend the following:

- **Broaden availability of financing**: Findings from our focus group conversations with cannabis business holders and applicants across license types, coupled with our survey analysis, suggest a need for additional revenue sources for the Cannabis Business Development Fund to improve sustainability and increase access to capital for more businesses.
- **Unify data systems and additional data management**: Interviews with industry leaders indicate a need for a centralized data system to ensure the state's licensing, enforcement, and case management systems are compatible and unified to improve tracking, monitoring, and supporting cannabis businesses across the entire industry.
- **Consolidate regulatory structure**: Based on our assessment of the quantitative and qualitative analyses, we recommend centralizing the five main regulatory agencies' cannabis units into one, unified department with clear accountability to the governor and public. Consolidation would allow for a more seamless and coordinated approach to operationalize the application process and business regulatory practices in support of all extant and future cannabis license holders in an equitable and just manner.

- **Conduct additional disparity studies**: We recognize the unique challenges that prohibited the optimal implementation of the social equity program in Illinois. We also realize it will take time to prioritize and implement our recommendations. Therefore, we recommend conducting an additional disparity study in three to five years following the end of this study period to assess the progress of new businesses in the growing marketplace. Studies indicate it is beneficial to conduct follow-up disparity studies on a periodic basis every three to five years. The recommended period would allow the newly issued cannabis licenses to "catch up" with the already established medical market, which will allow for more accurate assessments of disparities. The post-assessments would allow us to monitor change and progress towards the establishment of businesses, the maturity and evolution of ownership.
- Additional administrative recommendations:
    - **Allow SEAs to obtain a social equity business designation after receiving a cannabis license**.[27] This will allow for continued support for SEAs after they become licensed, provided they maintain their status as a social equity business.
    - **Implement a no-change affidavit for license renewals**: simplify the renewal process for businesses that have no changes in ownership or management.
    - **Implement a sliding scale for licensing renewal fees based on sales**: set renewal fees based on sales to improve equity in license renewal.
    - **Implement a third-party transport mandate:** codify a statutory change for transportation so that businesses can only transport up to a certain amount of their inventory transfers, like the rule for dispensaries to have no more than 40% of their inventory from one source.
    - **Allow infusers to apply for processing licenses:** allow infusing organizations to apply for the ability to process and extract cannabis products from raw materials and contribute to an adequate supply of distillate.
- **Strengthen industry-state collaboration:** implement collaborative and educational initiatives to address the knowledge gaps M/WBEs face in understanding the regulatory, market, and operational complexities of Illinois' cannabis industry, thereby fostering an informed, compliant industry conducive to economic growth and equitable success.

[27] Illinois General Assembly, "410 ILCS 705/1-10 Cannabis Regulation and Tax Act," specifying that a social equity applicant ("SEA") has at least 51% ownership and control by one or more individuals who:
SEA has lived in a Disproportionate Impacted Area (DIAs) in 5 of the past 10 years;
SEA, or their parent, child, or spouse, has been arrested for, convicted of, or adjudicated delinquent for cannabis-related offenses eligible for expungement, including cannabis possession up to 500 grams or intent to deliver up to 30 grams.
SEA has more than 10 full-time employees, and more than half of those employees:
currently reside in a DIA,
SEA, or their parent, child, or spouse, has been arrested for, convicted of, or adjudicated delinquent for cannabis-related offenses eligible for expungement, including cannabis possession up to 500 grams or intent to deliver up to 30 grams.
June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.

F. A Look Ahead

Our recommended policies aim to address and reduce the identified disparities by fostering an inclusive environment for M/WBEs. Implementing these recommendations would ultimately contribute to the Illinois cannabis industry's growth and diversity.

Table I-12 highlights the current landscape of adult use cannabis dispensary sales. Although operational SEA licensees were not operational for the full year of 2023, they have made great strides since the end of the study period.

Table I-12. Distribution of Dispensary Sales by License Category (as of 12/31/2023)

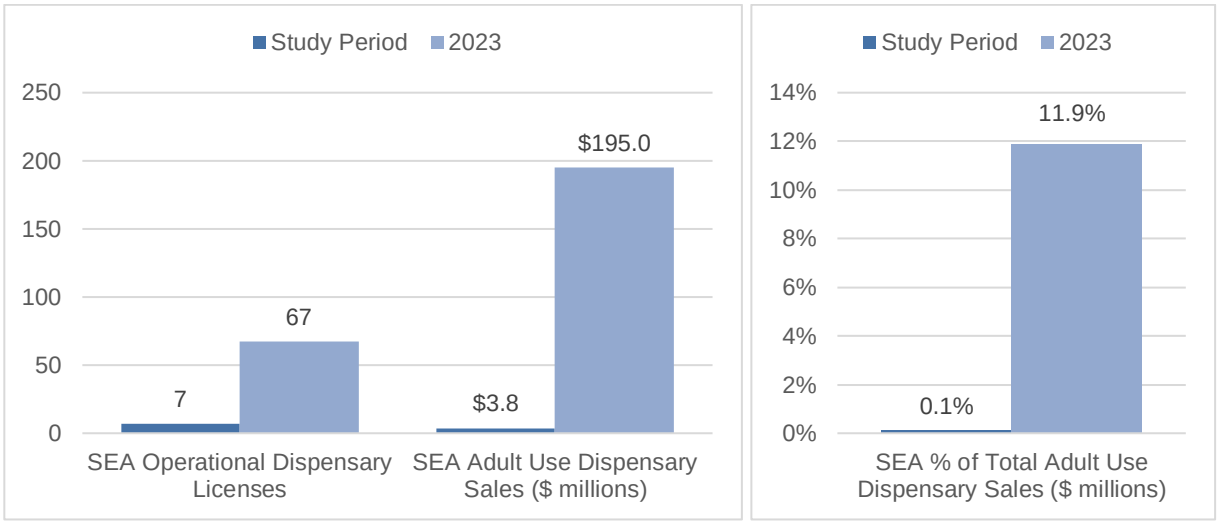
Dispensary License Category	Awarded Licenses	% Awarded Licenses	Operational Licenses	Total Adult Use 2023 Sales ($ millions)	% Total Adult Use 2023 Sales
Early Approval Same Site	55	17.8%	55	$620.85	38.0%
Early Approval Secondary Site	55	17.8%	55	$819.19	50.1%
Social Equity Applicant	199	64.4%	67	$195.02	11.9%
Total	**309**	100.0**%**	**117**	**$1,635.06**	100.0**%**

Source: Nerevu analysis of IDFPR data. Percentages may not add up to 100% due to rounding.

Figure 2 shows SEA operational dispensary licenses, adult use dispensary sales, and the percent of total adult use cannabis sales SEAs earned for the study period versus 2023. From the study period to 2023:

- SEA operational dispensary licenses increased from seven to 67,
- SEA adult use dispensary sales increased from $3.8 million to $195 million, and
- SEA's share of total adult use cannabis sales increased from 0.1% to 11.9%.

Figure 2. SEA Operational Dispensary Licenses and Sales (Study Period vs 2023)



Source: Nerevu analysis of IDFPR data

II. DISPARITY STUDY LEGAL STANDARDS

A. Legal Definitions and Tests

Pursuant to statute and well-established disparities studies, the purposes of this study are to:

1. identify whether racial and gender disparities exist within the cannabis industry, and if so,
2. determine if the disparities are caused by discrimination and evaluate the impact of government policies that led to such disparity and discrimination.[28,29]

If properly documented and measured, the above two steps can form the basis for a "compelling interest" that justifies recommending "narrowly tailored" government actions to remedy the discrimination and its impact.[30] The government policy in question here is the implementation of the licensing and regulatory provisions of the Cannabis Regulation and Tax Act.

Table II-1 defines disparity and discrimination.

Table II-1. Disparity Study Definitions

Term	Definition
Disparity	One or more quantifiable difference(s) between two or more racial, ethnic, or gender groups which determines whether a market reflects the available—ready, willing, and able—market participants.
Discrimination	A specific policy or practice that has a harmful effect whether by omission or commission on individuals based on their race, ethnicity, or gender identity. The policy or practice, or lack thereof, can result in inequitable access to services, systems, and/or resources, which hence have a disparate impact (e.g., inability to secure a license).

A disparity study can then determine:

3. whether the identified disparities should be redressed through governmental actions and
4. if the redressive actions are reasonably likely to succeed, especially as compared to a race- (or gender-) neutral policy.[31,32]

[28] *City of Richmond v. J. A. Croson Co*., 488 U.S. 469 (1989), accessed December 19, 2023, https://supreme.justia.com/cases/federal/us/488/469.
[29] *Adarand Constructors, Inc. v. Peña*, 515 U.S. 200 (1995), accessed December 10, 2023, https://casetext.com/case/adarand-const-v-pena.
[30] *Midwest Fence Corp. v. U.S. Dep't of Transpo., et. al*, 840 F. 3d 932 (7th Cir. 2016), accessed December 10, 2023, https://casetext.com/case/midwest-fence-corp-v-us-dept-of-transp-3.
[31] *Northern Contracting, Inc. v. Ill. Dep't of Transpo.*, 473 F. 3d 715 (7th Cir. 2007), accessed December 10, 2023, https://casetext.com/case/northern-contracting-inc-v-illinois.
[32] *Midwest Fence Corp.*, 840 F. 3d 932 (7th Cir. 2016), accessed December 10, 2023, https://casetext.com/case/midwest-fence-corp-v-us-dept-of-transp-3.

Steps three and four require a thorough discussion of policy options and depend on whether alternatives have been tried and/or succeeded.

Finally, step five is to evaluate whether the nature of the disparities, their causes, and the spectrum of available redressive actions meet the legal thresholds that permit explicitly race- or gender-conscious governmental actions (i.e., quotas, affirmative action, or government set-aside programs for racial and/or ethnic minorities or women). Courts assess these programs with "strict scrutiny" for explicitly race-conscious governmental actions and "intermediate scrutiny" for explicitly gender-conscious governmental actions.[33]

Step five requires assessing whether the specific actions are narrowly tailored, over or underinclusive, better than the alternatives, fully necessary, have set timelines with an expiration, and incorporate plans for constant reassessment.[34]

This disparity study models methodology identified in the National Academies of Sciences, Engineering, and Medicine's *Guidelines for Conducting a Disparity and Availability Study for the Federal DBE Program* (2010)[35] and demonstrated through such studies as the *State of Illinois Department of Central Management Services Disparity Study* (2015 and 2022).[36,37]

In reviewing legal challenges to race-conscious government procurement programs, for example, courts will consider a disparity (or under-utilization) statistically significant if firms receive fewer contract dollars than expected, given their availability, and this difference cannot be attributed to randomness.[38,39] Disparities that meet or surpass the 0.05 statistical significance threshold indicate a 95% likelihood that the observed discrepancies are not due to random chance.[40]

The disparity ratio, as detailed in §0.C.2. Disparity Ratio, serves as a critical metric for assessing the extent to which M/WBEs are disadvantaged within the licensing process, and provides a quantitative basis for identifying and addressing systemic inequities. In *City of Richmond v. J.A. Croson Co.*, the Supreme Court held that a statistically significant disparity between the number

[33] *Builders Ass'n of Chicago v. County of Cook*, 256 F. 3d 642 (7th Cir. 2001), https://casetext.com/case/bldrs-assn-greater-chicago-v-cook-county.

[34] *Students for Fair Admissions, Inc. v. President & Fellows of Harvard Coll.*, No. 20-1199, 143 S. Ct. 2141 (2023), accessed November 10, 2024, https://casetext.com/case/students-for-fair-admissions-inc-v-president-fellows-of-harvard-coll-8.

[35] National Academies of Sciences, Engineering, and Medicine. 2010. *Guidelines for Conducting a Disparity and Availability Study for the Federal DBE Program*. Appendix C, *Legal Standards for Race-Conscious Government Contracting Programs,* Washington, DC: The National Academies Press, accessed December 10, 2024, https://doi.org/10.17226/14346.

[36] Colette Holt & Associates, "State of Illinois Department of Central Management Services Disparity Study 2015," 2015, accessed January 4, 2024, https://www.urbanaillinois.us/sites/default/files/attachments/03%20-%20Illinois%20CMS%20Disparity%20Study%202015.pdf.

[37] Colette Holt & Associates, "State of Illinois Department of Central Management Services Disparity Study 2022," 2022, accessed November 19, 2023, https://cei.illinois.gov/content/dam/soi/en/web/cei/documents/State%20of%20Illinois%20Goods%20and%20Services%20Disparity%20Study%202022.pdf.

[38] *Midwest Fence Corp.*, 840 F. 3d 932 (7th Cir. 2016), accessed December 10, 2023, https://casetext.com/case/midwest-fence-corp-v-us-dept-of-transp-3.

[39] *Croson*, 488 U.S. 469, accessed December 19, 2023, https://supreme.justia.com/cases/federal/us/488/469.

[40] McDonough, M. "Statistical Significance", Encyclopædia Britannica, March 15, 2024, accessed April 1, 2024, https://www.britannica.com/topic/statistical-significance.

of MBE's that are eligible to participate in a particular market and the number of MBE's that actually do participate may be sufficient evidence of discrimination requiring narrowly tailored relief.[41] Post *Croson*, circuit courts have recognized the utility of the disparity ratio in determining statistical disparities in the utilization of M/WBEs.[42,43,44]

Furthermore, pursuant to the Code of Federal Regulations, *H.B. Rowe Co. v. Tippett,* and subsequent federal Fourteenth Amendment procurement cases such as in *Midwest Fence v. U.S. Department of Transportation*, a disparity index lower than 80 is considered an indication of disparate impact.[45,46,47,48]

Referred to as the "four-fifths rule," the 80% threshold is not rigidly dispositive in all cases, but commonly recognized as a benchmark. In *Midwest Fence*, the Seventh Circuit upheld an Illinois Department of Transportation and Illinois Tollway DBE program and concluded specifically held that "A figure below 0.80 is generally considered solid evidence of systematic under-utilization calling for affirmative action to correct it."[49] We use the four-fifths threshold when determining whether a disparity indicates a "substantively significant" underrepresentation of M/WBEs.

Unlike many disparity studies focusing on government procurement, such as those conducted for Central Management Services, this statutorily mandated study explores potential disparities in a regulatory licensing framework within a federally illegal industry. Although the models for assessing government procurement programs can be applied to this study, the traditional data used to evaluate disparities in government contracting with M/WBEs do not exist for cannabis companies. In procurement studies, data typically utilized are vendor bids, federal business classification codes, and demographic business information. However, this study faces unique challenges due to the intricate legislative framework governing the creation and regulation of various license types within the cannabis industry, as well as the uniqueness of a federally illegal market without clear comparable industries. These complexities lead to significant differences in the data collected and context considered.

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[41] *Croson*, 488 U.S. 469 (1989), accessed December 19, 2023, https://supreme.justia.com/cases/federal/us/488/469.
[42] *Id.*
[43] *H.B. Rowe Co. v. Tippett*, 615 F. 3d 233 (4th Cir. 2010), accessed December 10, 2023, https://casetext.com/case/hb-rowe-v-tippett.
[44] *Concrete Works of Colo. V. City of Denver*, 321 F. 3d 950 (10th Cir. 2003), at 198, accessed December 10, 2023, https://casetext.com/case/concrete-works-v-city-cty-of-denver.
[45] Code of Federal Regulations, 29 C.F.R. §1607.4(D) (2010), "A selection rate for any race, sex, or ethnic group which is less than four-fifths (4/5) (or eighty percent) of the rate for the group with the highest rate will generally be regarded by the Federal enforcement agencies as evidence of adverse impact, while a greater than four-fifths rate will generally not be regarded by Federal enforcement agencies as evidence of adverse impact," https://www.law.cornell.edu/cfr/text/29/1607.4.
[46] *H.B. Rowe Co.*, 615 F. 3d 233 (4th Cir. 2010), accessed December 10, 2023, https://casetext.com/case/hb-rowe-v-tippett.
[47] Amy Wax, "Disparate Impact Realism Disparate Impact Realism," (2011), *All Faculty Scholarship*. 352, accessed February 18, 2024, https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1351&context=faculty_scholarship.
[48] *Midwest Fence Corp.*, 840 F. 3d 932 (7th Cir. 2016), accessed December 10, 2023, https://casetext.com/case/midwest-fence-corp-v-us-dept-of-transp-3.
[49] *Midwest Fence Corp.* at 950.

A. We tailored the methodologies outlined in §0.C. Quantitative Methodology, §VI.A. Data Sources

Our qualitative data gathering focused on adult use market issues. We obtained most of the qualitative data through independent fact-finding and supplemented it with the CROO Diversity Surveys.

Table VI-1. Qualitative Data Sources

Source	Data	Description
IDFPR	Diversity surveys	2021, responses from 32 firms and four testing labs 2022, responses from 142 firms and 4,480 cannabis employees 2023, responses from 156 firms and 2,103 cannabis employees
Nerevu	Electronic survey	60 responses from 1672 survey invites distributed by Qualtrics via email to cannabis licenses applicants
Nerevu	Interviews	40 one-on-one interviews
Nerevu	Focus groups	27 focus groups that engaged 160 people

Qualitative Methodology, and §VII.A. Economy-Wide Analyses Methodology for this study to the novel aspects of the cannabis industry including its licensing framework, data availability, and the distinctive historical context of cannabis legalization. While these innovative approaches differ from those employed in jurisprudence precedent-setting contracting cases concerning race-based remedies in government procurement, they offer a compelling rationale for broadening the scope of existing legal frameworks to encompass this wider context.

Arguably, new statistical methods may be used in the quantitative assessment of racial and gender discrimination and disparities provided such new methods have a reasonable scientific or mathematical basis, are subject to objective evaluation and verification, and are both relevant and useful to the issue before the reviewing tribunal or court.[50] The quantitative methods deployed in this study meet those criteria.

Additionally, to strengthen our quantitative analysis, we undertook an extensive qualitative data collection process as detailed in §**Error! Reference source not found.**.D.1. Focus Groups, Interviews, and Surveys and discussed in §VI.J. Qualitative Findings.

[50] *Chavez v. Ill. State Police*, 251 F. 3d 612 (7th Cir. 2001), accessed December 10, 2023, https://casetext.com/case/chavez-v-illinois-state-police-2.

B. Standards of Judicial Review

The Equal Protection Clause of the Fourteenth Amendment to the U.S. Constitution is broadly interpreted to prohibit race- and gender-based discrimination in government policymaking.[51,52] Explicitly race-conscious and gender-conscious government action must each survive a "strict scrutiny" or "intermediate scrutiny" legal analysis, respectively, to withstand challenges to their constitutional validity.

In *City of Richmond v. J.A. Croson Co.*, the court ultimately held that a race-based policy or program must withstand "strict scrutiny", the most stringent standard of judicial review.[53] A strict scrutiny analysis is comprised of a two-prong test: First, the government must establish it has a "compelling interest" for what would otherwise generally be prohibited government race-based action; and secondly, any remedies adopted must be "narrowly tailored" to the achievement or furthering of the state's compelling interest.[54]

Alternatively, a sex- or gender-based policy is subject to an intermediate scrutiny analysis by courts. This standard of judicial review evaluates whether the state has an "exceedingly persuasive justification" for the implementation of regulation(s) making distinctions between individuals based on sex.[55,56,57] Any state action imposing different treatment of the sexes must be "substantially related" to the objective associated with that justification.[58] In the application of intermediate scrutiny, there is some degree of difference among Circuits as new issues of sex-based classification in public policy have arisen.[59] The law governing intermediate scrutiny might be described as in a state of change.

However, when considerations of gender disparity are subjected to the same metric as race in a strict scrutiny analysis, it satisfies the lower standard of intermediate scrutiny, as well. This is true for the underlying body of evidence and analyses evaluating gender as examined in this study and as it relates to proposing gender-conscious policy or recommendations.

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[51] United States Constitution, 14th Amendment, "No state shall make or enforce any law which shall…deny to any person within its jurisdiction the equal protection of the laws."

[52] *Students for Fair Admissions, Inc. v. President & Fellows of Harvard Coll.*, 143 S. Ct. 2141, 2161-2163, 600 U.S., 216 (2023), emphasizing the "clear and central purpose of the Fourteenth Amendment was to eliminate all official state sources of invidious racial discrimination in the States" and "central purpose of the Equal Protection Clause of the Fourteenth Amendment is the prevention of official conduct discriminating on the basis of race," accessed November 10, 2024, https://casetext.com/case/students-for-fair-admissions-inc-v-president-fellows-of-harvard-coll-8.

[53] *Croson*, 488 U.S. 469 (1989), accessed December 19, 2023, https://supreme.justia.com/cases/federal/us/488/469.

[54] *Id*.

[55] *Craig v. Boren*, 429 U.S. 190 (1976), accessed April 1, 2024, https://supreme.justia.com/cases/federal/us/429/190/#tab-opinion-1951945.

[56] *Califano v. Goldfarb*, 430 U.S. 199 (1977), accessed April 1, 2024, https://supreme.justia.com/cases/federal/us/430/199/.

[57] *Craig*, 429 U.S. 190 (1976), accessed April 1, 2024, https://supreme.justia.com/cases/federal/us/429/190/#tab-opinion-1951945.

[58] *United States v. Virginia*, 518 U.S. 515 (1996), accessed December 19, 2023, https://supreme.justia.com/cases/federal/us/518/515.

[59] Congressional Research Service, "Transgender Students and School Bathroom Policies: Equal Protection Challenges Divide Appellate Courts," January 17, 2023, accessed December 19, 2023, https://crsreports.congress.gov/product/details?prodcode=LSB10902.

In this study, gender analysis is subject to a process of evidence-gathering and data analysis of comparable rigor as the analysis of race. Thus, the application of the analysis done for strict scrutiny purposes is not only sufficiently applicable for examining the inherent "real-life" intersectionality of race and gender in Illinois' emerging cannabis marketplace but is relevant to determining the appropriateness and implementation of race- or gender-based corrective measure to address discriminatory prohibitions in the industry.

The final tier of judicial review, known as "rational basis scrutiny," assesses government actions that classify individuals based on factors other than race, ethnicity, religion, national origin, or gender.[60,61] For a classification to be deemed acceptable under this scrutiny, it must have a rational connection to a legitimate state interest.[62] Classifications involving age, veteran status, or disability fall under this category. However, rational basis scrutiny is not relevant to this study due to our focus on addressing potential discrimination based on race or gender, issues that inherently require a more rigorous analysis than what rational basis scrutiny provides.

C. Strict Scrutiny Standard of Judicial Review as Applied to Race-Based Policies

As mentioned above, pursuant to *Croson*, determining the constitutionality of race-based government action requires testing via a two-pronged "strict scrutiny" analysis.[63] Although the state of Illinois has not adopted a race-based policy for the issuance of licenses, it is helpful to understand how such a policy would be reviewed if adopted.

1. Compelling State Interest

The first element of the analysis determines whether the state has a compelling state interest.

The government must establish it has a "compelling interest" in remediating race discrimination by current "strong evidence" of the persistence of discrimination.[64,65] Such evidence may consist of the entity's "passive participation" in a system of racial exclusion. The compelling governmental interest prong is met through two types of proof:[66]

1. Quantitative evidence of discrimination between the utilization of racial and ethnic minoritized groups by the industry throughout the geographic and industry market area

[60] *Coral Construction Co. v. King County*, 941 F. 2d 910 (9th Cir. 1991), accessed December 19, 2023, https://casetext.com/case/coral-const-co-v-king-county.
[61] *Equal. Found. v. City of Cincinnati*, 128 F. 3d 289 (6th Cir. 1997), accessed December 19, 2023, https://casetext.com/case/equality-foundation-of-greater-cincinnati-inc-v-city-of-cincinnati.
[62] *Heller v. Doe*, 509 U.S. 312, 320 (1993), accessed December 19, 2023, https://casetext.com/case/heller-v-doe-doe.
[63] *Croson*, 488 U.S. 469 (1989), accessed December 19, 2023, https://supreme.justia.com/cases/federal/us/488/469.
[64] *Midwest Fence Corp.,* 840 F. 3d 932 (7th Cir. 2016), accessed December 10, 2023, https://casetext.com/case/midwest-fence-corp-v-us-dept-of-transp-3.
[65] *Concrete Works of Colo. V. City of Denver*, 321 F. 3d 950 (10th Cir. 2003), at 198, accessed December 10, 2023, https://casetext.com/case/concrete-works-v-city-cty-of-denver.
[66] *Midwest Fence Corp.*, 840 F. 3d 932 (7th Cir. 2016), accessed December 10, 2023, https://casetext.com/case/midwest-fence-corp-v-us-dept-of-transp-3.

compared to their availability there. Evidence of inadequate participation of M/WBEs in any government-created economic industry in a specified geographic market compared to the availability of such firms in that market lends quantitative evidence of discrimination.

2. Qualitative evidence of race- or gender-based barriers to the full and fair participation of M/WBEs in the market area or in seeking licenses.

Thus, whether a state has a compelling state interest in the implementation of race-based remedies can be determined by establishing the state's remedial action based on strong evidence ascertained from a mixed methodology study approach using a combination of both quantitative and qualitative data.

2. Narrowly Tailored Remedies

If there is quantitative and qualitative evidence of discrimination supporting the state's compelling interest, to be constitutionally viable, any government efforts of redress must be narrowly tailored remedies. Once establishing a strong basis in evidence showing disparities among constitutionally protected class(es) and other groups within a particular industry, then whatever measures taken by the government must be narrowly tailored to that evidence.

In *Builders Association of Greater Chicago v. City of Chicago,* for example, the district court concluded that: [67]

> *"Racial and ethnic classifications remain highly suspect, can be used only as a last resort, and cannot be made by some mechanical formulation. Race and ethnicity do matter—but remedies must be more akin to a laser beam than a baseball bat. The equal protection clause means what it says, we are one nation, indivisible."*

Courts tend to examine the following factors in determining whether race-based remedies are narrowly tailored to achieve their purpose:

- consideration of race-neutral remedies,[68]
- setting of targeted goals,[69]
- ensuring flexibility in participation goals,[70]
- review of limitation on inclusiveness,[71]
- burdening third parties,[72] and

[67] *Builders Ass'n of Greater Chicago v. City of Chicago*, No. 96 C 1122 (N.D. Ill. Feb. 7, 2003), accessed February 22, 2024, https://casetext.com/case/builders-association-of-greater-chicago-v-city-of-chicago.
[68] *Adarand Constructors*, 515 U.S. 200, 237-238 (1995), accessed January 9, 2024, https://supreme.justia.com/cases/federal/us/515/200.
[69] *United States v. Paradise*, 480 U.S. 149, 171 (1987), accessed January 9, 2024, https://supreme.justia.com/cases/federal/us/480/149.
[70] *Id*.
[71] *Id*.
[72] *Croson*, 488 U.S. 469 (1989), accessed December 19, 2023, https://supreme.justia.com/cases/federal/us/488/469.

- periodic review and limited duration of remedies.

(a) Consideration of Race-Neutral Remedies

The attempted application and examination of the efficacy of race-neutral approaches are necessary components to constitutionally viable legislation affecting suspect classification. However, strict scrutiny does not require implementing every race-neutral approach. It requires proving the race-neutral efforts were ineffective before utilizing race-conscious remedies.[73] While an entity must give good faith consideration to race-neutral alternatives, only a degree of practicality is subsumed in the exhaustion requirement.

(b) Setting of Targeted Goals

Numerical goals or benchmarks for the participation of racial and/or ethnic minorities when proposed, must be substantially related to their availability in the relevant market.[74,75]

(c) Ensuring Flexibility in Participation Goals

Narrow tailoring can be done by providing detailed waiver provisions, the requirements for which should be verifiable. Additionally, the courts have required an appeal process for adverse decisions on the good faith efforts of any applicant seeking access to the industry or state benefit or opportunity available to authorized industry participants.[76]

(d) Review of Limitation on Inclusiveness

Evaluating inclusiveness is crucial for ensuring that the proposed remedies effectively target the identified challenges. It entails verifying that the remedial measures specifically address the harms the disadvantaged groups experienced. Over-inclusiveness results when a remedial measure bestows benefits to groups who have not been discriminated against.[77] Conversely, under-inclusiveness rises when the state's remedies fail to benefits groups that are disadvantaged.

[73] *Grutter v. Bollinger*, 539 U.S. 306, 327 (2003), "Not every decision influenced by race is equally objectionable, and strict scrutiny is designed to provide a framework for carefully examining the importance and the sincerity of the reasons advanced by the governmental decisionmaker for the use of race in that particular context," accessed January 9, 2024, https://supreme.justia.com/cases/federal/us/539/306.

[74] *Webster v. Fulton County, Ga.*, 51 F. Supp. 2d at 1379, 1381 (statistically insignificant disparities are insufficient to support an unexplained goal of 35% M/WBE participation in County contracts), accessed December 9, 2023, https://law.justia.com/cases/federal/district-courts/FSupp2/51/1354/2497008.

[75] *Ass. Utility Contractors of Md. v. Mayor,* 83 F. Supp. 2d 613, 621 (D. Md. 2000), accessed December 9, 2023, https://casetext.com/case/associated-utility-contractors-v-mayor-2.

[76] *Midwest Fence Corp. v. U.S. Dep't of Transp., et al.,* 840 F.Supp. 3d 705 (N.D. Ill. 2015), accessed December 10, 2023, https://casetext.com/case/midwest-fence-corp-v-us-dept-of-transp-2.

[77] *Contractors Ass'n v. City of Philadelphia*, 6 F.3d 990, 1007-1008, (strict scrutiny requires data for each minority group; data was insufficient to include Hispanics, Asians, or Native Americans), accessed December 10, 2023, https://casetext.com/case/contractors-assn-v-city-of-philadelphia-3.

(e) Burdening Third Parties

Applying race-based remedies to resolve barriers to opportunities may result in unanticipated and undue burdens on others.[78] While such burdens can put race-based remedies at risk of constitutional challenge, burdens on nonprotected groups alone do not invalidate the remedy. Those burdens must be proven and cannot constitute mere speculation by a plaintiff seeking to challenge such the burdensome remedial measure.[79]

(f) Periodic Review and Limited Duration of Remedies

Race-based remedies must have an expiration date, which limits the remedy's implementation to a period which does "not last longer than the discriminatory effects it is designed to eliminate."[80]

3. Recent Court Decisions Since Midwest Fence

Finally, we would be remiss if we did not consider the ramifications of the recent decision by the United States Supreme Court in *Students for Fair Admissions v. President and Fellows of Harvard College (SFFA)*.[81] In SFFA, the Court struck down Harvard College's race-conscious admissions policy under a strict scrutiny analysis. It found the school's policy:

- was not grounded on compelling state interests,
- was not narrowly tailored to achieve its purported goal, and
- failed to sufficiently consider race-blind alternatives.

The Court further found that Harvard had failed to set a clear end point for its race-conscious policy.

Although there are fundamental differences between the factual circumstances applied to a higher education strict scrutiny analysis and the licensing matters upon which this study relies, it is important to consider how SFFA might guide future constitutional challenges to race-based policies and laws. Moreover, regardless of the holding in SFFA, *Midwest Fence* and the line of procurement cases upon which this study rests have not been overturned.[82]

The significance of the SFFA opinion on matters outside of higher education admissions is still unclear. However, the principles articulated in the opinion will transcend the specifics of the

[78] *Eng'g Contractors Assoc. of South Florida, Inc. v. Metro. Dade County*, 943 F. Supp. 1546, 1581-1582 (S.D. Fla. 1996) ("Engineering Contractors I") (County chose not to change its procurement system), accessed December 10, 2023, https://case-law.vlex.com/vid/engineering-contractors-ass-n-893999233.

[79] *H.B. Rowe*, 615 F.3d at 254, (prime bidder had no need for additional employees to perform program compliance and need not subcontract work it can self-perform), accessed December 10, 2023, https://casetext.com/case/hb-rowe-v-tippett.

[80] *Adarand Constructors*, 515 U.S. at 238 (1995), accessed December 10, 2023, https://casetext.com/case/adarand-const-v-pena.

[81] *Students for Fair Admissions v. President and Fellows of Harvard College*, 600 U.S. 181 (2023), accessed March 29, 2023, https://www.supremecourt.gov/opinions/22pdf/20-1199_hgdj.pdf.

[82] *Midwest Fence Corp.*, 840 F. 3d 932 (7th Cir. 2016), accessed December 10, 2023, https://casetext.com/case/midwest-fence-corp-v-us-dept-of-transp-3.

subject matter. Thus, we should view the SFFA lessons as a road map to new dimensions of how strict scrutiny is likely to be applied and upon what grounds race-conscious public policy will be permissible under an equal protection analysis.

III. BACKGROUND

A. About the Authors

Our study team's diverse knowledge—covering econometrics, sociology, statistics, and data analytics—enabled us to conduct a holistic assessment of disparities in the Illinois cannabis industry across race, and gender. Under the leadership of Nerevu Group, CW Financial and Management Group, and the Dorsey Law Office, we rigorously approached data collection, analysis, and interpretation.

Applied Economics Clinic's (AEC) equity study experience spanning energy, environment, and consumer protection sectors was invaluable. With their guidance, we adopted research methodologies that prioritized objectivity and led us towards unbiased and evidence-based findings.

Tanoma's expertise leading community-based participatory and culturally responsive research, evaluation, and capacity building through mixed methods research design that address inequitable workforce practices across sectors was an incomparable asset to our study. Guided by their expertise, we adapted an equitable and inclusive framework and developed an outreach strategy that ensured we recruited a diverse sample of participants who were proximally affected by the historical harms of cannabis prohibition (i.e., license holders and applicants from racial and ethnic minoritized groups and women).

We significantly enhanced our study by collaborating closely with Jean Lacy, a policy expert in the cannabis industry. Her perspective and expertise were crucial in navigating the intricate landscape of industry-specific laws and regulations. This gave us a contextualized and nuanced understanding of our findings within the broader political and regulatory landscape.

Finally, by incorporating diverse viewpoints from cannabis industry experts and community stakeholders ranging from unsuccessful applicants to large multi-state operators and government regulators, we ensured our study was not only thorough, but also balanced. This approach underpins our commitment to delivering well-informed and objective analysis and contributes to a more equitable and just understanding of the Illinois cannabis industry.

B. Study Authorization

Established within the Illinois Department of Professional and Financial Regulation (IDFPR), CROO commissioned the Illinois Adult Use Cannabis Industry Disparity Study pursuant to subsection (e) of Section 5-45 of 410 ILCS 705, the Cannabis Regulation and Tax Act (CRTA), which states:

> *(e) The Illinois Cannabis Regulation Oversight Officer shall commission and publish one or more disparity and availability studies that: (1) evaluates whether there exists discrimination in the state's cannabis industry; and (2) if so,*

> *evaluates the impact of such discrimination on the state and includes recommendations to the Department of Financial and Professional Regulation and the Department of Agriculture for reducing or eliminating any identified barriers to entry in the cannabis market. Such disparity and availability studies shall examine each license type issued pursuant to Sections 15-25, 15-30.1, or 15-35.20, subsection (a) of Section 30-5, or subsection (a) of Section 35-5, and shall be initiated within 180 days from the issuance of the first of each license authorized by those Sections.*

In the context of the CRTA's statutory authorization, we examine quantitative and qualitative data to determine the answer. We use the well-established legal foundations identified in federal guidelines and applied in previous State of Illinois disparity studies.[83] In particular, the legal precedents cited in those studies provide the guidance for investigating and assessing whether explicitly race- and gender-conscious governmental policies and practices should be implemented in order to "reduc[e] or eliminat[e] any identified barriers to entry in the cannabis market."

C. Cannabis Legalization

1. Overview

The Illinois General Assembly passed the Cannabis Control Act (CCA) of 1978 to update criminal penalties for the manufacture, sale, and possession of cannabis. Although it acknowledged wide use of cannabis within the population, the CCA still imposed harsh penalties. Additionally, the CCA contained a small provision (720 ILCS 550) that authorized the Illinois Department of Human Services (IDHS) to permit some medicinal use, but the agency was not appropriated any funds or encouraged to create a cannabis program.[84]

During the 1980s and 1990s, Illinois, like many states, continued to grapple with the balance between attempting to control the widespread cannabis use that still occurred despite prohibition and addressing the burgeoning understanding of cannabis's medical applications. Nationwide, the broader War on Drugs heavily influenced policy and public opinion, often overshadowing emerging medical research and maintaining a status quo of criminalization, disproportionately harming racial and ethnic minoritized communities.[85,86]

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[83] See Chapter II DISPARITY STUDY LEGAL STANDARDS for more information on the guidelines, models, and legal standards.

[84] Illinois General Assembly, "720 ILCS 550 Cannabis Control Act," May 31, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=1937&ChapterID=53.

[85] Ryan King and Marc Mauer, "The War on Marijuana: The Transformation of the War on Drugs in the 1990s." ResearchGate. Springer Nature, February 2006, accessed November 17, 2023, https://www.researchgate.net/publication/7305544_The_War_on_Marijuana_The_Transformation_of_the_War_on_Drugs_in_the_1990s.

[86] Subsection 2 **Error! Reference source not found.** discusses the disparate impact of cannabis criminalization on racial and ethnic minority communities.

However, the turn of the millennium marked a significant shift. Public opinion increasingly favored the decriminalization and medical use of cannabis.[87] This change was partly driven by the advocacy of medical professionals and patient groups who highlighted the benefits of cannabis in treating conditions such as post-traumatic stress disorder, epilepsy, and the side effects of chemotherapy.[88,89]

The evolving cannabis landscape set the stage for the Compassionate Use of Medical Cannabis Pilot Program Act (CUMCPPA) enacted in August 2013 and subsequently implemented in 2014.[90] The CUMCPPA authorized the Illinois Department of Agriculture (IDOA) to license and regulate cultivation centers for the growing of cannabis for medical use, and authorized IDFPR to license and regulate dispensaries for the sale of cannabis to qualifying patients and caregivers for treatment of specific medical conditions. The CUMCPPA authorized the Illinois Department of Public Health (IDPH) to issue medical cannabis cards to eligible patients and caregivers. CUMCPPA allowed qualifying patients and designated caregivers to possess and obtain cannabis only from a certified medical cannabis dispensary.

The CUMCPPA created a Medical Cannabis Advisory Board (MCAB) to evaluate petitions and recommend additions to the program's list of debilitating conditions. The director of IDPH holds the final decision-making authority to accept or reject MCAB's recommendations. Any recommendations the director accepts require an administrative rule change to update the program's list of medical cannabis qualifying conditions.

The CUMCPPA authorized 22 cultivation centers and 60 dispensing organizations located throughout the state. For cultivation centers, the single-stage application process included a $25,000 non-refundable application fee, proof of $500,000 in liquid assets and documentation satisfying selection, and optional bonus criteria. Applications were scored by a team selected by IDOA.[91] IDOA issued the first 18 medical cannabis cultivation center licenses February 2, 2015.[92] IDOA would ultimately issue 21 medical cultivation center licenses.[93]

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[87] E.B. McGinty, J. Niederdeppe, K. Heley, and C. L. Barry, "Public Perceptions of Arguments Supporting and Opposing Recreational Marijuana Legalization." Preventive Medicine 99 (June 2017): 80–86, Accessed November 17, 2024, https://doi.org/10.1016/j.ypmed.2017.01.024.

[88] Jamey Dunn-Thomason, "Medical Marijuana Bill Touted as Country's Tightest: Illinois to Legalize Medical Marijuana." NPR Illinois. NPR Illinois, December 2013, accessed December 1, 2023, https://www.nprillinois.org/2013-12-01/medical-marijuana-bill-touted-as-countrys-tightest-illinois-to-legalize-medical-marijuana.

[89] Charles W. Webb and Sandra M. Webb, 2014, "Therapeutic Benefits of Cannabis: A Patient Survey." *Hawai'i Journal of Medicine & Public Health: A Journal of Asia Pacific Medicine & Public Health* 73 (4): 109–11, accessed December 1, 2023, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3998228/.

[90] Illinois General Assembly, "410 ILCS 130 Compassionate Use of Medical Cannabis Program Act: 'excluded offense barring agent registration,'" August 9, 2019, accessed January 4, 2024, https://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=3503&ChapterID=35.

[91] State of Illinois, "Illinois Registers First Medical Cannabis Dispensary," August 25, 2015, accessed December 11, 2023, https://www.illinois.gov/news/press-release.13302.html.

[92] Illinois Public Media, "Medical Marijuana Growing, Distribution Licenses Awarded After Delay," February 2, 2015, accessed February 17, 2024, https://will.illinois.edu/news/story/medical-marijuana-growing-distribution-licenses-awarded-after-delay.

[93] Illinois Department of Agriculture, "List of Cannabis Licensees," February 8, 2015, accessed February 17, 2024, https://cannabis.illinois.gov/content/dam/soi/en/web/cannabis/documents/idoa/List%20of%20Licensees%20with%20Construction%20and%20Operational%20Status.pdf.

For dispensing organizations, the two-stage application process included a $5,000 non-refundable application fee, proof of $400,000 in liquid assets and documentation satisfying selection and optional bonus criteria. A team selected by IDFPR scored applications.[94] On August 25, 2015, IDFPR announced the registration for the first medical cannabis dispensary.[95] IDFPR issued 55 medical cannabis dispensary licenses by February 3, 2020.

From 2015 through 2019, the CUMCPPA continued to be updated and amended. These amendments expanded the number of legislatively authorized conditions eligible for medical cannabis cards, removed the fingerprinting/background check requirements, required an online application for medical cannabis cards, and created an Opioid Alternative Pilot Program.[96,97] The Opioid Alternative Pilot Program allowed patients who were prescribed opioids to opt for cannabis as a replacement.[98] Further, the state loosened the penalties for cannabis possession and allowed driving under the influence (DUI) of small amounts of cannabis.[99,100,101,102] People in possession of up to 10 grams of cannabis could face fines of $100–$200 and the state allowed individual municipalities to charge fines or implement other penalties, such as requiring drug treatment.[103]

[94] Melaney Arnold, "Proposed Rules for Compassionate Use of Medical Cannabis Pilot Program Act Filed," April 14, 2014, accessed December 12, 2023, http://www.idph.state.il.us/public/press14/4.18.14_Proposed_Rules_for_Compassionate_Use_of_Medical_Cannabis.htm.

[95] State of Illinois, "Illinois Registers First Medical Cannabis Dispensary," August 25, 2015, accessed December 11, 2023, https://www.illinois.gov/news/press-release.13302.html.

[96] Sen. Donne E. Trotter and Sen. Thomas Cullerton, "Bill Status of SB0010," June 30, 2016, accessed December 12, 2023, https://ilga.gov/legislation/BillStatus.asp?DocNum=0010&GAID=13&DocTypeID=SB&LegID=83724&SessionID=88&SpecSess=&Session=&GA=99. On June 30, 2016, Public Act 99-0519 (SB10) was signed into law, extending the CUMCPPA until the summer of 2022 and adding Post-Traumatic Stress Disorder (PTSD) and terminal illnesses as qualifying conditions.

[97] Pub. Act 100-1114, "Alternatives to Opioids Act of 2018," August 28, 2018, accessed January 7, 2024, https://www.ilga.gov/legislation/publicacts/100/100-1114.htm.

[98] *Id.*

[99] Under the CUMCPPA, drivers would not be charged with DUI unless they had five nanograms or more of Tetrahydrocannabinol (THC) in their blood, or 10 nanograms or more of THC in their saliva. The state law reportedly followed a measure enacted by Chicago in 2012 that allowed police to issue $250 to $500 tickets to persons caught with 15 grams or less of cannabis. The state law did not override laws in cities such as Chicago which already had fines in place. Instead, the law created uniformity across the state for towns which did not have such measures.

[100] Sen. Heather A. Steans, "Bill Status of SB2228," July 29, 2016, accessed January 7, 2024, https://www.ilga.gov/legislation/billstatus.asp?DocNum=2228&GAID=13&GA=99&DocTypeID=SB&LegID=93232&SessionID=88.

[101] Pub. Act 099-0697, "The Criminal Identification Act- amended," July 29, 2016, accessed January 7, 2024, https://www.ilga.gov/legislation/publicacts/fulltext.asp?name=099-0697.

[102] Monique Garcia, "Rauner Reduces Punishment for Minor Pot Possession from Jail to Citation," Chicago Tribune, July 29, 2016, accessed January 7, 2024, http://web.archive.org/web/20160809132343/http:/www.chicagotribune.com/news/local/breaking/ct-illinois-marijuana-decriminalzation-0730-20160729-story.html.

[103] *Id.*

Governor Pritzker signed the CRTA into law on June 25, 2019, which legalized adult use cannabis.[104,105] The CRTA was developed:

> *"…in the interest of allowing law enforcement to focus on violent and property crimes, generating revenue for education, substance abuse prevention and treatment, freeing public resources to invest in communities and other public purposes, and individual freedom, the General Assembly finds and declares that the use of cannabis should be legal for persons 21 years of age or older and should be taxed in a manner similar to alcohol."*[106]

The goals of the CRTA were to:

- repair the harms from prohibition through expungements,
- provide economic opportunities for people affected by prohibition and criminalization through social equity licensing, and
- reinvest tax dollars in communities most impacted.[107]

The CRTA allows Illinois residents 21 years of age and older to legally possess 30 grams of cannabis, five grams of cannabis concentrate, or 500 milligrams of THC contained in a cannabis-infused product. Patients registered in the medical cannabis program may possess more than 30 grams of cannabis if it is grown and secured in their residence under certain conditions. The possession limit for non-Illinois residents is half that of Illinois residents.[108]

[104] Pub. Act 101-0027, "Cannabis Regulation and Tax Act," June 25, 2019, accessed January 7, 2024, https://www.ilga.gov/legislation/publicacts/101/PDF/101-0027.pdf.
[105] Illinois General Assembly, "HB1438 Cannabis Regulation and Tax Act," June 25, 2019, accessed December 14, 2023, https://ilga.gov/legislation/fulltext.asp?DocName=&SessionId=108&GA=101&DocTypeId=HB&DocNum=1438&GAID=15&LegID=115810&SpecSess=&Session=.
[106] Illinois General Assembly, "410 ILCS 705/1-5 Cannabis Regulation and Tax Act," June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.
[107] *Id.*
[108] Governor J.B. Pritzker's Office, "Adult Use Cannabis Summary," n.d., accessed November 17, 2023, https://www2.illinois.gov/IISNews/20242-Summary_of_HB_1438__The_Cannabis_Regulation_and_Tax_Act.pdf.

To repair the harms of prohibition, the CRTA set provisions allowing for the expungement of Class A misdemeanor and Class 4 felony cannabis-related criminal records except convictions associated with a violent crime.[109,110,111,112]

The CRTA established a licensing structure for cannabis-related businesses to be licensed by the Department of Agriculture and the Department of Financial and Professional Regulation. Although municipalities cannot license adult use cannabis business, they may prohibit adult use cannabis businesses from operating within their boundaries,[113]

(a) Cultivation Centers

The CRTA legalized adult use sales effective January 1, 2020, which allowed the 21 cultivation centers with medical licenses from IDOA under the CUMCPPA to apply for early approval adult use cultivation licenses to cultivate and sell cannabis products for adult use. No additional licenses for cultivation centers were authorized under the CRTA.[114]

(b) Dispensaries

The CRTA authorized IDFPR to issue adult use dispensary licenses to existing medical cannabis dispensaries as follows:

- The 55 dispensaries with medical licenses under the CUMCPPA to apply for early approval "Same Site" adult use dispensary licenses which permitted the sale of adult use cannabis at the medical dispensary location,[115]

[109] Between the years 2020 and 2021, Illinois began the expungement process, which aimed to absolve cannabis-related convictions for low-level and non-violent offenses, so long as they did not exceed the official "minor cannabis offenses" standards. These standards are defined as involving no more than 30 grams as well as no enhancements or violence. The Illinois State Police, in collaboration with the Prisoner Review Board and county State's Attorneys, work to review and expunge eligible records. In 2021, Illinois legislators passed Senate Bill 2535. The bill legalized the automatic expungement of low-level cannabis convictions. This, in turn, streamlined and expedited the process, ensuring a more efficient clearing of past cannabis offenses. As of January 17, 2023, the Illinois State Police have expunged over 780,000 charges for minor cannabis offenses, which are usually possession, manufacture, delivery, or intent of delivery of under 30 grams cannabis that did not result in conviction, since July 2019. As of January 17, 2023, the Governor has pardoned 11,430 conviction records for minor cannabis offenses and 23,097 conviction records for minor cannabis offenses have been vacated and expunged since July 2019. The majority of the expungements have been in Cook County (over 488,000 records). Rural counties have been slower to implement the expungement process.

[110] Cannabis Regulation Oversight Office (CROO), "Expungement," accessed November 17, 2023, https://cannabis.illinois.gov/legal-and-enforcement/expungement.html.

[111] State of Illinois, "Cannabis Expungement Information and Forms," n.d., accessed November 17, 2023, https://osad.illinois.gov/expungement/cannabis-expungement.html.

[112] R. Pearson, D. Petrella, and J. Munks, "Legal Recreational Marijuana in Illinois a Step Closer after Senate Vote; Bill Heads to House Next," Chicago Tribune, May 30, 2019, accessed November 17, 2023, https://www.chicagotribune.com/politics/ct-met-illinois-marijuana-legislation-senate-20190529-story.html.

[113] Dan Petrella, "Illinois House Approves Marijuana Legalization Bill Backed by Governor J.B. Pritzker." Chicago Tribune, May 31, 2019, accessed November 17, 2023, https://www.chicagotribune.com/politics/ct-met-illinois-recreational-marijuana-legislation-20190531-story.html.

[114] Illinois General Assembly, "410 ILCS 705/1-10 Cannabis Regulation and Tax Act," Definitions, June 25, 2019, accessed April 1, 2024, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992&ChapterID=35.

[115] State of Illinois, "All Cultivation Centers in Illinois are Now Approved to Grow for Adult Use." December 23, 2019, accessed November 17, 2023, https://www.illinois.gov/news/press-release.20970.html.

- The same 55 medical dispensaries to apply for early approval "Secondary Site" adult use dispensary licenses, also known as +1 licenses, to open an additional location for selling adult use cannabis exclusively.

Early approval adult use dispensaries—both same site and secondary sites—were permitted to begin selling adult use cannabis to the public beginning on January 1, 2020. §IV.B Adult Use Cannabis Business Licensing Overview provides a comprehensive overview of every license type created by the CRTA. By April 2020, IDFPR had awarded 49 Same Site and five Secondary Site adult use cannabis licenses.[116] IDFPR awarded all 110 Same and Secondary Site adult use cannabis licenses by July 2021.[117] By the end of 2021, 107 early approval adult use dispensaries were operational.[118]

In addition to the early approval licenses issued to medical dispensaries, the CRTA directed IDFPR to issue an additional round of 75 conditional adult use dispensary licenses in 2020. Applications for this round of licenses were submitted to the Department beginning December 10, 2019, until January 2, 2020. In 2021, following delays in the licensing process, the CRTA was amended to authorize a third round of 110 dispensary licenses in 2021 from the same application pool.[119] Each round included extensive application scoring criteria to prioritize Social Equity Applicants (SEA). See §IV.0. Source: Nerevu analysis of state websites.

Social Equity in Cannabis for additional SEA details including its definition. Furthermore, the CRTA limited ownership to no more than 10 dispensaries and created a statewide cap of 500 adult use dispensary licenses.

(c) Craft Growers, Infusers, and Transporters

The CRTA authorized IDOA to expand the adult use program through the issuance of 213 new licenses beginning in 2020 —40 craft growers, 32 infusers, and 141 transporters. As with the new dispensary licenses, the CRTA set caps on the number of craft grower and infuser licenses a firm could own, in addition to the total number of licenses. Additionally, all three licenses contained similar social equity scoring criteria.[120]

Due to the COVID-19 pandemic, IDOA extended the deadline for applying for craft grower, infuser, and transporter licenses to April 30, 2020 and pushed back the application scoring announcement (originally planned for July 1, 2020) to January 9, 2021 through executive

[116] State of Illinois, 2020, "Press-Release. Illinois Department of Financial and Professional Regulation Announces fifth "Secondary Site" License for Adult Use Cannabis," accessed November 17, 2023, https://cannabis.illinois.gov/news/press-release.21416.html.
[117] Nerevu analysis of IDFPR data.
[118] *Id.*
[119] State of Illinois, "Press-Release. Gov. Pritzker Announces Lottery Dates for 185 Cannabis Dispensary Licenses and Notifies Over 200 Awardees of Craft Grow, Infuser, and Transporter Licenses," July 15, 2021, accessed November 17, 2023, https://cannabis.illinois.gov/news/press-release.23577.html.
[120] Illinois General Assembly, "410 ILCS 705 Cannabis Regulation and Tax Act," June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.

orders.[121,122,123] The first round of scores were eventually announced on July 15, 2021 (see Table IV-4). The full application and licensing timeline is described in §**Error! Reference source not found.**.C. Applications and Licensing Timeline.

2. Status of Cannabis Under Federal Law & State Decriminalization

Federal policy dictates cannabis is a plant containing psychoactive compounds regulated by federal authorities under the Controlled Substances Act (CSA) enacted in 1970.[124] The federal government classifies cannabis as a Schedule I controlled substance.[125] The CSA prohibits all manufacture, distribution, dispensation, and possession of cannabis except for federally approved research. The 2018 Farm Bill defined hemp as cannabis containing a maximum of 0.3% THC and removed it from the CSA definition of prohibited cannabis substances.[126]

Federal law prohibits both medical and adult recreational cannabis use. The Drug Enforcement Administration's (DEA) classification of cannabis as Schedule I indicates a high potential for abuse coupled with no accepted evidence of medicinal benefits.[127] Therefore, the Food and Drug Administration (FDA) does not approve the marketing of cannabis for medical treatment of any condition with the exception of three cannabis-derived drug products that are independently used to treat seizures, nausea or vomiting due to chemotherapy, and appetite loss for individuals with HIV.

Cannabis businesses are also limited by federal regulations that categorize cannabis business transactions as money laundering, which exposes financial institutions to potential legal, operational, and regulatory penalties thereby restricting available financing options.[128]

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[121] State of Illinois, "Executive Order 2020-45," June 20, 2020, accessed January 4, 2024, https://www.illinois.gov/government/executive-orders/executive-order.executive-order-number-45.2020.html.

[122] State of Illinois, "Executive Order 2020-71," November 13, 2020, accessed January 4, 2024, https://www.illinois.gov/government/executive-orders/executive-order.executive-order-number-71.2020.html.

[123] State of Illinois, "Executive Order 2020-74," December 11, 2020, accessed January 4, 2024, https://www.illinois.gov/government/executive-orders/executive-order.executive-order-number-74.2020.html.

[124] United States Congress, "21 USC § 801 et seq. Congressional Findings and Declarations: Controlled Substances," October 27, 1970, accessed January 7, 2024, https://www.law.cornell.edu/uscode/text/21/801.

[125] In August 2023, the Department of Health and Human Services recommended that the DEA reclassify cannabis from a Schedule I to a Schedule III controlled substance. Schedule III controlled substances are considered to have a moderate to low potential for physical and psychological dependence. This change could have implications for the cannabis industry in terms of broadening access to research, taxing, and banking, as well as criminal enforcement. Congressional Research Service, "Department of Health and Human Services Recommendation to reschedule Marijuana: Implications for Federal Policy," September 13, 2023, accessed January 7, 2024, https://crsreports.congress.gov/product/pdf/IN/IN12240#:~:text=On%20August%2029%2C%202023%2C%20the,Controlled%20Substances%20Act%20(CSA).

[126] J. Lampe, H. Sheikh, and L. Sacco, "The Federal Status of Marijuana and the Expanding Policy Gap with States," Congressional Research Service (CRS), March 6, 2023, accessed January 4, 2024, https://crsreports.congress.gov/product/pdf/IF/IF12270.

[127] United States Drug Enforcement Administration, "Drug Scheduling." 2018, accessed January 7, 2024, https://www.dea.gov/drug-information/drug-scheduling.

[128] Federal Crimes Enforcement Network, "BSA Expectations Regarding Marijuana-Related Businesses," February 14, 2014, accessed January 4, 2024, https://www.fincen.gov/resources/statutes-regulations/guidance/bsa-expectations-regarding-marijuana-related-businesses.

Despite federal criminalization of cannabis, most states have amended their drug laws and policies to authorize the cultivation, sale, distribution, and possession of cannabis in some form. Since the 1996 legalization of medicinal cannabis in California, 37 states have instituted comprehensive laws and policies for medical cannabis use with 10 additional states sanctioning low-THC cannabis use.[129] As of November 8, 2023, 24 states, two territories, and the District of Columbia have enacted measures to regulate cannabis for non-medical adult (recreational) use.[130]

Some states have eliminated state-imposed penalties for specified activities including possession of a limited quantity by adults 21 years of age and older and regulate its cultivation, sale, and distribution. Alternatively, some states have just removed the associated criminal penalties while potentially still holding a person liable for civil penalties or fines for possession. For example, some states or jurisdictions classify the activity as a low-level misdemeanor without a possible prison term.[131]

3. Disproportionate Impact of Prohibition

Historically, federal laws have imposed criminal sanctions for cannabis-related offenses. Following the completion of any sentences for such offences, lingering consequences for individuals of such a conviction can include restrictions on buying and owning firearms, loss of eligibility for federal housing assistance, disqualification from federal employment and military service opportunities, and ineligibility for certain types of visas.

Illinois' prohibition of cannabis has had a profound and lasting impact on racial and ethnic minoritized communities, a legacy which continues to shape the social and economic landscape in many areas. Cannabis prohibition historically resulted in explicit criminalization by the state that disproportionately targeted racial and ethnic minoritized communities and led to a myriad of social and economic challenges.[132]

One of the most significant impacts in these communities is the high rate of arrests and incarcerations in both county jails and state prisons for cannabis-related offenses.[133] Despite similar rates of cannabis use across different racial groups, minorities, particularly African

[129] J. Lampe, H. Sheikh, and L. Sacco, "The Federal Status of Marijuana and the Expanding Policy Gap with States." Congressional Research Service (CRS), March 6, 2023, accessed January 4, 2024, https://crsreports.congress.gov/product/pdf/IF/IF12270.

[130] National Conference of State Legislatures, "State Medical Cannabis Laws," June 22, 2023, accessed December 14, 2023, https://www.ncsl.org/health/state-medical-cannabis-laws.

[131] J. Lampe, H. Sheikh, and L. Sacco, "The Federal Status of Marijuana and the Expanding Policy Gap with States," Congressional Research Service, March 6, 2023, accessed January 4, 2024, https://crsreports.congress.gov/product/pdf/IF/IF12270. Note that in Illinois all possession below the thresholds in the CRTA is legal for adults. Use in public spaces and by minors remains a civil offense.

[132] Christian Gunadi and Yuyan Shi, "Cannabis Decriminalization and Racial Disparity in Arrests for Cannabis Possession," Social Science & Medicine, January 2022, accessed December 14, 2023, https://www.sciencedirect.com/science/article/abs/pii/S0277953621010042.

[133] Colleen Daniels, Aggrey Aluso, Naomi Burke-Shyne, Kojo Koram, Suchitra Rajagopalan, Imani Robinson, Shaun Shelly, Sam Shirley-Beavan, and Tripti Tandon, "Decolonizing Drug Policy." *Harm Reduction Journal* 18 (1), 2021, accessed December 14, 2023, https://doi.org/10.1186/s12954-021-00564-7.

Americans and Hispanics, have faced higher rates of arrests and convictions both in Illinois, and nationally.[134]

An American Civil Liberties Union (ACLU) report on cannabis arrests in Illinois from 2010 to 2018 revealed significant racial disparities. Black individuals were 43 times more likely than White individuals to be arrested for cannabis possession in Tazewell County, 24 times more likely in Peoria County, and nearly 20 times more likely in Whiteside County.[135] These disparities in the criminal justice system have led to long-term consequences, including reduced employment opportunities, difficulty securing housing, and the family disruptions.[136]

The stigma of a criminal record can follow individuals for a lifetime and hinder their ability to fully participate in society and the economy.[137] Importantly, the criminal record was an explicit barrier to enter the legal cannabis industry in Illinois under the CUMCPPA: people with prior drug convictions, including for cannabis, were prohibited from obtaining medical cannabis agent identification cards.[138] A cannabis agent identification card is required to be a principal officer, board member, or employee of a cultivation center or medical dispensary.[139] While this restriction does not apply to those seeking employment in adult use cannabis businesses, this initial exclusion of individuals with past convictions from the medical cannabis industry likely impacted those same individuals' ability to participate in the adult use industry, as they did not have the opportunity to gain experience in the industry.

The broader War on Drugs' heightened focus on cannabis exacerbated the situation.[140] High arrests and convictions reenforced stigmatization, isolation, and disinvestment in certain Illinois

[134] American Civil Liberties Union, "A Tale of Two Countries: Racially Targeted Arrests in the Era of Marijuana Reform," accessed December 14, 2023, http://www.aclu.org/publications/tale-two-countries-racially-targeted-arrests-era-marijuana-reform.
[135] *Id.*
[136] M.A. Curtis, S.B. Garlington, and L.S. Schottenfeld, "Alcohol, Drug, and Criminal History Restrictions in Public Housing," September 13, 2013, accessed January 4, 2023, https://www.semanticscholar.org/paper/Alcohol%2C-Drug%2C-and-Criminal-History-Restrictions-in-Curtis-Garlington/714ea050dc5dda4370e6ab5cdb26a08e074624e6.
[137] National Institute on Drug Abuse, "Criminal Justice Drug Facts," June 1, 2020, accessed January 20, 2024, https://nida.nih.gov/publications/drugfacts/criminal-justice.
[138] Illinois General Assembly, "410 ILCS 130/10(l)(1) Compassionate Use of Medical Cannabis Program Act: 'excluded offense barring agent registration,'" August 9, 2019, accessed January 4, 2024, https://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=3503&ChapterID=35.
[139] Illinois General Assembly, "410 ILCS 130/10(p),'" August 9, 2019, accessed February 12, 2024, https://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=3503&ChapterID=35.
[140] Sentencing Policy Advisory Council, "Sentencing Reform House Bill 3355 House Amendment 1," May 2017, accessed January 4, 2024, https://spac.icjia-api.cloud/uploads/HB3355_HA1_Sims_Sentencing_Reform-20191106T20103719.pdf.

communities.[141,142] Additionally, cannabis prohibition led to increased police presence and surveillance in minoritized neighborhoods, which fostered an environment of mistrust and fear.[143]

This environment has strained community relations with law enforcement and often resulted in a cyclical pattern of marginalization and criminalization.[144] It has significantly affected the social fabric of these communities with generations growing up in an atmosphere where cannabis-related law enforcement is a common occurrence.[145,146]

Cannabis prohibition's economic impact on minoritized communities is also noteworthy. The inability to participate in the legal cannabis market as a business owner has been a significant barrier.[147] Racial and/or ethnic minorities who have been most affected by cannabis prohibition often find themselves unprepared to take advantage of the new opportunities due to past convictions or lack of access to capital and resources needed to enter the cannabis industry.[148,149,150]

With the legalization of cannabis in Illinois and other states, the industry has seen a surge in sales, amounting to billions, and offers substantial prospects for expansion and notable economic potential. Growing recognition of these disparities and the need for reform has led to efforts and initiatives such as the CRTA to decriminalize cannabis, expunge past cannabis-related convictions, and encourage racial and ethnic minority participation in the burgeoning legal

[141] Jessica Reichert, "Concentrations of Incarceration: Consequences of Communities with High Prison Admissions and Returns," Illinois Criminal Justice Information Authority, December 19, 2019, accessed January 20, 2024, https://icjia.illinois.gov/researchhub/articles/concentrations-of-incarceration-consequences-of-communities-with-high-prison-admissions-and-returns.

[142] D.W. Willits, B. Solensten, M. Meize, M. Stonf, D. Makin, C. Hemmens, D.L. Stanton, N.P. Lovrich, "Racial Disparities in the Wake of Cannabis legalization: Documenting Persistence and Change," National Institute of Justice, January 1, 2022, accessed January 4, 2024, https://nij.ojp.gov/library/publications/racial-disparities-wake-cannabis-legalization-documenting-persistence-and.

[143] John Kagia, "Racial Disparities and Cannabis Legalization in American Policing," New Frontier Data, June 15, 2020, accessed January 4, 2024 https://newfrontierdata.com/cannabis-insights/racial-disparities-and-cannabis-legalization-in-american-policing/.

[144] Jan Mooney, "Racial Disparities in Policing and Their Impact on Police-Community Relations," Penn State Social Science Research Institute, July 2020, accessed January 4, 2024, https://evidence2impact.psu.edu/resources/racial-disparities-in-policing-and-their-impact-on-police-community-relations/.

[145] Dorothy Roberts, "The Social and Moral Cost of Mass Incarceration in African American Communities," *Stanford Law Review*, January 1, 2004, https://scholarship.law.upenn.edu/faculty_scholarship/583.

[146] John Kagia, "Racial Disparities and Cannabis Legalization in American Policing," New Frontier Data, June 15, 2020, accessed January 4, 2024, https://newfrontierdata.com/cannabis-insights/racial-disparities-and-cannabis-legalization-in-american-policing/.

[147] Illinois General Assembly, "410 ILCS 130/10(1) Compassionate Use of Medical Cannabis Program Act: 'excluded offense barring agent registration,'" August 9, 2019, accessed January 4, 2024, https://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=3503&ChapterID=35.

[148] Alex Malyshev and Sarah Ganley, "The Challenges of Getting Social Equity Right in the State-Legal Cannabis Industry," Reuters, July 22, 2021, accessed December 17, 2023, https://www.reuters.com/legal/litigation/challenges-getting-social-equity-right-state-legal-cannabis-industry-2021-07-22/.

[149] See Chapter VII. ECONOMY-WIDE ANALYSIS.

[150] See §VI.J. Qualitative Findings.

cannabis industry.[151] The efforts and initiatives are crucial in addressing the historical injustices of cannabis prohibition and pave the way for more equitable and inclusive policies and practices.

[151] State of Illinois, "Gov. Pritzker Signs Most Equity-Centric Law in Nation to Legalize Adult-Use Cannabis," June 25, 2019, accessed December 11, 2023, https://www.illinois.gov/news/press-release.20242.html.

IV. CANNABIS REGULATION IN ILLINOIS

In Illinois, the regulatory framework governs both adult use and medical cannabis. Eight state agencies oversee various aspects of the program, described in Table IV-1. In addition to the eight agencies, CROO coordinates and supports the efforts of all agencies involved in regulating and taxing the cannabis industry. CROO focuses on promoting diversity and equity in the cannabis industry and makes recommendations to further the aims of the CRTA.[152] Importantly, CROO is statutorily prohibited from participating in the issuance or award of any cannabis business establishment license or participating in any discipline related to any cannabis business establishment.[153]

Table IV-1. Illinois Cannabis Administrative and Supporting Agencies

Agency	Role
Illinois Department of Professional and Financial Regulation (IDFPR)	IDFPR handles the licensing and oversight of dispensing organizations, dispensary agents, and Responsible Vendors. Including application review, background checks, compliance enforcement, inspections, and disciplinary actions.
Illinois Department of Agriculture's (IDOA)	IDOA's Division of Cannabis Regulation (DCR) is responsible for licensing cultivation centers, craft growers, infusers, transporters, and overseeing Community College Vocational Cannabis Pilot Programs. IDOA ensures compliance with safety and quality standards and approves product labeling and packaging.[154]
Illinois Department of Revenue (IDOR)	IDOR manages state and municipal cannabis taxes, ensuring tax law compliance and auditing cannabis businesses.[155]
Illinois Department of Public Health (IDPH)	IDPH manages the Medical Cannabis Patient Registry and oversees public health impacts.[156]
Illinois State Police (ISP)	ISP conducts security plan reviews and regulatory compliance inspections for all cannabis licensed entities and provides support and training on cannabis laws.[157]
Illinois Department of Commerce and Economic Opportunity (DCEO)	DCEO develops opportunities for technical assistance and capital access for cannabis business participants, funded by the Cannabis Business Development Fund.[158]

[152] Cannabis Regulation Oversight Office (CROO), "Meet the Cannabis Team," accessed November 17, 2023, https://cannabis.illinois.gov/about/meet-the-cannabis-team.html.
[153] *Id.*
[154] Illinois Department of Agriculture, "IDOA Cannabis," n.d., accessed November 17, 2023, https://cannabis.illinois.gov/agencies/cannabis-idoa.html.
[155] Illinois Department of Revenue, "Cannabis Taxes," n.d., accessed November 17, 2023, https://tax.illinois.gov/research/taxinformation/other/cannabis-taxes.html.
[156] Illinois Department of Public Health, "Medical Cannabis Patient Registry Program," n.d., accessed November 17, 2023, https://dph.illinois.gov/topics-services/prevention-wellness/medical-cannabis.html.
[157] Illinois State Police, "Cannabis Control," 2020, accessed November 17, 2023, https://isp.illinois.gov/CCO/CannabisControl.
[158] Illinois Department of Commerce and Economic Opportunity, "Adult-Use Cannabis Social Equity Program" n.d., accessed November 17, 2023, https://dceo.illinois.gov/cannabisequity.html.

Agency	Role
Illinois Criminal Justice Information Authority (ICJIA)	ICJIA oversees the Restore, Reinvest, and Renew (R3) Program, which reinvests cannabis tax dollars in communities affected by violence, excessive incarceration, and economic disinvestment.[159]
Illinois Department of Human Services (IDHS)	IDHS funds cannabis public education campaigns, data collection and analysis, and programs addressing substance abuse, prevention, and mental health services. The IDHS also provides Substance Use Prevention and Recovery (SUPR) Resources related to non-medical cannabis use.[160]

Source: Nerevu analysis of state websites.

A. Social Equity in Cannabis

1. Social Equity Criteria

The CRTA requires the state's two licensing agencies (IDOA and IDFPR) to award adult use licenses to businesses using application scoring rubrics established by statute for cultivation centers,[161] craft growers,[162] infusers,[163] transporters,[164] and dispensaries.[165,166]

The scoring rubrics set by the CRTA dictate both IDOA and IDFPR allocate a significant number of points to those applicants who met certain criteria to be considered an SEA to direct economic opportunities to the communities most impacted by the criminalization of cannabis.[167] These criteria applied to all craft grower, infuser and transporter licenses issued by IDOA, and all new adult use dispensary licenses (excluding the early approval same site and early approval secondary sites). These criteria are race neutral, but target individuals and communities most impacted by the criminal justice system's enforcement of the Cannabis Control Act.

The CRTA took a notably different approach to awarding licenses than had been used for the issuance of medical licenses under the CUMCPPA. In the CRTA, the General Assembly found that the ownership of the medical cannabis businesses did not reflect the population of the State

[159] State of Illinois, "Restore. Reinvest. Renew.," n.d., accessed November 17, 2023, https://r3.illinois.gov/.
[160] Illinois Department of Human Services, "IDHS: SUPR Cannabis Resources," n.d., accessed November 17, 2023, https://www.dhs.state.il.us/page.aspx?item=127972.
[161] Illinois General Assembly, "410 ILCS 705/20-20 Cannabis Regulation and Tax Act," June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.
[162] Illinois General Assembly, "410 ILCS 705/30-15 Cannabis Regulation and Tax Act," June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.
[163] Illinois General Assembly, "410 ILCS 705/35-15 Cannabis Regulation and Tax Act," June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.
[164] Illinois General Assembly, "410 ILCS 705/40-15 Cannabis Regulation and Tax Act," June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.
[165] Illinois General Assembly, "410 ILCS 705/15-30 Cannabis Regulation and Tax Act," June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.
[166] See §IV.B Adult Use Cannabis Business Licensing Overview below
[167] Illinois General Assembly, "410 ILCS 705/1-10 Cannabis Regulation and Tax Act," June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.

of Illinois and additional efforts are needed to reduce barriers to ownership.[168] Although creating an equitable industry was one of the stated objectives of the CRTA, the Act did not use explicit race or gender criteria for scoring cannabis license applications.

For the first round of social equity licenses, the SEA status criteria requires that cannabis license applicants be at least 51% owned and control by one or more individuals who meet at least one of the following criteria:[169,170]

1. have lived in a Disproportionately Impacted Area (DIA) for five of the past ten years,[171]
2. have been convicted or arrested for cannabis-related offenses eligible for expungement, and/or
3. have a direct family connection (parent, child, or spouse) to cannabis-related offenses eligible for expungement.

Additionally, businesses employing at least ten full-time employees can qualify for SEA status if over half of their employees individually meet the above criteria.[172]

According to the CRTA, a Census tract is designated as a DIA if it meets one of the following criteria:

- has a poverty rate of at least 20% according to the latest federal decennial census,
- at least 75% of the children participate in the federal free lunch program according to reported statistics from the State Board of Education,
- at least 20% of the households receive assistance under the Supplemental Nutrition Assistance Program,
- has an average unemployment rate, as determined by the Illinois Department of Employment Security, which is more than 120% of the national unemployment average, as determined by the United States Department of Labor, for a period of at least two consecutive calendar years preceding the date of the application, or

[168] Illinois General Assembly Cannabis Regulation and Tax Act "410ILCS 701/7-1 Findings" (a) https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.
[169] Illinois General Assembly, "410 ILCS 705/1-10 Cannabis Regulation and Tax Act," June 25, 2019, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.
[170] IDFPR has proposed new criteria for future rounds of Social Equity Licenses, however the new criteria are not relevant for this study.
[171] Illinois Department of Commerce and Economic Opportunity (DCEO), "Disproportionately Impacted Area Map," n.d., accessed November 17, 2023, https://dceo.illinois.gov/cannabisequity/disproportionateimpactedareamap.html.
[172] For future rounds IDFPR proposed new SEA criteria that did not include this employment clause, but those criteria were not relevant for this study.

- has high rates of arrest, conviction, and incarceration related to the sale, possession, use, cultivation, manufacture, or transport of cannabis.[173,174,175]

Although IDFPR and IDOA employed different scoring criteria for each of the different license types, each application review process awarded a certain number of points to those applicants that met the SEA criteria.IV02Application and Licensing Fee DiscountsIV05Restore, Reinvest, Renew (R3) Program

2. Application and Licensing Fee Discounts

Qualified SEAs are given a 50% discount on all application and licensing fees, and other financial requirements (see Table IV-2).

Table IV-2. License Fees and Discounts

License Type	Non-refundable Application Fee	SEA Application Fee	License Fee	SEA License Fee
Dispensary	$5,000	$2,500	$60,000	$30,000
Craft Grower	$5,000	$2,500	$40,000	$20,000
Infuser	$5,000	$2,500	$5,000	$2,500
Transporter	$5,000	$2,500	$10,000	$5,000
Cultivation	N/A	N/A	N/A	N/A

Source: Nerevu analysis of IDFPR and IDOA data.

3. Social Equity Loan Program

In 2021, DCEO launched the Social Equity Loan Program, which aims to help SEAs start and operate cannabis businesses by providing capital, outreach, research on racial and ethnic minority participation in the cannabis industry, and job training in DIAs.[176,177,178] The Social Equity

[173] State of Illinois, "Press-Release. State of Illinois Releases Disproportionately Impacted Areas for Cannabis Program's Social Equity Applicants," October 1, 2020, accessed December 10, 2023, https://www.illinois.gov/news/press-release.20661.html.

[174] Illinois General Assembly, "410 ILCS 705/1-10 Cannabis Regulation and Tax Act," see "Disproportionately Impacted Area," June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.

[175] Neither the CRTA nor IDFPR, IDOA, or DCEO administrative rules define "high".

[176] Illinois Department of Commerce and Economic Opportunity, "Social Equity Cannabis Loan Program," n.d., accessed January 7, 2024, https://dceo.illinois.gov/cannabisequity/loaninfo.html.

[177] Illinois General Assembly, "410 ILCS 705/7-10 Cannabis Regulation and Tax Act," June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.

[178] State of Illinois House of Representatives, Transcript Debate, pg. 8, "Representative Jehan Gordon-Booth: 'So, when looking at what many other states that have embarked upon adult-use legalization, many of the problems that we saw in terms of creating a policy that was equitable, some of the things that were missing were things such as having access to capital. A major hurdle for individuals wanting to get into this space. We've addressed that. With a $30 million grant and a revolving loan fund for Social Equity Applicants," May 31, 2019, accessed January 4, 2024, https://www.ilga.gov/House/transcripts/Htrans101/10100062.pdf.

Loan Program (SELP) received its funding from the Cannabis Business Development (CBD) Fund, which enabled the program to provide low-interest loans to SEAs.

DCEO had an initial appropriation for $18 million. The CBD Fund grew to $36 million with receipts from application fees and, in 2023, obtained another $40 million from the Compassionate Use for Medical Cannabis Fund.[179] As of January 4, 2024, the CBD Fund had just under $61 million available.[180]

The first iteration of the program in 2021 was designed in partnership with lending institutions, with DCEO funding a portion of each loan to incentivize lending to qualified SEAs by reducing the risk for lenders.[181] Some participants faced considerable delays in receiving their funds due to regulatory and fiduciary requirements imposed by the lending partners.[182] In response to participants experiencing challenges securing funding through the initial model of the Social Equity Loan Program, DCEO enhanced the program to provide Direct Forgivable Loans (DFL) in 2022 to service the businesses directly. The DFL Program was initially allocated $8.75M to award. However, after the phaseout of the Partnership Lending Program (PLP) in 2023, DCEO amended the loans and awarded $18.3 million in DFLs and $3.6 million in partnership lending.

The new iteration of the program offered state funding to all eligible participants in the initial loan application round, independent of the status of their loan applications with lending partners. The program's forgivable loans waived payments and interest during an 18-month grace period. Loan amounts for the initial Round 1 DFL Program per participant are based on type as follows:[183]

- Craft Growers: $1,250,000
- Infusers: $625,000
- Transporters: $125,000

The loan principal was 100% forgivable for eligible business expenses including but not limited to rent, payroll, utilities, inventory, debt, regulatory expenses, legal fees, and equipment. Fees up to $10,000 would be assessed for borrowers who transferred, sold, or granted their license to a non-SEA within five years of receiving a loan. Additionally, if a borrower no longer met the SEA criteria over the term of the loan through a change in ownership, DCEO could accelerate repayment of

[179] DCEO's initial appropriation was for $18 million, of which $12 million was a transfer from the Compassionate Use Fund. The CBD Fund grew over time with application fees, and, in July 2023, Pub. Act 103-0008 injected another $40 million from the Compassionate Use Fund. Pub. Act 103-0008 (adding subsection (c-5) to 410 ILCS 705/7-10). If each of the new 559 licenses received an equal amount, irrespective of need or operational status, each would receive under $110,000, not including the CBD Fund's other obligations of funding technical assistance.

[180] Illinois Comptroller, "Fund Search: 'Fund 0898, Cannabis Business Development Fund'," accessed January 4, 2024, https://illinoiscomptroller.gov/financial-reports-data/data-sets-portals/fund-search.

[181] Illinois Department of Commerce and Economic Opportunity (DCEO), "Report to the 101st General Assembly: Cannabis Social Equity Program," January 1, 2021, accessed January 7, 2024, https://dceo.illinois.gov/content/dam/soi/en/web/dceo/aboutdceo/reportsrequiredbystatute/cannabis-report-dec20.pdf.

[182] One lending partner was a regulated financial institution. Their loan requirements were arguably required by law or regulation.

[183] DCEO may amend the loan amounts in future lending rounds.

the balance, require a program closeout fee of up to $10,000, and, for one year following forgiveness, recapture any forgiven loan principal.[184]

Through 2023, DCEO has provided $21.9 million in loan funding, of which $18.3 million was provided through the DFL Program. Round 1 of the DFL was dedicated to providing funds to craft growers, infusers, and infusers. DFL remains active and Round 2 will be for qualified SEA dispensaries.

4. Access to Information and Technical Assistance

Pursuant to the CRTA, DCEO established a network of technical assistance (TA) providers, including community-based organizations and educational institutions to administer TA on behalf of the Department for no cost to qualified SEAs.[185] The providers developed and implemented various programs such as virtual events, videos, and workshops to assist SEAs in obtaining and maintaining a cannabis business license in Illinois.

In addition to each of the agencies' cannabis specific websites and information shown in Table IV-3, CROO has been a resource for SEAs and cannabis businesses since 2020. In 2023, CROO launched a comprehensive and user-friendly website to consolidate information from across the state government for the public and applicants.[186] It serves as a central resource for information related to the cannabis industry.

Table IV-3. State Agency Cannabis Specific Websites

Department	Webpage	Description
IDFPR	CROO	Includes media releases, research and data, comprehensive legal and enforcement resources, and links to the affiliate agency webpages.
IDFPR	Medical Cannabis Patient Program	Includes license information to include resources, license renewal, license look up, and a link to file a complete application. The site includes links to forms, resources and publications.
IDFPR	Adult Use Cannabis Program	Contains general information for the public and potential adult use licensees about the program's administrative requirements and deadlines and frequently asked questions. Includes links to program information.
IDOA	Division of Cannabis Regulation (DCR)	Includes news, resources to include forms, licenses services, information on how to apply for cultivation center, craft grower, infuser, and transporter licenses, application and fees, general

[184] Illinois General Assembly, "14 Ill. Admin. Code 650.20, Cannabis Social Equity Fees," n.d., accessed January 4, 2024, https://www.ilga.gov/commission/jcar/admincode/014/014006500000200R.html.
[185] Illinois General Assembly, "410 ILCS 705/7-15 Loans and Grants to Social Equity Applicants".
[186] Illinois Cannabis Regulation Oversight Officer, "Illinois: The Most Diverse Cannabis Industry and Still Growing," n.d., accessed January 7, 2024, https://cannabis.illinois.gov/.

Department	Webpage	Description
		information for the cannabis business, FAQs, and links to affiliate agencies.
DCEO	Illinois Adult Use Cannabis Social Equity Program	Includes applicant criteria, Disproportionately Impacted Area map, Social Equity Cannabis Loan Program, technical assistance opportunities, and other cannabis license resources.
IDOR	Cannabis Taxes	Comprehensive cannabis taxes page with legal references, pertinent definitions, applicable tax rates, registration information, and payment information.
ISP	Cannabis Control Office	Comprehensive site providing guidelines and instructions on how to properly submit craft grower, infuser, and transporter security plans.
IDPH	Medical Cannabis Patient Registry Program	Comprehensive site providing information related to the Medical Cannabis Patient Program to include application resources for new and existing patients and health care providers.
IDPH	Cannabis	Provides a definition of cannabis and links to resources and the Annual Cannabis Regulation and Tax Act Evaluation Annual Cannabis Reports.
IDHS	Let's Talk Cannabis Illinois	Information and education site designed to help individuals, parents, mentors, and new moms understand the risks and considerations of cannabis use.
ICJIA	Restore, Reinvest, and Renew (R3)	Includes news and information, applicant tools, funding and technical assistance resources.

5. Restore, Reinvest, Renew (R3) Program

The CRTA created the Restore, Reinvest, and Renew (R3) Program to use cannabis tax revenues for the following purposes:

- "To directly address the impact of economic disinvestment, violence, and the historical overuse of criminal justice responses to community and individual needs by providing resources to support local design and control of community-based responses to these impacts;
- To substantially reduce both the total amount of gun violence and concentrated poverty in this State;
- To protect communities from gun violence through targeted investments and intervention programs, including economic growth and improving family violence prevention, community trauma treatment rates, gun injury victim services, and public health prevention activities; and

- To promote employment infrastructure and capacity building related to the social determinants of health in eligible community areas."[187]

Administered by the Illinois Criminal Justice Information Authority (ICJIA), R3 grants fund programs in five areas : Civil Legal Aid, Economic Development, Reentry, Violence Prevention, and Youth Development.

The geographic regions where R3 funds are directed, known as R3 Areas, are identified every four years, in part, by their rates of gun injuries, child poverty rates, unemployment, and commitments from and returns to the Department of Corrections.[188] Applicants must provide service in at least one R3 Area and receive additional points during the evaluation of their grant applications if they are located in an R3 Area.[189]

Illinois is split into 12 funding regions, and funding is based on the percentage of total R3 Area population within each region.[190] The R3 grant program exhibits equity in grantmaking by prioritizing new and emerging grassroots organizations, allowing communities to define their own needs and approaches for services, and promoting collaboration between providers.

B. Adult Use Cannabis Business Licensing Overview

This section outlines the essential details of the licensing criteria, application process, and operational requirements for each type of cannabis business license in Illinois. Each license type is subject to specific operational capabilities, application requirements, and compliance standards as mandated by the CRTA. The licensing process aims to ensure that all cannabis businesses operate within the legal bounds set by the state, prioritizing safety, social equity, and economic development.

1. Dispensing Organizations

IDFPR licenses dispensing organizations, also known as dispensaries, to acquire cannabis from a cultivation center, craft grower, infusing organization, or another dispensary to sell or dispense cannabis, cannabis-infused products, cannabis seeds, paraphernalia, or related supplies. Adult use dispensaries hold licenses to sell cannabis products directly to consumers over the age of twenty-one (21). Dispensaries depend on cultivation centers, craft growers, infusers, and transporters to receive a consistent supply of high-quality cannabis and cannabis products for sale to consumers.

[187] Illinois General Assembly, "410 ILCS 705/10-40 Restore, Reinvest, and Renew Program," n.d., accessed January 7, 2024, https://www.ilga.gov/legislation/ilcs/documents/041007050K10-40.htm.
[188] *Id.*
[189] Illinois Criminal Justice Information Authority, "Restore, Reinvest, and Renew (R3) Notice of Funding Opportunity (NOFO) Webinar," December 20, 2021, accessed January 7, 2024, https://r3.illinois.gov/downloads/R3NOFOTASession.pdf.
[190] *Id.*

(a) Same Site Early Approval Dispensing Organizations

A same site early approval adult use dispensing organization license permits a medical cannabis dispensing organization licensed under the CUMCPPA to begin selling cannabis or cannabis-infused product to purchasers as permitted by the CRTA as of January 1, 2020.

Medical cannabis dispensaries in Illinois wanting an early license to also sell cannabis for adult use at their existing medical dispensary site could apply with IDFPR using the provided forms. They needed to submit a form with a $30,000 fee, show they are a registered and compliant medical cannabis dispensary, provide details about their current and new location, and outline their operational, security, and inventory plans. Additionally, they paid a $200,000 non-refundable fee to support the CBD fund and made a commitment to complete one of the following Social Equity Inclusion Plans:

- Contribute 3% of total sales from June 1, 2018–June 1, 2019, or $100,000, whichever is less, to the CBD Fund. This is in addition to the $200,000 CBD Fund fee;
- Contribute 3% of total sales from June 1, 2018–June 1, 2019, or $100,000, whichever is less, to a cannabis industry training or education program at an Illinois community college as defined in the Public Community College Act;
- Donate $100,000 or more to a program that provides job training services to persons recently incarcerated or that operates in a Disproportionately Impacted Area;
- Participate as a host in a cannabis business establishment incubator program approved by the DCEO, and in which a secondary site early approval adult use dispensing organization license holder agrees to provide a loan of at least $100,000 and mentorship to incubate, for at least a year, an SEA intending to seek a license or a licensee that qualifies as an SEA;[191] or,
- Participate in a sponsorship program for at least two years approved by DCEO in which a secondary site early approval adult use dispensing organization license holder agrees to provide an interest-free loan of at least $200,000 to an SEA.[192]

A same site early approval adult use dispensing organization licensee whose license was issued pursuant to the CRTA could apply to relocate within the same geographic district where its existing associated medical cannabis dispensing organization dispensary, licensed under the CUMCPPA, is authorized to operate. They were not permitted to move outside of that geographic district.

[191] Illinois General Assembly, "410 ILCS 705/15-20 Cannabis Regulation and Tax Act," defines "incubate" as providing direct financial assistance and training necessary to engage in licensed cannabis industry activity similar to that of the host licensee and states that the early approval adult use dispensing organization license holder or the same entity holding any other licenses issued under the CRTA shall not take an ownership stake of greater than 10% in any business receiving incubation services, June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.

[192] Illinois General Assembly, "410 ILCS 705/15-20 (d) (5) Cannabis Regulation and Tax Act," states the sponsor shall not take an ownership stake of greater than 10% in any business receiving sponsorship services to comply with these rules, June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.

(b) Secondary Site Early Approval Dispensing Organizations

A secondary site early approval adult use dispensing organization license permits a medical cannabis dispensing organization licensed under the CUMCPPA to begin selling cannabis or cannabis-infused product to purchasers on January 1, 2020, at a different dispensary location from its existing registered medical dispensary location.

Medical cannabis dispensaries seeking a secondary site early approval adult use license for a new location followed a process similar to the one used when applying to sell adult use cannabis at their existing locations. The application, submitted by the current medical cannabis license holder, required a $30,000 nonrefundable fee, proof of good standing, certification of compliance with medical cannabis laws, details about the organization and its principal members, and a CBD Fund fee based on previous sales. They also needed to choose a social equity plan, involving contributions to the CBD Fund, grants for cannabis training programs, donations to job training for the recently incarcerated, participation in an incubator program, or sponsorship of a social equity applicant.

(c) Conditional Dispensing Organizations

For new entrants to the adult use cannabis market's dispensing organizations, the licensing criteria focuses on compliance with state regulations, security measures, record-keeping, and operational standards. Dispensing Organization applications were scored on the following criteria for a total of 250 possible points with an option for two additional bonus points:

- Suitability of Employee Training Plan (15 points)
- Security and Recordkeeping (65 points)
- Applicant's Business Plan, Financials, Operating and Floor Plan (65 points)
- Knowledge and Experience (30 points)
- Status as a Social Equity Applicant (50 Points)
- Labor and Employment Practices (5 points)
- Environmental Plan (5 points)
- Illinois Owner (5 points)
- Status as a Veteran (5 points)
- Diversity Plan (5 points)
- Community Outreach Plan (2 bonus points)

Applications require a non-refundable application fee of $5,000 which is available for waiver for SEAs. Conditional license approval requires a registration fee of $60,000 ($30,000 for SEAs). The conditional license phase allows licensees preparation time to build out operations and undergo necessary inspections by IDFPR as well as the ISP within one year of issuance.

The conditional license is a provisional license awarded to applicants that grants the right to an adult use dispensing organization license if the applicant meets the conditions of the CRTA. Holding a conditional license does not entitle the recipient to begin purchasing or selling cannabis

or cannabis-infused products until approved to receive an adult use dispensing organization license, meaning a license issued by IDFPR that permits a person to act as a dispensing organization under the CRTA.

2. Craft Growers

IDOA licenses craft growers to cultivate, dry, cure, and package cannabis and perform other necessary activities to make cannabis available for sale at a dispensing organization or use at an infusing organization. A craft grower may contain up to 5,000 square feet of canopy space on its premises for plants in the flowering state.[193] A craft grower may share premises with an infusing organization or a dispensing organization, or both, provided each licensee stores currency and cannabis or cannabis-infused products in a separate secured vault. If a vault is shared, all licensees using it must have over 50% common ownership.

A craft grower license is required prior to starting any production activities. Applications require a non-refundable application fee of $5,000 which is available for waiver for SEAs. Applications required comprehensive business details including items such as business demographics, details of administrative or judicial proceedings for principal officers and board members, proposed operating bylaws, etc. A complete list of application requirements is available at 68 Ill. Adm. Code 1290.50.

Craft Grower applications are scored on the following criteria for a total of 1,000 possible points, with an optional 2 bonus points:

- Suitability of the Proposed Facility (75 points)
- Suitability of Employee Training Plans (50 points)
- Security Plan and Recordkeeping (145 points)
- Cultivation Plan (75 points)
- Product Safety and Labeling Plan (95 points)
- Business Plan and Services to be Offered (110 points)
- Status as a Social Equity Applicant (200 points)
- Labor and Employment Practices (20 points)
- Environmental Plan (20 points)
- Proof of 51% owned and operated by an Illinois resident (90 points)
- Proof of 51% control or ownership by a Veteran (20 points)
- Diversity Plan (100 points)
- Commitment to Engage with the Community (2 bonus Points)

[193] IDOA may authorize an increase or decrease of flowering stage cultivation space in increments of 3,000 square feet by rule based on market need, craft grower capacity, and the licensee's history of compliance or noncompliance, with a maximum space of 14,000 square feet for cultivating plants in the flowering stage, which must be cultivated in all stages of growth in an enclosed and secure area.

IDOA awarded licenses to the highest scoring applicants, with a minimum of 75% of available points required. Selected applicants pay a prorated fee of $40,000. The information and plan provided by the applicant at application became a mandatory condition of the license once awarded.

3. Infusing Organizations

IDOA licenses infusing organizations, or infusers, to directly incorporate cannabis or cannabis concentrate into a product formulation to produce a cannabis-infused product. The licensing requirements encompass compliance with manufacturing and health standards, labeling and packaging regulations, and safety protocols.

Applications require a non-refundable application fee of $5,000 which is available for waiver for SEAs. Applicants had to demonstrate at least $20,000 in liquid assets. Infuser applications were scored on the following criteria for a total of 1,000 possible points, with an optional 2 bonus points available:

- Suitability of the Proposed Facility (75 points)
- Suitability of Employee Training Plans (50 points)
- Security Plan and Recordkeeping (145 points)
- Infusing Plan (75 points)
- Product Safety and Labeling Plan (95 points)
- Business Plan and Services to be Offered (110 points)
- Status as a Social Equity Applicant (200 points)
- Labor and Employment Practices (20 points)
- Environmental Plan (20 points)
- Proof of 51% owned and operated by an Illinois resident (90 points)
- Proof of 51% control or ownership by a Veteran (20 points)
- Diversity Plan (100 points)
- Commitment to Engage with the Community (2 bonus Points)

IDOA awarded licenses to the highest scoring applicants, with a minimum of 75% of available points required. Selected applicants pay a licensing fee of $5,000 ($2,500 for SEAs). The information and plan provided by the applicant at application becomes a mandatory condition of the license once awarded. Infusers may share premises with a craft grower or a dispensing organization provided currency, cannabis, and infused products are stored in a separate secured vault. Infusers may not offer or deliver money or anything else of value to obtain preferential placement within the dispensing organizations.

Infusers are dependent on cultivation centers and craft growers for supplying the raw materials required to produce cannabis-infused products. IDOA ensures infusers have enough affordable raw materials for cannabis-infused products. This involves conducting surveys, market studies, and cost assessments to determine this availability. IDOA may implement rules to guarantee

infusers' access to these materials, potentially including setting aside raw materials or allowing infusers to get a processor license for extraction.[194] Processor licenses depend on the infusers' experience, practices, and compliance with safety and waste disposal regulations.

4. Transporting Organizations

IDOA licenses transporting organizations, also known as transporters, to transport cannabis on behalf of other licensed cannabis businesses. IDOA requires Transportation licenses for transporting cannabis products between licensed facilities, such as from cultivators to infusers or from infusers to dispensaries. Transporters ensure the safe and compliant transportation of cannabis products, adhering to security protocols and regulatory requirements.

Transporters depend on cultivation centers and craft growers to receive cannabis products for transportation and deliver them to the intended destinations. Applications require a non-refundable application fee of $5,000 (waived for SEAs).

Transporter applications were scored on the following criteria for a total of 1,000 possible points:

- Business Plan (150 points)
- Suitability of Employee Training Plans (160 points)
- Security Plan and Recordkeeping (180 points)
- Status as a Social Equity Applicant (200 points)
- Labor and Employment Practices (20 points)
- Environmental Plan (20 points)
- Illinois resident (90 points)
- Veteran Owned Business (90 points)
- Diversity Plan (90 points)

IDOA awarded licenses to high scoring applicants, with a minimum of 75% of available points required. Because there was no limit on the number of transporter licenses, all applicants who met the minimum criteria received a license. Selected applicants paid a prorated fee of $10,000 ($5,000 for SEAs) based on the license award date. Transporter licensees shall provide proof of properly registered and insured vehicles. Denials may occur for incomplete applications and failure to meet application requirements.

5. Cultivation Centers

A cultivation center is a facility licensed by IDOA to cultivate, process, transport (excluding dispensing), and perform other necessary activities to provide cannabis and cannabis-infused

[194] The processor license may only be issued once IDOA promulgates rules, which must be based upon a supply study conducted by IDOA. Illinois General Assembly, "410 ILCS 705/35-31 §35-31 Cannabis Regulation and Tax Act (Adequate Access to Raw Materials for Infusers)," June 25, 2019, accessed February 18, 2024, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.

products to dispensing organizations. The licensing process considers factors like cultivation practices, environmental impact, security measures, and adherence to health and safety regulations.

(a) Early Approval Cultivation Centers

Early approval adult use cultivation center licenses were available to medical cannabis cultivation center license holders through March 31, 2022, to allow them to begin cultivating, infusing, packaging, transporting, processing, and selling cannabis or cannabis-infused product to cannabis business establishments for resale to purchasers as permitted by the CRTA on January 1, 2020. Applicants were permitted to renew their licenses after March 31, 2022.

Applicant qualifications included payment of a nonrefundable application fee of $100,000, registration as a medical cannabis cultivation center in good standing, other business demographics, a nonrefundable fee not less than $250,000 contributing to the CBD Fund, and a commitment to one of the following Social Equity Inclusion Plans before the initial expiration of the early approval license in March 31, 2022:

- A contribution of 5% of the cultivation center's total sales from June 1, 2018–June 1, 2019, or $100,000, whichever is less, to one of the following:
  - the CBD Fund. This is in addition to the $250,000 CBD fund fee,
  - a cannabis industry training or education program at an Illinois community college as defined in the Public Community College Act, or
  - a program that provides job training services to persons recently incarcerated or that operates in a Disproportionately Impacted Area.
- Participate as a host in a cannabis business incubator program approved by DCEO for at least one year, and in which an early approval adult use cultivation center license holder agrees to provide a loan of at least $100,000 and mentorship to incubate, for at least a year, an SEA intending to seek a license or a licensee that qualifies as an SEA.[195]

The early approval cultivation center license permitted the holder to begin producing cannabis and cannabis-infused products six months prior to the CRTA's effective date, and to commence sales to dispensing organizations on January 1, 2020.[196]

[195] Illinois General Assembly, "410 ILCS 705/20-10 Cannabis Regulation and Tax Act," defines "incubate" as providing direct financial assistance and training necessary to engage in licensed cannabis industry activity similar to that of the host licensee and states that the early approval adult use cultivation center license holder or the same entity holding any other licenses issued pursuant to this Act shall not take an ownership stake of greater than 10% in any business receiving incubation services to comply with this subsection," June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.

[196] Illinois General Assembly, "410 ILCS 705/20-10 Cannabis Regulation and Tax Act," Early Approval of Adult Use Cultivation Center License, June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992&ChapterID=35.

(b) Conditional Cultivation Center

IDOA also has authority to make available additional cultivation center licenses pursuant to Section 20-5 of the CRTA, but has not exercised that authority. If IDOA exercises this authority, conditional adult use cultivation center license applicants shall electronically submit the following in such form as IDOA may direct:

- A nonrefundable application fee.
- The legal name of the cultivation center.
- The proposed address of the cultivation center.
- Information about each principal officer and board member, including name, address, social security number, and date of birth. All must be at least 21 years old.
- History of legal proceedings involving principal officers or board members, including any convictions, fines, or license suspensions.
- Operating bylaws that comply with rules set by IDOA, including plans for plant monitoring, recordkeeping, staffing, and security.
- Background check confirmations from the Illinois State Police for all principal officers, board members, and agents.
- Proof of compliance with local zoning regulations.
- A plan for employing a diverse workforce, including minorities, women, veterans, and people with disabilities.
- Evidence of experience in promoting economic empowerment in disproportionately impacted areas.
- Experience in agricultural or horticultural business operations.
- A description of the secure facility where cannabis will be processed.
- A detailed survey of the cultivation space.
- Plans for cultivation, processing, inventory, and packaging.
- Details of the applicant’s experience in agricultural cultivation techniques.
- Academic degrees, certifications, or relevant experience of all key personnel.
- Information on anyone with a financial or voting interest of 5% or greater in the cultivation center.
- A plan addressing energy, water, and waste management.
- A diversity plan outlining goals for diverse ownership and employment.
- Any other information required by IDOA's rules.
- A recycling plan for waste management.
- A commitment to comply with state and local environmental requirements.
- A commitment to resource efficiency, including specific standards for lighting, HVAC, water application, and wastewater filtration.

Applicants shall be awarded points for a total of 1,000 points based on the following categories:

- Suitability of the proposed facility (75)
- Suitability of employee training plan (50)
- Security and recordkeeping (145)
- Cultivation plan (75)
- Product safety and labeling plan (95)
- Business plan (110)
- The applicant's status as a Social Equity Applicant, which shall constitute no less than 20% of total available points (200)
- Labor and employment practices, which shall constitute no less than 2% of total available points (20)
- Environmental plan (20)
- The applicant is 51% or more owned and controlled by an individual or individuals who have been an Illinois resident for the past five years (90)
- The applicant is 51% or more controlled and owned by an individual or individuals who meet the qualifications of a veteran as defined by Section 45-57 of the Illinois Procurement Code (20)
- a diversity plan that includes a narrative of not more than 2,500 words that establishes a goal of diversity in ownership, management, employment, and contracting to ensure that diverse participants and groups are afforded equality of opportunity (100)
- Any other criteria IDOA may set by rule for points

IDOA may also award an optional 15 bonus points for the applicant's plan to engage with the community. Bonus points will only be awarded if IDOA receives applications that receive an equal score for a particular region. The following are examples of a Community Engagement Plan:

- Community Benefits Plan: The applicant commits to the establishment of an incubator program designed to increase participation in the cannabis industry by persons who would qualify as Social Equity Applicants.
- Substance Abuse Prevention Plan: The applicant commits to providing financial assistance to substance abuse treatment centers.
- Local Community/Neighborhood Report: The applicant commits to educating children and teens about the potential harms of cannabis use.

Should the applicant be awarded a conditional adult use cultivation center license, it shall pay a fee of $100,000 ($50,000 for SEAs) prior to receiving the license, to be deposited into the Cannabis Regulation Fund. The information and plans that an applicant provided in its application, including any plans submitted for the acquiring of bonus points, becomes a mandatory condition of the permit. Any variation from or failure to perform such plans may result in discipline, including the revocation or nonrenewal of a license.

C. Applications and Licensing Timeline

IDFPR and IDOA opened the original application window for new cannabis business establishments with the intention to close the window in early 2020 and issue licenses as soon as administratively possible. However, the COVID-19 pandemic, subsequent emergency executive orders, and litigation matters significantly delayed the licensing issuance process. The dates each initial application window was open is provided in Table IV-4.

Table IV-4. Application Timeline

License Type	Regulatory Agency	Application Open Date	Application Close Date	Scoring Announced Date
Dispensary	IDFPR	December 10, 2019	January 2, 2020	September 3, 2020
Craft Grower	IDOA	February 14, 2020	April 30, 2020	July 15, 2021
Infuser	IDOA	February 14, 2020	April 30, 2020	July 15, 2021
Transporter	IDOA	February 14, 2020	April 30, 2020	July 15, 2021

Source: Nerevu analysis of IDFPR and IDOA data.

1. IDFPR Licensing

On September 3, 2020, IDFPR announced the completion of the scoring process for all the dispensary applications and identified 21 dispensary applicants out of 2,607 total applications submitted who received a perfect score. The number of top-scoring applications exceeded the available licenses, therefore the Department announced that these applicants would be entered into a lottery for 75 dispensary licenses.[197]

The day after the state made the announcement, several applicants filed lawsuits challenging the Department's scoring process. The state then announced it would allow applicants who did not receive a perfect score on their applications to submit additional information through additional

[197] Illinois Department of Professional and Financial Regulation, "Top Scoring Applicants by BLS region (REVISED)," September 3, 2020, accessed February 12, 2024, https://idfpr.illinois.gov/content/dam/soi/en/web/idfpr/forms/auc/2020-top-scorer-document.pdf.

deficiency rounds before a newly scheduled lottery.[198,199] These deficiency rounds lasted until March 5, 2021.[200,201]

On July 15, 2021, Governor Pritzker signed into law Public Act 102-0098, which authorized the Department to issue additional dispensary licenses from the original pool of 2,207 applicants. That statute established the following:

- A Tied Applicant Lottery to issue the original 75 dispensary licenses to the highest scoring applicants from the original application around,
- A new Social Equity Justice Involved Applicants Lottery to issue 55 licenses to applicants from the original application round that prioritized social equity criteria of residency in a DIA or an eligible conviction,
- A new Qualifying Applicant Lottery to issue an additional 55 licenses to applicants from the original application round that received at least 85% of available points,
- A Social Equity Justice Involved Medical Lottery to issue the remaining available five dispensing organization registrations for operation,[202] and
- A new round of at least 50 additional conditional adult use dispensing organization Licenses to be issued by IDFPR using a streamlined application process on or before December 21, 2022.[203]

In July and August 2021, IDFPR announced a revised list of high scoring applicants eligible to receive a conditional adult use license following these additional rounds of deficiencies. As applicants provided supplemental information, more of them achieved perfect scores. This led to a final list of applicants eligible to enter the three lotteries, including a Tied Applicant Lottery for all the applicants with perfect scores.

On behalf of IDFPR, the Illinois Lottery conducted a computerized random drawing to assign a ranked order to each applicant eligible to participate in each of the three lotteries: the Tied Applicant Lottery, the Social Equity Justice Involved Lottery, and the Qualifying Applicant Lottery.

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[198] State of Illinois, "Press-Release. Pritzker Administration Announces Additional Steps to Ensure Fairness in Awarding Conditional Adult-Use Cannabis Dispensary Licenses," September 21, 2020, accessed February 12, 2024, https://cannabis.illinois.gov/news/press-release.22113.html.

[199] JB Pritzker and Deborah Hagan, "Conditional Adult Use Dispensing Organization License Supplemental Deficiency Notice Process Illinois Department of Financial and Professional Regulation Office of the Secretary," September 22, 2020, accessed February 12, 2024, https://idfprapps.illinois.gov/Forms/AUC/Supplemental%20Deficiency%20Notice%20Process.pdf.

[200] Illinois Department of Financial and Professional Regulation, "Frequently Asked Questions Relating to Adult Use Dispensing Organizations – Supplemental Deficiency Notices," n.d., accessed February 12, 2024, https://idfprapps.illinois.gov/Forms/AUC/AUC%20Supplemental%20FAQs.pdf.

[201] As part of the original review of applications, IDFPR issued original deficiency notices pursuant to Section 15-30(b). In the fall of 2020, IDFPR announced it would provide a supplemental deficiency process, which occurred between February and March of 2021. In this supplemental deficiency process, no new applications were submitted, but all original applicants were permitted to provide supplemental information to their original applications.

[202] The Social Equity Justice Involved Medical Lottery had not been scheduled at the time of the publishing of this report.

[203] The new round of licenses was not completed at the time of this study and is therefore not the subject of this Report.

On July 29, 2021, IDFPR announced the results of the Qualifying Applicant Lottery (55 licenses). On August 5, 2021, IDFPR announced the results of the Social Equity Justice Involved Applicant Lottery (55 licenses). On August 19, 2021, IDFPR announced the results of the Tied Applicant Lottery (75 licenses).[204] In total, the three lotteries awarded 185 licenses (see Table IV-5).

Table IV-5. Dispensary Lotteries Timeline

Date	Lottery	Criteria/Purpose	Licenses Awarded
July 29, 2021	Qualifying Applicant Lottery	Qualifying applicants with a score of at least 85% of the 250 application points.	55
August 5, 2021	Social Equity Justice Involved Applicant Lottery	Social equity justice-involved applicants with a score of at least 85% of the 250 application points and are located in a Disproportionately Impacted Area or have an eligible conviction.	55
August 19, 2021	Tied Applicant Lottery	The final lottery held for the original 75 licenses.	75
N/A	Social Equity Justice Involved Medical Lottery	To issue the remaining available five dispensing organization registrations for operation.	

Source: Nerevu analysis of IDFPR data.

The dispensary licenses, in addition to the 110 early approval adult use dispensary licenses (55 same site and 55 secondary site), brought the total number of IDFPR awarded statute mandated dispensary licenses to 295.

Litigation challenging IDFPR's lotteries resulted in a stay in the issuance of the conditional adult use dispensary licenses from each of the three lotteries until May 27, 2022.[205] As part of these legal challenges, IDFPR held three additional "corrective lotteries" pursuant to court orders to

[204] State of Illinois, "Pritzker Administration Announces Results of Tied Applicant Lottery to Award 75 Conditional Adult-Use Cannabis Dispensing Organization Licenses," August 19, 2021, accessed November 17, 2023, https://www.illinois.gov/news/press-release.23770.html.

[205] State of Illinois, "Pritzker Administration Issues First Wave of Conditional Adult Use Cannabis Dispensary Licenses," July 22, 2022, accessed February 16, 2024, https://www.illinois.gov/news/press-release.25209.html.

remedy any errors in scoring of the original applications.[206] Through this court-ordered relief, IDFPR issued 14 additional dispensary licenses (see Table IV-6).[207,208 ,209,210]

Table IV-6. Dispensary Corrective Lotteries Timeline

Date	Lottery	Licenses Awarded
June 21, 2022	Qualifying Applicant Corrective Lottery	2
June 22, 2022	Social Equity Justice Involved Corrective Lottery	1
June 23, 2022	Tied Applicant Corrective Lottery	11

Source: Nerevu analysis of IDFPR data.

These final licenses increased the total number of dispensary licenses awarded by IDFPR to 309, with 308 issued during the study period. Due to the challenge of scoring the volume of applications and legal delays, the first social equity dispensary did not become operational until October 2022, nearly three years after adult use retail sales began.

2. IDOA Licensing

IDOA received more than 450 applications for craft growers, more than 110 for infusers, and more than 250 for transporters. All applications had to meet all requirements in the Cannabis Regulation and Tax Act and IDOA's administrative rules. Due to the limitations on the number of licenses to be issued, not all applicants meeting the requirements were eligible to receive a license.

On July 15, 2021, announced those applicants eligible to receive one of 213 licenses: 40 for craft grower, 32 for infuser, and 141 for transporter. Applicants who received a Notice of Award for craft grower and infuser licenses were given extensions to submit their licensing fee and other required documents. Those applicants for a craft grower or infuser license that did not receive a Notice of Award were notified that IDOA also planned to issue up to 60 additional craft grower licenses and up to 60 additional infuser licenses before December 21, 2021, pending a fourth round of deficiency notices.

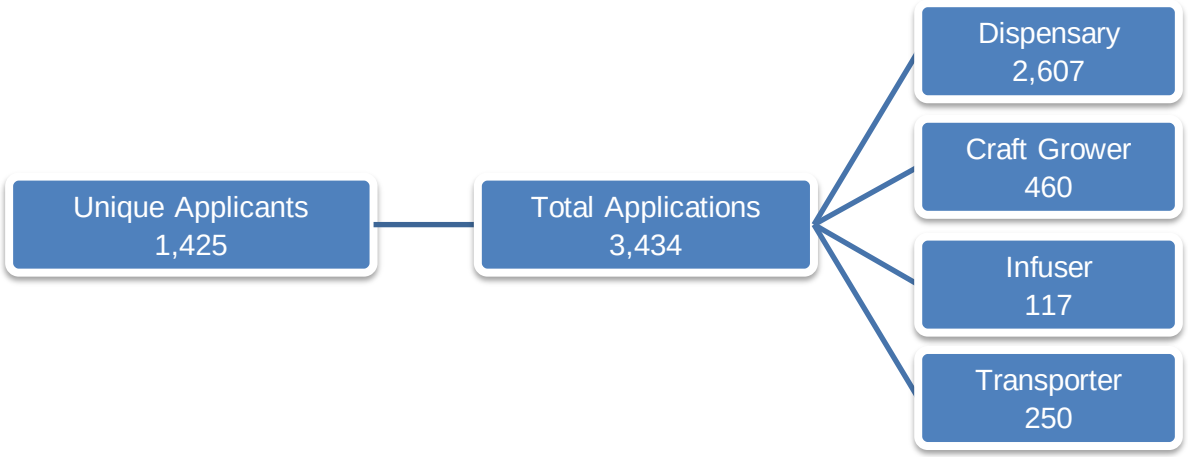
[206] Illinois Department of Financial and Professional Regulation, "Order Granting Limited Remand," May 17, 2022, accessed February 16, 2024, https://idfpr.illinois.gov/content/dam/soi/en/web/idfpr/forms/auc/2022-05-19-cannabis-order.pdf.
[207] Illinois Department of Financial and Professional Regulation, "Results of the Qualifying Applicant Corrective Lottery for Conditional Licenses Per BLS Region," June 21, 2022, accessed February 16, 2024, https://idfpr.illinois.gov/content/dam/soi/en/web/idfpr/forms/auc/final-qacl-results-by-bls-list-6-21-2022.pdf.
[208] Illinois Department of Financial and Professional Regulation, "Results of the Social Equity Justice Involved Corrective Lottery for Conditional Licenses Per BLS Region," June 22, 2022, accessed February 16, 2024, https://idfpr.illinois.gov/content/dam/soi/en/web/idfpr/forms/auc/2022-06-22-final-sjcl-results-by-bls-list.pdf
[209] Illinois Department of Financial and Professional Regulation, "Results of the Tied Applicant Corrective Lottery for Conditional Licenses Per BLS Region," June 23, 2022, accessed February 16, 2024, https://idfpr.illinois.gov/content/dam/soi/en/web/idfpr/forms/auc/2022-06-23-final-tacl-results-by-bls-list.pdf.
[210] Illinois Department of Financial and Professional Regulation, "Conditional Licenses List," February 9, 2024, accessed February 16, 2024, https://idfpr.illinois.gov/content/dam/soi/en/web/idfpr/forms/auc/Conditional%20Licenses%20List.pdf.

The first round of IDOA licenses were issued on August 2, 2021, and included 32 craft grower licenses, 28 infuser licenses, and nine transporter licenses. On December 21, 2021, IDOA notified all remaining applicants of their eligibility to receive a license.[211,212]

On June 1, 2022, IDOA awarded 48 craft grower licenses, successfully completing the licensing round that began in December of 2021. All licenses were issued to SEAs. Since 2021, IDOA has issued 88 craft grower licenses, 54 infuser licenses, and189 transporter licenses. These are in addition to the 21 existing early approval adult use cultivation centers, previously approved under the Compassionate Use of Medical Cannabis Program.[213]

Applicants could submit multiple dispensary applications and apply for various license types under the same organization, resulting in more applications than unique applicants.[214] Over the study period, 1,425 unique applicants submitted a total of 3,434 applications for Illinois adult use cannabis licenses. The applications included 2,607 submissions for dispensaries, 460 for craft growers, 117 for infusers, and 250 for transporters as shown in Figure 3.

Figure 3. Adult Use Cannabis Business License Applications



Over the study period, there were multiple waves of licenses awarded based on statutory authorizations.[215]

[211] After first round, applicants that were still in running received a notice that IDOA would use the same pool of applicants for a second round.
[212] State of Illinois, Division of Cannabis Regulation, "Prior Updates Regarding the Adult Use Cannabis Business Establishment Scoring and Licensing Process," October 1, 2020, accessed November 17, 2023, https://cannabis.illinois.gov/agencies/cannabis-idoa/agriculture-news/archived-news/prior-updates-regarding-the-adult-use-cannabis-business-establis.html.
[213] State of Illinois, "Press-Release. Illinois Department of Agriculture Issues Next Round of Craft Grow Licenses," 2023, accessed November 17, 2023, https://www.illinois.gov/news/press-release.24986.html.
[214] Illinois General Assembly, "410 ILCS 705/15-30(k) Cannabis Regulation and Tax Act," June 25, 2019, accessed February 6, 2024, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.
[215] Illinois General Assembly, "410 ILCS 705 Cannabis Regulation and Tax Act," §15-25, §15-30.20, §15-35, §15-35.10, and §15-35.20, June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.

D. Applications and Licensing Summary

While the CRTA remains in its early stages of implementation, the social equity criteria have already significantly impacted the Illinois cannabis industry. As shown in Table IV-7, by the end of the study period almost 400 licenses had been issued to SEAs. This represents over 70% of awarded cannabis business licenses in the state and is an important step towards building a more equitable cannabis industry in Illinois.

Table IV-7 through Source: Nerevu analysis of IDFPR and IDOA data. Shares are calculated by aggregating the application count by majority ownership demographics and dividing by total applications. E.g., five majority Black-owned dispensary applications out of a total 10 dispensary applications would equate to 50% availability. The Other MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake.

Table IV-10 summarize the number and demographic breakdown of applications and lottery results for each license type. In sum, the race and gender-neutral approaches of the CRTA have led to a diverse applicant and licensee pool. For example, 67.6% of dispensary applications were from M/WBEs, and of the 308 dispensary licenses awarded, 55.2% were to M/WBEs.[216]

The other license types similarly had over half of the applications and awards go to M/WBEs.

Table IV-7. Cannabis License Application Summary by Unique Licenses

License Type	Total Applications Submitted	SEA Qualified Applications	Lottery Participating Applications	Awarded Licenses	SEA Qualified Licenses Awarded
Dispensary	2,607	2,125	2,082	308	187
Craft Grower	460	185	N/A	88	86
Infuser	117	68	N/A	56	40
Transporter	250	161	N/A	86	78
Cultivation	N/A	N/A	N/A	21	0
Total	**3,434**	**2,539**	**2,082**	**559**	**391**

Source: Nerevu analysis of IDFPR and IDOA data. Only dispensaries held a lottery during the study period, so all other license types are marked as N/A. Cultivation centers were not accepting applications during the study period and are also marked as N/A. The 21 awarded cultivation licenses represent early approval licenses.

[216] The total dispensary licenses awarded includes early approval adult use dispensary licenses.

Table IV-8. Cannabis License Application Summary by Unique Companies

License Type	Total Companies Applied	SEA Qualified Companies	Lottery Participating Companies	Companies Awarded Licenses	SEA Qualified Companies Awarded Licenses
Dispensary	922	628	636	183	122
Craft Grower	413	173	N/A	82	79
Infuser	101	54	N/A	56	39
Transporter	244	156	N/A	84	76
Cultivation	N/A	N/A	N/A	21	0
Total	**1,680**	**1,011**	**636**	**426**	**316**

Source: Nerevu analysis of IDFPR and IDOA data. Only dispensaries held a lottery during the study period, so all other license types are marked as N/A. The 21 awarded cultivation licenses represent early approval licenses.

Table IV-9. Demographics of Cannabis License Applicants[217]

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	43.3%	5.4%	0.0%	7.5%	8.5%	64.8%	2.8%	67.6%	22.0%	10.4%
Craft Grower	37.7%	5.1%	0.0%	6.7%	3.5%	53.1%	4.9%	58.0%	24.0%	18.1%
Infuser	44.8%	1.7%	0.0%	5.2%	6.9%	58.6%	5.2%	63.8%	22.4%	13.8%
Transporter	33.3%	2.9%	0.0%	3.9%	3.9%	44.1%	2.0%	46.1%	11.8%	42.2%
Cultivation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Nerevu analysis of IDFPR and IDOA data. Shares are calculated by aggregating the application count by majority ownership demographics and dividing by total applications. E.g., five majority Black-owned dispensary applications out of a total 10 dispensary applications would equate to 50% availability. The Other MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake.

[217] We define this throughout the report as Availability Rate #1. See §V.D. Availability for further explanation.

Table IV-10. Demographics of Adult Use Cannabis Licenses Distribution[218]

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	35.1%	6.2%	0.0%	3.3%	7.5%	52.1%	4.9%	57.0%	35.7%	7.2%
Craft Grower	44.3%	1.1%	0.0%	8.0%	10.2%	63.6%	2.3%	65.9%	26.1%	8.0%
Infuser	26.8%	8.9%	0.0%	10.7%	8.9%	55.4%	5.4%	60.7%	32.1%	7.1%
Transporter	55.8%	4.7%	1.2%	7.0%	2.3%	70.9%	4.7%	75.6%	19.8%	4.7%
Cultivation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	14.3%	76.2%	9.5%

Source: Nerevu analysis of IDFPR and IDOA data. The Other MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake. Shares are calculated by aggregating the license count by majority ownership demographics and dividing by total licenses. E.g., five majority MBE owned dispensary licenses out of a total 10 dispensary licenses would equate to a 50% share.

[218] We define this throughout the report as Utilization Rate #3. See §V.E. Utilization for further explanation.

V. QUANTITATIVE ANALYSIS

The quantitative analysis was designed to assess whether a disparity exists when comparing the demographics of the cannabis business license holders to the demographics of entities that could have been available to receive a license.

A. Product and Geographic Market

Defining the product and geographic market areas to be studied and to serve as comparisons encompasses identifying specific sectors, geographic scope, and market participants to compare the availability and utilization of goods and services by M/WBEs against non-M/WBEs.

Market area definition is a crucial step in analyzing diversity and detecting disparities. The market areas establish the boundaries within which competition, regulation, and economic activities occur. It enables a close examination of economic activities and facilitates an investigation into the distribution of resources and opportunities.

In other industries such as transportation, construction, architecture, engineering, and professional services, market definitions are key to pinpointing disparities in capital markets, government contracting, and procurement processes. In the Illinois cannabis industry, market definitions can provide a foundation for addressing identified disparities with measures that promote equitable economic participation among various demographic groups.

The Illinois cannabis industry differs in two key ways from the above industries:

1. The state controls the existence of cannabis businesses via licensing.
2. The state does not award cannabis contracts and therefore does not control businesses' revenues.

The impact the key differences have on our approach is the focus shifts away from market forces and competition toward how regulatory decisions (such as licensing or zoning), market access barriers, and other factors indirectly influence the economic opportunities available to businesses in the cannabis industry. Thus, directly influencing our product market, geographic market, and comparison group definitions as explained in §**Error! Reference source not found.**.**Error! Reference source not found.**.1. Product Market, §**Error! Reference source not found.**.**Error! Reference source not found.**.2. Geographic Market, and §**Error! Reference source not found.**.C.1. Study and Comparison Group.

To fully grasp the nuances and barriers faced by racial and/or ethnic minorities and women in the adult use cannabis market, we first examined the history and operation of the medical cannabis

framework. This framework, with adjustments incorporated to ensure equity, informed the establishment of the adult use market in Illinois.[219]

By understanding the medical cannabis program alongside the adult use program, it became possible to identify both the continuities and changes in policy and practice that affect racial and/or ethnic minority and women ownership. For this disparity study, we used a mixed methods research (MMR) approach guided by the principles of culturally responsive and equitable practices.[220,221] MMR blends qualitative and quantitative techniques to collect data and comprehend issues.

Cultural responsiveness is inclusive of the individuals most proximally involved in and affected by a program or service (applicants and licensees in our case) to humanize their voices, experiences, and perspectives. This accounts for the historical and cultural context necessary to identify social and environmental factors that affect an individual's equal access to economic progress, health, and wellbeing.

Using a culturally responsive approach, we examined the adult use cannabis licensing process—criteria, application, and approval processes—as well as the adult use industry to identify racial, ethnic, and gender disparities. Our study period spans from January 1, 2020, the commencement of the adult use market, through January 31, 2023.

1. Product Market

The product market for the study includes those companies authorized to engage in cannabis cultivation, production, transportation, or retail within the study period, adhering to state licensing requirements. This includes applicants who applied for or were granted licenses for such activities. All commercial activities of these licensed companies, including sales and transportation, are captured by mandated reporting to the state, which links transactions directly to licenses and firms involved. Comprehensive tracking underpins the determination of the product market for the analysis.

Table V-1 provides a breakdown of awarded licenses and sales data by license type. More than half of the licenses were issued to dispensaries, while only 21 (four percent) were issued to cultivation centers.

During the study period, only dispensaries and cultivation centers recorded any sales, and a significant portion of the dispensary sales stemmed from early approval adult use dispensary licenses because of the delay in issuing Social Equity licenses. The vast majority of licenses in

[219] For example, agent badges are not screened for past cannabis offenses under adult use requirements, an excluded offense under the medical cannabis rules. Compare 410 ILCS 705/1-10 (agent definitions) with 410 ILCS 130/10.

[220] J.W. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 3rd ed. (Sage Publications, 2009).

[221] S. Hood, R. Hopson, and K. Kirkhart, "Culturally Responsive Evaluation," in *Handbook of Program Evaluation*, ed. K.E. Newcomer, H.P. Harty, and J.S. Wholey, 2015, accessed December 7, 2024, https://nasaa-arts.org/wp-content/uploads/2017/11/CRE-Reading-1-Culturally-Responsive-Evaluation.pdf.

operation during the study period were those issued to existing medical cannabis dispensaries and cultivation centers in 2020 and 2021. Craft grower, infuser, and transporter licensees did not generate revenue during the study period, as the first new adult use licensees did not become operational until after October 2022 (near the end of the study period). Thus, the sales data in Table V-1 is presented for observational purposes only, and is not used to evaluate discrepancies in the cannabis industry.

Table V-1. Distribution of Adult Use Cannabis Licenses and Sales (Jan 2020–Jan 2023)

License Type	Awarded Licenses	Pct Awarded Licenses	Total Adult Use Sales ($ millions)	Pct Total Sales
Dispensary	308	54.9%	$3,725.05	81.8%
Craft Grower	88	15.8%	$0.00	0.0%
Infuser	56	10.1%	$0.00	0.0%
Transporter	86	15.5%	$0.00	0.0%
Cultivation	21	3.8%	$827.98	18.2%
Total	**559**	**100.0%**	**$4,553.03**	**100.0%**

Source: Nerevu analysis of IDFPR and IDOA data. Few to no craft grower, infuser, and transporter licensees were operational during the study period and thus had no revenue or sales.

2. Geographic Market

We determined the geographic market as the entire state of Illinois based on the zip codes from 534 unique facilities and 1,517 unique firms which collectively accounted for the 559 cannabis licenses and 1,425 cannabis applicants. We did not analyze disparities on a sub-state level (by region, county, city, or neighborhood).

Although the SEA residency requirement mandates majority ownership and control (51% or more) by an Illinois resident, there is no requirement for firms to be based in Illinois. Nevertheless, Illinois encompasses 91% of firm headquarter locations.

Dispensary license applicants had 180 days after receiving a conditional license to secure a storefront physical location (facility).[222,223] Consequently, many dispensary license applicants did not have a facility address at the time of their application submission. Among cannabis applicant facilities with a known location, 100% were located within Illinois. Moreover, under federal law, cannabis cannot be transported across state lines.

[222] Illinois General Assembly, "410 ILCS 705 Cannabis Regulation and Tax Act," June 25, 2019, accessed February 2, 2024, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992

[223] Facilities are the physical locations while firms are the licensed business entities which own the facilities.

B. Data Sources

Our quantitative analysis relies on applications, licenses, lottery entrants, and cannabis-related businesses cohorts.

Table V-2. Quantitative Data Sources

Source	Data	Description
IDFPR and IDOA	Applications	3,434 applications from 1,680 applicants across four license types (dispensaries, craft growers, infusers, and transporters)
IDFPR and IDOA	Licensing	559 awarded active licenses to 387 unique companies from January 2020 through January 2023
IDFPR	Sales	Illinois Seed-to-Sale Tracking System (BioTrack) from January 2020 through January 2023
U.S. Census Bureau	Economic	2021 American Community Survey (ACS), Public Use Microdata (PUMS) 5-year estimate
U.S. Census Bureau	Economic	2017-2020 ACS Table DP05: Demographic and Housing Estimates
U.S. Census Bureau	Economic	2020 Annual Business Survey (ABS), Table AB2000CSA01
Federal Reserve	Economic	2020–2022 Survey of Household Economics and Decision-Making (SHED)
Hoovers	Industry	Sales and demographic information on minority- and woman-owned firms of cannabis related companies
Web searches	Demographics	Articles, documents, contracts, and related information on cannabis license applicants
System for Electronic Disclosure by Insiders (SEDI)	Ownership	Ownership information for cannabis companies publicly traded on Canadian stock exchanges
Cyber Background Check	Demographics	Public details for 36 individual owners of publicly traded cannabis companies
Namsor	Demographics	Race and/or gender inference for 15 individual owners of publicly traded cannabis companies
Mylife	Demographics	Race and/or gender details for 27 individual owners of publicly traded cannabis companies
NAICS.com	Industry	Sales and industry classification information on 341 cannabis license applicants
IL Secretary of State	Business	IL company registration information including address, officers, and agents

C. Quantitative Methodology

1. Study and Comparison Groups

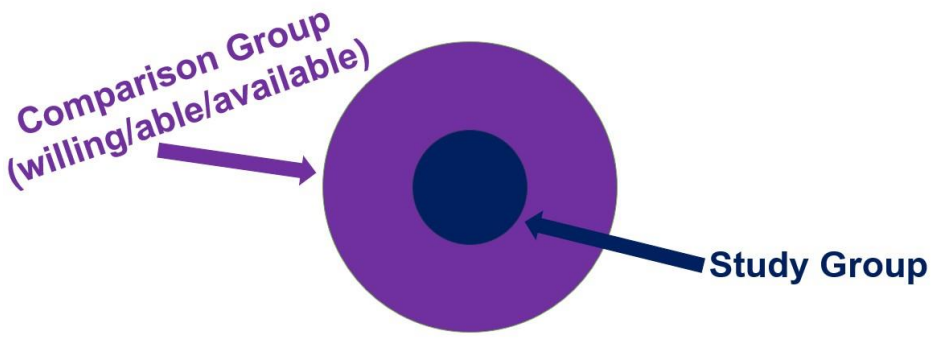
We define the study group in one of two ways:

1. Illinois adult use cannabis businesses licensed or with sales during the study period (cannabis licensees), or
2. Illinois adult use cannabis licenses awarded during the study period (cannabis licenses).

The distinction is that in one case we look at individual businesses, and in the other case we look at individual licenses. This distinction is important because businesses can hold multiple licenses of the same type. Either way, we segment the study group into five license types: dispensary, craft grower, infuser, transporter, and cultivation. The cultivation license type is unique as it is the only license type permitting its holder to perform multiple functions: in this case to grow, infuse, and transport cannabis.

The comparison group typically consists of businesses that, although not part of the study group, are theoretically "available" for inclusion in the study group. The comparison group acts as a relevant benchmark for identifying disparities based on race, ethnicity, and gender within the study group (see Figure 4).

Figure 4. Government Contracting Disparity Analysis Approach



In the context of government contracting disparity studies, the comparison group is traditionally defined as businesses operating within the same geographic and industry market as the study group. However, defining a comparison group using this approach is not applicable in our case. The only businesses permitted to engage in cannabis-related activities are those within the study group itself, namely the cannabis license holders. In other words, the regulatory barriers to entry ensure that only licensed businesses can participate in the market.

To adapt to the unique data needs of the cannabis industry we define the comparison group in one of four ways:[224]

1. Firms who applied for an adult use cannabis license during the study period (applicants),

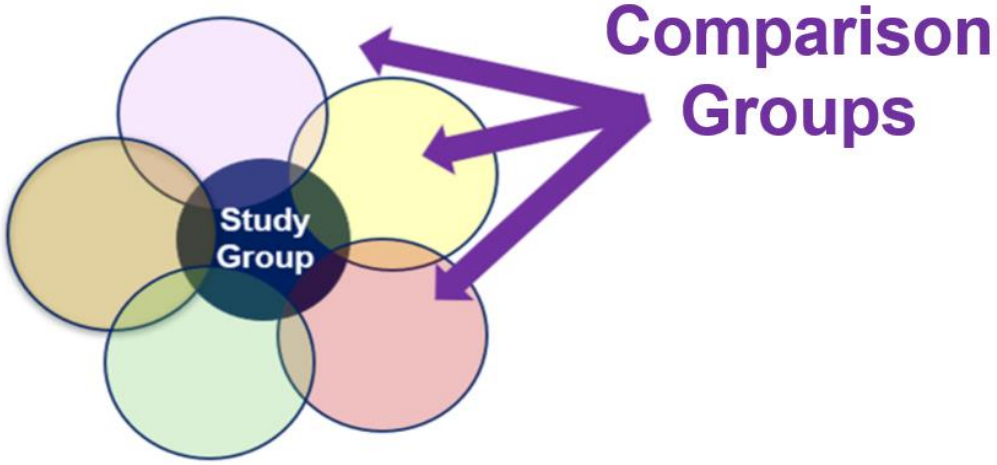
[224] We use "comparison group" as an umbrella term to categorize the firms. For each category and license type, the actual comparisons we perform are between the various racial and ethnic groups, and White women.

2. Illinois adult use cannabis businesses licensed during the study period (adult use licensees),[225]
3. Illinois medical cannabis businesses with sales during the study period (medical licensees), or
4. Cannabis-related businesses.

These multiple comparison groups allow us to overcome the impact of cannabis regulation by approximating the number of "available" Illinois businesses that could potentially enter the cannabis market in the absence of barriers.[226] Note we identified two additional comparison groups for this study—lottery participants and cannabis-related arrests—but did include them in our final disparity ratio calculations for conciseness. Although these groups provide insights into the cannabis industry, we concentrated on the most directly relevant comparisons. We present these additional results (availability rates #7 and #8) in Appendix D. Comparison Group Justification.

By providing different intersections with the study group (including across license types), multiple comparison groups enable a broader and more nuanced exploration of the nascent adult use cannabis sector. Multiple comparison groups not only minimize bias but also allow for a range of disparity analyses, including comparisons within the study group itself (see Figure 5).

Figure 5. Multiple Cohort Catalog



The cannabis-related businesses comparison group is comprised of seven comparison cohorts which are groups of individual NAICS codes (see Table V-3) associated with one or more cannabis licenses. For example, the Liquor Stores cohort serves as a comparison group for the dispensary license type and includes NAICS codes 424810, 424820, and 445320.

[225] Restating the above paragraph, the reason the study group is also part of the comparison group is that there is no other collection of businesses permitted to sale adult use cannabis. E.g., license applicants are not a suitable replacement comparison group since they cannot sale cannabis without a license.

[226] See Appendix D. Comparison Group Justification for explanation of why a cohort is suitable for comparison with a cannabis license study group. Each cohort was created because it has similar barriers to market entry, business licensing processes, zoning considerations, and/or business types or structure.

Table V-3. Cannabis-Related Businesses Comparison Cohorts[227]

Comparison Cohort	NAICS Codes	License Type(s) for Comparison
Armored Cars/Trucking	336999, 484110, 484121, 484122, 484220, 484230, 532120, 561612, and 561613	Transporter and Cultivation
CBD Stores	424690 and 459999	Dispensary
Hemp Growers	111419 and 111998	Craft Grower and Cultivation
Hemp Infusers/Manufacturers	313110, 313210, 313220, and 424590	Infuser and Cultivation
Liquor Stores	424810, 424820, and 445320	Dispensary
Testing Labs	541380 and 621511	Cultivation
Vaping/Smoke Shops	424940, 424990, and 459991	Dispensary

Source: Nerevu NAICS code analysis.

We then aggregated these comparison cohorts for each license type. For example, we performed the dispensary comparison cohort calculations using combined NAICS codes from the CBD Stores, Liquor Stores, and Vaping/Smoke Shops cohorts. See Appendix D. Comparison Group Justification and Appendix B. North American Industry Classification System (NAICS) for detailed justifications for each cohort.

2. Disparity Ratio

We assess disparity by comparing utilization—the share of licenses each racial, ethnic and gender demographic group holds in the study group, e.g., licensees—to availability, their corresponding share in the comparison group, e.g., applicants. The following equation represents how that share is calculated:

Equation V-1. Share

$$Share = \frac{DemographicGroupCount}{TotalCount}$$

This comparison of utilization to availability is known as "disparity ratio" and is calculated as follows:

Equation V-2. Disparity Ratio

$$DisparityRatio = \frac{Utilization}{Availability}$$

[227] See Appendix D. Comparison Group Justification for a description and justification for the industries included in the study cohort.

The disparity ratio measures whether the study group's utilization for a particular demographic is higher or lower than expected, given the comparison group's availability. A disparity ratio of less than 100% indicates a given racial, ethnic, or gender group is underutilized based on its availability. In other words, the demographic in question is less represented in the study group than in the comparison group.

As a numeric illustration (not from Illinois cannabis data): if the study group has 10% M/WBE utilization and the comparison group has 20% M/WBE availability, the M/WBE disparity ratio is then:

$$\frac{10\%}{20\%} = 50\%$$

The availability and utilization values above are referred to as "unweighted". Unweighted values simply reflect the proportional representation of different demographic groups (race, ethnicity, gender, and M/WBE status) within the market being studied. These are calculated without considering the economic size or sales performance of these businesses.

For the cannabis-related business and medical licensee comparison groups, we calculate both an unweighted and "sales-weighted" availability. "Sales-weighted availability" adjusts unweighted availability by considering the share of total sales as follows:

Equation V-3. Sales-Weighted Availability

$$SalesWeightedAvailability = UnweightedAvailability \times 2022SalesShare$$

For the licensee study group **only**, we calculate both an unweighted and sales-weighted utilization.[228,229] Sales-weighted utilization represents the proportion of 2022 sales attributed to a specific demographic group in relation to the total sales for the license type. The adjustment provides a comprehensive view of demographic representation by considering their economic impact within the industry as follows:

Equation V-4. Sales-Weighted Utilization

$$SalesWeightedUtilization = \frac{DemographicGroup2022Sales}{Total2022Sales}$$

Extending the above example, if the M/WBE comparison group that holds 20% of the licenses also has a 25% availability sales share, while the M/WBE study group has a 2% sales-weighted utilization rate, the disparity ratio is then:

[228] Our use of "weighted" and "unweighted" in this report is not the same for traditional disparity studies. In traditional studies, "weighted" commonly refers to combining NAICS codes in the *comparison group* by using sales weights from the *study group*. We are not able to do this because our comparison and study groups do not share a common set of NAICS codes.

[229] Since sales shares are typically associated with businesses, we do not calculate weighted utilization for the licenses study group because that study group represents individual licenses.

$$\frac{2\%}{20\% \times 25\%} = \frac{2\%}{5\%} = 40\%$$

For each license type, we performed the various calculations as summarized in Table V-4 through Table V-6.[230]

Table V-4. Availability Rate Calculations

Analysis	Weighting?	Availability Name	Comparison Group
Availability rate #1	Unweighted	Adult use license applicant counts	Applicants
Availability rate #2	Unweighted	Adult use license holder counts	Adult use licensees
Availability rate #3	Unweighted	Cannabis-related business counts	Cannabis-related businesses
Availability rate #4	Sales-Weighted	Cannabis-related sales	Cannabis-related businesses
Availability rate #5	Unweighted	Medical license holder counts	Medical licensees
Availability rate #6	Sales-Weighted	Medical licensee sales	Medical licensees

Table V-5. Utilization Rate Calculations

Analysis	Weighting?	Utilization Name	Study Group
Utilization rate #1	Unweighted	Adult use license holder counts	Adult use licensees
Utilization rate #2	Sales-Weighted	Adult use licensee sales	Adult use licensees
Utilization rate #3	Unweighted	Adult use license counts	Adult use licenses

While utilization rates #1 and #3 seem similar, the distinction lies in their counting methods: rate #1 counts unique licensed companies, whereas rate #3 counts unique licenses. Consequently, companies holding multiple licenses are counted once under rate #1 but multiple times under rate #3.

We assigned application, license, and licensee demographics based on the race, ethnicity, and gender of the majority owners by examining the license applications, CROO diversity survey responses, and, where necessary, publicly available information. All sales-weighted rates use full year 2022 sales results.

While there are numerous combinations of availability and utilization rates we could select for calculating disparity ratios, we chose the ones presented in Table V-6 to best address the question

[230] We use adult use license holders as both Availability Rate #2 and Utilization Rate #1.

of whether M/WBEs are over- or under-represented in cannabis licensing and sales in relation to multiple comparison groups.[231]

Table V-6. Disparity Ratio Calculations

Analysis	Utilization	Availability
DR #1	UR #1: [Unweighted] Adult use license holder counts	AR #1: [Unweighted] Adult use license applicants
DR #2	UR #2: [Sales-Weighted] Adult use sales	AR #2: [Unweighted] Adult use license holder counts
DR #3	UR #2: [Sales-Weighted] Adult use sales	AR #4: [Sales-Weighted] Cannabis-related sales
DR #4	UR #1: [Unweighted] Adult use license holder counts	AR #5: [Unweighted] Medical license holder counts
DR #5	UR #2: [Sales-Weighted] Adult use sales	AR #6: [Sales-Weighted] Medical sales

DR is Disparity Ratio, UR is Utilization Rate, AR is Availability Rate.

Each of these disparity ratios provides a different perspective into the disparities which may exist in the Illinois adult-use cannabis sector:

- Disparity ratio #1 compares the unweighted utilization of adult use cannabis licensees to the unweighted availability of adult use cannabis license applicants that did not obtain a license. This disparity ratio provides insight on the disparities in cannabis licensing compared to the applicant pool. Unsuccessful applicants have indicated a clear readiness and willingness to operate a license but were not awarded one—the key condition for a suitable comparison group in disparity analysis literature to-date.[232]
- Disparity ratio #2 compares the sales-weighted utilization of adult use cannabis licensees to the unweighted availability of adult use cannabis licensees. This disparity ratio provides insight on the disparities in cannabis licensee sales compared to the licensee pool.[233]
- Disparity ratio #3 compares the sales-weighted utilization of adult use cannabis licensees to the sales-weighted availability of cannabis-related businesses (such as smoke shops or CBD retailers—see Appendix D. Comparison Group Justification for more details). This disparity ratio provides insight on the disparities in cannabis licensee sales compared to the sales of business owners in similar industries.

[231] We measure outcome with sales because it is 1) straightforward to obtain for both the study and comparison groups (versus profit or license specific metrics such as canopy space), and 2) commonly used in other disparity studies.

[232] One could argue that not all applicants are similarly situated, and lottery participants would make for a more accurate comparison. Lottery participants, being the top scoring dispensary license applicants, are more likely to be similarly situated. We chose not to use lottery participants because 1) the other license types did not conduct a lottery, and 2) we wanted a broader estimate of disparities by being more inclusive of willing participants.

[233] Due to not all adult use cannabis licensees being operational during the study period, the sales numbers are skewed towards early approval licensees, i.e., those that were also medical dispensaries/cultivators.

- Disparity ratio #4 compares the unweighted utilization of adult use cannabis licensees to the unweighted availability of medical cannabis licensees. This disparity ratio provides insight on the disparities in adult use cannabis licensing compared to the medical industry.
- Disparity ratio #5 compares the sales-weighted utilization of adult use cannabis licensees to the sales-weighted availability of medical cannabis licensees. This disparity ratio provides insight on sales disparities between adult use and medical cannabis licensees.[234]

To measure disparity significance, we employ two tests: 1) substantive significance and 2) statistical significance. Courts commonly define "substantively significant disparity" as a disparity ratio equal to or less than 80%.[235] Substantively significant disparity provides supporting evidence of an adverse impact.[236] Statistically significant disparity means the result is unlikely to have occurred due to random chance alone. The larger the statistical significance, the smaller the likelihood the disparity resulted from chance.[237]

3. Cannabis-Related Businesses

The process for calculating the availability of M/WBEs in the cannabis-related businesses comparison group (which is compared to the cannabis licensees study group for purposes of Disparity Ratio #3) involves several steps. We first determine the types of firms available in each comparison cohort (i.e., comparable cohorts of businesses for each cannabis license type). Then, we determine the share of firms by race, ethnicity, and gender for each comparison cohort using NAICS codes.

Take, for example, dispensary-related businesses: its firm shares are derived from NAICS codes associated with the CBD Stores, Liquor Stores, and Vaping/Smoke Shops cohorts. The firm demographic data, indicating the majority ownership by race, ethnicity, and gender, is sourced from Hoovers.

To determine the unweighted availability, we then take the average of the NAICS code shares for each license type. Using data in Table V-7 to provide an illustrative example, the unweighted availability of Black-owned dispensary-related businesses (Dispensary Total) is calculated as follows:

$$\frac{50\% + 30\% + 35\%}{3} = \frac{115\%}{3} = 38\%$$

[234] Due to not all adult use cannabis licensees being operational during the study period, the sales numbers are skewed towards medical licensees.

[235] Code of Federal Regulations, 29 C.F.R. §1607.4(D) (2010), "A selection rate for any race, sex, or ethnic group which is less than four-fifths (4/5) (or eighty percent) of the rate for the group with the highest rate will generally be regarded by the Federal enforcement agencies as evidence of adverse impact, while a greater than four-fifths rate will generally not be regarded by Federal enforcement agencies as evidence of adverse impact," https://www.law.cornell.edu/cfr/text/29/1607.4.

[236] *Id.*

[237] We use a chi-square test to determine statistical significance of the disparity ratios.

In this example, Black-owned dispensary-related businesses comprise 38% of all dispensary-related businesses.

Table V-7. Illustrative Unweighted Availability Example Calculation

NAICS	Black	Asian	Indigenous	Hispanic	White Women	Non-M/WBE
AAAAAA	50%	5%	5%	15%	5%	20%
BBBBBB	30%	10%	10%	10%	15%	25%
CCCCCC	35%	5%	15%	5%	10%	30%
Dispensary Total	**38%**	**7%**	**10%**	**10%**	**10%**	**25%**

For sale-weighted availability for the purposes of disparity ratio #3, we multiply each NAICS code's firm share from above by that NAICS code's share of total cohort sales. For example, if NAICS code AAAAAA represents 10% of all dispensary-related business sales, we multiply each of AAAAAA firm shares by 10%. We then sum these sales-weighted shares for each license type.

Using Table V-8 as an illustrative example, the weighted availability of Black-owned dispensary-related businesses (Dispensary Total) is calculated as follows:

$$(50\% \times 10\%) + (30\% \times 30\%) + (35\% \times 60\%) = 5\% + 9\% + 21\% = 35\%$$

In this example, Black-owned dispensary-related businesses comprise 35% of all dispensary-related business sales. Note: actual unweighted and sales-weighted availability rates are presented in §0.D. Availability.

Table V-8. Illustrative Weighted Availability Example Calculation

NAICS	Sales Share	Black	Asian	Indigenous	Hispanic	White Women	Non-M/WBE
AAAAAA	10%	5%	1%	1%	2%	1%	2%
BBBBBB	30%	9%	3%	3%	3%	5%	8%
CCCCCC	60%	21%	3%	9%	3%	6%	18%
Dispensary Total	**100%**	**35%**	**7%**	**13%**	**8%**	**11%**	**28%**

D. Availability

Availability refers to the estimated share each racial, ethnic, and gender demographic group hold in the comparison group. These groups represent firms "ready, willing, and able" to enter the Illinois cannabis industry. We identified six availability rates across four comparison groups (applicants, adult use licensees, cannabis-related businesses, and medical licensees):

1. Availability rate #1: Adult use license applicant counts
2. Availability rate #2: Adult use license holder counts
3. Availability rate #3: Cannabis-related business counts
4. Availability rate #4: Cannabis-related sales
5. Availability rate #5: Medical license holder counts
6. Availability rate #6: Medical sales

1. Applicants

Table V-9 presents the availability of cannabis license applicants results by race, ethnicity, gender, and M/WBE status. This availability comparison group is relevant for calculating disparity ratio #1. IDOA did not accept cultivation centers applications during the study period, hence they are marked as N/A.

Table V-9. Availability Rate #1 [Unweighted] Cannabis License Applicants

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	43.3%	5.4%	0.0%	7.5%	8.5%	64.8%	2.8%	67.6%	22.0%	10.4%
Craft Grower	37.7%	5.1%	0.0%	6.7%	3.5%	53.1%	4.9%	58.0%	24.0%	18.1%
Infuser	44.8%	1.7%	0.0%	5.2%	6.9%	58.6%	5.2%	63.8%	22.4%	13.8%
Transporter	33.3%	2.9%	0.0%	3.9%	3.9%	44.1%	2.0%	46.1%	11.8%	42.2%
Cultivation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Nerevu analysis of IDFPR and IDOA data. Shares are calculated by aggregating the application count by majority ownership demographics and dividing by total applications. E.g., five majority Black-owned adult use dispensary applications out of a total 10 adult use dispensary applications would equate to 50% availability. The Other MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake.

2. Adult Use Licensees

Table V-10 presents availability based on adult use cannabis licensed companies by race, ethnicity, gender, and M/WBE status. This availability comparison group is relevant for calculating disparity ratio #2. M/WBE availability of adult use licensed companies across all cannabis license types spans from 14% for cultivation centers to 74% for transporters.

Table V-10. Availability Rate #2 [Unweighted] Adult Use Cannabis Licensed Companies

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	37.7%	5.5%	0.0%	4.4%	6.0%	53.6%	5.5%	59.0%	35.5%	5.5%
Craft Grower	45.1%	1.2%	0.0%	6.1%	8.5%	61.0%	2.4%	63.4%	26.8%	9.8%
Infuser	26.8%	8.9%	0.0%	10.7%	8.9%	55.4%	5.4%	60.7%	32.1%	7.1%
Transporter	54.8%	4.8%	1.2%	7.1%	1.2%	69.0%	4.8%	73.8%	20.2%	6.0%
Cultivation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	14.3%	76.2%	9.5%

Source: Nerevu analysis of IDFPR and IDOA data. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake. Shares are calculated by aggregating the license holder count by majority ownership demographics and dividing by the total number of licensed companies. E.g., five majority Black-owned adult use licensed dispensaries out of a total 10 adult use licensed dispensaries would equate to 50% availability.

3. Cannabis-Related Businesses

We also examined cannabis-related businesses: businesses that have similarities with cannabis licensees, but are not licensed for cannabis activities.[238] Cannabis-related businesses includes CBD stores, hemp growers, hemp infusers/manufacturers, liquor stores, vaping/smoke shops, cannabis testing labs and armored car/trucking services. We selected these industries due to their similarities with adult use cannabis businesses in aspects such as licensing requirements, regulatory burdens, business operating costs, and market entry barriers. See Appendix D. Comparison Group Justification for more for detailed justifications for each cannabis-related industry comparison group. Table V-3 summarizes which license type is utilized for each cannabis-related industry as a comparison group.

Table V-11 and Table V-12 present the unweighted and sales-weighted availability based on cannabis-related businesses by race, ethnicity, gender, and M/WBE status. This availability comparison group is relevant for calculating disparity ratio #3. Table V-11 shows the vast majority of cannabis-related businesses are non-M/WBE, with availabilities spanning from 85% for infuser related businesses to 97% for craft grower related businesses.

[238] See Table V-3 in §**Error! Reference source not found.**.C.1. Study and Comparison Groups for a list and description of "cannabis-related businesses."

Table V-11. Availability Rate #3 [Unweighted] Cannabis-Related Businesses

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	0.4%	0.2%	0.0%	0.1%	0.0%	0.7%	3.8%	4.6%	95.4%	0.0%
Craft Grower	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	3.0%	3.1%	96.9%	0.0%
Infuser	0.4%	1.8%	0.0%	0.0%	0.0%	2.2%	13.2%	15.3%	84.7%	0.0%
Transporter	1.8%	0.1%	0.0%	0.8%	0.0%	2.8%	5.0%	7.8%	92.0%	0.2%
Cultivation	1.1%	0.6%	0.0%	0.5%	0.0%	2.1%	6.5%	8.6%	91.3%	0.1%

Source: AEC analysis of IDFPR and IDOA data; Hoovers. Shares are calculated by averaging the firm shares across comparison cohort NAICS codes. See §V.C.3. Cannabis-Related Businesses for additional details.

When weighted by sales, the non-M/WBE availability spans from 94% for transporter-related businesses to 99% for craft grower-related businesses. In other words, in no cannabis-related industry did racial and/or ethnic minorities or women make up more than 7% of sales (see Table V-12).

Table V-12. Availability Rate #4 [Sales-Weighted] Cannabis-Related Business Sales

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	0.5%	0.6%	0.0%	0.1%	0.0%	1.3%	4.9%	6.2%	93.7%	0.1%
Craft Grower	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	1.3%	1.4%	98.6%	0.0%
Infuser	0.2%	0.4%	0.0%	0.0%	0.0%	0.6%	4.6%	5.2%	94.8%	0.0%
Transporter	1.3%	0.1%	0.0%	0.6%	0.0%	2.0%	4.3%	6.3%	93.5%	0.2%
Cultivation	0.9%	0.3%	0.0%	0.4%	0.0%	1.5%	3.7%	5.3%	94.5%	0.2%

Source: AEC analysis of IDFPR and IDOA data; Hoovers. Shares are calculated by summing the sales-weighted shares across comparison cohort NAICS codes. See §0.C.3. Cannabis-Related Businesses for additional details.

4. Medical Licensees

Table V-13 presents availability based on medical cannabis licensed companies by race, ethnicity, gender, and M/WBE status. This availability comparison group is relevant for calculating disparity ratio #4. M/WBE availability of medical licensed companies across all cannabis licenses is 14% for cultivation centers and 21% for dispensaries.

Table V-13. Availability Rate #5 [Unweighted] Medical Cannabis Licensed Companies

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	0.0%	4.2%	0.0%	0.0%	2.1%	6.3%	14.6%	20.8%	72.9%	6.3%
Cultivation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	14.3%	76.2%	9.5%

Source: Nerevu analysis of IDFPR and IDOA data. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake. Shares are calculated by aggregating the license holder count by majority ownership demographics and dividing by the total number of licensed companies. E.g., five majority Black-owned medical licensed dispensaries out of a total 10 medical licensed dispensaries would equate to 50% availability.

When weighted by sales, the M/WBE availability is 7% for cultivation centers and 11% for dispensaries (see Table V-14). This availability comparison group is relevant for calculating disparity ratio #5.

Table V-14. Availability Rate #6 [Sales-Weighted] Medical Cannabis Sales

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	0.0%	1.1%	0.0%	0.0%	2.4%	3.6%	7.3%	10.8%	78.7%	10.5%
Cultivation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.5%	6.5%	87.6%	5.9%

Source: Nerevu analysis of IDFPR and IDOA data. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake. Shares are calculated by aggregating 2022 medical sales by majority ownership demographics and dividing by the total 2022 medical sales. E.g., $5 in 2022 medical sales by majority Black-owned licensed dispensaries out of a total $10 in 2022 medical sales by all medical licensed dispensaries would equate to 50% utilization.

E. Utilization

Utilization refers to the estimated share each racial, ethnic and gender demographic group hold in the study group. These groups represent firms currently active in the Illinois cannabis industry. We identified three utilization rates across two study groups:

1. Utilization rate #1: Adult use license holder counts
2. Utilization rate #2: Adult use licensee sales
3. Utilization rate #3: Adult use license counts[239]

Table V-15 provides a breakdown of applications, lottery participation, awarded licenses, and sales by license type. More than half of the total licenses were for dispensaries, while 4% were for cultivation centers.

[239] While we ultimately do not use utilization rate #3 in our disparity ratio calculations, we present them here instead of the appendix because it is a metric commonly reported on in the industry. E.g., the percentage of licenses awarded to majority-owned by black applicants.

Table V-15. Cannabis Applications, Awards, and Sales Summary

License Type	Total Applications Submitted	Social Equity Qualified Applications	Lottery Participating Applications	Awarded Licenses	Total Adult Use Study Period Sales ($ millions)
Dispensary	2,607	2,125	2,082	308	$3,725.05
Craft Grower	460	185	N/A	88	$0.00
Infuser	117	68	N/A	56	$0.00
Transporter	250	161	N/A	86	$0.00
Cultivation	N/A	N/A	N/A	21	$827.98
Total	**3,434**	**2,539**	**2,082**	**559**	**$4,553.03**

Source: Nerevu analysis of IDFPR and IDOA data. Sales values for craft grower, infuser, and transporter license types are zero as no revenue was recorded for these license types during the study period. Only dispensaries held a lottery during the study period, so all other license types are marked as N/A.

Craft grower, infuser, and transporter licensees did not have sales or transportation contracts during our study period because the first new adult use licensees did not start to become operational until the end of 2022.

As Table V-16 shows, the majority of dispensary sales during the study period (99.9%) were attributed to early approval licenses, which were exclusively granted to medical cannabis dispensaries in 2020 and 2021.

Table V-16. Distribution of Dispensary Sales by License Category (Study Period)

Dispensary License Category	Awarded Licenses	% Awarded Licenses	Operational Licenses	Total Adult Use Study Period Sales ($ millions)	% Total Adult Use Study Period Sales
Early Approval Same Site	55	17.9%	55	$1,886.12	50.6%
Early Approval Secondary Site	55	17.9%	55	$1,835.13	49.3%
Social Equity Applicant	198	64.3%	7	$3.80	0.1%
Total	**308**	**100.1%**	**117**	**$3,725.05**	**100.0%**

Source: Nerevu analysis of IDFPR data. Percentages may not add up to 100% due to rounding.

Table V-17 provides a breakdown of awarded licenses by license type, race, ethnicity, gender, and M/WBE status.

Table V-17. Count of Cannabis Licenses by Majority Owners' Race, Ethnicity, and Gender

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	107	19	0	10	23	159	15	174	113	22
Craft Grower	39	1	0	7	9	56	2	58	23	7
Infuser	15	5	0	6	5	30	4	34	18	4
Transporter	48	4	0	6	2	61	4	65	17	4
Cultivation	0	0	0	0	0	0	3	3	16	2
Total	**209**	**25**	**0**	**29**	**39**	**306**	**28**	**334**	**183**	**39**

Source: Nerevu analysis of IDFPR and IDOA data. The Other MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake.

1. Licensees

Table V-18 and Table V-19 presents unweighted and sales-weighted utilization for cannabis licensed companies by race, ethnicity, and gender for each license type. Table V-18 shows M/WBE utilization of licensed companies across all cannabis license types spans from 14% for cultivation centers to 74% for transporters. This utilization rate is relevant for calculating Disparity Ratios #1 and #4.

Table V-18. Utilization Rate #1 [Unweighted] Adult Use Cannabis License Holder Distribution

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	37.7%	5.5%	0.0%	4.4%	6.0%	53.6%	5.5%	59.0%	35.5%	5.5%
Craft Grower	45.1%	1.2%	0.0%	6.1%	8.5%	61.0%	2.4%	63.4%	26.8%	9.8%
Infuser	26.8%	8.9%	0.0%	10.7%	8.9%	55.4%	5.4%	60.7%	32.1%	7.1%
Transporter	54.8%	4.8%	1.2%	7.1%	1.2%	69.0%	4.8%	73.8%	20.2%	6.0%
Cultivation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	14.3%	76.2%	9.5%

Source: Nerevu analysis of IDFPR and IDOA data. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake. Shares are calculated by aggregating the license holder count by majority ownership demographics and dividing by the total number of licensed companies. E.g., five majority Black-owned licensed dispensaries out of a total 10 licensed dispensaries would equate to 50% utilization.

Table V-19 presents the sales-weighted utilization rates. M/WBE sales-weighted utilization is 13% for dispensaries and 9% for cultivation centers. This utilization rate is relevant for calculating Disparity Ratios #2, #3, and #5.

Table V-19. Utilization Rate #2 [Sales-Weighted] Adult Use Cannabis Sales Distribution

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	0.02%	4.89%	0.00%	0.00%	1.15%	6.06%	6.44%	12.50%	77.79%	9.71%
Cultivation	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.57%	8.57%	90.97%	0.00%

Source: Nerevu analysis of IDFPR and IDOA data. Craft grower, infuser, and transporter license types are not shown because they received no revenue or sales during the study period. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake. Shares are calculated by aggregating 2022 adult use sales by majority ownership demographics and dividing by the total 2022 adult use sales. E.g., $5 in 2022 adult use sales by majority Black-owned licensed dispensaries out of a total $10 in 2022 adult use sales by all licensed dispensaries would equate to 50% utilization.

The following is an important caveat to understand when interpreting the results of this disparity analysis: One explanation for the stark difference between unweighted and weighted dispensary utilization is that only seven SEA licensees were able to enter the market and become operational during the study period. Cultivation centers did not participate in social equity licensing and did not award any licenses to non-medical operators, therefore there were no new entrants to the cultivation center market.

2. Cannabis Licenses

Table V-20 presents Utilization Rate #3 based on cannabis licenses by license type, race, ethnicity, gender, and M/WBE status. These rates are similar to, but different than, Utilization Rate #1 in Table V-18, which shows shares of licensed companies. For example, a company with two dispensary licenses only counts once in Table V-18, but counts twice in Table V-20.

The share of M/WBE held licenses spans from 14% for cultivation centers to as high as 76% for transporters.

Table V-20. Utilization Rate #3 [Unweighted] Adult Use Cannabis Licenses Distribution

License Type	Black	Asian	Indigenous	Hispanic	Other MBE	Total MBE	White Women	Total M/WBE	Non-M/WBE	No/Unknown Majority
Dispensary	35.1%	6.2%	0.0%	3.3%	7.5%	52.1%	4.9%	57.0%	35.7%	7.2%
Craft Grower	44.3%	1.1%	0.0%	8.0%	10.2%	63.6%	2.3%	65.9%	26.1%	8.0%
Infuser	26.8%	8.9%	0.0%	10.7%	8.9%	55.4%	5.4%	60.7%	32.1%	7.1%
Transporter	55.8%	4.7%	1.2%	7.0%	2.3%	70.9%	4.7%	75.6%	19.8%	4.7%
Cultivation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	14.3%	76.2%	9.5%

Source: Nerevu analysis of IDFPR and IDOA data. The Other MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake. Shares are calculated by aggregating the license count by majority ownership demographics and dividing by total licenses. E.g., five majority MBE owned dispensary licenses out of a total 10 dispensary licenses would equate to a 50% share.

F. Disparity Findings

This disparity assessment compares the *utilization* rate (i.e., the share each racial, ethnic and gender demographic hold in a study group) to the *availability* rate (i.e., the share each racial, ethnic, and gender demographic hold in a comparison group). We identified five disparity assessments across various study utilization and availability rates. Each tells a different but important story about disparity in cannabis:[240]

1. Disparity ratio #1: Adult use license holder counts compared to adult use license applicant counts
2. Disparity ratio #2: Adult use licensee sales compared to adult use license holder counts
3. Disparity ratio #3: Adult use licensee sales compared to cannabis-related business sales
4. Disparity ratio #4: Adult use license holder counts compared to medical license holder counts
5. Disparity ratio #5: Adult use licensee sales compared to medical licensee sales

1. Disparity Analysis

Table V-21 presents disparity ratios comparing utilization based on adult use cannabis license holders to availability based on adult use cannabis license applicants (disparity ratio #1). This disparity ratio measures the extent to which the adult use cannabis license holders reflect the diversity of the adult use applicant pool.

Disparity ratio #1 revealed substantively significant disparity ratios for Hispanic dispensary, Asian and White women craft grower, and Black infuser adult use license holders.[241] Except for these

[240] See §0.C.2. Disparity Ratio for additional details on the calculations.
[241] Cultivation centers were not open to applicants, so those disparity ratios could not be calculated.

four categories, the adult use cannabis license holders reflect the diversity of the applicant pool. All dispensary and craft disparity ratios are statistically significant at the 0.001 level. The Black infuser disparity ratio is statistically significant at the 0.05 level.

Table V-21. Disparity Ratio #1: Adult Use License Holder Share vs Applicant Share

License Type	Black	Asian	Indigenous	Hispanic	Total MBE	White Women	Total M/WBE	Non-M/WBE
Dispensary	87.0% ***	101.0% ***	N/A	58.3%‡***	82.7% ***	193.2% ***	87.3% ***	161.4% ***
Craft Grower	119.6% ***	23.8%‡***	N/A	90.5% ***	114.8% ***	50.3%‡***	109.4% ***	111.8% ***
Infuser	59.8%‡*	517.9% ***	N/A	207.1% *	94.4%	103.6%	95.2%	143.4%
Transporter	164.3% *	161.9%	N/A	182.1%	156.5% *	242.9% *	160.2% **	172.0% **
Cultivation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Source: Nerevu analysis of IDFPR and IDOA data; Hoovers. ‡ Indicates substantive significance (<80%). ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. The cells marked N/A indicate that no applications were submitted by the given demographic group during the study period. Cultivation center license types are marked N/A because they were not open to applicants so those disparity ratios could not be calculated. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake.*

Table V-22 presents disparity ratios comparing utilization based on adult use cannabis licensee sales to availability based on adult use cannabis license holder counts. This disparity ratio measures the extent to which the sales experienced during the study period by adult use cannabis licensees reflect the diversity of the adult use licensee pool. Notably, during the study period, few to no MBE adult use dispensary sales were operational during the study period and thus had little to no sales. Because this Disparity Ratio will be important to evaluate over time, however, we have provided the results here despite the limitation of this ratio. Craft grower, infuser, and transporter license types are not shown because they received no revenue or sales during the study period.

Disparity ratio #2 revealed substantively significant disparity ratios for Black, Hispanic, MBE, and M/WBE adult use dispensary license holders, and White women and M/WBE adult use cultivation center license holders.[242] All dispensary and cultivation center disparity ratios are statistically significant at the 0.001 level.

[242] Cultivation centers had no MBE license holders, so those disparity ratios could not be calculated.

Table V-22. Disparity Ratio #2: Adult Use Licensee Sales vs Adult Use License Holder Share

License Type	Black	Asian	Indigenous	Hispanic	Total MBE	White Women	Total M/WBE	Non-M/WBE
Dispensary	0.1%‡***	89.4% ***	N/A	0.0%‡***	11.3%‡***	117.9% ***	21.2%‡***	219.0% ***
Cultivation	N/A	N/A	N/A	N/A	N/A	60.0%‡***	60.0%‡***	119.4% **

*Source: Nerevu analysis of IDFPR and IDOA data; Hoovers. ‡ Indicates substantive significance (<80%). ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively.* [243] *The cells marked N/A indicate that no licenses were held by the given demographic group during the study period. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake.*

Table V-23 presents disparity ratios comparing utilization based on adult use cannabis licensee sales to availability based on cannabis-related business sales (disparity ratio #3). This disparity ratio measures the extent to which sales experienced by adult use cannabis licensees reflect the diversity of sales in cannabis-related businesses. Craft grower, infuser, and transporter license types are not shown because they received no revenue or sales during the study period. Also, few to no MBE adult use dispensary licensees were operational during the study period and thus had little to no sales. As with disparity ratio #2, this information is being provided despite its limitation, however, as this disparity ratio may be more informative as the industry matures.

Disparity ratio #3 revealed substantively significant disparity ratios for Black, Indigenous, and Hispanic adult use dispensary license holders. The disparity ratios for Black, Asian, Indigenous, Hispanic, and MBE adult use cultivation center license holders are also substantively significant. All adult use dispensary and cultivation center disparity ratios are statistically significant at the 0.001 level. [244]

Table V-23. Disparity Ratio #3: Adult Use Licensee Sales vs Cannabis-Related Business Sales

License Type	Black	Asian	Indigenous	Hispanic	Total MBE	White Women	Total M/WBE	Non-M/WBE
Dispensary	5.0%‡***	762.6% ***	0.0%‡***	0.0%‡***	475.6% ***	130.3% ***	201.1% ***	83.0% ***
Cultivation	0.0%‡***	0.0%‡***	0.0%‡***	0.0%‡***	0.0%‡***	230.2% ***	162.7% ***	96.2% ***

*Source: Nerevu analysis of IDFPR and IDOA data; Hoovers. ‡ Indicates substantive significance (<80%). ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively.* [245] *Note: The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake.*

Table V-24 presents disparity ratios comparing utilization based on adult use cannabis license holders to availability based on medical cannabis license holders (disparity ratio #4). This disparity ratio measures the extent to which the diversity of the adult use cannabis license holders reflects

[243] We performed a chi-square test to determine the statistical significance of the disparity ratio.
[244] *Id.*
[245] *Id.*

the diversity of the medical cannabis license holders. Craft grower, infuser, and transporter license types are not shown because they are not authorized for medical use.

Disparity ratio #4 revealed substantively significant disparity ratios for White women and Non-M/WBE adult use dispensary license holders. These ratios are statistically significant at the 0.001 level. [246]

Table V-24. Disparity Ratio #4: Adult Use License Holder Share vs Medical License Holder Share

License Type	Black	Asian	Indigenous	Hispanic	Total MBE	White Women	Total M/WBE	Non-M/WBE
Dispensary	N/A	131.1% ***	N/A	N/A	856.8% ***	37.5%‡***	283.3% ***	48.7%‡***
Cultivation	N/A	N/A	N/A	N/A	N/A	100.0%	100.0%	100.0%

*Source: Nerevu analysis of IDFPR and IDOA data. ‡ Indicates substantive significance (<80%). ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. [247] The cells marked N/A indicate that no medical licenses were held by the given demographic group during the study period. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake.*

Table V-25 presents disparity ratios comparing utilization based on adult use cannabis licensee sales to availability based on medical cannabis licensee sales (disparity ratio #5). This disparity ratio measures the extent to which the diversity of sales experienced by adult use cannabis licensees reflect the diversity of sales by medical licensees. Craft grower, infuser, and transporter license types are not shown because they are not authorized for medical use. While all results were statistically significant, we observed no substantively significant disparities using disparity ratio #5 (see Table V-25).

Table V-25. Disparity Ratio #5: Adult Use Sales vs Medical Sales

License Type	Black	Asian	Indigenous	Hispanic	Total MBE	White Women	Total M/WBE	Non-M/WBE
Dispensary	N/A	434.7% ***	N/A	N/A	170.0% ***	88.7% ***	115.5% ***	98.8% ***
Cultivation	N/A	N/A	N/A	N/A	N/A	131.6% ***	131.6% ***	103.8% ***

*Source: Nerevu analysis of IDFPR and IDOA data. ‡ Indicates substantive significance (<80%). ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. [248] The cells marked N/A indicate that no medical licenses were held by the given demographic group during the study period. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake.*

2. Disparity Discussion

Overall, the disparity ratio results are encouraging and highlight the success of the social equity licensing policy in diversifying the racial and ethnic demographics of the adult use cannabis

[246] We performed a chi-square test to determine the statistical significance of the disparity ratio.
[247] *Id.*
[248] *Id.*

license holders. This is evident by disparity ratio #1 (which compares license holders to the applicant pool) having only four substantively significant disparities. While we identified substantively and statistically significant disparities for disparity ratios #1, #2, #3, and #4, we found no evidence that these disparities were caused by discrimination on the part of the state agencies awarding those licenses.

Delays in SEA license issuance post-CRTA implementation hindered SEAs from entering the adult use market concurrently with early approval licensees, who began sales as early as January 1, 2020. Because so few M/WBEs had early approval licenses, M/WBE licensees were only operational for a few months of the study period. This setback led to M/WBE licensees having lower sales than non-M/WBE licensees (see Table V-22).

In short, SEA licensee sales trail their licensure rates (disparity ratio #2) and cannabis-related sales (disparity ratio #3), which resulted in substantively significant M/WBE disparity ratios. Further examination in future years once the market has matured may be more informative.

G. Quantitative Limitations

This section examines the challenges we encountered while completing this study. In particular, the cannabis industry's emerging market status made comparisons and analyses of disparities difficult. This required us to devise innovative approaches to navigate these and other obstacles.

1. New Industry

The newness of the cannabis industry poses additional challenges and limitations for conducting a disparity study. Because all cannabis businesses in Illinois must have a license, there were no operational cannabis businesses besides the study group to compare against. This resulted in a shortage of comparative data and subsequent methodological constraints. To mitigate these challenges, we utilized proxy industries and adapted our disparity analysis accordingly.

(a) Newly Registered Entrepreneurs

The Illinois cannabis industry's rapid influx in participants at the inception of the legal adult use market have complicated the establishment of a reliable baseline for comparison. Further, the intricate licensing process and the lack of historical data further hindered the accurate assessment of any disparities. These unique features, along with the innovative nature of new businesses, set the cannabis industry apart from more established industries, including the cannabis-related business comparison cohorts.

(b) Timeline

Furthermore, the Illinois cannabis industry is still a novel market. The first medical dispensary opened November 9, 2015, and the adult use market only opened on January 1, 2020, making the medical and adult use cannabis industries eight and two years old respectively at the start of

this study.[249] Since then, litigation and licensing delays impacted the issuance of new licenses beyond the initial medical dispensaries and cultivation centers. The relatively brief history of these industries posed considerable challenges for quantitative data collection and other aspects of the study. The data available for our regression analysis was sparse, and in some cases entirely lacking. Thus, it must be noted that the conclusions in this report represent a snapshot in time and will require reevaluation as more licensees come online and more sales and business activity is generated.

(c) Constant Changes

The dynamic nature of the Illinois cannabis industry, with new licensees becoming operational during the study period, presented additional challenges. For example, the initial application data represented just a single point in time and rapidly became outdated as applicants added or changed business partners and modified their business relationships.

2. Data Management

(a) Inconsistent Application Formats

Although IDFPR and IDOA provided guidelines detailing the required information for each application exhibit, applicants did not uniformly adhere to these instructions. Consequently, specific details such as ownership percentages were presented in different locations and formats, complicating the process of locating and analyzing this information. We overcame this hurdle by searching through all the exhibits for relevant information.

(b) Manual Data Extraction

This study involved extensive manual data extraction since data from the license applications, submitted as PDFs, was not accessible in a spreadsheet format. Many submissions were scans or photos of pages which rendered search and copy functionality unusable.

While the state provided results from optical character recognition (OCR) performed on the applications, it covered only a portion of the available application data and contained character recognition errors necessitating manual correction. To gather all the necessary demographic information for our study we individually reviewed a substantial number of the thousands of applications received. We also ran additional OCR scans to verify license application types and business and facility addresses.

(c) Unique Identifying Numbers

The lack of standardized unique identifiers for applications, individuals, businesses, facilities, license type(s) sought, and licensing outcome across the licensing agencies severely hindered

[249] Shellie Nelson, "First Medical Marijuana Dispensaries Open in Illinois," November 5, 2015, accessed January 4, 2024, https://www.wqad.com/article/news/local/drone/8-in-the-air/medical-marijuana-dispensaries-open-in-illinois/526-5bbd9eae-de9f-4cdc-b84b-2744532cd230.

analysis. Individuals often held ownership in multiple firms, necessitating thorough cross-checking of all full and partial name matches to consolidate duplicate contacts.

Additionally, some businesses and facilities underwent name, location, and/or ownership changes between their initial application submission and the granting of their operational license. Changes in identifying information made it especially difficult to accurately attribute licensing and sales data to the correct entities.

While a unique seed-to-sale system identifier (BioTrack ID) existed for licensed facilities, the identifier was not a one-to-one match. Some facilities had multiple IDs and others had none, as only operational facilities were assigned these identifiers.

We solved these issues by establishing our own database which modeled the relationships between the entities. We cross referenced names, birth dates, addresses, and data found in state corporation registries, annual reports, and news articles. While the process proved challenging and time intensive, it enhanced our understanding of the cannabis application and licensing landscape.

(d) Ownership Data

Frequently, the ownership percentages provided in applications did not total 100%. Moreover, applications commonly named parent companies rather than individual owners, necessitating extra research to trace back through two or three tiers to identify the actual owners of the firms.

(e) Diversity Survey Responses

Parent companies often responded to the CROO Diversity Survey on behalf of their subsidiaries, making it difficult to attribute responses to specific licensees. The same issue was also evident for companies and facilities that experienced ownership and/or name changes.

(f) Sales Data

The seed-to-sale system used to track cannabis transactions offered limited reporting capabilities. This required CROO to manually generate sales data by directly querying the database. Despite incorporating all available identifiers, linking the data to specific businesses and facilities required meticulous manual effort.

3. Regressions

Note that 3-digit NAICS codes are used in the regression analyses (except in the business growth indicator regression analysis, which employed 3 and 4-digit NAICS codes) instead of 6-digit codes, as presented in Appendix C. Illinois Cannabis-Related Industry Availability Analysis. Employing 3-digit NAICS codes ensured adequate sample sizes and allowed us to zoom out beyond the study group (cannabis licensees) to include other cannabis-related industries and the Illinois economy as a whole.

VI. QUALITATIVE ANALYSIS

H. Data Sources

Our qualitative data gathering focused on adult use market issues. We obtained most of the qualitative data through independent fact-finding and supplemented it with the CROO Diversity Surveys.

Table VI-1. Qualitative Data Sources

Source	Data	Description
IDFPR	Diversity surveys	2021, responses from 32 firms and four testing labs 2022, responses from 142 firms and 4,480 cannabis employees 2023, responses from 156 firms and 2,103 cannabis employees
Nerevu	Electronic survey	60 responses from 1672 survey invites distributed by Qualtrics via email to cannabis licenses applicants
Nerevu	Interviews	40 one-on-one interviews
Nerevu	Focus groups	27 focus groups that engaged 160 people

I. Qualitative Methodology

Qualitative research refers to methodologies used to answer questions about human experiences, beliefs, attitudes, behaviors, interactions, and social contexts through semi-structured and in-depth interviews, focus groups, as well as document review and analysis.[250,251,252] The qualitative methodologies arrive at a deep understanding and contextual meaning of the intersectionality between sociocultural phenomena, human lives, and the issues affecting them.[253,254]

1. Focus Groups, Interviews, and Surveys

In conducting this study, we engaged with 200 Illinois cannabis industry professionals, agents, and business owners about their personal experiences, insights, and suggestions through 40 in-depth interviews and 27 focus groups (n=160 participants) [see Table VI-2 for a list of participants

[250] National Health and Medical Research Council, *Ethical Aspects of Qualitative Methods in Health Research. An Information Paper for Institutional Ethics Committees,* Canberra: Australian Government Publishing Service, 1995, accessed December 7, 2024, https://catalogue.nla.gov.au/catalog/1475574.
[251] J.M. Corbin and A.L. Strauss, *Basics of Qualitative Research*, fourth, California: Sage Publications, 2015.
[252] K. Hammarberg, M. Kirkman, and S. Lacey, "Qualitative Research Methods: When to Use Them and How to Judge Them," *Human Reproduction* 31, no. 3 (2016): 498–501.
[253] E. Fossey et al., "Understanding and Evaluating Qualitative Research," *Australian & New Zealand Journal of Psychiatry* 36, no. 6 (2002): 717–32.
[254] J.M. Corbin and A.L. Strauss, *Basics of Qualitative Research*, fourth, California: Sage Publications, 2015.

by license type].[255] These interviews and focus groups were designed to delve into a range of critical areas including:

- how the cannabis industry is administered on a state level,
- the experiences of various cannabis business license holders,
- the process of applying for a cannabis business license, and
- the overarching goals and aspirations they held for their cannabis ventures.

Participants were encouraged to share their perspectives on the cannabis licensing process and the challenges they faced, as well as to offer suggestions for potential improvements in the industry.

These conversations highlight the diverse experiences within the cannabis community. Quotations taken from interviews and focus groups may have been shortened for readability and are representative of the views expressed by numerous participants.

Table VI-2. Interviews and Focus Groups

Group	Individual Interviews	Focus Groups Sessions	Focus Group Participants
Cannabis License Applicants	0	6	38
Dispensary Licensees	6	6	51
Craft Grower Licensees	4	4	29
Infuser Licensees	2	5	11
Transporter Licensees	2	4	28
Cultivation Licensees	2	2	3
Regulators	20	0	0
Community College Program Directors	4	0	0
Total	**40**	**27**	**160**

We additionally analyzed over 6,000 survey responses from four different surveys, three of which CROO conducted in 2021, 2022, and 2023, and one we conducted in 2023 (see Table VI-3). The CROO surveys were sent to all cannabis licensees and cannabis employees and had response rates of 25%–50% for employees and above 90% for licensees.[256,257] These surveys collectively received over 200 business entity responses and over 6,000 employee responses. Each licensee

[255] Since focus group participation was anonymous, we do not know the overlap between focus group participants and survey respondents.
[256] Surveys were distributed via email from the state and cannabis businesses, as well as by physical flyers and cards with QR codes. The response rates are based on the estimates of the workforce size and vary by year.
[257] CROO began surveying cannabis employees in 2022.

was required to respond to the survey, and employees for each licensee were separately asked to complete a survey.

We disseminated our industry survey via email to 1,672 cannabis license applicants who were not awarded a license during the study period. We identified these applicants through state provided lists, application analysis, and outreach efforts. We received 60 survey responses resulting in a response rate of 3.6%.

Table VI-3. Survey Responses

Group	Survey Responses
Cannabis License Applicants	60
Cannabis Employees	6,583
Cannabis Licensees	292
Total	**6,935**

2. Outreach Strategy

Our outreach strategy involved compiling a comprehensive list of key participants and primary groups to interview using a semi-structured questionnaire with open-ended questions. The goal was to conduct a series of interviews and focus groups to gather qualitative evidence about the experiences of an array of primary actors involved in the Illinois cannabis industry. Interviews were conducted with Illinois agency staff, state lawmakers, and program directors from community colleges offering cannabis certification programs. We conducted a series of focus groups to reach adult use license holders and unlicensed applicants.[258,259]

3. Thematic Data Analysis Plan

Qualitative research can achieve rigor, validity, and objectivity by employing methods such as systematic thematic data analyses to minimize bias.[260] Thematic data analysis identifies and

[258] Cannabis license holder groups included: craft growers, infusers, transporters, cultivation centers (which can grow, infuse, and transport cannabis), and dispensaries.
[259] Focus group invitations were extended to various stakeholder advocacy groups across the state.
[260] J. Morse, "Critical Analysis of Strategies for Determining Rigor in Qualitative Inquiry," *Qual Health Res* 25 (2015): 1212–22, accessed December 7, 2024, https://pubmed.ncbi.nlm.nih.gov/26184336.

analyzes themes within unstructured text. The analysis process involves breaking the text into small units of content and subjecting them to descriptive treatment.[261,262,263]

Interviews and focus groups were audio recorded, transcribed verbatim, and underwent independent thematic data analysis using Dedoose v9.0.90, an online statistical software for sociocultural research. The analysis was weighted based on the themes that were prominently expressed by study participants about their knowledge and experiences. We aggregated and grouped data to highlight key differences. We also extracted participant quotes to further provide meaning to themes.

J. Qualitative Findings

Between July and October 2023, we engaged with 200 individuals through forty (40) interviews and twenty-seven (27) 90-minute focus group sessions (n=160 participants). This diverse group included industry professionals, state officials, agents, and both cannabis licensees and applicants. The primary goals of these discussions were to identify any instances of discrimination within the industry and understand the varied experiences of those involved in the Illinois cannabis sector. Additionally, we sought recommendations from participants on potential areas for growth or improvement within the state's cannabis industry.

Our analysis also includes over 200 survey responses from the 2023 CROO Diversity Survey and our own cannabis applicant survey.[264] Table VI-4 and Table VI-5 summarize the 216 survey responses analyzed in this report. For a summary of our interview, focus group, and survey participants (including breakdowns by license type), see §**Error! Reference source not found.**.D.1. Focus Groups, Interviews, and Surveys.

[261] V. Braun and V. Clarke, "Using thematic analysis in psychology," *Qual. Res. Psych* 3, no. 2 (2006): 77–101, accessed January 5, 2024, https://doi.org/10.1191/1478088706qp063oa.

[262] L. DeSantis and D. Noel Ugarriza, "The Concept of Theme as Used in Qualitative Nursing Research," *West. Journal of Nursing Research* 22 (2000): 351–72, accessed January 5, 2024, https://pubmed.ncbi.nlm.nih.gov/10804897.

[263] A. Sparker, "Narrative Analysis: Exploring the Whats and Hows of Personal Stories," in *Qualitative Research in Health Care*, ed. I. Holloway, 1st ed., Berkshire: Open University Press, 2005, 191–208, accessed January 5, 2024, https://www.scienceopen.com/document?vid=b6b69d5c-5732-4e71-82cf-568df8ddd1cf.

[264] We reviewed responses from the 2021 and 2022 CROO Diversity Surveys but did not analyze their responses.

Table VI-4. Demographics of Survey Participants

Firm Ownership	2023 CROO Survey #	2023 CROO Survey %	Nerevu Survey #	Nerevu Survey %
Black	52	33.3%	19	31.7%
Asian	6	3.8%	6	10.0%
Indigenous	4	2.6%	0	0.0%
Hispanic	9	5.8%	4	6.7%
Other MBE	9	5.8%	5	8.3%
White Women	9	5.8%	6	10.0%
Non-M/WBE	54	34.6%	12	20.0%
No/Unknown Majority	13	8.3%	8	13.3%
Total	**156**	**100.0%**	**60**	**100.0%**

Source: Nerevu analysis of IDFPR and Survey data.

Table VI-5. M/WBE Status of Survey Participants

Firm Ownership	2023 CROO Survey #	2023 CROO Survey %	Nerevu Survey #	Nerevu Survey %
M/WBE	89	57.1%	40	66.7%
Non-M/WBE	54	34.6%	12	20.0%
No/Unknown Majority	13	8.3%	8	13.3%
Total	**156**	**100.0%**	**60**	**100.0%**

Source: Nerevu analysis of IDFPR and Survey data.

1. Overall Concerns

As noted in the methodology section, qualitative data from interviews and focus groups were transcribed and analyzed using thematic analysis in Dedoose v.9.0.90. The most prominent themes were identified and quantified through frequency counts, as summarized below. It is important to note that the themes presented below do not constitute an exhaustive list, but rather highlight the most prominent ones.

Our comprehensive research provided an in-depth view of the cannabis industry. The qualitative data supports and further elaborates on the findings in this study. Particularly, the interview and survey data revealed business owners in the cannabis industry still face significant barriers often magnified by their race, ethnicity, and gender. Our sources acknowledge progress but still struggle to access capital, face hard legal issues, and adapt to constantly evolving (and hard-to-understand) regulations. Recognizing it has only been three short years since the inception of the

cannabis industry, these businesses seek market share, new customers, and the ability to develop new brands and product lines.

Table VI-6 and Table VI-7 list the five most prominent themes identified from the interviews and focus groups.

Table VI-6. Prominent Interview Themes Across All Participants

Rank	Theme	Frequency
1	Lack of funds or capital	24
2	Need to consolidate leadership structure	22
3	Cannabis related regulation is complex/difficult to navigate	18
3	Policy related challenges	18
5	Improve communication between government and community groups	15

Source: Nerevu analysis of interview transcripts.

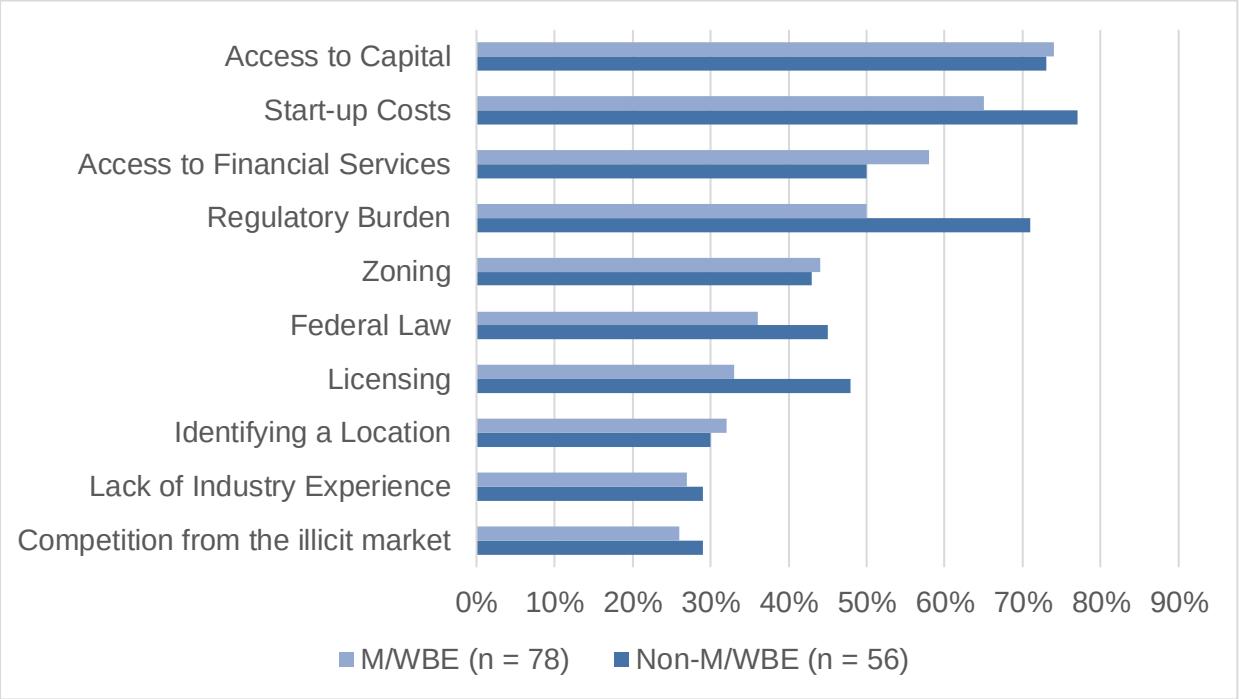
Table VI-7. Prominent Focus Group Themes Across All Groups

Rank	Theme	Frequency
1	Lack of funds and/or financial support	140
2	Application related challenges	88
3	Policy or regulation related challenges	70
4	Perceived discrimination in the cannabis industry	61
5	Large companies dominate the cannabis industry	56

Source: Nerevu analysis of interview transcripts.

When asked what significant barriers exist to opening and operating a cannabis business in Illinois, the top three barriers reported by M/WBE licensees were access to capital (74%), start-up costs (65%), and access to financial services (58%). In comparison, the top three barriers reported by non-M/WBE licensees were start-up costs (77%), access to capital (73%), and regulatory burden (71%).

Figure 6. Responses to, "Significant barriers to opening and operating a cannabis business in Illinois?"

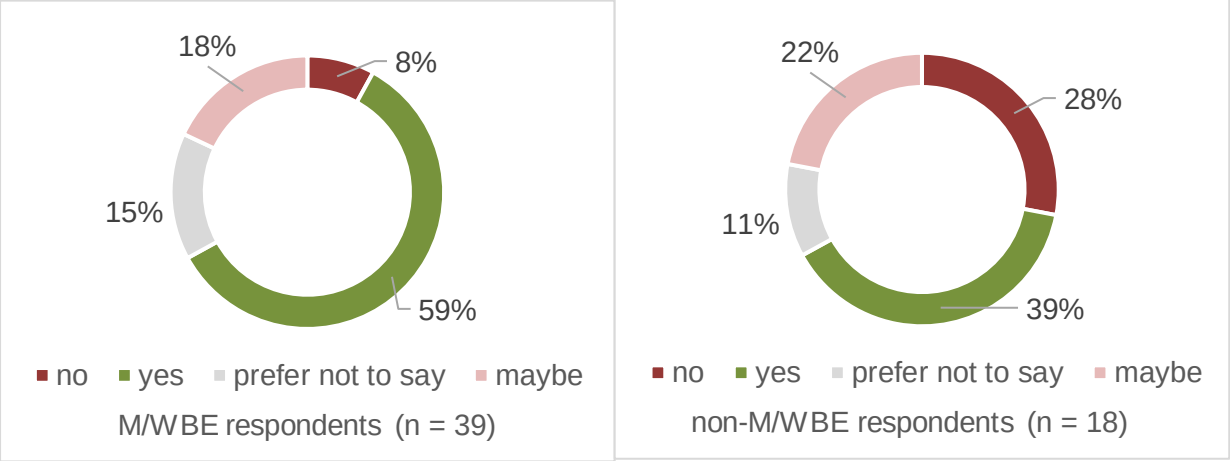


Source: Nerevu analysis of 2023 CROO Diversity Survey. Percentages exclude blank or nonresponsive responses.

(a) Perceived Industry Discrimination

Fifty-nine percent of M/WBE applicants reported experiencing barriers in applying for a license versus 39% of non-M/WBE applicants.

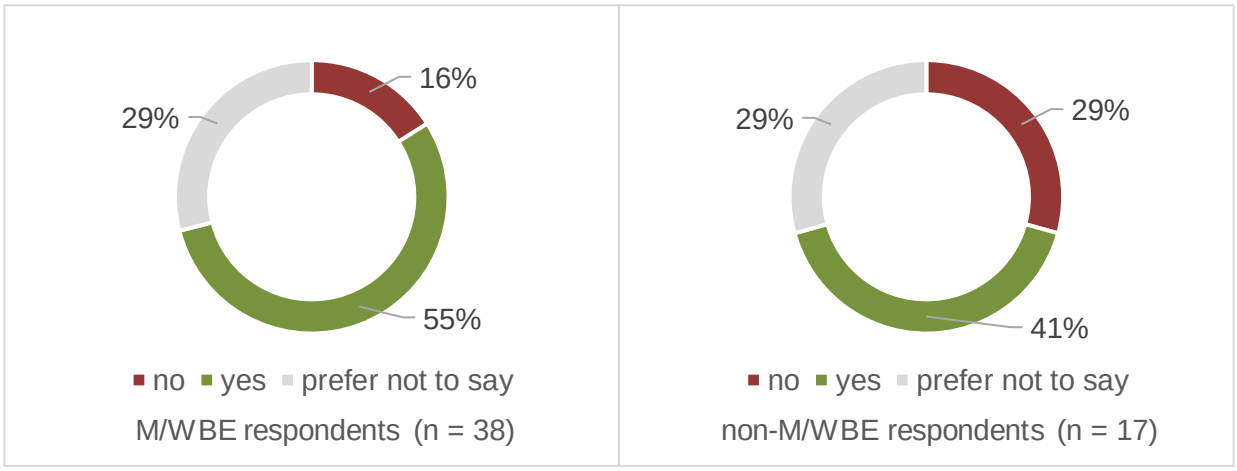
Figure 7. Responses to, "In your opinion, did your firm experience barriers in applying for a license in the Illinois cannabis industry based on race and/or gender?"



Source: Nerevu analysis of Nerevu Applicant Survey. Percentages exclude blank or nonresponsive responses.

Fifty-five percent of M/WBE applicants reported experiencing discrimination based on race, ethnicity, or gender during the licensing process versus 41% of non-M/WBE applicants.

Figure 8. Responses to, "In your opinion, did your firm experience discrimination based on race or gender during any portion of the licensing process?"



Source: Nerevu analysis of Nerevu Applicant Survey. Percentages exclude blank or nonresponsive responses.

When asked to explain their answers, survey respondents reported:

"My female-owned cannabis business has had difficulty being legitimized."

> *"One group of potential investors told me that I do not have the skill set necessary to make it in any business. These individuals were non-minority. For the record, I had more business experience and educational opportunities than both of them."*

> *"Due to the race, ethnicity, or gender of my company's owners or executives, my company has also had to deal with longer response times across the board."*

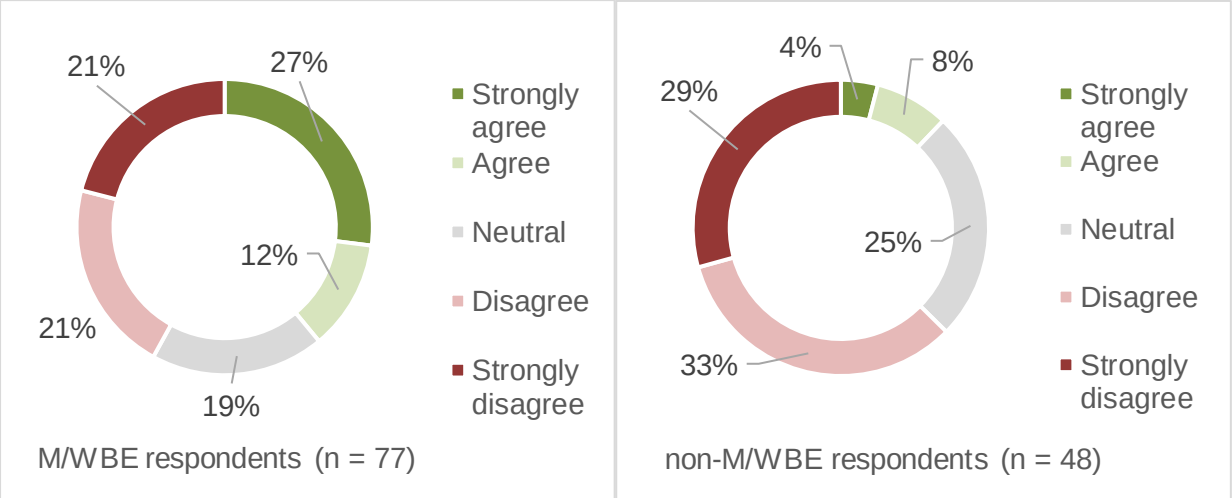
This qualitative evidence suggests while work is needed for diversity in Illinois's cannabis industry, it may be too early to fully assess the extent of discrimination. Given this industry is relatively new and rapidly evolving, a thorough assessment of discrimination requires ongoing observation and extended data gathering.

Focus groups revealed concerns about perceived discrimination within the industry as well as challenges related to the application process, funding, implementation, and policy or regulation. These challenges highlight the need for clarity in the regulatory framework governing cannabis and consistent enforcement of those rules. Various focus group participants shared their experiences with discriminatory practices as women and people from racial and/or ethnic minority backgrounds.

It is important to note the discriminatory experiences reported by participants were not associated with government policies but rather stemmed from the perceptions attributed to the industry's culture. A female participant recounted how, despite her extensive knowledge of business and cannabis, she often felt overlooked and demeaned by male colleagues.

Among M/WBE licensees, 39% reported either agreeing or strongly agreeing that their firm, "had its competence questioned due to the race, ethnicity, or gender of the company's owners or executives" versus 12% for non-M/WBE licensees.

Figure 9. Responses to, "Had its competence questioned due to the race, ethnicity, or gender of my company's owners or executives?"



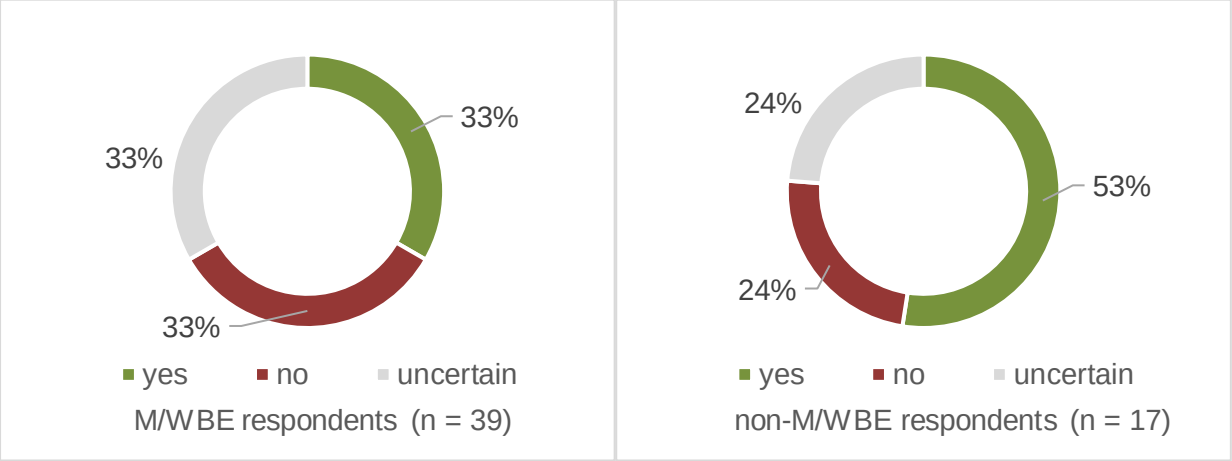
Source: Nerevu analysis of 2023 CROO Diversity Survey. Percentages exclude blank or nonresponsive responses.

Another woman participant shared her experience of perceived discrimination affecting her ability to access information, access financial services and capital, build relationships in the industry, and interact with the state.

> *"I do feel like my youthfulness, and me being a female in this industry, people talk to me differently, and don't answer questions unless I have the mayor, who is a male, get involved, and then he sends a message, and then they'll respond back to me. So that's why I feel there's a little bit of something going on there."*

Thirty-three percent of M/WBE applicants reported having access to formal and informal networking information versus 53% of non-M/WBE applicants.

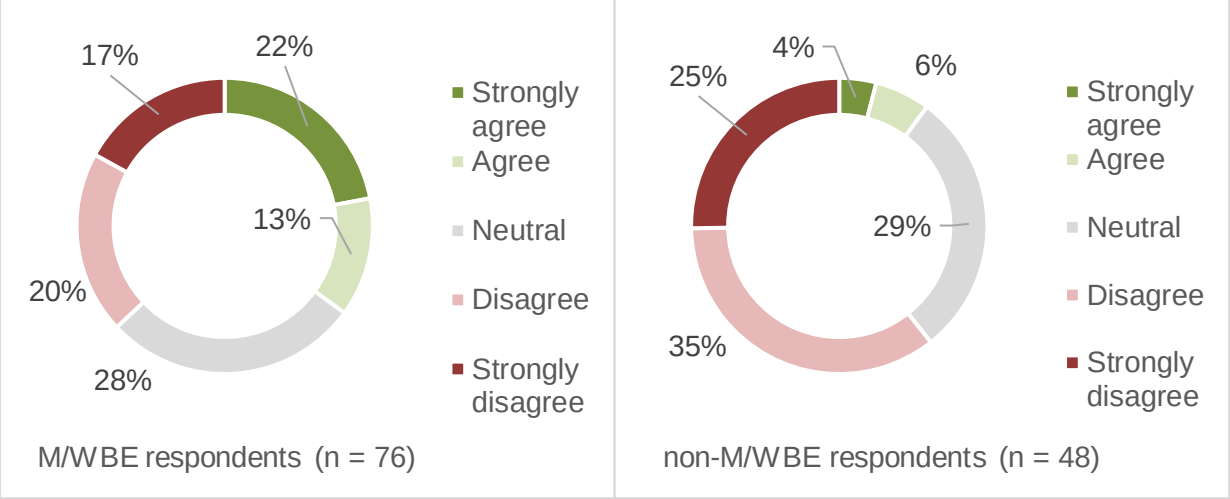
Figure 10. Responses to, "Does your firm have access to formal and informal networking information?"



Source: Nerevu analysis of Nerevu Applicant Survey. Percentages exclude blank or nonresponsive responses.

Thirty-three percent of M/WBE licensees reported either agreeing or strongly agreeing that the perceived lack of access to those formal and informal networks were "due to the race, ethnicity, or gender of the company's owners or executives" versus 10% of non-M/WBE licensees.

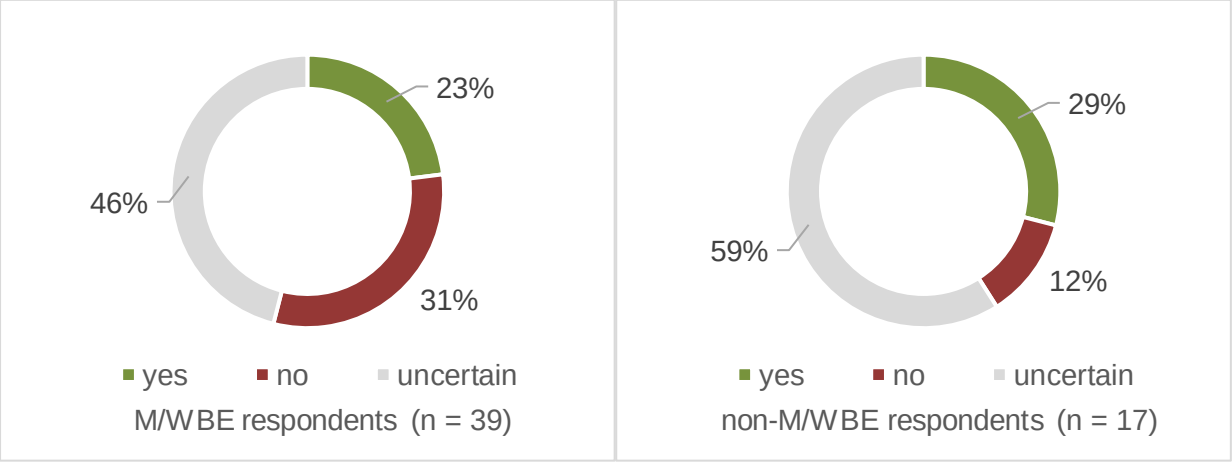
Figure 11. Responses to, "Been excluded from formal or informal networks due to the race, ethnicity, or gender of my company's owners or executives?"



Source: Nerevu analysis of 2023 CROO Diversity Survey. Percentages exclude blank or nonresponsive responses.

Less than a quarter (23%) of M/WBE applicants reported feeling they had "access to the same information as non-Social Equity licensees" versus 29% of non-M/WBE applicants.

Figure 12. Responses to, "Does your firm have access to the same information as non-Social Equity licensees?"



Source: Nerevu analysis of 2023 Nerevu Applicant Survey. Percentages exclude blank or nonresponsive responses.

The qualitative data gathering conducted in 2023 confirmed the race and gender challenges to enter the cannabis industry. Throughout the focus group conversations, Black, Hispanic, and

women business owners shared their struggle to gain the financial support necessary to complete an application.

One participant shared:

> *"As a Black person, I feel that I don't have the same access to capital, both in my personal and business networks, as others might. What this means is that the connections I have with people who could provide financial support or investment opportunities seem to be more limited. In my personal life, this affects my ability to borrow money from friends or family, while in my business life, it would make it harder to find investors or secure loans."*

Participants also noted the impact of the complexity of the application process, plus the uncertainty of results, and how these potential owners were constantly assessing predatory risks, trying to protect their interests and navigate a landscape that is often hostile and unfair. A participant stated:

> *"…on the first dispensary application that I did, even though with their [consultant and financial] help, I paid those fees, and they still thought and saw fit that they needed to take 49%. And then once we go operational, they wanted to strip me down to 10%."*

Our review of interviews and focus groups indicated that perceived discrimination was a common concern among cannabis license applicants. This perception was typically revealed in broad statements relating to universal challenges, such as access to capital. All groups shared the belief that covert discrimination is prevalent across the cannabis industry as a whole. For example, one participant shared a discriminatory experience when trying to purchase land for the cannabis business:

> *"At first, it was $6.50 a square foot, and then it jumped at $10 when I showed up."*

Others also reported that, while they cannot prove it, they believe that banks offer them higher interest rates or deny them loans and land in certain neighborhoods because of their race.

Gender discrimination was also cited as a challenge for women. During an interview, one participant recounted how despite her in-depth business and cannabis knowledge, she was ignored and belittled by her male colleagues,

> *"Oh, it's a hobby for you. Oh, this is so cute. They're literally using words like cute. I've never seen anything quite like it before. I hadn't experienced sexism when I was a consultant. Now, I've not seen anything quite like it. And again, people are talking to my husband, not talking to me."*

(b) Financing Challenges

Participants noted the difficulty business owners face in securing loans or capital from banks to fund their cannabis businesses. Financing challenges are attributed to the recent legalization of cannabis, persisting stigmas, the complexity of cannabis regulation, and discrepancies between state and federal policies. These factors collectively deter banks from funding cannabis businesses, posing a significant barrier to entry and growth in the industry. A CROO Diversity survey respondent recalled:

> *"Access to funds has been extremely hard due to being new in this area. As well as this not be Federally approved makes it much harder to get funding from financial institutions."*

Social equity participants reported challenges in getting funding from external sources such as venture capital due to the waning interest in the Illinois cannabis market. Participants also cited factors such as legal and pandemic-related delays, limited licensing capacities, and perceived discrimination faced as minorities. Social equity participants spoke at length about experiences with non-social equity partners in decision-making processes, often involving predatory contracts and unfair business dealings.

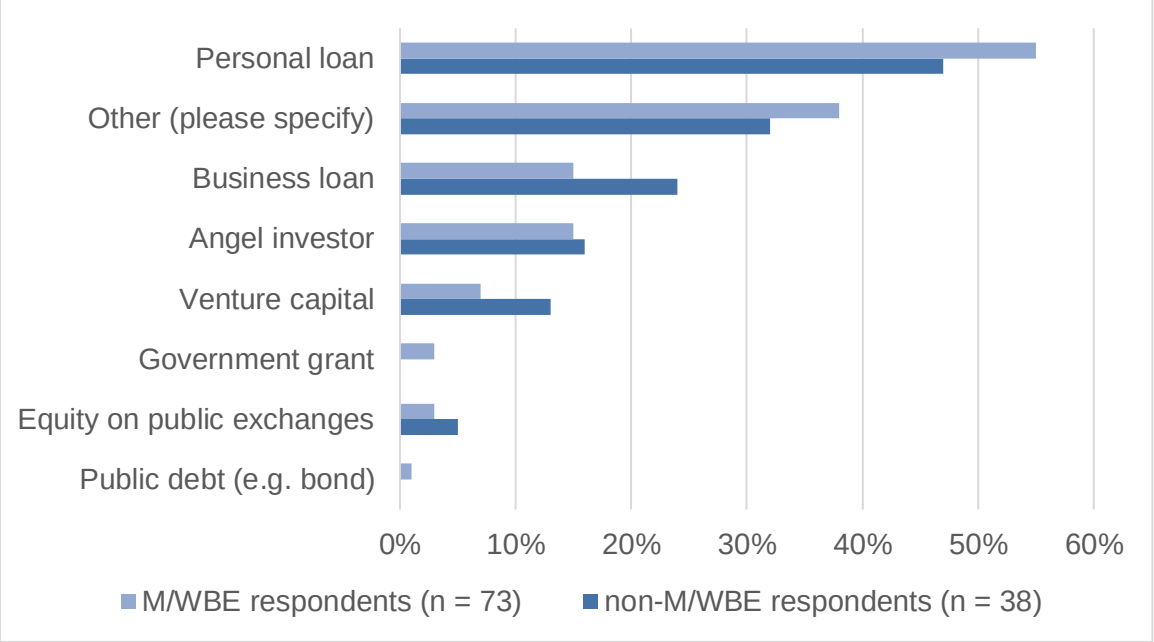
Other companies reported to the CROO Diversity Survey:

> *"It is also extremely difficult to secure any traditional funding for a cannabis-related business. This is because marijuana is only legal on a state level. Because it is illegal federally, major financial institutions consider the investment to be high-risk and will not provide financial services or funding."*

> *"Access to funds has been extremely hard due to being new in this area. As well as this not being Federally approved, makes it much harder to get funding from financial institutions. In regards of the licensing fee, I believe new owners of these licenses only need to pay 10% of the current license until they have opened up their establishment. The yearly cost of $40K is really taxing on the individuals."*

The top three largest sources of capital reported by M/WBE licensees were personal loan (55%), other (38%), business loan (15%). In comparison, the top three sources non-M/WBEs reported were personal loan (47%), other (32%), business loan (24%).

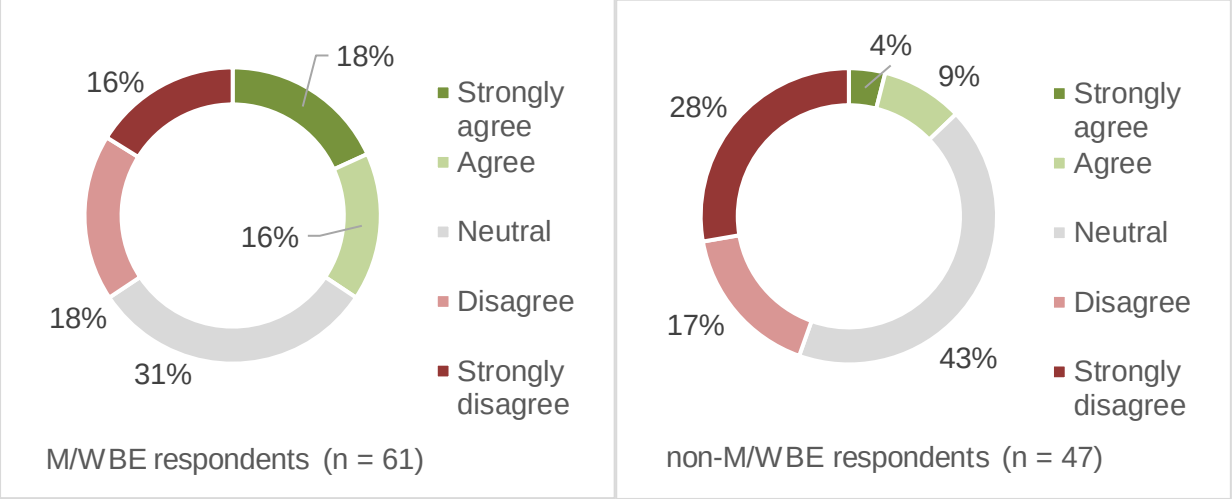
Figure 13. Responses to, "What types of capital or investment did your company successfully obtained prior to beginning operations in Illinois?"



Source: Nerevu analysis of 2023 CROO Diversity Survey. Percentages exclude blank or nonresponsive responses.

Thirty-four percent of M/WBE licensees reported either agreeing or strongly agreeing that they "faced worse pricing terms due to the race, ethnicity, or gender of the company's owners or executives" versus 13% of non-M/WBE licensees.

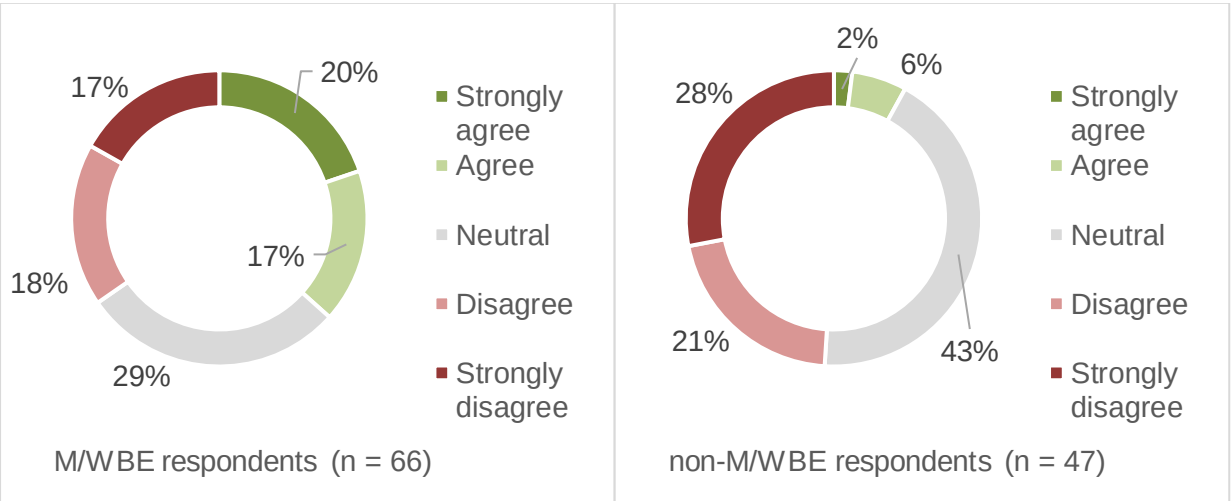
Figure 14. Responses to, "Faced worse pricing terms from suppliers or vendors due to the race, ethnicity, or gender of my company's owners or executives?"



Source: Nerevu analysis of 2023 CROO Diversity Survey. Percentages exclude blank or nonresponsive responses.

Thirty-seven percent of M/WBE licensees reported either agreeing or strongly agreeing that "suppliers or vendors limited or refused business due to the race, ethnicity, or gender of the company's owners or executives" versus 8% of non-M/WBE licensees.

Figure 15. Responses to, "Had suppliers or vendors limit or refuse my business due to the race, ethnicity, or gender of my company's owners or executives?"



Source: Nerevu analysis of 2023 CROO Diversity Survey. Percentages exclude blank or nonresponsive responses.

(c) Perceptions of Legislative and Regulatory Barriers

The barriers to understanding and navigating cannabis industry policies are prominently highlighted through participants' challenges, suggestions, and personal experiences. One participant's experience vividly illustrated these barriers by stating,

> *"I really struggled to find my footing when it came to working the politics of different municipalities and their zoning laws and what it takes to get in front of the right people to talk about moving the needle on this. We ended up partnering with another organization, who had more savvy in the lobbying arena and more connectedness with the politicians in the area, and that's how Chicago works. So that's what I've learned."*

Other respondents to the CROO Diversity Survey stated:

> *"Zoning and regulations are incredibly difficult, inconsistent and a huge expense as it requires professional services (i.e., legal) costs are extreme when access to capital, banking and financing is a continuous struggle."*

> *"[Commercial] lobbyists have thwarted legislation that would aid social equity infuser, craft grower, dispensary, and transporter licensees become operational."*

Focus group participants vividly illuminated the cumbersome and often redundant nature of cannabis businesses inspections, underscoring significant issues in regulatory compliance and efficiency. Their experiences shed light on inspection frequency and intensity, and the lack of coordination among various state departments inspectors. One participant detailed the rigorous monthly ISP security audits and weekly IDOA inspections, describing them as "way excessive" and disruptive to business operations.

> *"Illinois State Police comes and audits us for security once a month, and Department of Agriculture comes every week, which is way excessive. They're here for an average of two hours every week, and it takes so much time and it is so excessive. And half the time, they come in guns blazing just after us for a deficiency, and we're a small business doing our best. We're all very honest, responsible professionals, and they treat us like criminals. And it's one of those guilty until proven innocent. They come in, and they're like, 'Well, what about this? What about this? What about this?' And then, we go through all of our processes, our BioTrack, and all that. And then, we're like, 'Look, we're doing everything right. We're literally doing everything to the tee that you can.' And they'll be like, 'Well, what about this?' And we'll be like, 'Oh, well, BioTrack system doesn't have that capability, so we can't do it.' And then, they'll be like, 'Oh, well, then you guys need to work with BioTrack to add that.' And I'm like, 'Hey, this is your system you're making us use.'"*

Participants also pointed out the inconsistent interpretation of regulations from the frequently changing inspectors. One focus group participant shared how this led to a significant amount of time and resources spent re-explaining business processes to different inspectors who came to conflicting and seemingly arbitrary conclusions.

> *"They send random new inspectors all the time. We spend all of our time and energy explaining all of our processes to one, only the next week to have a random new inspector show up and have to do the whole thing all over. There is tons of discretion because everyone is different. Some will give us a deficiency and some will not give us a deficiency for the exact same issue."*

Another focus group participant noted that frequently rechecking unchanged inventory, sometimes within days, wastes time without adding value or enhancing compliance. They asserted it questions the overall effectiveness and rationale behind such inspection practices.

> *"We didn't make any new inventory for five weeks, so we had no change in our inventory. But still, every week they came in and checked the same inventory and took all that time for absolutely nothing. For example, sometimes they'll come on a Friday, and then they'll be back on Monday. And it's like, 'Literally nothing has changed. We haven't made anything. We haven't moved anything. Why are you here?' But they'll go through their whole two-hour process."*

Participants emphasized the need for a streamlined, coordinated, and rational approach to regulatory inspections in the Illinois cannabis industry. They suggested enhanced inspector training, improved inter-departmental coordination, and more flexible compliance solutions would significantly reduce the burden on cannabis businesses.

(d) Implementation Challenges

State agencies also faced challenges in implementing the CRTA's social equity priorities. Prominent challenges include the lack of centralized cannabis licensing leadership; technological gaps across agencies; and the need for additional implementation time, staff specialized in cannabis regulation, and cannabis industry experts to address the growing demands of business owners and applicants effectively and equitably.

These issues highlight the complexity of the application process and the need for more focused, coordinated efforts to achieve the goals of the CRTA. One interviewee highlighted the struggle with outdated technology which impedes the ability to analyze data and identify trends effectively, a stark contrast to capabilities seen in other departments, and shared how this technological gap extends to field equipment, where even with updates, differences in devices necessitate unique technological solutions for each agency:

> *"Additionally, there are technological differences between the agencies… …Ours is much more out of date, meaning we don't have access or the ability to manipulate our data to find trends that [another department] might be able to do, even down to having different equipment in the field… …and we were finally*

> *able to bring that up to date, but even that, the tablets themselves are different. So, there are different technologies that have to be developed for each. I think that that really lays it out. It's really being a part of so many different agencies, it creates a hurdle to communication just due to the different goals of each agency."*

> *"We need more staff. …I wish that there were more of me. Like I said, in this new cannabis world, almost every question we get is a case of a first impression. We need to be consistent, but we also can't be everywhere at once. There's just not enough [bodies]. I would say, more people within the agencies that are dedicated to cannabis specifically. And I know that that's a state government answer, but to actually be able to stop backlogs before they happen, and make sure that everyone is efficient but at the right timeline. This is a highly regulated, highly specific industry, and we need state workers that can specialize in it. From a regulator's perspective, to get more folks working for the state that know this area to help actual Social Equity dispensaries open would be the number one thing that I would recommend."*

On the CROO Diversity Survey, companies reported government implementation barriers caused harm to their business operations:

> *"We did not operate in the past 12 months due to the previous and existing litigation with the cannabis licenses, awardees are beginning to come online now."*

> *"The licensing process was onerous and burdensome. The current department(s), if you can get a hold of the right people, are helpful but seemed to be swamped with the workload."*

Participants in both interviews and focus groups identified the current decentralized regulatory framework involving multiple agencies with overlapping responsibilities as problematic. One licensee shared how the current structure complicates the licensing process, creating inefficiencies and inconsistencies that burden entrepreneurs, particularly those with dual operations.

> *"Beyond that, speaking frankly, there were contradictory sections in the law and there are a number of regulatory bodies that we have to interact with… …often, there's at least three or four we have to work with, especially licensees who are dual or jointly operating. I think more efficient coordination and effective coordination from state bodies that are supposed to do that would also be very helpful in addressing some of the inconsistencies."*

(e) Application and Technical Assistance Challenges

Both licensed firms and applicants who were not granted a license detailed the rigors of the application process. Both emphasized the criteria were overinclusive and underinclusive. Many focus group participants maintained that the statutory eligibility provision that allows for firms with more than 10 employees with over half of them meeting the criterion for social equity dilutes the goals of the policy to encourage ownership participation from marginalized communities.

Table VI-8 lists the five most prominent themes identified from the applicant focus groups.

Table VI-8. Prominent Applicant Focus Group Themes

Rank	Theme	Frequency
1	Funding/lack of funds/cost related challenges	67
2	Perceived discrimination in cannabis industry	55
3	Scoring system was unclear and confusing	36
4	Application is complex/confusing and time consuming	27
5	Need to increase clarity and transparency from state and federal government regarding requirements for assistance	23

Source: Nerevu analysis of interview transcripts.

Many alleged that the state did not verify whether firms receiving licenses under the SEA provision had employee compositions meeting the social equity criteria. They contended the criteria were overinclusive and included businesses that did not truly qualify as social equity.

For example, on the CROO Diversity Survey, a firm reported:

> *"It has been extremely difficult to overcome the barriers. The MSO's [multi-state operators] have a huge advantage. The state should consider creating a set-a-side program that would promote access and help Independent/Social Equity business owners even the playing field, this program would be similar to the MBE/WBE program that encourages larger business to partner and work with smaller businesses."*

Interviewed applicants reported finding the cannabis business application overly complex and time-consuming. Some sought external technical support for assistance, while others conducted their own research on the cannabis industry and related policies to complete the application on their own. Many firms informed us they hired private consultants costing tens of thousands of dollars. In fact, it was not uncommon to hear that firms spent over $100,000 on consulting fees for assistance with the application process.

Although the state has a technical assistance program through DCEO, many stated the staff did not provide information specific to their applications or highlighted the need to have connections

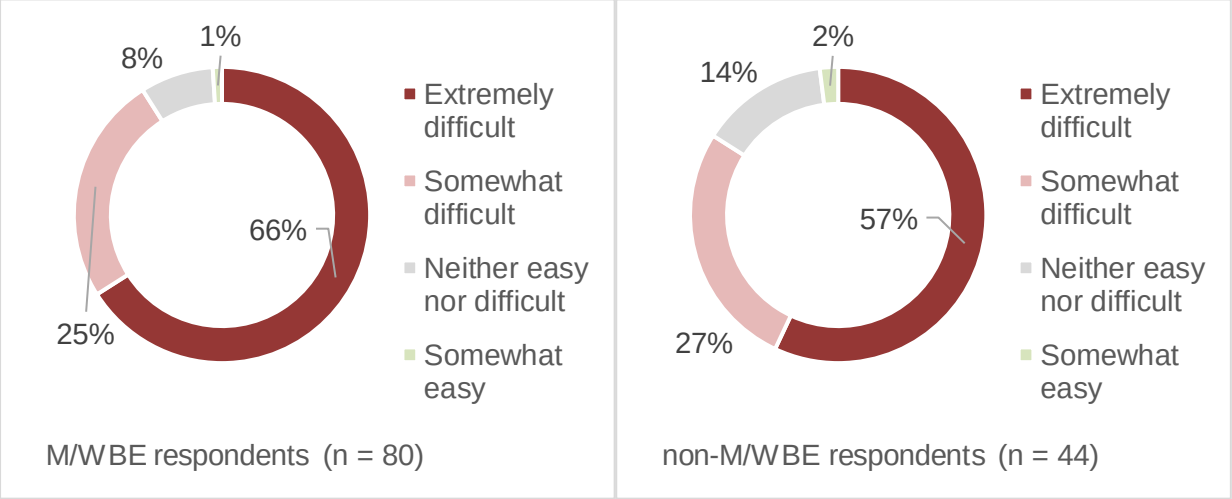
in the cannabis industry and/or with state policymakers to successfully navigate the cannabis licensing process.

Additionally, the participants found navigating cannabis regulations to be daunting. They believed a lack of necessary expertise hindered their ability to stay competitive with market prices and obtain necessary funding. A participant highlighted the importance of licensees staying well-informed,

> *"That's a daily occurrence. Often licensees aren't familiar with the regulations that they're supposed to operate under. There's a degree to which the state has a role in communicating those, but also, we do an incredible amount of work communicating that to them. There's a point at which, if you wish to operate a business of any type, you need to be broadly aware of the regulations that guide the operations of your business. This is no different, except that it's even more important because this is a federally illegal substance."*

Sixty-six percent of M/WBE respondents found the initial application process "extremely difficult" vs 57% of non-M/WBE licensees."

Figure 16. Responses to, "For your firm's first cannabis business license in Illinois, how difficult was the initial application process?"



Source: Nerevu analysis of 2023 CROO Diversity Survey. Percentages exclude blank or nonresponsive responses.

Participants also alleged the social equity criteria were underinclusive and, according to these participants, did not include people who should have benefited under the licensing criteria. Some participants who applied for but were not awarded a license stated that although they grew up in designated disadvantaged communities and were harmed by the prohibition of cannabis, they moved out of those areas and were no longer eligible for social equity benefits.

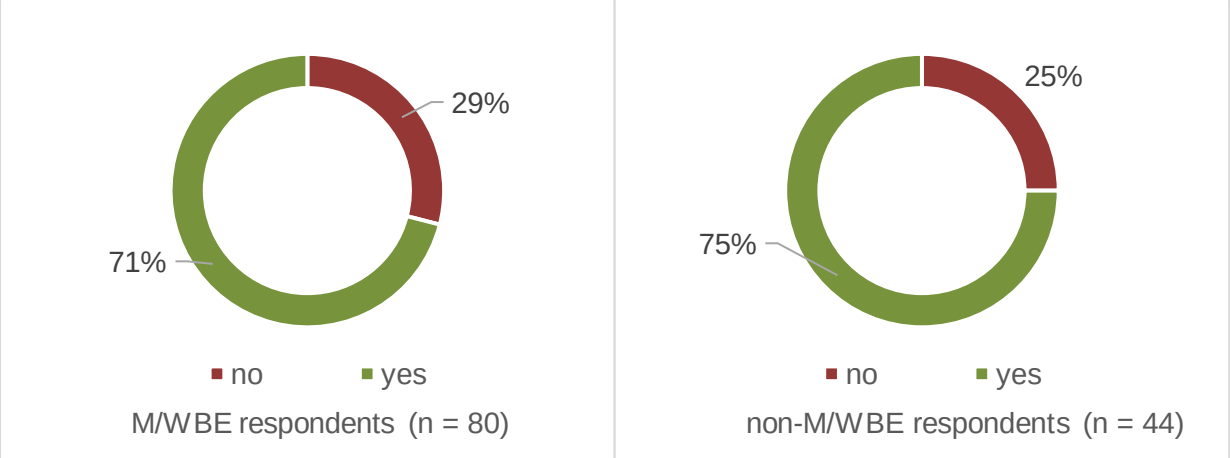
Other participants shared a similar perspective about the various challenges of the social equity application process, most notably citing the financial and knowledge barriers of the application

process. Some applicants felt the application fees ($2,500) were too high and the process was complex enough to require consultants and legal support to get a successful application. One state employee explained,

> *"I think that simplification of paperwork would be huge. One of the first things I did coming on was basically say, 'If any piece of paperwork [applicants] had to fill out is more than two pages, I want a justification for it.' We moved toward an audit style process rather than a verification in the front, which reduces the review time. It reduces the amount of paperwork. It streamlines that process for applicants. That being said, I would also make some general changes too… There are some requirements in the law that are frankly a little onerous or [for] first time applicants, it requires a business plan. It required your proposed org chart. I can't really think of any other business that requires that for your initial operations approval. In general, I think probably some of the security guidelines could be relaxed a bit. I also believe the fee structure should be revised downward."*

Seventy-one percent of M/WBE respondents used consultants, vendors, or contractors to complete their first cannabis business license application versus 75% of non-M/WBE licensees.

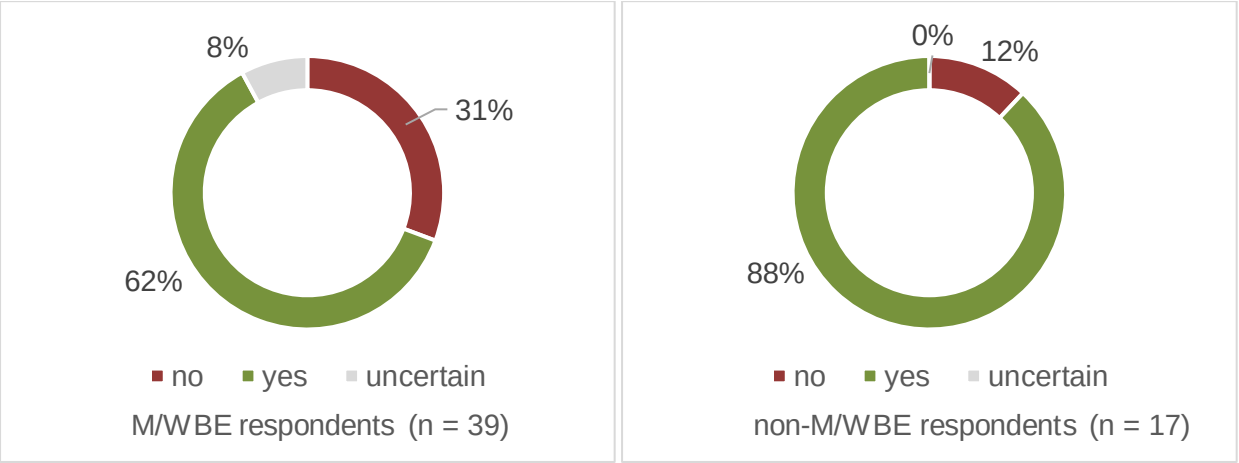
Figure 17. Responses to, "Did your firm utilize consultants, vendors, or contractors to complete the first cannabis business license application for which it applied in Illinois?"



Source: Nerevu analysis of 2023 CROO Diversity Survey. Percentages exclude blank or nonresponsive responses.

Sixty-two percent of M/WBE applicants paid for technical assistance during the application process versus 88% of non-M/WBE licensees.

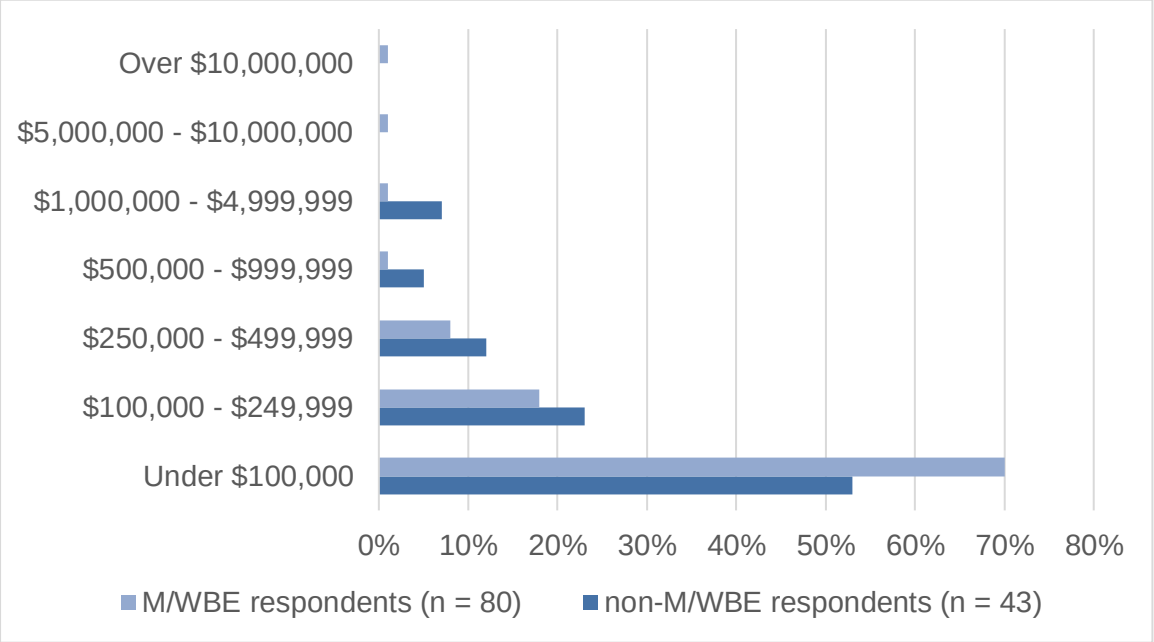
Figure 18. Responses to, "Did you pay for technical assistance during the application process?"



Source: Nerevu analysis of Nerevu Applicant Survey. Percentages exclude blank or nonresponsive responses.

Seventy percent of M/WBE respondents reported spending under $100,000, while 12% reported spending $250,000 or more, "in total to complete their initial cannabis business license application in Illinois." In comparison, 53% of non-M/WBE respondents reported spending under $100,000 and 23% reported spending $250,000 or more.

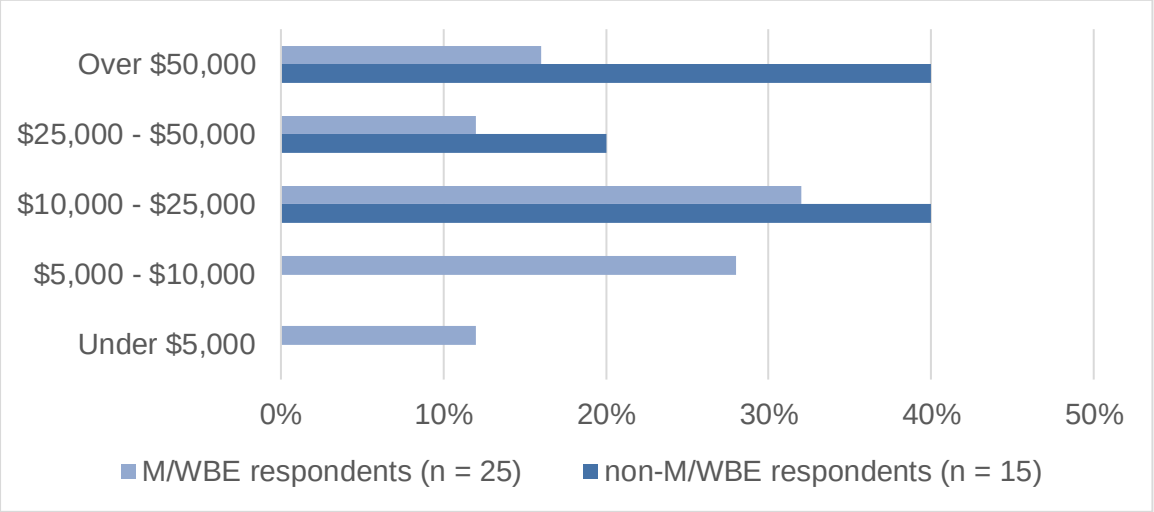
Figure 19. Responses to, "How much did your firm spend in total to complete its initial cannabis business license application in Illinois?"



Source: Nerevu analysis of 2023 CROO Diversity Survey. Percentages exclude blank or nonresponsive responses.

Sixty percent of M/WBE applicants reported spending $10,000 or more while 28% reported spending $25,000 or more, "for technical assistance." In comparison, 100% of non-M/WBE applicants reported spending $10,000 or more, and 60% reported spending $25,000 or more.

Figure 20. Responses to, "If you paid for technical assistance, how much did your firm pay?"



Source: Nerevu analysis of Nerevu Applicant Survey. Percentages exclude blank or nonresponsive responses.

(f) Inclusion of Veteran Points on Applications

Participants frequently noted that the statutory provisions awarding points to applicants who were veterans made it harder for individuals from disadvantaged communities to achieve the perfect scores needed for the Tied Applicant Lottery. Although veterans' status was not a required criteria for the dispensary application, there were more applicants with perfect scores than licenses available and per the CRTA, licenses were to be awarded to the highest-scoring applicants. For dispensaries, this resulted in the use of a lottery to distribute the licenses available among the highest-scoring applicants. Thus, only those applications that received perfect scores were eligible for the original Tied Applicant Lottery. A CROO Diversity Survey respondent corroborated:

> *"By far, the biggest barrier of entry into the cannabis industry in Illinois is the barrier that the State of Illinois imposed itself with the Veteran Ownership points, this was never a Social Equity Program it was a Veteran Equity Program"*

Many shared during focus groups that they applied believing they would be approved if they met all requirements. Although the assumption was incorrect, these applicants stated they did not know the state would use a lottery for awarding dispensary licenses and applications missing veteran points would not be eligible for the lottery until after the application was submitted. These applicants stated had they known this from the start, they would not have applied.

Additionally, those entering the cannabis industry cited the large, non-refundable application fees as a significant obstacle. Feedback from the participants suggests a need to reassess license application components to ensure they do not unintentionally create barriers.

2. Licenses-Specific Concerns

(a) Dispensaries

Unique to the dispensary license application process is that IDFPR is statutorily required to issue a conditional license before issuing the "full" adult use license that is required for dispensaries to begin dispensing cannabis. A dispensary with a conditional license is not able to sell cannabis until they have a final inspection and awarded an adult use license by IDFPR. During this conditional period, dispensaries may not change ownership or sell their license. Thus, lottery winners received a conditional license and are required to receive a full adult use license before they can transfer or sell their license. A dispensary licensee, who responded to the CROO Diversity Survey, shared the challenges experienced with this limitation:

> *"The rules and process regarding conditional license transfer of ownership are not transparent or at best opaque."*

Multiple participants maintained the conditional phase unique to dispensary licenses limits investment opportunities during the critical startup conditional phase. They suggested simplifying this process to enable dispensary groups to more easily raise the necessary funds required to bring their business online and advance to the operational license.

Table VI-9 lists the five most prominent themes identified from the dispensary focus groups.

Table VI-9. Prominent Dispensary Focus Group Themes

Rank	Theme	Frequency
1	Funding/lack of funds/costs related challenges	67
2	Implementation related challenges	45
3	Policy or regulation related challenges	15
4	Predatory partnerships	14
5	Covert racism in the cannabis industry	9

Source: Nerevu analysis of interview transcripts.

Additionally, participants stated social equity firms should be allowed to participate in medical sales to increase the viability of their businesses.

(b) Craft Growers

Several firms operating under the craft grower license expressed a need for additional canopy space. Participants stated that the cannabis market in Illinois is robust enough to support the expansion of canopy space for craft growers.[265] A CROO Diversity Survey respondent shared:

> *"The canopy size of 5,000 sq. feet is also a barrier which some of my VC's find hard to invest in. Since the upfront cost to open a craft grow is upwards of $10M. It would take an investor a lengthy amount of time to recoup the investment."*

Craft growers further argued that their current allotment of 5,000 square feet is insufficient for the following reasons:

- It does not generate sufficient profit necessary to secure financial backing.
- It limits the biomass needed for cannabis distillate production which decreases revenue potential.
- It restricts the ability to produce enough cannabis to build brand loyalty throughout the Illinois market.
- Desired facilities often exceed 5,000 square feet, leading firms to underutilize their space and increase their financial burden.

Some firms mentioned the desire to cultivate outdoors securely and the potential for this to broaden opportunities for their licenses.

Table VI-10 lists the five most prominent themes identified from the craft grower focus groups.

Table VI-10. Prominent Craft Grower Focus Group Themes

Rank	Theme	Frequency
1	Lack of funds and/or financial support	22
2	MSOs have advantages over smaller groups	19
3	Policy or regulation related challenges	16
3	Large companies dominate cannabis industry	16
5	MSOs have lobbying groups to push policies in their favor	12

Source: Nerevu analysis of interview transcripts.

[265] For more information on the public discussion regarding allowable canopy space for craft growers, see: Brad Spirrison, "Illinois Craft Grow Expansion Passes Key Illinois Committee," *GrownIn*, December 13, 2023, https://grownin.com/illinois-craft-grow-expansion-passes-key-illinois-committee/.

(c) Infusers

Infusers require a product known as cannabis distillate, which comes exclusively from commercial cultivators. Technically, craft growers may produce distillate to sell to infusers, but many reported they are unlikely to do so given their limited canopy space.[266]

Many infuser participants said cultivators charge far above fair market price for distillate. They also stated cultivators inconsistently price their distillate and you must have a preexisting relationship with a cultivator to get a fair deal. Infuser participants expressed the desire to apply for cultivation licenses to process raw material as outlined in the CRTA.

Similar to dispensaries, the CRTA authorized pre-existing medical cannabis cultivation centers to receive an early approval adult use cultivation center license which allowed them to begin selling adult use cannabis to dispensaries. Per the CRTA, the Department of Agriculture may modify the number of licensed cultivation centers beyond the currently operational 21, up to a maximum of 30 based on market demand, among other factors. 410 ILCS 705/20-5. The Department Agriculture has not modified the number of licenses available.

Several applicants shared their frustrations with the infuser application not being available at the time of our study.

A CROO Diversity Survey respondent best summarized the barriers infusers encounter:

> *"The general barriers to opening and operating a cannabis business in Illinois have to do a lot with the regulations and competition with the larger, pre-existing cannabis companies. The law did not contemplate, or did not consider in its practical application, the extent in which the pre-existing licensed companies would need to play a role in the newly licensed cannabis business becoming operational. For example, an infuser needs to take in distillate which at this moment can only be purchased by the large pre-existing cannabis cultivation facilities. The lack of access to this distillate and the extraordinarily high price is prohibitive to an infuser becoming operational. Also, these infusers must sell into dispensaries. To date, there are few newly licensed dispensaries open which means that the pre-existing dispensaries are the only available retail outlets for an infuser's products. What incentive or requirement do they have to allow a newly licensed operator shelf space in their dispensary."*

Table VI-11 lists the five most prominent themes identified from the infuser focus groups.

[266] We heard this from the vast majority of craft growers. Many stated that they only have enough canopy space to turn any kind of profit by growing high grade flower.

Table VI-11. Prominent Infuser Focus Group Themes

Rank	Theme	Frequency
1	Funding/Lack of funds/cost related challenges	60
2	Implementation related challenges	46
3	Perceived discrimination in cannabis industry	22
4	Predatory partnerships	11
4	Lack of support from the state	11
4	Support and incentivize partnerships	11

Source: Nerevu analysis of interview transcripts.

(d) Transporters

Most participants with transporter licenses reported they have yet to complete a transport and attributed it to the fact that cultivation centers have both the capacity and legal authorization to transport their own products. A CROO Diversity Survey respondent noted these disadvantages:

> *"We have not been able to secure any transportation business since having this license. There has not been any reason to hire employees other than the core ownership team. We never imagined when applying for this license that the State of Illinois would grant cultivators the privilege to transport after our application was submitted."*

Second, although transporters may also secure contracts to transport products from craft growers or infusers, during the study period no craft growers or infusers were fully operational. As a result, many participants advocated for requiring cultivation centers to utilize third-party transportation services, thus allowing transporters to participate in the market. Transporters also noted permitting home-delivery and overnight storage of cannabis products would greatly expand their revenue opportunities and business viability. A CROO Diversity Survey respondent described these challenges:

> *"We cannot get any business to transport from MSOs because they are allowed to transport their own goods which the "ACT" said they would not. They have nearly 85% of the market, squeezing 3rd party transporters out. We can only get a 30-day contract from other SEA infusers, craft growers, etc."*

Additionally, participants sought clarification on the transportation equipment requirements as several applicants and licensees noted discrepancies. Clear, updated guidance in line with statutory mandates would help address these perceived discrepancies.

Table VI-12 lists the five most prominent themes identified from the transporter focus groups.

Table VI-12. Prominent Transporter Focus Group Themes

Rank	Theme	Frequency
1	Funding/lack of funds/cost related challenges	40
2	Large companies dominate cannabis industry	20
3	Implement mandate that says 3rd party transporters must be used	12
3	Perceived discrimination in cannabis industry	12
5	Limitations and requirements differ based on license type	8

Source: Nerevu analysis of interview transcripts.

(e) Cultivation Centers

Participants from cultivation centers spoke at length about their experiences in the cannabis market prior to the CRTA. They recalled how the rigorous application and operation processes helped prepare them for adult use regulations. However, they faced significant challenges due to the quick transition from the CRTA's passage in July 2019 to the legalization of adult use sales in January 2020, which provided limited time for adequate preparation.

One participant stated it was difficult to stay focused on medical product innovation once adult use sales began. Participants discussed the evolving cannabis landscape and its historical stigma which created challenges in gaining community support for operations in rural areas. They also shared they frequently felt pressured to stay abreast of constant regulatory changes. Adapting to new regulations often required interacting with regulatory bodies, engaging advocacy groups, and expending considerable resources to remain compliant.

A CROO Diversity Survey respondent shared the most impactful barriers they experienced as a cultivator:

> *"Our biggest barriers are: Unfavorable tax treatment at federal and state level (280E),[267] Highest cannabis sales tax in country, Difficulty accessing private capital, Difficulty accessing public capital grants/loans/SBA/etc., Excessive and costly regulation (e.g., Excessively stringent testing requirements, security requirements, etc.), Competition from unregulated hemp derived cannabinoid markets, Competition from lower taxed neighboring states, Regulatory uncertainty (inability to get answers to even very direct regulatory questions, constantly changing rules)."*

Table VI-13 lists the five most prominent themes identified from the cultivation center focus groups.

[267] Illinois now allows for deductions for cannabis establishments operating and licensed in Illinois that were disallowed federally under the U.S. IRS Revenue Code (IRC) Section 280E for the taxable year. 26 USC § 280E. In other words, Illinois decoupled state policy from federal policy. Pub. Act 103-0008.

Table VI-13. Prominent Cultivation Center Focus Group Themes

Rank	Theme	Frequency
1	Policy or regulation related challenges	9
2	Funding/cost related challenges	7
3	Differences exist between medical and adult use cannabis	6
3	Perceived discrimination in cannabis industry	6
3	Policy changes put pressure on businesses to comply with new rules	6

Source: Nerevu analysis of interview transcripts.

K. Qualitative Limitations

1. Focus Groups

Recruiting a diverse and representative sample of licensees and applicants to participate in focus groups was challenging. We were tasked with identifying participants representing varied racial, ethnic, and socio-economic backgrounds across each license type.

Additionally, the sensitive nature of the subject and the desire to avoid offending regulators and industry peers may have made participants reluctant to openly share experiences and perceptions. Given the scarcity of licenses and competitive nature of the industry, participants might have also feared repercussions from sharing their honest perspectives.

We worked diligently to mitigate these challenges and ensure reliable conclusions. Despite these challenges, the study team was successful at recruiting 140 participants and the focus groups were crucial in revealing valuable insights and enhancing understanding of the industry's disparities.

2. Anonymity of Participants

Throughout the surveys, focus groups, and interviews, participant anonymity was a core principle guiding the data collection process. Anonymity was crucial in ensuring individuals felt safe and comfortable sharing their experiences, opinions, and insights without fear of identification or reprisal.

The emphasis on anonymity complicated the identification of duplicate participants across the different aspects of the study, such as those who might have taken part in both a focus group and an interview. Consequently, any participant overlap remains unknown. This limitation should be considered when analyzing and interpreting the data, as it may affect the prevalence of themes or perspectives in the findings.

The challenge of balancing participant anonymity and methodological accuracy highlights a fundamental dilemma in qualitative research. Future studies should seek innovative solutions to reconcile these competing priorities.

VII. ECONOMY-WIDE ANALYSIS

This chapter sets the context that cannabis disparities exist in an environment of widespread disparity across many industries that is not directly related to the licensing activities of the state.

A. Economy-Wide Analyses Methodology

In addition to our assessment of race, ethnicity, and gender disparities in licensing of the Illinois cannabis industry, we performed the following economy-wide analysis of disparities in cannabis-related industries and the Illinois economy as a whole:

1. Assessment of disparity in business ownership
2. Assessment of disparity in business loan denial
3. Assessment of disparity in business growth indicators (such as the number of employees or annual payroll)
4. Assessment of disparity in wages

Except for business loan denial, these analyses are not specific to the Illinois cannabis industry itself. In three of our analyses—business ownership, business loan denial, and wages—we rely on regression analysis to control for important varying factors across the population such as education, work experience, and marital status.

These additional analyses are consistent with methodologies used in past disparity studies, used widely in economic literature, and support the conclusion that race, ethnicity, and gender impact economic participation in Illinois broadly.

Analyzing all sectors in Illinois provides a comprehensive backdrop to understand the specific challenges of the cannabis sector. This broader examination sheds light on systemic issues that transcend individual industries and offers insights into the structural barriers racial and/or ethnic minorities and women face in the economic landscape at large.

Moreover, by examining business growth indicators such as employment and annual payroll across Illinois, we can infer the potential for disparities in business development opportunities and support, which are critical for the success of any industry, including cannabis. Comprehensive analysis enables us to not only identify but also begin to untangle the complex web of economic, social, and institutional factors contributing to the disparities observed within the cannabis industry.

The appendices provide a complete description of methodologies, full results, and robustness checks of the results.

B. Economy-Wide Analyses Findings

The analysis suggests the challenges faced by M/WBE licensees are not isolated incidents but rather part of a broader systemic issue affecting their economic empowerment and industry participation statewide. The broader perspective is essential for developing targeted, effective policies and interventions to address the root causes of disparity, ensuring a more equitable economic environment for all sectors, including the burgeoning cannabis industry. Appendix G. Economic Regression Results provides the complete results and analysis.

Our business ownership assessments show significant disparities for Black, Asian, Hispanic, and women individuals in the Illinois economy compared to their White, male counterparts. Black, Hispanic, additional raced, and women individuals were less likely to be business owners compared to White men for cannabis-related industries associated with at least one license type (see Table VII-1).

Our results also confirm racial and/or ethnic minorities and women have less access to capital through either hourly wages or bank loans. Specifically, we find denial rates in the Illinois economy are higher for Black loan applicants compared to their White, male counterparts. Within cannabis-related industries, there were no statistically significant disparities in denial rates, but the number of observations were too small for a complete analysis.[268] We found no disparities for loan applications (see Table VII-1).

Black, Hispanic, additional raced, and women workers in both the Illinois economy and cannabis-related industries have wage disparities relative to White men. Asian workers have wage disparities relative to White men in the Illinois economy (see Table VII-1).

Table VII-1. Statistically Significant Adverse Disparity Detected in the Broader Illinois Economy and Cannabis-Related Businesses

Metric	Black	Asian	Hispanic	Additional Races	Women
Business Ownership Likelihood	Yes†‡	Yes†	Yes†‡	Yes ‡	Yes†‡
Loan Application Rate	No	No	No	No	No
Loan Denial Rate	Yes†	No	No	No	No
Hourly Wage	Yes†‡	Yes†	Yes†‡	Yes†‡	Yes†‡

Source: AEC analysis of 2021 ACS PUMS 5-Year Estimates, 2020–2022 SHED, and 2017–2020 Annual Business Survey. Cells marked Yes/No indicate the presence/lack of a statistically significant adverse disparity. E.g., Black individuals are more likely than White men to be denied a loan.
† Indicates the presence of a statistically significant adverse disparity in the Illinois economy for either gender at the 0.05 level or above. ‡ Indicates the presence of a statistically significant adverse disparity in one or more cannabis-related industries at the 0.05 level or above.

[268] The probit regression model is inconsistent and inefficient with sample sizes below 500. The cannabis-related industry sample contains only 462 loan applicants, meaning that the sample size may not be large enough to yield conclusive findings of disparities.

Cells marked with "N/A" indicate that this demographic was not available. Full regression analysis details are available in the appendix.

In 2020 and 2021, DCEO received 161 requests (from 131 firms) for financial assistance, totaling $678 million. DCEO awarded a total of $21.9 million to 31 firms—$18.3 million of which was DFL awards to 33 recipients (31 firms) in Round 1.[269] Round 1 was only for licenses issued by IDOA, including craft growers, infusers, and transporters. The next loan round is intended for adult use dispensary licensees.[270]

The sample size of loan applicants and loan awards is not large enough to warrant a regression analysis. Additionally, none of the companies that applied for a loan had sales during the study period. As a result, this analysis does not include sales-weighted averages (see Table VII-2).

Table VII-2. DCEO Direct Forgivable Loan Summary Statistics (by Loan)

License Type	Requests	DFL Initial Awards	DFL Expanded Awards	Amount Requested ($M)	Initial Amount Awarded ($M)	Additional Funding Increase ($M)
Dispensary	44	N/A	N/A	$24.8	N/A	N/A
Craft Grower	58	7	7	$626.9	$3.5	$6.8
Infuser	22	9	11	$22.6	$2.3	$4.4
Transporter	36	7	12	$3.9	$0.4	$1.1
Total	**163**	**23**	**30**	**$678.2**	**$6.2**	**$12.3**

Source: Nerevu analysis of DCEO data from 1/2/2020—6/23/2023. Some totals may not match due to rounding errors. While the first loan request was on 1/2/2020, the first loan award was after the study period on 2/1/2023. Dispensaries were not eligible for Round 1 of the DFL Program.

M/WBEs accounted for 77% of initial loan awards, which is slightly less than the 82% share of loan requests by M/WBEs (see Table VII-3).

Table VII-3. DCEO Direct Forgivable Loan Count Shares (by Firm)

License Type	Black	Asian	Indigenous	Hispanic	Total MBE	White Women	Total M/WBE	Non-M/WBE
Requested Loan	68.1%	0.6%	0.0%	6.1%	79.1%	6.1%	85.3%	11.7%
Awarded Initial Loan	43.5%	0.0%	0.0%	17.4%	65.2%	8.7%	73.9%	26.1%
Awarded Expanded Loan	53.3%	0.0%	0.0%	13.3%	70.0%	10.0%	80.0%	20.0%

[269] DCEO originally deemed 36 applications eligible for award and three chose not to participate.
[270] Illinois Department of Commerce and Economic Opportunity, "Adult-Use Cannabis Social Equity Program" n.d., accessed November 17, 2023, https://dceo.illinois.gov/cannabisequity.html.

Source: Nerevu analysis of DCEO data from 1/2/2020–6/21/2023. Does not include PLP awards. While the first loan request was on 1/2/2020, the first loan award was after the study period on 2/1/2023. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake.

M/WBEs received 77% of initial awarded dollars, which is larger than the 14% share of requested dollars by M/WBEs (see Table VII-4).

Table VII-4. DCEO Direct Forgivable Loan Amount Shares (by Firm)

License Type	Black	Asian	Indigenous	Hispanic	Total MBE	White Women	Total M/WBE	Non-M/WBE
Amount Requested	12.3%	0.0%	0.0%	0.5%	13.3%	1.1%	14.4%	85.3%
Initial Amount Awarded	52.5%	0.0%	0.0%	9.8%	66.4%	4.9%	71.3%	28.7%
Expanded Amount Awarded	66.9%	0.0%	0.0%	7.4%	77.3%	6.4%	83.6%	16.4%

Source: Nerevu analysis of DCEO data from 1/2/2020–6/21/2023. Does not include PLP awards. While the first loan request was on 1/2/2020, the first loan award was after the study period on 2/1/2023. The Total MBE column includes businesses owned by coalitions of non-White owners where no individual race or ethnicity holds a majority stake.

C. Barriers for Minority and Women Entrepreneurs

Despite the cannabis industry's growth and efforts to enhance diversity, economic barriers disproportionately impact racial and/or ethnic minority and women entrepreneurs. High startup costs create a significant barrier to entry for these groups, who often have limited access to capital.[271] Economic disparity is often rooted in systemic issues such as historical wealth gaps, restricted access to conventional banking and funding, and limited private investment networks. These disparities apply to potential entrepreneurs in the cannabis industry as well. As a result, the Illinois cannabis industry's steep entry cost deters a large segment of potential business owners, thereby reducing diversity and inclusivity within the industry. This situation negatively impacts the industry's development, product variety, market reach, and ability to meet diverse consumer needs.

Women business owners, particularly in the cannabis industry, face significant challenges due to underrepresentation. Women struggle more than men to secure capital, as women-led ventures historically receive less investment from venture capital and traditional financing sources.[272]

[271] U.S. Department of Commerce, Minority Business Investment District, "Disparities in Capital Access between Minority and Non-Minority-Owned Businesses: The Troubling Reality of Capital Limitations Faced by MBEs," 2010, accessed November 19, 2023, https://www.mbda.gov/sites/default/files/migrated/files-attachments/DisparitiesinCapitalAccessReport.pdf.

[272] Siri Chilazi, "Advancing Gender Equality in Venture Capital: What the Evidence Says About the Current State of the Industry and How to Promote More Gender Diversity, Equality, and Inclusion," WAPPP Research Fellow Working Paper, October 2019, accessed January 9, 2024, https://www.hks.harvard.edu/sites/default/files/2023-09/gender_and_culture_in_vc_literature_review_final.pdf.

These issues, exacerbated by historical gender biases, limit women's presence in decision-making roles in business and government.[273] This can lead to policies and industry norms that overlook women's unique challenges.[274]

D. Economy-Wide Analysis Limitations

The regression analyses used 2017 NAICS codes (rather than 2022 NAICS codes) due to the underlying data utilized.

Additionally, the loan denial regression utilized Survey of Household Economics and Decision-Making (SHED) data, which relies on an idiosyncratic industry classification system that does not directly coincide with NAICS. Therefore, the loan denial regression analysis does not utilize NAICS codes.

Results produced from models of loan denial may be biased due to self-selection because most available data are only related to applicants that chose to apply for a given loan and were therefore already aware of the loan and actively sought it out. Self-selection, which creates inflated loan approval rates, violates one of the assumptions of the model: random assignment. The likelihood of a particular business or individual applying for a loan is closely related to applicant characteristics like race and/or ethnicity, gender, educational attainment, and income, which can result in biased results that overstate loan approval rates. This means that the results produced can only tell us about the differences among Illinois loan applicants but not differences between applicants and those that did not apply for a loan.

[273] C.S. Stamarski & L.S. Son Hing, "Gender inequalities in the workplace: the effects of organizational structures, processes, practices, and decision makers' sexism," Frontiers in psychology, 6, 1400, 2015, accessed January 9, 2024, https://doi.org/10.3389/fpsyg.2015.01400.

[274] *Id.*

VIII. RECOMMENDATIONS

In this disparity study, we examined the participation and representation of racial and ethnic minority- and women-owned firms in the Illinois cannabis industry. We then transitioned to focus on the crucial legal standards and historical context, an essential shift to fully understand any industry disparities related to race, ethnicity, and gender. Delving into the legal framework provided an in-depth examination of constitutional protections and criteria for race- and gender-based policies and programs. The comprehensive legal analysis was instrumental in delineating the boundaries and potential for policy interventions within the cannabis industry.

Our research provided significant insights into the participation of minority- and women-owned businesses in Illinois' adult use cannabis industry. We conducted a thorough investigation into various aspects of the industry including licensing procedures, market engagement, and the wider economic environment. The findings underscored the challenges faced by racial and/or ethnic minority and women entrepreneurs in accessing the cannabis market, securing financing, and navigating complex regulatory frameworks.

As evidenced by the few disparities our analysis uncovered in Illinois adult use cannabis licensing, the social equity policies of the CRTA are commendable. The CRTA created a diverse set of licensed cannabis businesses.

Since many M/WBE licensees were not yet operational during the study period resulting in them not having sales, it is too early to determine whether the observed disparities are evidence of discrimination. Stakeholder discussions with licensees and applicants also identified potential race-neutral policies that could increase M/WBE success in the cannabis industry.

Given the absence of significant statistical disparities sufficient to meet the compelling interest requirement of strict scrutiny, alongside the risk of unintended burdens from implementing race-based policies, we cannot recommend race-based remedies at this time. Specifically, the State of Illinois has not fully implemented its race-neutral social equity policies, i.e., it has not finished issuing all of its cannabis licenses. Additionally, the SEA firms with licenses were only operational during the latter end of study period. Furthermore, the state has not fully explored other race-neutral measures, as required by strict scrutiny's narrowly tailored criterion.

Our study highlights the need for improved data collection, outreach, and support networks for M/WBEs. Streamlining fee structures, operational costs, regulations, and providing equitable access to resources and mentorship are also critical. These measures will bolster the representation of women and racial and/or ethnic minorities in ownership and leadership positions.

As part of our study, we completed the following measures:

- We interviewed M/WBEs and non-M/WBEs about their experiences in the cannabis industry in the state. State staff also provided extensive input about the operations of the industry and recommendations for improvement.

- We solicited M/WBE experiences in obtaining licenses and their efforts to get their businesses operational.
- We analyzed M/WBE utilization as measured by the number of licenses granted and sales within the industry.
- We estimated the availability of M/WBEs in the cannabis marketplace by license type.
- We compared the utilization of M/WBEs to the availability of all ready, willing, and able firms in the marketplace to calculate whether disparities between utilization and availability exist.

We designed the following recommendations to increase earning opportunities for all participants. These recommendations serve as a comprehensive guide for the state's strategy to cultivate more equitable opportunities for entry into and sustainability in the Illinois cannabis industry.

A. Broaden the Availability of Financing

The cannabis industry, despite its growth potential, faces unique financial hurdles. These hurdles are, in part, due to the United States federal government restricting access to traditional banking and investment avenues. Due to the federal illegality of cannabis, many financial institutions refrain from providing conventional business loans to businesses in the emerging cannabis market. Financial barriers significantly hinder the initiation, operation, and scaling of cannabis enterprises. The cannabis industry, despite its growth potential, faces unique financial hurdles partly due to its legal status at the federal level in the United States, which restricts access to traditional banking and investment avenues.

Our qualitative analysis revealed that SEA qualified businesses, especially M/WBE licensees, frequently struggled to secure loans, attract investors, or even maintain standard banking relationships. SEAs often lack access to the private and favorable financing options available to commercial operators, leading them to resort to high-interest loans from alternative lenders. Financial strain adversely impacts all aspects of business operation including product development, market expansion, compliance, and safety measures.

Recognizing the critical role financial resources play in the success and sustainability of the cannabis industry, we recommend a strategic initiative to bolster the funds available through the Cannabis Business Development (CBD) Fund. CBD Fund enhancement aims to foster the growth and development of businesses, particularly those from underrepresented and underinvested communities. The initiative would focus on the following key aspects:

1. Diversified Funding Sources

The CBD Fund is funded solely through adult use licensing fees, including the initial medical cannabis operators' early approval adult use licenses. In 2023, the state authorized a one-time transfer of funds from the Compassionate Use of Medical Cannabis Fund to the CBD Fund, due to the lack of other funding sources.

We propose exploring and identifying new avenues for funding, including public-private partnerships, grants, and other innovative financing. We also advocate for a statutorily mandated and reoccurring funding source for the CBD Fund. Some examples of reoccurring funding sources include a percentage of adult use tax revenue, licensing fees, or other reoccurring revenue streams from the cannabis industry itself.

2. Strategic Allocation of Resources

We also recommend DCEO strategically allocate CBD funds to prioritize the needs within the industry. For instance, certain license types may require higher levels of funding than others. Evenly distributing the fund across all new licensees might result in excessive funding to well-capitalized licensees while leaving licensees of high capital-intensive licenses, like craft grower or infuser, underfunded.

Additionally, to the extent that DCEO utilizes third-party partners to support financial arrangements with licensees, we advise against permitting the third parties to select fund recipients, as this could result in the allocation of funds to those businesses that are more appealing investments, rather than supporting those licensees who struggle to attract capital investors.

Through our analysis of DCEO loan data and our discussions with licensees, we could not conclude a clear methodology for a balanced distribution of funds. Given the scarcity of traditional loans and inconsistent venture capital involvement, financial resources are fundamental to the success of cannabis businesses. We recommend the state develop a comprehensive policy to efficiently and effectively distribute state resources and capital.

B. Unify Data Systems

While analyzing data for this study, we encountered several challenges such as manually extracting ownership percentages and other demographic details from PDF-formatted license applications. Additionally, the absence of standardized unique identifiers across agencies and license-types made it difficult to track individuals and businesses, especially amid ownership changes and multiple ownership layers. While we created a database to model the entity relationships and cross-reference available information, it remained a labor-intensive task. Sales data collection was also problematic due to the seed-to-sale system's limited reporting capabilities, requiring manual data generation and entity linking.

To address these challenges, we recommend creating a centralized data system and streamlined data collection process that prioritizes data privacy and efficient information flow. Currently, IDFPR, IDOA, ISP, and IDOR each manage separate systems for licensing, registration, investigation, and enforcement. Furthermore, IDPH manages a distinct medical cannabis system. These disparate incompatible systems hinder data integration.

Our recommendation focuses on the following key areas:

1. Unified Data System Development with Integration Across Departments

A central database that integrates data across departments will aid in analyzing the cannabis industry's economic impact and market entry disparities. This database should include demographic information, sales, ownership details, facilities, licenses, and other vital business statistics. It should facilitate seamless data integration across departments and sharing for comprehensive tracking and analysis, from the point of application through licensed operations. As well as specific outcomes, the system should also track grant applications and programmatic engagement across agencies.

2. Reliable and Accessible Data

Ensure data is accessible and reliably collected so it can help policymakers implement targeted interventions to provide equitable opportunities for all cannabis industry participants.

3. Electronic Application System

Develop a system for submitting license applications electronically. This digital system, feeding into a centralized database, should automate data extraction and standardize application forms to guarantee uniformly formatted and ordered responses. This system should also employ both client and server-side validation to verify data accuracy, such as confirming total ownership percentages equal 100%.

4. Expand Data Collection

Improved data collection systems will enhance monitoring and reporting capabilities:

(a) Inspection Data

Collect detailed inspection data including inspection findings, discrepancies, and violations.

(b) Cannabis Market-Related Data

Adopt a unified license registration system to streamline access to data on licenses (both conditional and operational), products, and seed-to-sale metrics. Gather comprehensive business information, including expenses, license details, ownership, debt, hiring practices, employee counts, contracts/vendors, and real estate details (e.g., leased versus owned, properties improvements, etc.). Information on predatory vendors and negative success factors (e.g., thefts, robberies, etc.) should also be gathered.

(c) Demographic Data

Expand demographic data collection at the point of license application and for principal officers and agents. Also, monitor and report on the demographics of regulatory personnel to establish

the importance of diversity in cannabis regulation. These metrics are essential in understanding who is involved in regulating, applying for, and receiving cannabis licenses in Illinois.

(d) Owner, Firm, and Facility Registration

Create an electronic owner, firm, and facility registration system to track these entities over time. The system should accommodate scenarios like multiple applications per firm, individual ownership in multiple firms, and ownership changes in facilities and/or firms.

The system should also enforce ownership transparency by requiring ownership to trace back to individuals, not just parent companies. Publicly traded entities should be required to provide information on the top 10 shareholders. Additionally, it should require state-registered businesses to provide their state registration number.

C. Consolidate Administration

During the focus group sessions, numerous participants shared their challenges when navigating the intricate administrative processes of the cannabis industry in the State of Illinois. Many expressed frustrations with the complex and convoluted structure they encountered. These difficulties ranged from understanding the licensing requirements, to dealing with permit applications and compliance regulations. The participants emphasized the need for a streamlined and user-friendly system to foster ease of access and encourage participation in the flourishing cannabis market. Significant complexity is inherent in the current setup, with multiple agencies and departments involved in various aspects of regulation and oversight. However, avoiding unnecessary complexities may be critical in an industry with inherently high barriers to entry.

Due to the high level of participation among focus group participants in the legislative process, many participants were already educated and spoke in great detail on the need for a single administrative agency. An example emphasizing the need for consolidated administration was participants' experiences with inspections. Multiple state departments conducted different types of inspections, yet according to interview and focus group participants, there was a notable lack of coordination among the inspectors.

The focus group participants who detailed these experiences were often small business owners who did not have the dedicated staff to work with state inspectors. To properly monitor the inspection, many businesses had to shut down operations while inspectors were present. Focus group participants informed us they also underwent multiple inspections in the same week, each one causing a halt in operations.

Our focus group participants overwhelmingly expressed their support for a departmental approach for a consolidated agency over a commission-based agency. Participants stated the primary reason for the preference of a department over a commission was due to the extensive time typically required to implement policy improvements under a commission-based agency, and Team Nerevu agrees.

A unified department will further create a more structured and efficient approach to managing the cannabis industry. A unified department will support a more equitable and well-regulated cannabis industry in Illinois while safeguarding social equity policies.

The creation of a single department aims to address issues reported in our qualitative analysis including breakdowns in communication, staffing challenges, and technological disparities among the agencies. The new department would be dedicated to regulation, licensing, training, enforcement, and the enhancement and administration of social equity policies. Establishing a unified department ensures a focused and effective approach to regulating the evolving cannabis industry.

The key aspects of this recommendation include:

1. Centralized Administration

The new department would serve as a central hub for all activities related to regulatory and social equity policies. The department could singularly focus on streamlining processes, improving response times, and increasing overall efficiency.

2. Enhanced Program Management

The department should allocate dedicated resources and specialized expertise to enhance its capacity respond to meet industry demands, improve social equity policies, tackle present challenges, and identify opportunities for improvement. It should also establish a team focused on conducting disparity analyses. This team would lay the groundwork for future independent studies and uphold the CRTA's commitment to social equity.

To improve accountability, the cannabis department director would report directly to the governor and have a single, responsible leader to improve information exchanges.

3. Strategic Policy Implementation

The new department would facilitate more strategic and effective implementation of policies by ensuring alignment with the state’s commitment to efficiency, equity, and inclusion in the cannabis industry.

D. Conduct Additional Disparity Studies

The study period, spanning from the start of adult use cannabis sales in January 2020 through January 2023, was marked by significant change and growth. The period coincided with a global pandemic and judicial actions delayed the implementation of the CRTA. Despite these challenges, many licenses were issued to M/WBEs once the judicial stays were removed, with sales for these businesses commencing towards the end of the study period.

Because of these delays, we recommend additional disparity analyses to further evaluate whether disparities continue with respect to M/WBE sales compared non-M/WBE sales. We also recommend that this future disparity study analyzes the medical use market in addition to the adult use market. Ideally the state can continue to collect demographic, sales, and business data in a comprehensive fashion to facilitate the future analyses. With quality data, a future report can provide a deeper understanding of disparities within the cannabis industry. A comprehensive future study would equip policymakers with the necessary information to develop effective, equitable, legally sound, and potentially race- or gender-conscious policies to address the identified disparities.

Given the above, the data available during the period of study presented a preliminary look at the cannabis industry. Additional years of data would provide:

- greater understanding of potential disparities in the awarding of cannabis business licenses and the need for any proposed race- and gender-conscious policies,
- sufficient data for evaluation of the existing race-neutral policies, and
- information to guide narrowly tailored solutions.

Most race- and gender- conscious programs undergo a thorough review every three to five years. Since the adult use program is less than five years old and given the findings in this report, we recommend conducting an additional disparity study in three to five years following the end of this study period. A future study should be contingent upon the availability of more comprehensive and detailed data.

E. Additional Administrative Recommendations

Based on the challenges shared with the team during the interviews and focus groups, we present these additional administrative recommendations geared towards enhancing the operational efficiency, regulatory compliance, and economic viability of the Illinois cannabis industry. By implementing the following strategies, the industry can move towards a more equitable, sustainable, and prosperous future.

1. Allow Social Equity Applicants to Obtain a Social Equity Business Designation After the License Is Issued

We recommend allowing businesses to obtain a social equity business designation after receiving a cannabis license. Focus group feedback indicated a seal or logo on cannabis products, signifying production by a social equity business, would differentiate their items from established brands. A social equity designation could also grant additional future benefits such as reduced license renewal fees and seed-to-sale licenses.

These incentives could significantly bolster the CRTA's objectives and address applicants' concerns about being squeezed out of the controlling stake in their cannabis business by their partners.

2. Implement No-Change Affidavit for License Renewal

Implement a no-change affidavit during the annual license renewal process. A no-change affidavit would replace the current practice where licensees submit a new statement from their owners and principal officers each renewal period. License holders informed us of instances where, after receiving a license, changes to SEA firms' ownership structure reduced minority ownership below the required 51% threshold.

The affidavit would require licensees to reaffirm owners and principal officers in a simple format. Further, it could require affirmation of all terms and conditions of their eligibility for social equity criteria, ensuring continued compliance and eligibility for social equity benefits.

The state should then audit social equity status and implement a disciplinary structure for businesses found to have falsified information or engaged in ownership changes not appropriately disclosed to the state.

3. Implement Sliding Scale for Licensing Renewal Fees Based on Sales

We heard from many businesses that had yet to become operational that they still faced the burden of paying licensing renewal fees. We recommend implementing a more equitable license renewal fee structure employing a sliding scale based on revenue. A sliding scale approach ensures the fees are equitable and proportionate to the financial capacity of each business, thereby supporting the financial sustainability of smaller entities in the industry.

4. Implement a Third-Party Transport Mandate

Implement a policy mandating the use of third-party transportation services for cannabis and cannabis-related products. A third-party transport mandate is consistent with the 40% retail rule, which limits vertically integrated businesses to sourcing no more than 40% of their retail items from a single supplier.[275] Likewise, a transportation regulation would limit the quantity of products cultivation centers can self-transport. This policy aims to standardize and secure cannabis transportation. Currently transporters lacking other cannabis licenses face difficulties securing contracts. A third-party transportation mandate would ensure these transporters obtain a fair market share, as prescribed in the CRTA.

[275] Illinois General Assembly, "410 ILCS 705/15-70(p)(5) Cannabis Regulation and Tax Act," (prohibiting a dispensary from entering "into an exclusive agreement with any adult use cultivation center, craft grower, or infuser. Dispensaries shall provide consumers an assortment of products from various cannabis business establishment licensees such that the inventory available for sale at any dispensary from any single cultivation center, craft grower, processor, transporter, or infuser entity shall not be more than 40% of the total inventory available for sale."), June 25, 2019, accessed February 18, 2024, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.

5. Allow Infusers to Apply for Processing Licenses

Provisions in the CRTA empower IDOA to adopt rules to guarantee infusers have adequate supply and affordable access to necessary raw materials.[276] To resolve an inadequate supply, the CRTA suggests that such measures may include, but not be limited to, requiring cultivation centers and craft growers to set aside a minimum amount of raw materials for the wholesale market or enabling infusers to apply for a processor license to extract raw materials from cannabis flower.[277]

Infusers require cannabis distillate and usually obtain it from commercial cultivators. However, craft growers, which are capable of producing it, tend not to due to its low profit margins and their restricted space. Participants reported that cultivators often overcharge for distillate, inconsistently price it, and favor those with existing relationships. There is a notable interest in securing processing licenses to directly process raw materials, as the CRTA allows. We recommend IDOA allow infusers to apply for processor licenses to enable them to extract raw materials directly from cannabis flower. This change would significantly enhance infusers' self-sufficiency and reduce their dependence on external suppliers in addition to giving them the ability to produce a broader variety of products.

F. Strengthen Industry-State Collaboration

In our discussions, we discovered M/WBEs struggle to grasp the complexities of Illinois' cannabis industry, including regulatory, market, and operational aspects. It is crucial for cannabis licensees to understand the regulations at local, state, and federal levels affecting their operations. We recommend the state initiate collaborative and educational programs to bridge these knowledge gaps and utilize a platform for sharing insights and best practices.

This strategy aims to equip licensees with the knowledge to succeed and effectively navigate the regulatory landscape. Such collaboration will promote stronger advocacy among licensees, improve regulation comprehension, and create stakeholder networks. Moreover, an informed and compliant industry eases regulatory oversight, reduces the need for enforcement, and fosters economic growth through job creation and tax revenue.

[276] Illinois General Assembly, "410 ILCS 705/35-31 §35-31 Cannabis Regulation and Tax Act (Adequate Access to Raw Materials for Infusers)," June 25, 2019, accessed February 18, 2024, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.

[277] *Id.*

IX. APPENDICES

A. Glossary

1. Study Terms

All definitions in this part are derived from Cannabis Regulation Tax Act, unless otherwise noted.[278,279,280]

1. **"Adult use cultivation center license"** means a license issued by the Department of Agriculture that permits a person to act as a cultivation center under the CRTA.
2. **"Adult use dispensing organization license"** means a license issued by the Department of Financial and Professional Regulation that permits a person to act as a dispensing organization under the CRTA.
3. **"BLS region"** means a region in Illinois used by the United States Bureau of Labor Statistics to gather and categorize certain employment and wage data. The 17 such regions in Illinois are: Bloomington, Cape Girardeau, Carbondale-Marion, Champaign-Urbana, Chicago-Naperville-Elgin, Danville, Davenport-Moline-Rock Island, Decatur, Kankakee, Peoria, Rockford, St. Louis, Springfield, Northwest Illinois nonmetropolitan area, West Central Illinois nonmetropolitan area, East Central Illinois nonmetropolitan area, and South Illinois nonmetropolitan area.
4. **"Cannabis"** means marijuana, hashish, and other substances that are identified as including any parts of the plant Cannabis sativa and including derivatives or subspecies, such as indica, of all strains of cannabis, whether growing or not; the seeds thereof, the resin extracted from any part of the plant; and any compound, manufacture, salt, derivative, mixture, or preparation of the plant, its seeds, or resin, including tetrahydrocannabinol (THC) and all other naturally produced cannabinol derivatives, whether produced directly or indirectly by extraction; however, "cannabis" does not include the mature stalks of the plant, fiber produced from the stalks, oil or cake made from the seeds of the plant, any other compound, manufacture, salt, derivative, mixture, or preparation of the mature stalks (except the resin extracted from it), fiber, oil or cake, or the sterilized seed of the plant that is incapable of germination. "Cannabis" does not include industrial hemp as defined and authorized under the Industrial Hemp Act. "Cannabis" also means cannabis flower, concentrate, and cannabis-infused products.

[278] Illinois General Assembly, "410 ILCS 705 Cannabis Regulation and Tax Act," June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.
[279] Illinois General Assembly, "Public Act 101-0027," June 25, 2019, accessed November 17, 2023, https://www.ilga.gov/legislation/publicacts/fulltext.asp?Name=101-0027.
[280] Illinois General Assembly, "Public Act 102-0538," August 20, 2021, accessed November 17, 2023,https://www.ilga.gov/legislation/publicacts/102/102-0538.htm.

5. **"Cannabis business establishment"** means a cultivation center, craft grower, processing organization, infuser organization, dispensing organization, or transporting organization.
6. **“Cannabis Business Development Fund"** or **“CBD Fund”** are funds sourced from fees collected from the early approval adult use dispensing organization license and remunerations from permit transfers to qualified Social Equity applicants. The fund is designated for various purposes including low interest loans, outreach, research on minority participation in the cannabis industry, and job training in Disproportionately Impacted Areas.
7. **"Cannabis-infused product"** means a beverage, food, oil, ointment, tincture, topical formulation, or another product containing cannabis or cannabis concentrate that is not intended to be smoked.
8. **“Cannabis Social Equity Loan Program”** is a program established by DCEO to provide low-interest loans to Social Equity applicants through partnerships with lending institutions. The program is funded by the Cannabis Business Development Fund.
9. **"Cannabis testing facility"** means an entity registered by the Department of Agriculture to test cannabis for potency and contaminants.
10. **"Conditional adult use dispensing organization license"** means a provisional license awarded to adult use dispensing organization license applicants. This license grants the applicant the right to an adult use dispensing organization license after meeting certain conditions described in the CRTA. It does not entitle the recipient to begin purchasing or selling cannabis or cannabis-infused products.
11. **"Conditional adult use cultivation center license"** means a license awarded to top-scoring adult use cultivation center license applicants. This license grants the applicant the right to an adult use cultivation center license after meeting certain conditions as determined by IDOA. It does not entitle the recipient to begin growing, processing, or selling cannabis or cannabis-infused products.
12. **"Craft grower"** means a facility operated by an organization or business that is licensed by IDOA to cultivate, dry, cure, and package cannabis and perform other necessary activities to make cannabis available for sale at a dispensing organization or use at a processing organization. A craft grower may contain up to 5,000 square feet of canopy space on its premises for plants in the flowering state. The Department of Agriculture may authorize an increase or decrease of flowering stage cultivation space in increments of 3,000 square feet by rule based on market need, craft grower capacity, and the licensee's history of compliance or noncompliance, with a maximum space of 14,000 square feet for cultivating plants in the flowering stage, which must be cultivated in all stages of growth in an enclosed and secure area. A craft grower may share premises with a processing organization or a dispensing organization, or both, provided each licensee stores currency and cannabis or cannabis-infused products in a separate secured vault to which the other licensee does not have access or all licensees sharing a vault share more than 50% of the same ownership.

13. **“Illinois Cannabis Regulation Oversight Officer”** or **“CROO”** is created within the Department of Financial and Professional Regulation under the Secretary of Financial and Professional Regulation. The Cannabis Regulation Oversight Officer serves a coordinating role among State agencies regarding the CRTA and the Compassionate Use of Medical Cannabis Program Act. The Illinois Cannabis Regulation Oversight Officer shall be appointed by the Governor with the advice and consent of the Senate.
14. **“Cannabis Regulation Tax Act”** or **“CRTA”** is the statute that regulates the cannabis industry in Illinois.
15. **“Compassionate Use of Medical Cannabis Pilot Program Act”** or **“CUMCPPA”** permits the legal use of cannabis through a limited medical use state program.
16. **"Cultivation center"** means a facility operated by an organization or business that is licensed by the Department of Agriculture to cultivate, process, transport, and perform other necessary activities to provide cannabis and cannabis-infused products to cannabis business establishments.
17. **"Dispensary applicant"** means the proposed dispensing organization name as stated on an application for a conditional adult use dispensing organization license.
18. **"Dispensing organization"** or **“Dispensary”** means a facility operated by an organization or business that is licensed by the Department of Financial and Professional Regulation to acquire cannabis from a cultivation center, craft grower, processing organization, or another dispensary for the purpose of selling or dispensing cannabis, cannabis-infused products, cannabis seeds, paraphernalia, or related supplies under the CRTA to purchasers or to qualified registered medical cannabis patients and caregivers. As used in the CRTA, "dispensing organization" includes a registered medical cannabis organization as defined in the Compassionate Use of Medical Cannabis Program Act or its successor Act that has obtained an early approval adult use dispensing organization license.
19. **"Disproportionately Impacted Area"** or **“DIA”** means a census tract or comparable geographic area that satisfies the following criteria as determined by the Department of Commerce and Economic Opportunity:
    - the area has a poverty rate of at least 20% according to the latest federal decennial census; or
    - 75% or more of the children in the area participate in the federal free lunch program according to reported statistics from the State Board of Education; or
    - at least 20% of the households in the area receive assistance under the Supplemental Nutrition Assistance Program; or
    - the area has an average unemployment rate, as determined by the Illinois Department of Employment Security, that is more than 120% of the national unemployment average, as determined by the United States Department of Labor, for a period of at least 2 consecutive calendar years preceding the date of the application; and has high rates of arrest, conviction, and incarceration related to the sale, possession, use, cultivation, manufacture, or transport of cannabis.

20. **"Early approval adult use cultivation center license"** means a license that permits a medical cannabis cultivation center licensed under the Compassionate Use of Medical Cannabis Program Act to begin cultivating, infusing, packaging, transporting, processing, and selling cannabis or cannabis-infused product to cannabis business establishments for resale to purchasers as of January 1, 2020.
21. **"Early approval adult use dispensing organization license"** means a license that permits a medical cannabis dispensing organization licensed under the Compassionate Use of Medical Cannabis Program Act to begin selling cannabis or cannabis-infused products to purchasers as of January 1, 2020.
22. **"Early approval adult use dispensing organization at a secondary site"** means a license that permits a medical cannabis dispensing organization licensed under the Compassionate Use of Medical Cannabis Program Act to begin selling cannabis or cannabis-infused product to purchasers as permitted by the CRTA on January 1, 2020, at a different dispensary location from its existing registered medical dispensary location.
23. **"Eligible tied applicant"** means a tied applicant that is eligible to participate in the process by which a remaining available license is distributed by lot pursuant to a Tied Applicant Lottery.
24. **"Financial institution"** has the same meaning as "financial organization" as defined in Section 1501 of the Illinois Income Tax Act, and also includes the holding companies, subsidiaries, and affiliates of such financial organizations.
25. **"Illinois Department of Agriculture"** or **"IDOA"**, "Division of Cannabis Regulation" or "DCR" is responsible for licensing cultivation centers, craft growers, infusers, transporters, and overseeing Community College Vocational Cannabis Pilot Programs. IDOA ensures compliance with safety and quality standards and approves product labeling and packaging.
26. **"Illinois Department of Commerce and Economic Opportunity"** or **"DCEO"** develops opportunities for technical assistance and capital access for cannabis business participants, funded by the Cannabis Business Development Fund.
27. **"Illinois Department of Financial and Professional Regulation"** or **"IDFPR"** handles the licensing and oversight of dispensing organizations, dispensary agents, and Responsible Vendors. This includes application review, background checks, compliance enforcement, inspections, and disciplinary actions.
28. **"Illinois Department of Public Health"** or **"IDPH"** manages the Medical Cannabis Registry and oversees public health impacts.
29. **"Illinois Department of Revenue"** or **"IDOR"** manages state and municipal cannabis ensuring tax law compliance and auditing cannabis businesses.
30. **"Illinois Department of State Police"** or **"ISP"** conducts security plan reviews and regulatory compliance inspections for all cannabis licensed entities and provides support and training on cannabis laws.

31. **"Infuser organization"** or **"infuser"** means a facility operated by an organization or business that is licensed by the Department of Agriculture to directly incorporate cannabis or cannabis concentrate into a product formulation to produce a cannabis-infused product.
32. **"Member of an impacted family"** means an individual who has a parent, legal guardian, child, spouse, or dependent, or was a dependent of an individual who, prior to the effective date of the CRTA, was arrested for, convicted of, or adjudicated delinquent for any offense that is eligible for expungement under the CRTA.
33. **"Ownership and control"** means ownership of at least 51% of the business, including corporate stock if a corporation, and control over the management and day-to-day operations of the business and an interest in the capital, assets, and profits and losses of the business proportionate to the percentage of ownership.
34. **"Principal officer"** includes a cannabis business establishment applicant or licensed cannabis business establishment's board member, owner with more than 1% interest in the total cannabis business establishment or more than 5% interest of the total cannabis business establishment of a publicly traded company, president, vice president, secretary, treasurer, partner, officer, member, manager member, or person with a profit sharing, financial interest, or revenue sharing arrangement. The definition includes a person with authority to control the cannabis business establishment, a person who assumes responsibility for the debts of the cannabis business establishment and who is further defined in the CRTA.
35. **"Processing organization"** or **"processor"** means a facility operated by an organization or business that is licensed by the Department of Agriculture to either extract constituent chemicals or compounds to produce cannabis concentrate or incorporate cannabis or cannabis concentrate into a product formulation to produce a cannabis product.
36. **"Qualifying applicant"** means an applicant that submitted an application pursuant to Section 15-30 of the CRTA and received at least 85% of 250 application points available under Section 15-30 as the applicant's final score and meets the definition of "Social Equity Applicant".
37. **"Qualifying Social Equity Justice Involved Applicant"** means an applicant that an application pursuant to Section 15-30 of the CRTA and received at least 85% of 250 application points available under Section 15-30 as the applicant's final score and meets the criteria of either paragraph (1) or (2) of the definition of "Social Equity Applicant".
38. **"Qualified Social Equity Applicant"** means a Social Equity Applicant who has been awarded a conditional license under the CRTA to operate a cannabis business establishment.
39. **“Race-neutral policy”** is a race-neutral policy is a policy or practice that is designed and implemented without considering or explicitly targeting individuals or groups based on their race or ethnicity.
40. **"Social Equity Applicant"** or **“SEA”** means an applicant that is an Illinois resident that meets one the following criteria:

- an applicant with at least 51% ownership and control by one or more individuals who have resided for at least 5 of the preceding 10 years in a Disproportionately Impacted Area;
- an applicant with at least 51% ownership and control by one or more individuals who:
  - have been arrested for, convicted of, or adjudicated delinquent for any offense that is eligible for expungement under the CRTA; or
  - is a member of an impacted family;
- for applicants with a minimum of 10 full-time employees, an applicant with at least 51% of current employees who:
  - currently reside in a Disproportionately Impacted Area; or
  - have been arrested for, convicted of, or adjudicated delinquent for any offense that is eligible for expungement under the CRTA or member of an impacted family.

41. **"THC"** or **"Delta-9-tetrahydrocannabinol"** is a cannabinoid that is derived from Tetrahydrocannabinolic acid (THCa) is a cannabinoid found in cannabis.
42. **"Tied applicant"** means an application submitted by a dispensary applicant pursuant to Section 15-30 of the CRTA and received the same number of application points under Section 15-30 as the dispensary applicant's final score as one or more top-scoring applications in the same BLS Region and would have been awarded a license but for the one or more other top-scoring applications that received the same number of application points. Each application for which a dispensary applicant was required to pay a required application fee for the application period ending January 2, 2020, shall be considered an application of a separate Tied Applicant.
43. **"Tied Applicant Lottery"** means the process established under 68 Ill. Adm. Code 1291.50 for awarding conditional adult use dispensing organization Licenses pursuant to Sections 15-25 and 15-30 of the CRTA among eligible tied applicants.
44. **"Transporting organization"** or "transporter" means an organization or business that is licensed by IDOA to transport cannabis or cannabis-infused products on behalf of a cannabis business establishment or a community college licensed under the Community College Cannabis Vocational Training Pilot Program.

2. Disparity Study Terms

1. **"Availability analysis"** Examining the number, size, and distribution of businesses in a market to understand potential underrepresentation and assess the need for remedial measures, especially for specific demographic groups.
2. **"Cannabis business applicant"** Individual or company applying for a cannabis business license in Illinois, involving meeting legal, financial, and operational criteria.
3. **"Cannabis business license"** Official authorization granted by IDFPR and IDOA for various aspects of the cannabis industry. Types include cultivation, craft grower, transportation organizations, dispensing organizations, and infusing organizations.

4. **"Cannabis-related industry"** Refers to businesses in industries similar or adjacent to the cannabis industry.
5. **"Compelling government interest"** In disparity studies, a legally recognized significant objective or need of the government, used when remedial measures are necessary for promoting equality and overcoming discrimination.
6. **"Criminal record"** An official document detailing an individual's criminal convictions and other legal history, used for background checks, employment screenings, and legal proceedings.
7. **"Disparity"** In disparity studies, the comparison between the participation (utilization) and availability of minority- and women-owned businesses using evidence-based analysis to assess inequities in resource allocation, opportunities, or outcomes.
8. **"Disparity ratio"** A quantitative measure comparing the availability of certain groups (like minority or women-owned businesses) to their actual market utilization, derived from dividing utilization by availability and multiplying by 100.
9. **"Expungement"** The legal process of erasing, sealing, or destroying a person's criminal record or arrest history, making it inaccessible to the general public and, in some cases, law enforcement agencies.
10. **"Firms, businesses, or companies"** In the context of a disparity study on the Illinois cannabis industry, refers to entities operating within the cannabis sector or related industries, including licensed businesses involved in cultivation, manufacturing, distribution, retail sales, and ancillary services.
11. **"Intermediate judicial scrutiny"** The middle level of Equal Protection Clause scrutiny applied by courts to programs based on gender, or government decisions that take gender into account, used to assess gender-focused programs/policies in disparity studies.
12. **"Multiple cohort catalog"** Includes various comparison cohorts of businesses in cannabis-related industries, such as CBD stores, hemp growers, hemp infusers, liquor stores, vaping/smoke shops, cannabis testing labs, armored cars, expungements, and license applicants, serving as comparative reference points for analyzing the cannabis industry.
13. **"Narrowly tailored"** In disparity studies, refers to the requirement that remedial measures address identified disparities without unduly burdening or discriminating against other businesses or individuals.
14. **"Rational basis judicial scrutiny"** The most minimal level of Equal Protection Clause scrutiny applied by courts to programs based on firm size, location, disability, or veteran status, or government decisions that take these into account, used in disparity studies to evaluate the justification of disparities.
15. **"Social Equity Applicant"** or **"SEA"** Defined by the CRTA as individuals who meet specific criteria related to areas impacted by cannabis prohibition or adversely affected by cannabis-related laws, potentially receiving preferences or benefits in the application process.

16. **"Strict judicial scrutiny"** The highest level of Equal Protection Clause scrutiny applied by courts to programs based on race or ethnicity, or government decisions considering these factors, used in disparity studies when assessing the constitutionality of affirmative action measures.
17. **"Study period"** In disparity studies, refers to the specific timeframe during which data is collected and analyzed to assess disparities or inequities in contracting or business opportunities.
18. **"Unweighted analysis"** A statistical technique where each factor is given equal importance or weight in the analysis, treating all variables equally without accounting for variations in their importance.
19. **"Utilization"** In disparity studies, refers to the percentage of total dollars of a type of work going to a demographic-specific business, focusing on analyzing contract awards and participation rates compared to market availability.
20. **"Weighted analysis"** A statistical technique assigning different degrees of importance to factors in an analysis, with each factor weighted based on its relative importance, often determined through informed judgment, expert opinion, or objective measures.

3. Study Acronyms

Acronym	Term
ABS	Annual Business Survey
ACS	American Community Survey
AOSCA	Association of Official Seed Certifying Agencies
CBD	Cannabis Business Development Fund
CBD	Cannabidiol
CCA	Cannabis Control Act
CREE	Culturally Responsive Equitable Evaluative Framework
CROO	Cannabis Regulation Oversight Officer
CRTA	Cannabis Regulation Tax Act
CSA	Controlled Substance Act
CTR	Cigarette and Tobacco Retailer
CUMCPPA	Compassionate Use of Medical Cannabis Pilot Program
DBE	Disadvantaged Business Enterprise
DCEO	Department of Commerce and Economic Opportunity
DIA	Disproportionately Impacted Area

Acronym	Term
ICJIA	Illinois Criminal Justice Information Authority
IDFPR	Illinois Department of Financial and Professional Regulation
IDHS	Illinois Department of Human Services
IDOA	Illinois Department of Agriculture
IDOR	Illinois Department of Revenue
IDPH	Illinois Department of Public Health
ILCC	Illinois Liquor Control Commission
ISO	International Organization for Standardization
ISP	Illinois State Police
M/WBE	Minority-and-Women-Owned Business Enterprise
MCAB	Medical Cannabis Advisory Board
MMR	Mixed Methods Research
NAICS	North American Industrial Classification System
PUMS	Public Use Microdata Sample
R3	Restore, Reinvest, and Renew
SEA	Social Equity Applicant
SECL	Social Equity Criteria Lottery
SEJI	Social Equity Justice Involved
SHED	Survey of Household Economics and Decision-Making

B. North American Industry Classification System (NAICS) [281]

For our regression analysis and cohort comparisons, we examined 2017 and 2022 NAICS codes to identify appropriate cannabis-related industries for each Illinois cannabis license type (dispensary, craft grower, infuser, transporter, and cultivation center). Utilizing a 2021 U.S. Bureau of Economic Analysis paper, we identified agriculture, manufacturing, and retail as key sectors involving cannabis products for our NAICS code selection.[282]

[281] U.S. Census Bureau, "North American Industry Classification System Manual," 2022, https://www.census.gov/naics/reference_files_tools/2022_NAICS_Manual.pdf.
[282] Rachel Soloveichik, "Tracking Marijuana in the National Accounts," 2021, https://www.bea.gov/system/files/papers/BEA-WP2021-5.pdf.

By searching for cannabis-related keywords (e.g., "CBD" or "marijuana") and activities specific to each license type (e.g., "grow" or "retail") within six-digit NAICS code descriptions, we selected codes closely aligned with each license type. For instance, although code 561613 ("armored car services") does not directly pertain to cannabis, it is relevant to cannabis transporter activities. This process led us to selecting 25 six-digit NAICS codes representing businesses engaged in cannabis cultivation, growth, infusion, transportation, and dispensing (see Table IX-1).

To ensure comprehensive data coverage for our quantitative analysis, we then mapped these six-digit NAICS codes to their broader 5, 4, and 3-digit counterparts (see Source: Nerevu NAICS code analysis

Table IX-2 through Source: Nerevu NAICS code analysis

Table IX-4).

Table IX-1. Cannabis-Related NAICS Codes (6-Digit Industry Classifications)

NAICS Code	NAICS Industry Description	Years	Hoovers License Types	ACS/ABS License Types
111419	Other Food Crops Grown Under Cover	2017, 2022	Cultivation, Craft Grower	Cultivation, Craft Grower
111421	Nursery and Tree Production	2017, 2022		Cultivation, Craft Grower
111422	Floriculture Production	2017, 2022		Cultivation, Craft Grower
111998	All Other Miscellaneous Crop Farming	2017, 2022	Cultivation, Craft Grower	
115112	Soil Preparation, Planting, and Cultivating	2017, 2022		Cultivation, Craft Grower
311812	Commercial Bakeries	2017, 2022		Infuser, Cultivation
311991	Perishable Prepared Food Manufacturing	2017, 2022		Infuser, Cultivation
313110	Fiber, Yarn, and Thread Mills	2017, 2022	Infuser, Cultivation	
313210	Broadwoven Fabric Mills	2017, 2022	Infuser, Cultivation	
313220	Narrow Fabric Mills and Schiffli Machine Embroidery	2017, 2022	Infuser, Cultivation	
325180	Other Basic Inorganic Chemical Manufacturing	2017, 2022		Infuser, Cultivation
325411	Medicinal and Botanical Manufacturing	2017, 2022		Infuser, Cultivation
325412	Pharmaceutical Preparation Manufacturing	2017, 2022		Infuser, Cultivation
336999	All Other Transportation Equipment Manufacturing	2017, 2022	Transporter, Cultivation	
339999	All Other Miscellaneous Manufacturing	2017, 2022		Infuser, Cultivation

NAICS Code	NAICS Industry Description	Years	Hoovers License Types	ACS/ABS License Types
424590	Other Farm Product Raw Material Merchant Wholesalers	2017, 2022	Infuser, Cultivation	Craft Grower, Cultivation
424690	Other Chemical and Allied Products Merchant Wholesalers	2017, 2022	Dispensary (Adult)	
424810	Beer and Ale Merchant Wholesalers	2017, 2022	Dispensary (Adult)	
424820	Wine and Distilled Alcoholic Beverage Merchant Wholesalers	2017, 2022	Dispensary (Adult)	
424940	Tobacco Product and Electronic Cigarette Merchant Wholesalers	2017, 2022	Dispensary (Adult)	
424990	Other Miscellaneous Nondurable Goods Merchant Wholesalers	2017, 2022	Dispensary (Adult)	Cultivation, Craft Grower
445298	All Other Specialty Food Retailers	2022		Dispensary (Adult)
445299	All Other Specialty Food Stores	2017		Dispensary (Adult)
445320	Beer, Wine, and Liquor Retailers	2022	Dispensary (Adult)	
446110	Pharmacies and Drug Stores	2017		Dispensary (Adult)
453110	Florists	2017		Dispensary (Adult)
453991	Tobacco Stores	2017		Dispensary (Adult)
453998	All Other Miscellaneous Store Retailers (except Tobacco Stores)	2017		Dispensary (Adult)
459991	Tobacco, Electronic Cigarette, and Other Smoking Supplies Retailers	2022	Dispensary (Adult)	
459999	All Other Miscellaneous Retailers	2022	Dispensary (Adult)	
484110	General Freight Trucking, Local	2017, 2022	Transporter, Cultivation	Transporter, Cultivation
484121	General Freight Trucking, Long-Distance, Truckload	2017, 2022	Transporter, Cultivation	Transporter, Cultivation
484122	General Freight Trucking, Long-Distance, Less Than Truckload	2017, 2022	Transporter, Cultivation	Transporter, Cultivation
484220	Specialized Freight (except Used Goods) Trucking, Local	2017, 2022	Transporter, Cultivation	
484230	Specialized Freight (except Used Goods) Trucking, Long-Distance	2017, 2022	Transporter, Cultivation	
488510	Freight Transportation Arrangement	2017, 2022		Transporter, Cultivation
492110	Couriers and Express Delivery Services	2017, 2022		Transporter, Cultivation
492210	Local Messengers and Local Delivery	2017, 2022		Transporter, Cultivation
532120	Truck, Utility Trailer, and RV (Recreational Vehicle) Rental and Leasing	2017, 2022	Transporter, Cultivation	

NAICS Code	NAICS Industry Description	Years	Hoovers License Types	ACS/ABS License Types
541380	Testing Laboratories and Services	2017, 2022	Cultivation	
561612	Security Guards and Patrol Services	2017, 2022	Transporter, Cultivation	Transporter, Cultivation
561613	Armored Car Services	2017, 2022	Transporter, Cultivation	Transporter, Cultivation
621511	Medical Laboratories	2017, 2022	Cultivation	

Source: Nerevu NAICS code analysis

Table IX-2. Cannabis-Related NAICS Codes (5-Digit Industry Classifications)

NAICS Code	NAICS Industry Description	Years	Hoovers License Types	ACS/ABS License Types
11141	Food Crops Grown Under Cover	2017, 2022	Cultivation, Craft Grower	Cultivation, Craft Grower
11142	Nursery and Floriculture Production	2017, 2022		Cultivation, Craft Grower
11199	All Other Crop Farming	2017, 2022	Cultivation, Craft Grower	
11511	Support Activities for Crop Production	2017, 2022		Cultivation, Craft Grower
31181	Bread and Bakery Product Manufacturing	2017, 2022		Infuser, Cultivation
31199	All Other Food Manufacturing	2017, 2022		Infuser, Cultivation
31311	Fiber, Yarn, and Thread Mills	2017, 2022	Infuser, Cultivation	
31321	Broadwoven Fabric Mills	2017, 2022	Infuser, Cultivation	
31322	Narrow Fabric Mills and Schiffli Machine Embroidery	2017, 2022	Infuser, Cultivation	
32518	Other Basic Inorganic Chemical Manufacturing	2017, 2022		Infuser, Cultivation
32541	Pharmaceutical and Medicine Manufacturing	2017, 2022		Infuser, Cultivation
33699	Other Transportation Equipment Manufacturing	2017, 2022	Transporter, Cultivation	
33999	All Other Miscellaneous Manufacturing	2017, 2022		Infuser, Cultivation
42459	Other Farm Product Raw Material Merchant Wholesalers	2017, 2022	Infuser, Cultivation	Craft Grower, Cultivation
42469	Other Chemical and Allied Products Merchant Wholesalers	2017, 2022	Dispensary (Adult)	
42481	Beer and Ale Merchant Wholesalers	2017, 2022	Dispensary (Adult)	

NAICS Code	NAICS Industry Description	Years	Hoovers License Types	ACS/ABS License Types
42482	Wine and Distilled Alcoholic Beverage Merchant Wholesalers	2017, 2022	Dispensary (Adult)	
42494	Tobacco Product and Electronic Cigarette Merchant Wholesalers	2017, 2022	Dispensary (Adult)	
42499	Other Miscellaneous Nondurable Goods Merchant Wholesalers	2017, 2022	Dispensary (Adult)	Cultivation, Craft Grower
44529	Other Specialty Food Retailers	2022, 2017		Dispensary (Adult)
44532	Beer, Wine, and Liquor Retailers	2022	Dispensary (Adult)	
44611	Pharmacies and Drug Stores	2017		Dispensary (Adult)
45311	Florists	2017		Dispensary (Adult)
45399	All Other Miscellaneous Store Retailers	2017		Dispensary (Adult)
45999	All Other Miscellaneous Retailers	2022	Dispensary (Adult)	
48411	General Freight Trucking, Local	2017, 2022	Transporter, Cultivation	Transporter, Cultivation
48412	General Freight Trucking, Long-Distance	2017, 2022	Transporter, Cultivation	Transporter, Cultivation
48422	Specialized Freight (except Used Goods) Trucking, Local	2017, 2022	Transporter, Cultivation	
48423	Specialized Freight (except Used Goods) Trucking, Long-Distance	2017, 2022	Transporter, Cultivation	
48851	Freight Transportation Arrangement	2017, 2022		Transporter, Cultivation
49211	Couriers and Express Delivery Services	2017, 2022		Transporter, Cultivation
49221	Local Messengers and Local Delivery	2017, 2022		Transporter, Cultivation
53212	Truck, Utility Trailer, and RV (Recreational Vehicle) Rental and Leasing	2017, 2022	Transporter, Cultivation	
54138	Testing Laboratories and Services	2017, 2022	Cultivation	
56161	Investigation, Guard, and Armored Car Services	2017, 2022	Transporter, Cultivation	Transporter, Cultivation
62151	Medical and Diagnostic Laboratories	2017, 2022	Cultivation	

Source: Nerevu NAICS code analysis

Table IX-3. Cannabis-Related NAICS Codes (4-Digit Industry Classifications)

NAICS Code	NAICS Industry Description	Years	Hoovers License Types	ACS/ABS License Types
1114	Greenhouse, Nursery, and Floriculture Production	2017, 2022	Cultivation, Craft Grower	Cultivation, Craft Grower

NAICS Code	NAICS Industry Description	Years	Hoovers License Types	ACS/ABS License Types
1119	Other Crop Farming	2017, 2022	Cultivation, Craft Grower	
1151	Support Activities for Crop Production	2017, 2022		Cultivation, Craft Grower
3118	Bakeries and Tortilla Manufacturing	2017, 2022		Infuser, Cultivation
3119	Other Food Manufacturing	2017, 2022		Infuser, Cultivation
3131	Fiber, Yarn, and Thread Mills	2017, 2022	Infuser, Cultivation	
3132	Fabric Mills	2017, 2022	Infuser, Cultivation	
3251	Basic Chemical Manufacturing	2017, 2022		Infuser, Cultivation
3254	Pharmaceutical and Medicine Manufacturing	2017, 2022		Infuser, Cultivation
3369	Other Transportation Equipment Manufacturing	2017, 2022	Transporter, Cultivation	
3399	Other Miscellaneous Manufacturing	2017, 2022		Infuser, Cultivation
4245	Farm Product Raw Material Merchant Wholesalers	2017, 2022	Infuser, Cultivation	Craft Grower, Cultivation
4246	Chemical and Allied Products Merchant Wholesalers	2017, 2022	Dispensary (Adult)	
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	2017, 2022	Dispensary (Adult)	
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	2017, 2022	Dispensary (Adult)	Cultivation, Craft Grower
4452	Specialty Food Retailers	2017, 2022		Dispensary (Adult)
4453	Beer, Wine, and Liquor Retailers	2022	Dispensary (Adult)	
4461	Health and Personal Care Stores	2017		Dispensary (Adult)
4531	Florists	2017		Dispensary (Adult)
4539	Other Miscellaneous Store Retailers	2017		Dispensary (Adult)
4599	Other Miscellaneous Retailers	2022	Dispensary (Adult)	
4841	General Freight Trucking	2017, 2022	Transporter, Cultivation	Transporter, Cultivation
4842	Specialized Freight Trucking	2017, 2022	Transporter, Cultivation	
4885	Freight Transportation Arrangement	2017, 2022		Transporter, Cultivation
4921	Couriers and Express Delivery Services	2017, 2022		Transporter, Cultivation

NAICS Code	NAICS Industry Description	Years	Hoovers License Types	ACS/ABS License Types
4922	Local Messengers and Local Delivery	2017, 2022		Transporter, Cultivation
5321	Automotive Equipment Rental and Leasing	2017, 2022	Transporter, Cultivation	
5413	Architectural, Engineering, and Related Services	2017, 2022	Cultivation	
5616	Investigation and Security Services	2017, 2022	Transporter, Cultivation	Transporter, Cultivation
6215	Medical and Diagnostic Laboratories	2017, 2022	Cultivation	

Source: Nerevu NAICS code analysis

Table IX-4. Cannabis-Related NAICS Codes (3-Digit Industry Classifications)

NAICS Code	NAICS Industry Description	Years	Hoovers License Types	ACS/ABS License Types
111	Crop Production	2017, 2022	Cultivation, Craft Grower	Cultivation, Craft Grower
115	Support Activities for Agriculture and Forestry	2017, 2022		Cultivation, Craft Grower
311	Food Manufacturing	2017, 2022		Infuser, Cultivation
313	Textile Mills	2017, 2022	Infuser, Cultivation	
325	Chemical Manufacturing	2017, 2022		Infuser, Cultivation
336	Transportation Equipment Manufacturing	2017, 2022	Transporter, Cultivation	
339	Miscellaneous Manufacturing	2017, 2022		Infuser, Cultivation
424	Merchant Wholesalers, Nondurable Goods	2017, 2022	Dispensary (Adult), Infuser, Cultivation	Cultivation, Craft Grower
445	Food and Beverage Retailers	2017, 2022	Dispensary (Adult)	Dispensary (Adult)
446	Health and Personal Care Stores	2017		Dispensary (Adult)
453	Miscellaneous Store Retailers	2017		Dispensary (Adult)
459	Sporting Goods, Hobby, Musical Instrument, Book, and Miscellaneous Retailers	2022	Dispensary (Adult)	
484	Truck Transportation	2017, 2022	Transporter, Cultivation	Transporter, Cultivation
488	Support Activities for Transportation	2017, 2022		Transporter, Cultivation
492	Couriers and Messengers	2017, 2022		Transporter, Cultivation

NAICS Code	NAICS Industry Description	Years	Hoovers License Types	ACS/ABS License Types
532	Rental and Leasing Services	2017, 2022	Transporter, Cultivation	
541	Professional, Scientific, and Technical Services	2017, 2022	Cultivation	
561	Administrative and Support Services	2017, 2022	Transporter, Cultivation	Transporter, Cultivation
621	Ambulatory Health Care Services	2017, 2022	Cultivation	

Source: Nerevu NAICS code analysis

C. Illinois Cannabis-Related Industry Availability Analysis

The below availability rates represent cannabis-related industries within the State of Illinois.

1. Dispensary

Dispensary cannabis-related industry comparison cohorts include CBD stores, liquor stores, and vaping/smoke shops. They are 92%–98% White male-owned with almost no Black, Asian, Native American, or Hispanic ownership.

Table IX-5. Dispensary Cohort Availability Rates

NAICS	Black	Asian	Indigenous	Hispanic	MBE	White Women	Total M/WBE	Non-M/WBE
459991	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	1.9%	98.1%
459999	0.3%	0.1%	0.0%	0.1%	0.5%	5.4%	5.9%	94.1%
424690	0.6%	1.0%	0.0%	0.1%	1.7%	5.9%	7.6%	92.3%
424810	1.6%	0.0%	0.0%	0.0%	1.6%	2.3%	3.9%	96.1%
424820	0.5%	0.0%	0.0%	0.5%	1.1%	4.6%	5.7%	94.3%
445320	0.0%	0.0%	0.1%	0.1%	0.1%	4.8%	5.0%	95.0%
424940	0.3%	0.0%	0.0%	0.0%	0.3%	3.2%	3.5%	96.5%
424990	0.2%	0.2%	0.0%	0.1%	0.5%	2.6%	3.1%	96.9%

Source: Nerevu analysis IDFPR and IDOA data; Hoovers

2. Craft Grower

The craft grower cannabis-related industry comparison cohort is hemp growers. They are 95%–99% White male-owned with almost no Black, Asian, Native American, or Hispanic ownership.

Table IX-6. Craft Grower Cohort Availability Rates

NAICS	Black	Asian	Indigenous	Hispanic	MBE	White Women	Total M/WBE	Non-M/WBE
111419	0.0%	0.0%	0.0%	0.0%	0.0%	4.8%	4.8%	95.2%
111998	0.1%	0.0%	0.0%	0.0%	0.1%	1.2%	1.3%	98.7%

Source: Nerevu analysis IDFPR and IDOA data; Hoovers

3. Infuser

The infuser cannabis-related industry comparison cohort is hemp infusers/manufacturers. They are 73%–97% White male-owned with no Hispanic ownership, little Black and Native American ownership, and some (6%) Asian ownership.

Table IX-7. Infuser Cohort Availability Rates

NAICS	Black	Asian	Indigenous	Hispanic	MBE	White Women	Total M/WBE	Non-M/WBE
424590	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	3.2%	96.8%
313110	0.0%	0.0%	0.0%	0.0%	0.0%	27.3%	27.3%	72.7%
313210	1.4%	1.4%	0.0%	0.0%	2.8%	10.4%	13.3%	86.7%
313220	0.0%	5.9%	0.0%	0.0%	5.9%	11.8%	17.6%	82.4%

Source: Nerevu analysis IDFPR and IDOA data; Hoovers

4. Transporter

The transporter cannabis-related industry comparison cohort is armored cars/trucking. They are 87%–97% White male-owned with very little Black, Asian, Native American, or Hispanic ownership. Of all the comparison cohorts, transporters are the most diverse comparable group.

Table IX-8. Transporter Cohort Availability Rates

NAICS	Black	Asian	Indigenous	Hispanic	MBE	White Women	Total M/WBE	Non-M/WBE
484110	0.5%	0.1%	0.0%	0.7%	1.3%	2.4%	3.7%	96.1%
484121	1.2%	0.0%	0.0%	0.3%	1.6%	5.1%	6.7%	93.1%
484220	0.9%	0.7%	0.0%	2.3%	4.0%	9.5%	13.5%	86.5%
561613	1.3%	0.0%	0.0%	1.3%	2.6%	7.9%	10.5%	89.5%
336999	1.1%	0.0%	0.0%	1.1%	2.2%	3.4%	5.6%	94.4%

NAICS	Black	Asian	Indigenous	Hispanic	MBE	White Women	Total M/WBE	Non-M/WBE
484122	2.3%	0.0%	0.0%	0.0%	2.3%	2.3%	4.5%	95.5%
484230	2.6%	0.0%	0.0%	0.0%	2.6%	7.4%	10.1%	89.4%
532120	0.0%	0.0%	0.0%	0.1%	0.1%	3.0%	3.1%	96.9%
561612	6.5%	0.0%	0.0%	1.7%	8.2%	4.0%	12.2%	87.1%

Source: Nerevu analysis IDFPR and IDOA data; Hoovers

5. Cultivation Center

Cultivation center cannabis-related industry comparison cohorts include armored cars/trucking, hemp growers, hemp infusers/manufacturers, and testing labs. They vary between 82 and 99% White male-owned with most having little Black, Asian, Native American, or Hispanic ownership.

Table IX-9. Cultivation Center Cohort Availability Rates

NAICS	Black	Asian	Indigenous	Hispanic	MBE	White Women	Total M/WBE	Non-M/WBE
111419	0.0%	0.0%	0.0%	0.0%	0.0%	4.8%	4.8%	95.2%
111998	0.1%	0.0%	0.0%	0.0%	0.1%	1.2%	1.3%	98.7%
424590	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	3.2%	96.8%
484110	0.5%	0.1%	0.0%	0.7%	1.3%	2.4%	3.7%	96.1%
484121	1.2%	0.0%	0.0%	0.3%	1.6%	5.1%	6.7%	93.1%
484220	0.9%	0.7%	0.0%	2.3%	4.0%	9.5%	13.5%	86.5%
561613	1.3%	0.0%	0.0%	1.3%	2.6%	7.9%	10.5%	89.5%
336999	1.1%	0.0%	0.0%	1.1%	2.2%	3.4%	5.6%	94.4%
484122	2.3%	0.0%	0.0%	0.0%	2.3%	2.3%	4.5%	95.5%
484230	2.6%	0.0%	0.0%	0.0%	2.6%	7.4%	10.1%	89.4%
532120	0.0%	0.0%	0.0%	0.1%	0.1%	3.0%	3.1%	96.9%
561612	6.5%	0.0%	0.0%	1.7%	8.2%	4.0%	12.2%	87.1%
133110	0.0%	0.0%	0.0%	0.0%	0.0%	27.3%	27.3%	72.7%
313210	1.4%	1.4%	0.0%	0.0%	2.8%	10.4%	13.3%	86.7%
313220	0.0%	5.9%	0.0%	0.0%	5.9%	11.8%	17.6%	82.4%
541380	0.2%	0.8%	0.1%	0.1%	1.2%	2.8%	3.9%	95.8%

NAICS	Black	Asian	Indigenous	Hispanic	MBE	White Women	Total M/WBE	Non-M/WBE
621511	0.6%	0.8%	0.0%	0.2%	1.5%	3.6%	5.2%	94.7%

Source: Nerevu analysis IDFPR and IDOA data; Hoovers

D. Comparison Group Justification

1. Cannabis-Related Industries

Cannabis-related businesses include CBD stores, hemp growers, hemp infusers/manufacturers, liquor stores, vaping/smoke shops, cannabis testing labs and armored car/trucking services. We selected these industries due to their similarities with adult use cannabis businesses in aspects such as licensing requirements, regulatory burdens, business operating costs, and market entry barriers.

(a) CBD Stores

i. CBD Stores Introduction

Cannabidiol (CBD) is a compound found in marijuana. CBD can be derived from hemp or from non-hemp plants. CBD is available in several locations around Illinois. Hemp-derived CBD products can be found at numerous retail outlets such as large retailers, health food stores, and vape or smoke shops. CBD derived from a cannabis plant with a THC level above 0.3% by dry weight is legally available only at licensed medical marijuana dispensaries. In Illinois, individuals with a valid ID and/or medical marijuana card can purchase marijuana-derived oils, which may include CBD.

CBD stores face similar, but different, regulatory burdens, business operating costs, barriers to market entry, and a need to adapt to regulatory changes as do cannabis dispensaries. Like cannabis dispensaries, CBD stores are brick and mortar businesses that sell products derived from hemp, defined as having less than 0.3% Delta 9 THC content. However, CBD stores offer a narrower range of goods and avoid stricter regulations surrounding cannabis products with higher THC levels compared to cannabis dispensaries. These are not licensed cannabis dispensaries.

ii. CBD Stores Licensing Requirements

The only requirements to sell CBD in Illinois are to comply with all local zoning and business licensing regulations, register with the Illinois Department of Revenue, file and pay all applicable taxes, and file a certificate of resale (Form CRT-61) obtained from IDOR. This certificate allows Illinois businesses to avoid sales taxes on buying CBD products for resell. Sales tax is then

collected and paid when the CBD items are sold at retail. Certificates of resale should be updated at least every three years.[283]

(b) Hemp Growers

i. Hemp Grower Introduction

The Illinois Industrial Hemp Act stipulates no person may cultivate industrial hemp in the state without obtaining an Industrial Hemp Cultivation License from IDOA.[284] All seeds, clones, transplants and propagules used to cultivate industrial hemp in Illinois shall be certified under the Association of Official Seed Certifying Agencies (AOSCA) standards and guidelines for industrial hemp or shall be accompanied by a certificate of analysis from an accredited certified laboratory from a state with a regulated industrial hemp program that certifies the industrial hemp grown will not contain in excess of 0.3% THC.[285]

Hemp growers are a suitable comparison cohort for the craft grower and cultivation center license type because:

- Hemp growers, cannabis cultivation centers, and craft growers all cultivate cannabis plants.
- Hemp growers face regulatory burdens, business operating costs, and barriers to market entry that are similar—though not identical—to craft growers and cannabis cultivation centers.

The differing THC content in hemp versus cannabis, however, results in unique cultivation practices, regulatory constraints, and market dynamics between the two industries.

ii. Hemp Grower Licensing Requirements

To produce hemp under the State of Illinois Hemp plan, producers must apply for and be issued an industrial hemp cultivation license from IDOA.

All applications must be accompanied by a completed criminal history report. Applicants who have been convicted of any controlled substances related felony in the 10 years prior to the date of application are ineligible to obtain a license or registration. For applicants that are entities, a complete criminal history report is required for all key participants associated with the applicant who has executive managerial control of the entity. Key participants are a person or persons who have a direct or indirect financial interest in the entity producing hemp, such as an owner or partner in a partnership. A key participant also includes a person in a corporate entity at executive levels including the chief executive officer, chief operating officer, and chief financial officer. Key

[283] Illinois Department of Revenue, "Certificate of Resale," n.d., accessed March 31, 2024, https://tax.illinois.gov/businesses/crtinfo.html.
[284] Illinois General Assembly, 505 ILCS 89/10, "Industrial Hemp Act," 2018, accessed February 28, 2024, https://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=3910&ChapterID=40.
[285] *Id.*

participants do not include non-executive managers, except when that member exercises executive managerial control over hemp production.

The Department will issue or deny a license within 30 calendar days of receipt of a complete application and the associated fees. Once a license application has been approved, IDOA will issue the producer license. Licenses are not transferable in any manner. Licenses do not renew automatically and must be renewed every three years. If at any time there is a change to the information submitted in the license application, a license modification is required. All processors of industrial hemp must register with the Department.

Applicants who are denied may appeal the decision by submitting a Petition to the Director as proscribed in 8 Ill. Adm. Code Part 1, Subpart C, within 30 calendar days of receiving notice of the denial.

(c) Hemp Infusers/Manufacturers

i. Hemp Infusers/Manufacturers Introduction

Industrial hemp manufacturers are regulated by IDOA. Licensed cannabis cultivation centers and licensed craft growers may procure and/or process industrial hemp in the form of distillate or isolate. Licensed infusers may procure industrial hemp in the form of distillate or isolate. All processed hemp derivatives must be accompanied by a certificate of analysis showing potency levels for THC,[286] THCa,[287] CBD,[288] and CBDa.[289] A representative sample of all final products containing industrial hemp or hemp derivatives must undergo testing pursuant to CUMCPPA, the CRTA, and applicable administrative rules.

Hemp infusers/manufacturers are a suitable comparison cohort for the infuser and cultivation center license types because:

- Hemp infusers/manufacturers, cannabis cultivation centers and cannabis infusers all produce products infused with hemp or cannabis oil, such as edibles or lotions.
- As with hemp growers and CBD stores, licensed hemp manufacturers deal with lower THC content hemp while licensed cannabis cultivation centers and infusers produce products with higher THC levels.

Hemp infusers/manufacturers face similar—though not identical and significantly less—regulatory burdens, business operating costs, and barriers to market entry to cannabis cultivation centers and infusers.

[286] Delta-9-tetrahydrocannabinol (THC) is a cannabinoid that is derived from THCa.
[287] Tetrahydrocannabinol acid (THCa) is a cannabinoid found in cannabis. With heat or decarboxylation, THCa can turn into THC with a minimal loss of volume (statutorily, Illinois uses 0.877 as the conversion ratio). Typical decarboxylation is through smoking, vaping, or cooking).
[288] Cannabidiol (CBD) is a non-psychoactive cannabinoid that is derived from CBDa.
[289] Cannabidiolic acid (CBDa) is a non-psychoactive cannabinoid found in cannabis.

ii. Hemp Infusers/Manufacturers Licensing Requirements

In Illinois there are no license requirements to process industrial hemp, however one must register with IDOA as a processor. Any licensed infuser that intends to use hemp derivatives must apply for, and be issued, a hemp processor's registration through IDOA before processing can occur.

(d) Liquor Stores

i. Liquor Store Introduction

Liquor stores are regulated by the Illinois Liquor Control Commission (ILCC) under the Liquor Control Act of 1934.[290] The Licensing Division of the ILCC is responsible for reviewing state liquor applications and issuing the renewal of state liquor licenses every month. There are 39 different license categories, of which Liquor stores are regulated under Article V. Licenses, Section 5-1(d) Retailers. Selling alcohol without a license is a criminal offense. Licenses and permits required to operate a retail liquor business are

1. A local retail liquor license,
2. A State of Illinois retail liquor license,
3. An Illinois Business Tax number,
4. A federal employer identification number (FEIN), and
5. Any other locally required licenses or permits.[291]

In an incorporated Illinois city, town or village, the mayor or president of the board of trustees is the local liquor commissioner with jurisdiction and full licensing authority within the municipality's corporate limits. The city council or local board has the authority to

1. determine, by ordinance, the number, kind and classification of licenses (e.g., beer or wine only; hours of operation),
2. determine whether a license shall be issued,
3. impose reasonable regulations and restrictions, as the public good and convenience requires.

A Retailer's Liquor License allows the licensee to sell and offer for sale at retail alcoholic liquor for use or consumption, not for resale, only at the premises specified in the license. A retailer's licensee may be designated by the State Commission as

1. an on-premises consumption retailer,
2. an off-premise sale retailer, or

[290] Illinois General Assembly, 235 ILCS 5/, "Liquor Control Act of 1934," n.d., accessed February 28, 2024, https://law.justia.com/codes/illinois/2022/chapter-235/act-235-ilcs-5.

[291] Illinois General Assembly, 235 ILCS 5/7-1, "Liquor Control Act of 1934," n.d., accessed February 28, 2024, https://www.ilga.gov/legislation/ilcs/documents/023500050K7-1.htm.

3. a combined on-premise consumption and off premise sale retailer. A retail licensee may sell alcoholic liquors to a special event retailer licensee and may ship alcoholic liquor from a licensed retailer to a consumer via a common carrier.

A license remains valid for one year, unless revoked or suspended as outlined in the Act. In general, a licensee may not be fined, nor can their license be suspended, revoked, or denied without providing them with at least three days' written notice and an opportunity to respond.

Liquor stores are a suitable comparison cohort for the dispensary license type because:

- Liquor stores face similar hurdles from municipal zoning restrictions as cannabis dispensaries do.
- As with cannabis dispensaries, in many cities, liquor stores are found primarily in districts zoned for commercial use and low-income neighborhoods.

Liquor licenses are administered by the Illinois Liquor Control Commission, which has a licensing process. The process is a state-mandated application and registration and is therefore similar—thought not identical—to the cannabis license process. Notably, liquor licenses are not limited by statute like cannabis licenses. Liquor licensing is therefore not a competitive process, unlike cannabis licensing.

ii. Liquor Licensing Requirements

All applicants for licensing as a liquor retailer must complete the required application, respond to all questions on the application, furnish all required supporting documents, and submit proper payment. Failure to do so will result in the rejection of the application and non-issuance of a state liquor license. A review of the application by the ILCC Licensing staff typically takes one to five business days to complete. The cost of a retail liquor license is $750.

Persons' ineligible to be licensed include non-residents (sole proprietors only), non-U.S. citizens, convicted felons, non-filers of Illinois tax returns, licensees whose license has been revoked for cause, and partnerships and corporations not meeting the license requirements. A local liquor commissioner has the discretion to consider other matters not specifically described in these sections of the Act when determining whether to issue a license.

Retailer's licenses will not be renewed unless the applicant provides documentation proving all municipal, county, and state taxes have been paid. Liquor licenses may be transferred to another premises with submission of an application and appropriate permission. Licenses may not be transferred to another person without that person being determined eligible to hold a license.

(e) Vaping/Smoke Shops

i. Vaping/Smoke Shop Introduction

Illinois law requires Vaping/Smoke shops to obtain a tobacco products distributor license and a cigarette and tobacco retailers' license (CTR) under the Tobacco Products Tax Act (35 ILCS 143). Shops must also register as retailers under the Retailers' Occupation Tax Act (35 ILCS120). Tobacco licenses are regulated by the Illinois Department of Revenue (IDOR).

Vaping/Smoke shops must obtain a distributor's license from IDOR if the business activities fall into one of the three categories listed:

- any manufacturers or wholesalers in Illinois in the business of selling, exchanging, or distributing tobacco products to retailers or consumers in Illinois;
- out-of-state manufacturers or wholesalers in the business of selling, distributing, shipping, or transporting tobacco products to retailers or consumers in Illinois, as long as they maintain a place of business in Illinois; or
- any retailer who receives tobacco products on which the tax has not been or will not be paid by a distributor, which means some registered retailers also need to register as distributors.

Vaping shops and smoke shops are a suitable comparison cohort for the dispensary license type because, as with CBD Stores, vaping and smoke shops face similar but lesser regulatory burdens, business operating costs, barriers to market entry, and need to adapt to regulatory changes as cannabis dispensaries.

ii. Tobacco Distributor Licensing Requirements[292]

Applicants are required to be bonded during the entire period covered by the license in an amount not to exceed three times the amount of the applicant's average monthly tax liability, or $50,000, whichever amount is lower. A separate application for licenses shall be made, and bond filed, for each place of business at which a person who is required to procure a distributor's license proposes to engage in business as a distributor under this Act. Applications for tobacco distributor licenses requires the following information:

1. The name of the applicant.
2. The address of the location at which the applicant proposes to engage in business as a distributor of tobacco products.
3. Other information the Department may reasonably require.

The license shall be issued by IDOR without charge or cost to the applicant. No license is issued to applicants who are in default to the State of Illinois for monies due under the Tobacco Tax Act

[292] Illinois General Assembly, "35 ILCS 143/10-20," n.d., accessed April 1, 2024, https://www.ilga.gov/legislation/ilcs/documents/003501430K10-20.htm.

or any other tax Act administered by IDOR. No license issued under the Tobacco Tax Act is transferable or assignable.

iii. Tobacco Retail Licensing Requirements[293]

Tobacco retailers must have a valid license from IDOR as well. Applications for licenses are submitted electronically to IDOR. Each applicant is required to electronically submit the following information:

1. the name and address of the applicant.
2. the address of the location at which the applicant proposes to engage in business as a retailer of tobacco products in this State.
3. Other additional information as the Department may lawfully require by its rules and regulations.

The annual tobacco retailer's license fee is $75 for each place of business and is electronically submitted at the time of application. The fee is deposited into the Tax Compliance and Administration Fund and used for the cost of tobacco retail inspection and with at least two-thirds of the money being used for contraband tobacco and tobacco smuggling operations and enforcement. Licenses are valid for a period of one year after issuance unless sooner revoked, canceled or suspended. No license is transferable or assignable. IDOR will not issue a license to a retailer unless the retailer is also validly registered under the Retailers Occupation Tax Act.

The following are ineligible to receive a retailer's license under the Tobacco Tax Act:

1. a person who has been convicted of a felony under any federal or State law for smuggling cigarettes or tobacco products or tobacco tax evasion, if the Department, after investigation and a hearing if requested by the applicant, determines that such person has not been sufficiently rehabilitated to warrant the public trust; and
2. a corporation, if any officer, manager or director thereof, or any stockholder or stockholders owning in the aggregate more than 5% of the stock of such corporation, would not be eligible to receive a license under this Act for any reason.

(f) Cannabis Testing Labs

i. Cannabis Testing Lab Introduction

Any laboratory seeking to test and analyze adult use cannabis must be approved by IDOA, per 410 ILCS 705/50-5(b)(1). The Department will approve a laboratory meeting the requirements outlined in the Cannabis Regulation and Tax Act. Laboratory applicants must mail a paper copy of the application and additional documentation plus a USB drive containing the same information to IDOA. No application fees are assessed.

[293] Illinois General Assembly, "35 ILCS 143/10-21," n.d., accessed April 1, 2024, https://www.ilga.gov/legislation/ilcs/documents/003501430K10-21.htm.

Cannabis testing labs are a suitable comparison cohort for the cultivation center license type because: Cannabis testing labs face similar regulatory burdens, business capital and operating costs, barriers to market entry, and need to adapt to regulatory changes as cannabis cultivation centers.

Like cannabis cultivation centers, cannabis testing labs require specific infrastructure investments, including sophisticated equipment and specialized personnel.

ii. Cannabis Testing Lab Licensing Requirements

IDOA requires all Cannabis Testing Labs to meet the following requirements:

1. The lab must be accredited by International Organization for Standardization (ISO) and has methods validated to ISO 17025 standards.
2. The lab is independent from all other persons involved in the cannabis industry in Illinois and no person with a direct or indirect interest in the laboratory has a direct or indirect financial, management or other interest in a dispensary, dispensary facility, cultivation center, certifying physician or any other entity that may benefit from the production, manufacture, dispensing, sale, purchase or use of cannabis.
3. The lab has employed at least one person to oversee and be responsible for the laboratory testing who has earned, from a college or university accredited by a national or regional certifying authority, at least:
    - A master's level degree in chemical or biological sciences and a minimum of two years post degree laboratory experience; or
    - A bachelor's degree in biological sciences and a minimum of four years post-degree laboratory experience.
4. The lab has attached a list of all analytical methods validated with a copy of the most recent annual inspection report granting validation of the aforementioned methods.
5. The lab has read and is familiar with Section 1000.510 of the Department's Compassionate Use of Medical Cannabis Administrative Rules (8 IAC 1000.510) and Section 55-5 of the Cannabis Regulation and Tax Act (410 ILCS 705/50-5), and will handle, test, or analyze each batch and or sample submitted to it and comply with all other requirements in accordance with each.

(g) Armored Cars/Trucking

Armored cars and trucking are a suitable comparison cohort for the transporter and cultivation center license type because:

- Armored car/trucking, cannabis cultivation centers and cannabis transporters have strict policies and procedures that are much more restrictive than transportation-related regulations for other industries.

- Cannabis transporters and cannabis cultivation centers are required to have a set number of personnel accompanying each shipment, similar to armored cars, and both cannabis transported and armored cars are required to have well-defined routes and controlled transports.

These requirements drive up expenses of cannabis transport and armored car transport above and beyond the transport of ordinary goods.

2. Cannabis License Applicants and Lottery Entrants

For our analysis, Illinois cannabis "applicants" are those that applied for but did not receive a license. "Lottery entrants" are those that entered the lottery but did not receive a license.[294] Due to none of our disparity ratios utilizing the lottery entrant comparison group, we present information for this comparison group here in the appendix for informational purposes only, rather than in the main body of the report.

Cannabis license applicants and lottery entrants are a suitable comparison group because comparing the cohort of those who wished to receive a cannabis license but did not successfully receive one with those that did receive a cannabis license illuminates the extent to which M/WBE businesses who wished to obtain a license were able to do so.

The below table presents the cannabis lottery participant availability results by race, ethnicity, gender, and M/WBE status. Only dispensaries held a lottery during the study period, so no other license types are shown.

Table IX-10. Availability Rate #7 [Unweighted] Cannabis Lottery Participants

License Type	Black	Asian	Indigenous	Hispanic	MBE	M/WBE	White Women	Non-M/WBE
Dispensary	42.1%	6.0%	0.0%	9.3%	61.2%	64.2%	3.0%	21.5%

Source: Nerevu analysis of IDFPR and IDOA data. Shares are calculated by aggregating the lottery participating application count by majority ownership demographics and dividing by total participating applications. E.g., 5 majority Black-owned dispensary lottery participating applications out of a total 10 dispensary lottery participating applications would equate to 50% availability.

3. Cannabis Arrests

Due to the fact that none of our final disparity ratios utilized the cannabis-related arrests comparison group, we present information for this comparison group here in the appendix, rather than in the main body of the report.

The CRTA allows for expungement, the erasing of the public record of a person's criminal history, for certain cannabis offenses. Free legal representation is available to help expunge records

[294] Only the dispensary license type has lottery entrants.

through a statewide, state-funded initiative. New Leaf Illinois is made up of 18 non-profit organizations throughout Illinois who provide free legal representation or legal information to people who want their cannabis convictions off their record.

The CRTA required certain cannabis-related arrest records created between 2013 and 2019 be expunged by January 1, 2021. Expungements have been granted for the following situations:

- Minor cannabis offenses, which are usually possession, manufacture, delivery, or intent of delivery of under 30 grams cannabis that did not result in conviction, are automatically expunged and removed from the public record. As of January 17, 2023, the Illinois State Police have expunged over 780,000 charges for minor cannabis offenses since July 2019.
- Minor cannabis offenses that resulted in a conviction—the person pled guilty or was found guilty by a court—may be pardoned by the Governor which expunges the record and removes the record from public databases. As of January 17, 2023, the Governor has pardoned 11,430 conviction records for minor cannabis offenses since July 2019.
- County State's Attorneys may request courts vacate and expunge convictions. As of January 17, 2023, 23,097 conviction records for minor cannabis offenses have been vacated and expunged since July 2019.

A majority of the expungements to date have been in Cook County (over 488,000 records). While the expungement process has been completed at the state level, many county clerks are still processing expungements at the local level and have until January 1, 2025, to expunge their arrest records.

Cannabis-related arrests are a suitable comparison cohort for all cannabis license types because:

- Comparing the cohort of those affected by cannabis-related offenses to current cannabis licensees illuminates the extent to which the communities most impacted by cannabis criminalization are represented in the legal cannabis market. Comparison of those affected by past cannabis policies with the beneficiaries of its current legal status, permits an assessment of the cannabis industry's broader societal impact.
- The cannabis industry's growth in Illinois is intrinsically linked to its historical context of prohibition and criminalization: The legalization of cannabis in Illinois presents not just an economic and regulatory turning point but also an opportunity to address historical injustices associated with cannabis prohibition. The Cannabis Regulation and Tax Act acknowledges that cannabis criminalization disproportionately impacted certain communities, especially Black and Hispanic populations. In line with the state's compelling interest to repair the harms caused by the prohibition of cannabis, it is essential to consider the broader societal implications of legalization.
- Arguably, there is no clearer representation of these implications than the contrast between those previously penalized for cannabis offenses and the new beneficiaries of its legal market. Those with cannabis-related criminal records often face barriers to

employment, housing, and other opportunities. A comparison can identify if systemic barriers persist, preventing those most affected by prohibition from benefiting from legalization.

- A comparison can allow Illinois to evaluate the efficacy of its restorative justice efforts, such as expungement initiatives, and identify areas for further action, such as refining licensing processes to directing additional funds from cannabis sales towards community programs in areas historically burdened by cannabis-related offenses.

The below table presents the cannabis arrest availability results by race, ethnicity, gender, and M/WBE status. The cannabis arrest comparison group is not broken down by license type because it is used as a comparison group for all license types.

Table IX-11. Availability Rate #8 [Unweighted] Cannabis Related Arrests

License Type	Black	Asian	Indigenous	Hispanic	MBE	M/WBE	White Women	Non-M/WBE
All	43.8%	0.1%	0.0%	2.5%	46.6%	51.8%	5.2%	18.3%

Source: AEC analysis of public record data for arrests occurring July 2019–January 17, 2023.[295, 296,297,298,299,300,301,302,303,304,305,306,307,308,309,310,311] *Shares are calculated by aggregating the cannabis charge count by demographics and dividing by the total number of cannabis related charges. E.g., 5 cannabis related charges for Black individuals out of a total 10 cannabis related charges would equate to 50% availability.*

E. National Surveys

1. American Community Survey (ACS)

The American Community Survey (ACS) is an annual survey conducted by the U.S. Census Bureau that collects data on the demographic, social, economic, and financial characteristics of the U.S. population. We used ACS data for Business Ownership and Wage Disparity analysis.

[295] http://50.77.170.147/NewWorld.InmateInquiry/IL0580000
[296] http://inmate.co.kendall.il.us/NewWorld.InmateInquiry/kendall/
[297] http://inmates.winnebagosheriff.com/
[298] http://publicsearch1.chicagopolice.org/Arrests
[299] https://apps03.lakecountyil.gov/inmatesearchmobile/SearchResults.aspx
[300] https://illinoisprisontalk.org/index.php
[301] https://melroseparkpd.com/welcome-to-the-melrose-park-police-department/press-releases/press-releases-agreed-terms/
[302] https://peoriail.mugshots.zone/
[303] https://records.sangamoncountycircuitclerk.org/
[304] https://www.glenellyn.org/Archive.aspx
[305] https://www.huntley.il.us/departments/police/police_reports.php
[306] https://www.idoc.state.il.us/subsections/search/EarlyCNER2_6.asp
[307] https://www.invillapark.com
[308] https://www.kanesheriff.com/Pages/Detainee-Search.aspx
[309] https://www.mchenrysheriff.org/wp-content/uploads/pdf-uploads/InmateSearch_ByDate.pdf
[310] https://www.oglecountyil.gov/departments/sheriff/daily_news_release.php
[311] https://www.wheaton.il.us/Archive.aspx

For these analyses, we utilize the 2021 5-Year ACS Public Use Microdata Sample (PUMS) which allows us to consider an individual's personal characteristics like educational attainment, age, race, ethnicity, gender, and marital status. Relative to the 1-Year estimates, 5-Year estimates contain larger sample sizes that allow for more accurate analysis of small populations, as increased sample sizes help to reduce error in estimation processes.

2. Survey of Household Economics and Decision-Making (SHED)

Survey of Household Economics and Decision-Making (SHED) is conducted annually to assess the economic well-being and financial stability of adults in the United States. SHED data include respondent state, urban/rural designation, demographic characteristics, such as age, sex, race and/or ethnicity, and marital status, in addition to several measures of economic and financial wellbeing. We used SHED data for Business Loan Denial analysis.

SHED uses its own occupational classification system to identify industries and group them into four main sectors: agriculture, manufacturing, services, and information and technology. We selected 11 industries across the agricultural, manufacturing and construction, and services sectors as cannabis-related SHED industries (see Table IX-12).

Table IX-12. Cannabis-Related SHED codes

Industry Code	Sector	2020-22 Industry Definition	License Type Associations
1	Agriculture	Farming/Agriculture, Forestry, Fishing	Craft Grower, Cultivation
5	Manufacturing and Construction	Factory, Manufacturing, and Woodworking	Cultivation, Infuser
6	Manufacturing and Construction	Wholesale Trade	Craft Grower, Cultivation
7	Services	Retail/Stores/Shopping	Dispensary
8	Services	Delivery Services, Warehousing, and Trade	Cultivation, Transporter
9	Services	Information (including Publishing, Media)	Cultivation, Transporter
16	Services	Health Care (including Elder Care, Home Health Care)	Dispensary
18	Services	Accommodation and Food Services	Cultivation, Infuser
23	Services	Administrative and Support Services	Cultivation, Transporter
25	Services	Repairs and Maintenance	Cultivation, Transporter
26	Services	Personal Services (including Beauty)	Dispensary

Source: The Federal Reserve Board. 2020–2022. SHED.

Of the 1,334 Illinois SHED respondents between 2020 and 2022, 462 worked in one of these cannabis-related SHED industries (see Table IX-13).

Table IX-13. Illinois SHED Respondents Working in a Cannabis-Related Industry

Industry Code	# of Respondents	% of Respondents
1	10	2.2%
5	79	17.1%
6	9	1.9%
7	93	20.1%
8	35	7.6%
9	24	5.2%
16	74	16.0%
18	23	5.0%
23	80	17.3%
25	12	2.6%
26	23	5.0%
Total	**462**	**100.0%**

Source: The Federal Reserve Board. 2020–2022. SHED.

Table IX-14 shows the breakdown of all 1,334 Illinois SHED respondents.

Table IX-14. Illinois SHED Respondents

Industry	# of Respondents	% of Respondents
Worked in cannabis-related SHED industry	462	34.6%
Did not work in cannabis-related SHED industry	396	29.7%
Not asked about industry classification	472	35.4%
Missing observation of industry classification	2	0.1%
Refused to provide industry classification	2	0.1%
Total	**1,334**	**99.9%**

Source: The Federal Reserve Board. 2020–2022. SHED.

Table IX-15 shows the breakdown of Illinois SHED respondents by associated license type.

Table IX-15. Illinois SHED Respondents Working in a Cannabis-Related Industry by Associated License Type

License Type Association	# of Respondents	% of Respondents
Dispensary	171	37.0%
Craft Grower	19	4.1%
Infuser	117	25.3%
Transporter	155	33.5%
Cultivation Center	291	63.0%

Source: The Federal Reserve Board. 2020–2022. SHED.
Note: Sample includes loan applicants who have an industrial classification.

3. Annual Business Survey (ABS)

Among the economic growth data sources are the Kauffman Firm Survey, County Business Patterns, Business Dynamic Statistics, Annual Business Survey (ABS), and the Quarterly Workforce Indicators (QWI) which include information that allows examination of growth indicators by race, ethnicity, and gender in 2019 or later (the year in which the State of Illinois legalized cannabis). The assessment of patterns of discrimination in economic growth indicators presented in this study utilizes the ABS, which surveys businesses and collects information on business-owner characteristics, rather than the QWI, which surveys workers. We use ABS data for Business Growth Indicator analysis.

The ABS is a joint project between the Census Bureau and the National Science Foundation's National Center for Science and Engineering Statistics. The ABS provides economic and demographic characteristics for employer firms and business owners including race, ethnicity, and gender. The ABS is released annually with finalized data currently available for 2017–2020. Each survey cycle uses the previous calendar year as the reference period. For example, the 2021 ABS provides data from calendar year 2020. To be included in the target population for the ABS, a firm must "allocate most of its annual domestic payroll to for-profit entities" and include at least one establishment that "paid employees based on the company's Internal Revenue Service Form 941." Included firms must also be classified as an in-scope NAICS industry, be physically located in the United States, and be in business at the end of the survey year.

The 2021 survey included approximately 300,000 employer firms in the United States out of a total of approximately 4.9 million firms, a smaller sample size than was collected in the initial survey year, 2018, which included nearly 850,000 employer firms out of an in-scope population of 4.6 million firms. The total number of employees for each cannabis-related industry shows that Black- and Hispanic-owned businesses had the lowest number of employees in nearly all industries (see Table IX-16). White-owned businesses had the greatest number of employees of all demographic groups, while male-owned businesses had more employees compared to female-owned businesses across all industries.

Table IX-16. Illinois Employees by Industry and Demographic Groups

NAICS	Industry	Black	Hispanic	White	Male	Female	Veteran	All Business-Owners
111	Crop Production	-	-	-	-	-	-	-
115	Agriculture Support	-	10	750	750	175	375	1,750
311	Food Manufacturing	300	4,020	36,865	26,711	8,022	875	82,477
325	Chemical Manufacturing	314	50	11,208	11,097	834	375	46,319
339	Miscellaneous Manufacturing	10	10	17,500	17,500	1,750	17,500	37,500
424	Nondurable Wholesalers	37	3,750	45,506	39,506	17,500	7,500	111,285
484	Truck Transportation	375	3,750	55,613	46,718	6,468	7,500	91,230
488	Transportation Support	60	187	22,205	19,562	1,750	1,750	43,062
492	Couriers and Messengers	10	375	6,682	8,168	430	1,750	50,753
561	Administrative Services	17,500	14,173	298,178	254,064	57,527	14,986	456,089
445	Food and Beverage Stores	60	7,500	50,879	46,472	17,500	175	124,001
446	Health and Personal Care Stores	3,750	750	7,500	4,249	1,750	175	49,104
453	Miscellaneous Store Retailers	60	175	17,500	17,500	4,006	15	37,500
N/A	**Illinois Economy**	**53,802**	**89,491**	**2,398,051**	**1,940,076**	**466,116**	**154,151**	**5,351,502**

Source: U.S. Census Bureau. 2020. "Annual Business Survey" [Table: AB2000CSA01].

Table IX-17. Illinois Employee Share by Industry and Demographic Groups

NAICS	Industry	Black	Hispanic	White	Male	Female	Veteran	All Business-Owners
111	Crop Production	-	-	-	-	-	-	-
115	Agriculture Support	-	1%	43%	43%	10%	21%	100%
311	Food Manufacturing	0.4%	5%	45%	32%	10%	1%	100%
325	Chemical Manufacturing	1%	0.1%	24%	24%	2%	1%	100%
339	Miscellaneous Manufacturing	0.03%	0%	47%	47%	5%	47%	100%
424	Nondurable Wholesalers	0%	3%	41%	35%	16%	7%	100%
484	Truck Transportation	0.4%	4.1%	61%	51%	7%	8.22%	100%

NAICS	Industry	Black	Hispanic	White	Male	Female	Veteran	All Business-Owners
488	Transportation Support	0.1%	0%	52%	45%	4%	4%	100%
492	Couriers and Messengers	0.0%	0.7%	13%	16%	1%	3%	100%
561	Administrative Services	3.84%	3%	65%	56%	13%	3%	100%
445	Food and Beverage Stores	0%	6%	41%	37%	14%	0%	100%
446	Health and Personal Care Stores	8%	2%	15%	9%	4%	0%	100%
453	Miscellaneous Store Retailers	0%	0%	47%	47%	11%	0%	100%
N/A	**Illinois Economy**	**1%**	**2%**	**45%**	**36%**	**9%**	**3%**	**100%**

Source: U.S. Census Bureau. 2020. "Annual Business Survey" [Table: AB2000CSA01].

F. Economic Regression Methodology

In addition to and separately from the Illinois cannabis industry disparity analysis, we conducted four statistical analyses that go beyond the assessment of disparities among adult use cannabis licensees to perform a broader analysis of disparities in cannabis- related industries and the Illinois economy as a whole:

1. Assessment of disparity in business ownership
2. Assessment of disparity in business loan denial
3. Assessment of disparity in business growth indicators (such as the number of employees or annual payroll)
4. Assessment of disparity in wages

An economy-wide statistical analysis is a common part of disparity studies. Its purpose is to identify disparities in the wider economic context in which the subject sector (here, the cannabis industry) is embedded. Each statistical analysis adapts methods used in existing disparity studies (as described below).

In accordance with best practices in econometric analysis, post-estimation tests were conducted to assess the reliability of the regression model results. Post-estimation tests are considered best practice in empirical research and do not compromise the validity of regression results and only serve as supplementary assessments to account for data limitations. These analyses provide valuable information about the reliability and significance of the estimated coefficients to gauge the precision, validity, and credibility of the findings.

By incorporating these additional tests, the robustness of the regression model is assessed and, often, improved—a step that is often missing from previous disparities studies.[312] The results of post-estimation tests can be found in Appendix I. Analysis of Reliability.

1. Business Ownership Disparity Methodology

We conducted an analysis of disparities in business ownership in the Illinois economy generally and cannabis-related industries specifically to identify patterns across different groups of business owners .

In addition to past disparity studies, the wider economic literature related to predicting business ownership provides best practices for this type of analysis. Demographic characteristics like gender, race and/or ethnicity, marital status, and age, inherited capital, employment status, and citizenship can have differing impacts on the likelihood of a particular individual owning a business.[313,314,315,316] Personality traits such as risk aversion, overconfidence, and self-efficacy also influence the likelihood that a particular worker might own a business.[317]

This analysis utilizes the 2021 5-Year ACS Public Use Microdata Sample (PUMS) data.

(a) Business Ownership Models

Business ownership disparity analysis methodologies used in past disparity studies include probit and logistic regression model estimation. Both probit and logistic models are used in cases where the dependent variable (in this case, business ownership) is a binary variable (that is, true or not true, 0 or 1) and estimate the effect of worker characteristics on the probability of business ownership. The models allow researchers to assess how each characteristic predicts the outcome, controlling for all the other factors included in the model. However, the models differ in the assumed link function[318] between the random components (the probability distribution of the dependent variable) and the systematic component (the combination of independent variables).

[312] L. Halsey, "The Reign of the P-Value Is over: What Alternative Analyses Could We Employ to Fill the Power Vacuum?," *Biology Letters* 15, no. 20190174 (2019), https://royalsocietypublishing.org/doi/10.1098/rsbl.2019.0174.

[313] N. Simoes, N. Crespo, and S.B. Moreira, "Individual Determinants of Self-employment Entry: What Do We Really Know?," *Journal of Economic Surveys* 30, no. 4 (2016): 783–806, accessed February 28, 2024, https://doi.org/10.1111/joes.12111.

[314] D.G. Blanchflower and A.J. Oswald, "What makes an entrepreneur?," *Journal of Labor Economics* 16, no. 1 (1998): 26–60, accessed February 28, 2024, https://www.nber.org/system/files/working_papers/w3252/w3252.pdf.

[315] S.C. Parker, "Entrepreneurship among Married Couples in the United States: A Simultaneous Probit Approach," *Labour Economics* 15, no. 3 (2008): 459–81, accessed February 28, 2024, https://docs.iza.org/dp1712.pdf.

[316] N. Simoes, N. Crespo, and S. Moreira, "Individual Determinants of Self-employment Entry: What Do We Really Know?", *Journal of Economic Surveys* 30,(4), May 25, 2015, accessed February 28, 2024, https://onlinelibrary.wiley.co.

[317] *Id.*

[318] Pennsylvania State University, "6.1 - Introduction to GLMs | STAT 504," n.d., https://online.stat.psu.edu/stat504/lesson/6/6.1.

The probit model assumes a normal cumulative distribution, whereas the logistic model uses a logit function.[319]

Consensus in the economic literature suggests probit and logistic models produce similar results, making the choice of model a matter of preference.[320] Our study employs probit methodology, because it is consistent with past Illinois-specific analyses IDOT 2011 and IDOT 2017.[321,322]

(b) Illinois Economy-Wide Sample

Based on the methods developed in existing disparity studies and the economic literature on wage estimation, we developed a probit regression model to assess patterns of discrimination in business ownership in Illinois in 2021 (see Equation IX-1):

Equation IX-1. AEC Business Ownership Disparity Model

$$BusinessOwner_i = \beta_1 Black_i + \beta_2 Hispanic_i + \beta_3 Asian_i + \beta_4 AdditionalRaces_i + \beta_5 Female_i + \beta_6 CollegeDegree_i + \beta_7 Married_i + \beta_8 Children_i + \beta_9 Experience_i + \beta_{10} Citizenship + \alpha Industry_i + \varepsilon_i$$

The specification includes variables that take the form 0 or 1 (called "dummy" variables when yes/no is simply marked by 0 or 1), dependent on each $worker_i$, to indicate a worker's race and/or ethnicity, gender, marital status, citizenship, and educational attainment. This model allows for estimates of the percentage change in probability of business ownership for workers that are Black, Hispanic, Asian, or additional races, and/or female compared to individuals that identify as White, non-Hispanic and male, holding all else constant.

The dummy variable for obtaining a college degree estimates the difference in earnings for those with a degree, compared to those with lower levels of educational attainment. Variables for marital status and having a child under six capture possible effects on wages from reduced participation in the labor force. The coefficients that are estimated by the model using the industry dummy variables are represented in the equation by vector α.

As workers gain more experience, wages are predicted to increase; however, at a certain age, experience begins to impact wages less as workers approach retirement. Since experience is not

[319] E.D. Hahn and R. Soyer, "Probit and Logit Models: Differences in the Multivariate Realm," *The Journal of the Royal Statistical Society, Series B* 67 (2005): 1–12, https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=c45e142a45851c8b4da074ac38fd56bb5ff78749.

[320] *Id.*

[321] Mason Tilman Associates, "Illinois Department of Transportation and Illinois Tollway Disadvantaged Business Enterprises Disparity Study Vol 2," September 2011, accessed February 28, 2024, https://www.illinoistollway.com/documents/20184/87215/Final+Disparity+Study+Report.pdf/bf922c9f-5cb8-4419-bf53-c5ab6d180f9c?version=1.0.

[322] BBC Research & Consulting, "2017 Illinois Department of Transportation Disparity Study," 2018, accessed February 28, 2024, https://idot.illinois.gov/Assets/uploads/files/Doing-Business/Reports/OBWD/DBE/2017%20IDOT%20Disparity%20Study_Final%20Report.pdf.

available within the ACS PUMS, we approximate it following standard econometric practice as a worker's age minus

- the number of years in school, and
- six (the typical age that an individual starts grade school).

For example, experience for a 30-year-old worker with a bachelor's degree would be calculated as: 30 years of age less 16 years in school less 6 years not enrolled in school = 8 years. While job titles are not available in the ACS PUMS, we expect the impact job titles have on wages to be captured by the experience variable.

The vector of variables, $Industry_i$, contains dummy variables indicating the industry in which the i^{th} individual is employed, allowing the model to identify differences in average annual wages across industries, holding all other factors constant. Industries are identified based on the twenty-four 2-digit North American Industry Classification System (NAICS).

The model also uses the same data: 2021 ACS PUMS 5-Year but includes different independent and dependent variables, including estimates on race and/or ethnicity, gender, educational attainment, marital status, having young children, age, experience, and citizenship. The sample is composed of workers ages 18 to 65 within Illinois. Within the sample, business owners are identified as workers that are self-employed in their own incorporated or unincorporated business.

Table IX-18 presents a description of the outcome we are trying to estimate.

Table IX-18. Business Ownership Dependent Variable Description

Dependent Variable	Description	Variable Form
Business owner	Worker categorized as being self-employed	Dummy variable (1/0)

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates.

Table IX-19 presents descriptions of the characteristics that affect the outcome.

Table IX-19. Business Ownership Independent Variable Descriptions[323]

Independent Variable	Description	Variable Form
Black	Worker categorized as Black	Dummy variable (1/0)
Hispanic	Worker categorized as non-White Hispanic	Dummy variable (1/0)
Asian	Worker categorized as Asian	Dummy variable (1/0)
Additional Race	Worker categorized as an additional race	Dummy variable (1/0)

[323] We did not include experience^2 here as we did in the wage disparity analysis because we had no theoretical/literature support to do so.

Independent Variable	Description	Variable Form
Female	Worker categorized as female	Dummy variable (1/0)
College Degree	Worker categorized as having bachelor's degree or higher	Dummy variable (1/0)
Married	Worker categorized as married	Dummy variable (1/0)
Children	Worker categorized as having children under 6	Dummy variable (1/0)
Experience	Estimate of worker experience based on age and education	Continuous
Citizenship	Worker categorized as a citizen	Dummy variable (1/0)

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates.

The resulting economy wide sample is composed of almost 314,000 Illinois workers: 9% own a business, nearly half of all workers in the dataset are women, 8% are Black, 13% are Hispanic, and 6% are Asian (see Table IX-20). The economy-wide sample is roughly comparable to the state's total population but has a lower share of Black residents; according to U.S. Census tabulations for the 2021 ACS, Illinois residents are 14% Black, 18% Hispanic and 6% are Asian. (Note: The economy-wide sample is expected to differ from estimates for Illinois residents as a whole because the economy-wide sample is limited to the non-military, non-incarcerated working population, aged 18 to 65 years old, that do not work in the public sector).

Table IX-20. Illinois Economy-Wide Business Ownership Data Set Description

Variable	Mean	Standard Deviation	Minimum	Maximum
Owner	8.6%	0.28	0	1
Black	8.5%	0.28	0	1
Hispanic	13.0%	0.34	0	1
Asian	5.5%	0.23	0	1
Additional Race	2.3%	0.15	0	1
Female	49.3%	0.50	0	1
College Degree	47.3%	0.50	0	1
Married	54.3%	0.50	0	1
Has children under 6	3.7%	0.19	0	1
Age	42.0	13.70	18	65
Experience	22.2	13.94	0	59
Citizenship	93.4%	0.25	0	1

Variable	Mean	Standard Deviation	Minimum	Maximum
Agriculture, Forestry, Fishing and Hunting	1.2%	0.11	0	1
Mining, Quarrying, and Oil and Gas Extraction	0.2%	0.05	0	1
Utilities	0.8%	0.09	0	1
Construction	6.0%	0.24	0	1
Manufacturing	12.7%	0.33	0	1
Wholesale Trade	3.0%	0.17	0	1
Retail Trade	10.9%	0.31	0	1
Transportation and Warehousing	5.8%	0.23	0	1
Information	1.8%	0.13	0	1
Finance and Insurance	5.7%	0.23	0	1
Real Estate and Rental and Leasing	1.5%	0.12	0	1
Professional, Scientific, and Technical Services	7.9%	0.27	0	1
Management of Companies and Enterprises	0.2%	0.04	0	1
Administrative and Support and Waste Management and Remediation Services	4.1%	0.20	0	1
Educational Services	10.8%	0.31	0	1
Health Care	14.1%	0.35	0	1
Arts, Entertainment, and Recreation	2.2%	0.15	0	1
Accommodation and Food Services	6.4%	0.25	0	1
Other Services (except Public Administration)	4.7%	0.21	0	1
Public Administration	0.0%	0.00	0	0

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates. Note: Number of observations 314,378. Industry groupings based on U.S. Census Bureau practice for grouping 2-digit NAICS codes.[324]

Illinois workers employed in the Healthcare and Social Assistance sector make up the largest share of the sample (14% of all Illinois workers), followed by Manufacturing (13%), Retail Trade and Education Services (11% each), and Professional, Scientific, and Technical Services (8%) as shown in Table IX-21.

[324] U.S. Census, "Economic Census: NAICS Codes & Understanding Industry Classification Systems," August 19, 2022, Available at: https://www.census.gov/programs-surveys/economic-census/year/2022/guidance/understanding-naics.html

Together, these five sectors account for more than half of all workers. The Healthcare and Social Assistance industry is not included as a control in the regression analysis because including all industry dummies will cause perfect collinearity. Instead, Healthcare and Social Assistance results are observed wherever the other industry dummies are all absent.

Table IX-21. Illinois Economy-Wide Business Ownership Top Industry Coverage

Industry	Share of Total Workers
Healthcare and Social Assistance	14%
Manufacturing	13%
Retail Trade	11%
Educational Services	11%
Professional, Scientific, and Technical Services	8%

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates. Note: Sample includes workers aged 18–65 who are not unemployed or in the military. Number of observations: 314,378.

(c) Illinois Cannabis-Related Industry Sample

To compare disparities in the probability of business ownership for cannabis-related industries, we conducted five separate regression analyses—one for each associated license type (see Equation IX-2 where the subscript n indicates the i^{th} individual in the n^{th} license type). Table IX-46 shows dummy variables for race and/or ethnicity include Black, Hispanic, and additional races (composed of Asian, Indigenous peoples, other and multi-race workers).

Equation IX-2. AEC Cannabis-Related Business Owner Disparity Model

$$BusinessOwner_{ni} = \beta_1 Black_{ni} + \beta_2 Hispanic_{ni} + \beta_3 AdditionalRace_{ni} + \beta_4 Citizenship_{ni} + \beta_4 Female_{ni} + \beta_5 CollegeDegree_{ni} + \beta_6 Married_{ni} + \beta_7 Children_{ni} + \beta_8 Experience_{ni} + \beta_9 Citizenship_{ni} + \varepsilon_{ni}$$

Table IX-22 presents a summary of the study variables (but not the results of the regression analysis itself).[325]

[325] See Appendix G. Economic Regression Results for regressions results.

Table IX-22. Cannabis-Related Industry PUMS Observations

License Type Association	Number of 2021 ACS PUMS 5-Year Estimates Observations
Dispensary	11,663
Craft Grower	7,489
Infuser	11,936
Transporter	21,055
Cultivation Center	40,480

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates.

Table IX-23. Business Ownership Variable Summary Statistics for Dispensary-Related Industries

Variable	Mean	Standard Deviation	Minimum	Maximum
Business owner	5%	0.23	0	1
Black	8%	0.27	0	1
Hispanic	14%	0.34	0	1
Additional races	9%	0.29	0	1
Female	57%	0.49	0	1
College degree	33%	0.47	0	1
Married	42%	0.49	0	1
Has children under 6	4%	0.20	0	1
Age	38.8	14.90	18	65
Experience	19.6	15.01	0	59
Citizenship	94%	0.23	0	1

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates.

Table IX-24. Business Ownership Variable Summary Statistics for Craft Grower-Related Industries

Variable	Mean	Standard Deviation	Minimum	Maximum
Business owner	19%	0.40	0	1
Black	3%	0.18	0	1
Hispanic	11%	0.31	0	1
Additional races	4%	0.20	0	1
Female	28%	0.45	0	1

Variable	Mean	Standard Deviation	Minimum	Maximum
College degree	40%	0.49	0	1
Married	61%	0.49	0	1
Has children under 6	2%	0.14	0	1
Age	44.1	13.70	18	65
Experience	24.8	14.04	0	59
Citizenship	95%	0.22	0	1

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates.

Table IX-25. Business Ownership Variable Summary Statistics for Infuser-Related Industries

Variable	Mean	Standard Deviation	Minimum	Maximum
Business owner	2%	0.15	0	1
Black	8%	0.27	0	1
Hispanic	19%	0.39	0	1
Additional races	9%	0.28	0	1
Female	38%	0.49	0	1
College degree	41%	0.49	0	1
Married	59%	0.49	0	1
Has children under 6	2%	0.15	0	1
Age	44.1	12.8	18	65
Experience	24.8	13.3	0	59
Citizenship	89%	0.31	0	1

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates.

Table IX-26. Business Ownership Variable Summary Statistics for Transporter-Related Industries

Variable	Mean	Standard Deviation	Minimum	Maximum
Business owner	14%	0.35	0	1
Black	14%	0.35	0	1
Hispanic	19%	0.39	0	1
Additional races	5%	0.22	0	1

Variable	Mean	Standard Deviation	Minimum	Maximum
Female	34%	0.47	0	1
College degree	29%	0.45	0	1
Married	49%	0.50	0	1
Has children under 6	2%	0.15	0	1
Age	42.4	13.41	18	65
Experience	23.7	13.81	0	59
Citizenship	90%	0.30	0	1

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates.

Table IX-27. Business Ownership Variable Summary Statistics for Cultivation Center-Related Industries

Variable	Mean	Standard Deviation	Minimum	Maximum
Business owner	12%	0.32	0	1
Black	10%	0.30	0	1
Hispanic	17%	0.38	0	1
Additional races	6%	0.24	0	1
Female	34%	0.47	0	1
College degree	34%	0.48	0	1
Married	54%	0.50	0	1
Has children under 6	2%	0.15	0	1
Age	43.2	13.31	18	65
Experience	24.2	13.71	0	59
Citizenship	90%	0.29	0	1

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates.

2. Business Loan Denial Disparity Methodology

We conducted an analysis of disparities in household loan denial rates in Illinois. To identify existing disparities in household loan denial rates in Illinois, this analysis uses a bivariate probit model to estimate the probability of loan denial across different demographic groups while controlling for factors that would influence loan denial (e.g., educational attainment and financial health) using SHED data.

To prepare the most comprehensive loan denial disparity methodology, we reviewed existing disparity studies and wider economic literature on predicting loan denial. The loan denial disparity analysis methodology adapts methods used in five existing disparity studies reviewed.[326]

The models and theories presented in these bodies of work provided the basis for the main model, as well as model extensions. The review of relevant economic literature indicates that loan denial rates vary substantially among loan applicants, as driven by many factors including credit history, income level, home ownership, and other demographic determinants such as gender and race and/or ethnicity.

Like past studies, this economy-wide and cannabis-related industry assessment relies on regression analysis to identify disparities in loan denial across different races, ethnicities, and gender in Illinois.

From the literature, there is evidence that incorporating location-specific controls, such as geographic boundaries and locally defined demographic characteristics, enhances the precision of loan denial prediction models.[327] In the absence of geographic information, locally-defined demographic characteristics can be used as a proxy for geographic identifiers.[328] Also, there is evidence that indirect measures of loan denial (for example, an applicant that chooses not to apply for a loan despite wanting a loan) elicit more accurate and complete responses in assessment of loan application outcomes.[329,330]

(a) Loan Denial Models

i. Bivariate Probit Model

A bivariate probit model is a statistical technique that is used to address self-selection bias in models with binary dependent variables. The bivariate probit model accounts for the correlation between likelihood of self-selection (i.e., the correlation between an Illinois business applying for a loan) and the likelihood of the outcome variable (i.e., the denial of a particular Illinois business' loan application) by taking into account any factors that might be influencing both the decision to apply and the loan denial outcome, such as credit worthiness or the financial health of a loan applicant.[331]

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[326] See Appendix J. Existing Disparity Studies Reviewed and Utilized.

[327] M. E. Schweitzer and B. Meyer, "Access to Credit for Small and Minority-Owned Businesses," *Economic Commentary*, no. 2022–04, March 22, 2022, accessed February 28, 2024, https://doi.org/10.26509/frbc-ec-202204.

[328] R.W. Bostic and K.P. Lampani, "Racial Differences in Patterns of Small Business Finance: The Importance of Local Geography," *Federal Reserve Bank of Chicago Proceedings No* II, 1999: 149–79, accessed February 28, 2024, https://www.fedinprint.org/item/fedhpr/38645.

[329] D. S. Karlan and J. Zinman, "List Randomization for Sensitive Behavior: An Application for Measuring Use of Loan Proceeds," *Journal of Development Economics*, Symposium on Measurement and Survey Design, 98, no. 1, May 1, 2012: 71–75, accessed February 28, 2024, https://doi.org/10.1016/j.jdeveco.2011.08.006.

[330] D. E. Keene, S. K. Cowan, and A. Castro Baker, "When You're in a Crisis Like That, You Don't Want People to Know: Mortgage Strain, Stigma, and Mental Health," *American Journal of Public Health* 105, no. 5, May 2015: 1008–12, accessed February 28, 2024, https://doi.org/10.2105/AJPH.2014.302400.

[331] *Id.*

While many loan denial models have used the bivariate probit specification to account for the self-selection bias, some find that using a standard probit model gives the same results when loan applications and loan denial outcomes are not statistically significantly correlated.[332,333] For this purpose, two models are used to estimate the disparities in loan denial outcomes across loan applicants in Illinois.

The first is a bivariate probit model to jointly estimate the effect of a loan application and loan denial; this controls for factors that determine the decision of a worker to apply for a loan that can lead to a loan approval or a loan denial.

Within the bivariate probit model, both a direct and indirect measure of loan denial were used. Individuals that were indirectly denied a loan, meaning they decided not to apply or delayed applying for a loan, will be considered as denied for a loan along with loan applicants that applied and were directly denied a loan.

Based on the methods developed in existing disparity studies (and the economic literature on loan denial estimation discussed above), we developed a bivariate probit regression model to assess patterns of loan discrimination in Illinois from 2020 to 2022 using SHED data (see Equation IX-3 and Equation IX-4).

Equation IX-3. Bivariate Probit Loan Application Model

$$\begin{aligned} Loan\ Application_{it} &= \beta_1 Black_{it} + \beta_2 Hispanic_{it} + \beta_3 Asian_{it} + \beta_4 AdditionalRace_{it} + \beta_5 Female_{it} \\ &+ \beta_6 CollegeDegree_{it} + \beta_7 Financial\ Wellbeing_{it} + \beta_8 BankAccount_{it} \\ &+ \beta_9 CreditCard_{it} + \beta_{10} Property_{it} + \beta_{12} Location_{it} + \omega Income_{it} + \alpha Industry_{it} \\ &+ \gamma Year_t + \alpha Industry_i + \varepsilon_i \end{aligned}$$

Equation IX-4. Bivariate Probit Loan Denial Model

$$\begin{aligned} LoanDenial_{it} &= \beta_1 Black_{it} + \beta_2 Hispanic_{it} + \beta_3 Asian_{it} + \beta_4 AdditionalRace_{it} + \beta_5 Female_{it} \\ &+ \beta_6 CollegeDegree_{it} + \beta_7 Financial\ Wellbeing_{it} + \beta_8 BankAccount_{it} \\ &+ \beta_9 CreditCard_{it} + \beta_{10} Property_{it} + \beta_{12} Location_{it} + \omega Income_{it} + \alpha Industry_{it} \\ &+ \gamma Year_t + \alpha Industry_i + \varepsilon_i \end{aligned}$$

The specification includes dummy variables, variables that take the form 0/1 dependent on $worker_i$, in year t, to indicate a worker's race or ethnicity, gender, and educational attainment. This allows for estimates of the percentage change in loan denial rates for loan applicants that are Black, Hispanic, Asian, or additional races, and/or female compared to loan applicants that are White, non-Hispanic and male, holding all else constant. The coefficients that are estimated by the model using the industry dummy variables are represented by vector α.

[332] L. Blanchard, B. Zhao, and J. Yinger, "Do Lenders Discriminate against Minority and Woman Entrepreneurs?," *Journal of Urban Economics,* 63(2), March 2008, accessed February 28, 2024, https://www.sciencedirect.com/science/article/abs/pii/S0094119007000320.

[333] E. Asiedu, J.A. Freeman, and A. Nti-Addae, "Access to Credit by Small Businesses: How Relevant Are Race, Ethnicity, and Gender?," *American Economic Review, 101(3), May* 2012, accessed February 28, 2024, https://www.aeaweb.org/articles?id=10.1257/aer.102.3.532.

The dummy variable for obtaining a college degree estimates the difference in earnings for those with a college degree, compared to those with lower levels of educational attainment. Variables on financial wellbeing capture possible effects on the likelihood of loan denial from changes in credit worthiness. The vector of coefficients to be estimated by the model for the industry dummy variables is represented by α.

This model relies on seven measures of financial health:

1. Respondent has a checking, or savings, or money market account.
2. Respondent has a credit card.
3. Respondent answers they are "doing ok" financially.[334]
4. Respondent owns property.
5. Respondent's income.
6. Respondent lives in a metropolitan/urban area.

Income is included in the model as a categorical variable; each value of the variable represents an income bracket the i^{th} individual is in in the t^{th} year and dummy variables are created foreach bracket. The income brackets used correspond to the income brackets presented in the SHED data set. As discussed in the previous section, creditworthiness and various measures of financial health loan applicants are important determinants of the likelihood of loan denial and, therefore, important measures to control for in the econometric model. However, the availability of information varies within the SHED data for each measure.[335]

The vector of variables, $Industry_i$, contains dummy variables indicating the industry in which the i^{th} individual is employed, in the t^{th} year, allowing the model to identify differences in loan denial rates across industries, holding all other factors constant.

Table IX-28. Business Loan Denial Dependent Variable Description[336]

Dependent Variable	Description	Variable Form
Loan Denial (with Loan Application)	Loan applicant categorized as having applied for and directly or indirectly denied for a loan	Dummy variable (1/0)

Source: The Federal Reserve Board. 2020-2022. SHED.

Table IX-29. Business Loan Denial Independent Variable Descriptions[337]

Independent Variable	Description	Variable Form
Black	Worker categorized as Black	Dummy variable (1/0)

[334] "Doing ok" is an option given to the respondent to choose from.
[335] The presence of a bank account or a credit card, along with the respondent's self-reported financial health, income, property ownership, and location have no missing observations in the SHED Illinois sample, though some measures considered to assess financial health were missing observations.
[336] Outcome we are trying to estimate.
[337] Characteristics that affect the outcome, or dependent variable.

Independent Variable	Description	Variable Form
Hispanic	Worker categorized as non-White Hispanic	Dummy variable (1/0)
Asian	Worker categorized as Asian	Dummy variable (1/0)
Additional Race	Worker categorized as any additional race	Dummy variable (1/0)
Female	Worker categorized as female	Dummy variable (1/0)
College Degree	Worker categorized as having bachelor's degree or higher	Dummy variable (1/0)
Bank Account	Worker categorized as having a checking, or savings, or money market account	Dummy variable (1/0)
Credit Card	Worker categorized as having a credit card	Dummy variable (1/0)
Self-reported financial wellbeing	Worker categorized as "doing ok" financially	Dummy variable (1/0)
Property	Worker categorized as owing property	Dummy variable (1/0)
Income	Worker categorized as having income in specific earning brackets	Dummy variable (1/0)
Location	Worker categorized as residing in an urban area	Dummy variable (1/0)

Source: The Federal Reserve Board. 2020-2022. SHED.

ii. Simple Probit Model

The second econometric specification was a simple probit model, as is used in the literature,[338] to predict direct loan denial outcomes. The simple probit model follows model specifications seen in Equation IX-5 below and uses an identical sample to the bivariate probit model. Using both methods circumvents any sample selection issues and provides a stronger identification strategy.[339,340,341]

Equation IX-5. Simple Probit Loan Denial Model

$$LoanDenial_{it} = \beta_1 Black_{it} + \beta_2 Hispanic_{it} + \beta_3 Asian_{it} + \beta_4 AdditionalRace_{it} + \beta_5 Female_{it} + \beta_6 CollegeDegree_{it} + \beta_7 Financial\ Wellbeing_{it} + \beta_8 BankAccount_{it} + \beta_9 CreditCard_{it} + \beta_{10} Property_{it} + \beta_{12} Location_{it} + \omega Income_{it} + \alpha Industry_{it} + \gamma Year_t + \alpha Industry_i + \varepsilon_i$$

[338] D.G. Blanchflower, P.B. Levine, and D.J. Zimmerman, "Discrimination in the Small-Business Credit Market," 2003.
[339] Pankaj K. Maskara and Donald J. Mullineaux, "Information Asymmetry and Self-Selection Bias in Bank Loan Announcement Studies," *Journal of Financial Economics* 101, no. 3 (September 1, 2011): 684–94, https://doi.org/10.1016/j.jfineco.2011.03.019.
[340] Karlan and Zinman, "List Randomization for Sensitive Behavior," *Journal of Development Economics, 98(1),* October 2011, accessed February 28, 2024, https://www.researchgate.net/publication/228303251_List_Randomization_for_Sensitive_BehaviorAn_Application_for_Measuring_Use_of_Loan_Proceeds.
[341] Keene, Cowan, and Baker, "When You're in a Crisis like That, You Don't Want People to Know," *American Journal of Public Health,* 105(5), May 2015, accessed February 28, 2024, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4386521.

(b) Data Description

Three potential data sources existed for possible use in a simple probit model analysis:

1. Survey of Small Business Finance,
2. Survey of Consumer Finances, and
3. Survey of Household Economics and Decision-Making (SHED).

These sources contain information on loan applications, denials, and sociodemographic characteristics of the respondents surveyed. Among these potential data sources, only SHED includes information that would allow an examination of loan denial measures by race and/or ethnicity and gender in 2020, 2021 and 2022.

This analysis relies on four SHED measures related to loan denial:

- Applicant was turned down for the loan.
- Applicant put off applying for the loan because they thought they would be turned down.
- Applicant did not apply for the loan because they thought they would be turned down.
- Applicant chose to not apply for the loan despite wanting the loan.

This assessment creates a binary indicator for being denied a loan where any respondent that answered "yes" to one or more of the related indicators above, are marked as being denied for a loan. The advantage of using multiple variables to create a binary indicator of loan denials is that more observations from the sample can be included in the analysis. Moreover, including both direct measures of loan denial (e.g., "Applicant was turned down for the loan") and indirect measures (e.g., "Applicant chose not to apply for the loan despite wanting the loan") reduces the risk for self-selection bias and is more inclusive of business owners who may not feel comfortable sharing that they were turned down for a loan.

(c) Illinois Economy-Wide Sample

The model variables included in Illinois economy-wide analysis were created using data from the 2020, 2021, and 2022 SHED data on race and ethnicity, gender, education, and financial wellbeing, along with loan application/denials).[342]

The resulting Illinois economy-wide sample is composed of 1,332 Illinois residents, with 400 to 500 Illinois respondents in each SHED data year (2020, 2021, and 2022). The economy-wide sample used in this analysis is limited to loan applicants with an industry classification, resulting in a sample size of 858 Illinois residents in which 44% are women and 56% are men (see Table IX-30). In addition, the respondents included in the sample were 6% Asian, 12% Black, 10% Hispanic, and 69% White (see Table IX-30).

[342] Thirty-five percent of Illinois respondents did not report an industrial classification and therefore were dropped from the sample.

Table IX-30. Distribution of Illinois Economy-Wide Observations

Gender	Black	Asian	Hispanic	Additional Races	White	Total
Gender	5.5%	3.7%	5.9%	1.3%	39.4%	55.8%
Male	6.8%	2.4%	4.1%	1.2%	29.7%	44.2%
Total	**12.2%**	**6.2%**	**10.0%**	**2.4%**	**69.1%**	**100.0%**

Source: The Federal Reserve Board. 2020–2022. SHED. Note: Sample includes loan applicants who have an industrial classification. Number of observations: 858.

To include both direct and indirect measures of loan denial, the single yes/no measure of loan denial used in this assessment indicates:

1. whether the applicant was turned down for a loan,
2. put off applying for a loan since they thought they would be turned down,
3. did not apply for the loan since they thought they would be turned down, or
4. chose to not apply for the loan despite wanting the loan. This estimate includes indirect measures of loan denial and is considered a best practice in the literature since it mitigates self-selection bias.

(d) Illinois Cannabis-Related Industry Sample

To estimate the difference in business loan denial for license types associated with Illinois cannabis-related industries after 2019 (the year the State of Illinois legalized cannabis), we created a cannabis-related industry sample from the 2020–2022 SHED data. This analysis was limited to loan applicants who were employed in a cannabis-related industry, resulting in a sample size of 462 Illinois residents in which 41% were women and 59% were men (see Table IX-31).

Table IX-31. Distribution of SHED Observations for Illinois Cannabis-Related Industries

Gender	Black	Asian	Hispanic	Additional Races	White	Total
Male	6.9%	3.5%	7.1%	1.5%	39.6%	**58.7%**
Female	7.6%	2.6%	3.5%	1.1%	26.6%	**41.3%**
Total	**14.5%**	**6.1%**	**10.6%**	**2.6%**	**66.2%**	**100.0%**

Source: The Federal Reserve Board. 2020–2022. SHED. Note: Sample includes loan applicants who have an industrial classification. Number of observations: 462.

Unfortunately, 36% of the Illinois SHED sample does not include industry classifications, leaving an insufficient sample size to analyze by each associated license type.

The probit regression methodology that is used in this analysis requires a large sample size because it uses maximum likelihood estimation techniques. This method is inconsistent and inefficient with sample sizes below 500. The cannabis-related industry sample contains only 462

loan applicants, meaning that the sample size may not be large enough to yield conclusive findings of disparities. Hence, it is important to note that our cannabis-related industry analysis will have low statistical power due to a small sample size.

3. Business Growth Indicator Disparity Methodology

We conducted an analysis of business growth indicators to identify disparities by race and/or ethnicity and gender impacting economic growth in the Illinois economy-wide and cannabis-related industries. Business (or economic) growth indicators are measures that provide information on the performance of a business over a particular period, including the number of employees, the number of firms, and annual payroll.

The methodology for this study included a review of existing disparity studies and other relevant data sources. The economic growth indicator assessment adapts methods used in two Illinois-specific disparity analyses, IDOT 2011 and IDOT 2017. [343,344] We use the following indicator metrics for business growth 2017–2020 for all Illinois businesses included in the Annual Business Survey (ABS):[345]

1. Number of employees
2. Number of businesses per year (i.e., rates of closure), and
3. Annual payroll

The availability of complete data (that is, whether the data field is suppressed, i.e., missing, or contains a numerical value) varies within the ABS data depending on the granularity of the geography, industry-identification, and demographic detail desired. Therefore, analyzed data by both 3- and 4-digit NAICS codes in order to allow for more complete results by race, ethnicity, and gender.

4. Wage Disparity Methodology

The study team conducted a regression analysis to identify patterns of disparities in hourly wage rates earned across different racial, ethnic, and gender groups in the Illinois economy-wide and cannabis-related industries. We examined multiple models to assess disparities in wages. The main model utilizes hourly wage rate data and includes interaction terms between race and gender in Illinois.

[343] Mason Tilman Associates, "Illinois Department of Transportation and Illinois Tollway Disadvantaged Business Enterprises Disparity Study Vol 2," September 2011, accessed February 28, 2024, https://www.illinoistollway.com/documents/20184/87215/Final+Disparity+Study+Report.pdf/bf922c9f-5cb8-4419-bf53-c5ab6d180f9c?version=1.0.

[344] BBC Research & Consulting, "2017 Illinois Department of Transportation Disparity Study," 2018, accessed February 28, 2024, https://idot.illinois.gov/Assets/uploads/files/Doing-Business/Reports/OBWD/DBE/2017%20IDOT%20Disparity%20Study_Final%20Report.pdf.

[345] Employees and payroll measure different things and do not follow the same patterns, e.g., for all business owners, the number of employees increased by 11% but annual payroll only increased by 1%.

To prepare the most comprehensive wage disparity methodology, we reviewed existing wage disparity studies and economic literature on predicting wages. The wage disparity analysis methodology adapts methods used in 12 existing disparity studies.[346]

In addition to the review of existing disparity studies, the wider economic literature related to wage estimation was reviewed for best practices for this type of analysis. The review of literature indicates that wages vary substantially among workers and are driven by many factors including education, experience, on-the-job training, and demographic determinants such as gender, race, marital status, and age.[347,348,349,350,351,352]

This analysis utilizes the 2021 5-Year ACS Public Use Microdata Sample (PUMS) data.

(a) Hourly Wage with Interactions Methodology

i. Illinois Economy-Wide Sample

The hourly wage rates variable was created from the 2021 ACS data using reported average hours worked in a week and the annual wages. Wages were divided by the total of average weekly hours worked multiplied by 52, the number of weeks in a year. We utilized this data and developed a model which examines disparities in the hourly wage rate earned by Illinois workers. Robust standard errors were utilized in this model to account for heteroskedasticity found in the initial model.

Based on the methods developed in existing disparity studies (and the economic literature on wage estimation discussed above), we developed an ordinary least squares (OLS) regression model to assess wage disparities in Illinois in 2021 (see Equation IX-6).

Equation IX-6. Wage Disparity Model

$$Ln(HourlyWage_i) = \beta_1 Back_i + \beta_2 Hispanic_i + \beta_3 Asian_i + \beta_4 AdditionalRaces_i + \beta_5 Female_i + \beta_6 (Black_i * Female_i) + \beta_7 (Hispanic_i * Female_i) + \beta_8 (Asian_i * Female_i) + \beta_9 (OtherRace_i * Female_i) + \beta_{10} CollegeDegree_i + \beta_{11} Married_i + \beta_{12} Children_i + \beta_{13} Experience_i + \beta_{14} Experience_i^2 + \alpha Industry_i + \varepsilon_i$$

[346] See Appendix F. Economic Regression Methodology for wage disparity analysis literature review.
[347] E. Berndt and M. Showalter, "Hands-on Econometrics: A Web-Based Introduction (Unpublished Version)," 2009.
[348] G.J. Duncan and B. Holmlund, "Was Adam Smith Right after All? Another Test of the Theory of Compensating Wage Differentials," *Journal of Labor Economics* 1, no. 4 (1983): 366–79, https://www.jstor.org/stable/2534860.
[349] Simon Jäger et al., "Wages and the Value of Nonemployment," *The Quarterly Journal of Economics* 135, no. 4 (2020): 1905–63, https://www.nber.org/system/files/working_papers/w25230/w25230.pdf.
[350] Manacorda, Manning, and Wadsworth, "The Impact of Immigration on the Structure of Wages: Theory and Evidence from Britain," *Journal of European Economic Association,* October 2011, accessed February 28, 2024, https://onlinelibrary.wiley.com/doi/full/10.1111/j.1542-4774.2011.01049.x.
[351] Jacob Mincer, "Investment in Human Capital and Personal Income Distribution," *Journal of Political Economy* 66, no. 4 (1958): 281–302.
[352] Cordelia W. Reimers, "Labor Market Discrimination against Hispanic and Black Men," *The Review of Economics and Statistics*, 1983, 570–79.

The specification includes dummy variables, variables that take the form 0/1 dependent on $worker_i$, to indicate a worker's race or ethnicity, gender, and educational attainment which allows for estimates of the percentage change in wages for workers that are Black, Hispanic, Asian, or additional raced, and/or female compared to workers that are White, non-Hispanic and male, holding all else constant. Interactions terms between race and gender are included which are equal to one if an individual is both female and a specific race. Including interactions allows researchers to test the idea that different groups may have different impacts than one another, giving the model more flexibility in its estimation. For example, by including variables that are equal to one if a worker is both female and Black, the model can indicate if Black women have different outcomes than Black men.

The dummy variable for obtaining a college degree estimates the difference in earnings for those with a degree, compared to those with lower levels of educational attainment. Variables for marital status and having a child under six capture possible effects on wages from reduced participation in the labor force. The vector of coefficients to be estimated by the model for the industry dummy variables is represented by vector α.

As workers gain more experience, wages are predicted to increase; however, at a certain age, experience begins to impact wages less as workers approach retirement. Experience-squared is included to aid in capturing the effect that as one ages, experience has a diminishing effect reducing the positive impact it has on wages. While experience is not available within the ACS PUMS, experience and experience-squared are approximated following standard econometric practice as:

a worker's age minus:

- the number of years in school, and
- age six, the typical age that an individual starts grade school.

For example, for a 30-year-old worker with a bachelor's degree experience would be calculated as: 30 years of age less 16 years in school less six years not enrolled in school = eight years. While job titles are not available in the ACS PUMS, we expect the impact job titles have on wages to be captured by the experience variable.

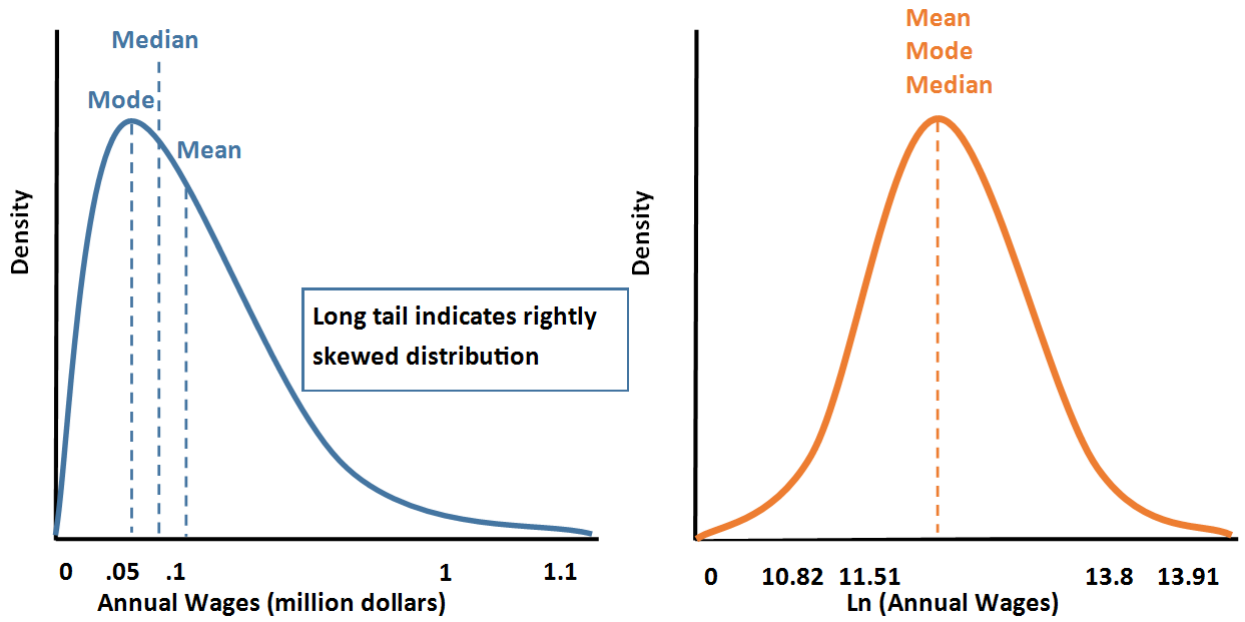
The vector of variables, $Industry_i$, contains dummy variables indicating the industry in which the i^{th} individual is employed, allowing the model to identify differences in average annual wages across industries, holding all other factors constant. Industries are identified based on the twenty-four 2-digit North American Industry Classification System (NAICS).

The natural log of hourly wage rates $Ln(HourlyWage_i)$ in Equation IX-6) is widely used as the dependent variable in wage estimation models due to the non-normal distribution[353] of wages that

[353] A normal distribution is a probability distribution which displays symmetry around the center. In other words, the peak of the normal distribution is the mean, median, and mode of the data. Half of the data fall on each side of the peak.

results from the large variation in the magnitude of wages (i.e., some workers earning much more than most, skewing the distribution to the right, see Figure 3).[354,355,356]

Figure 21. Illustrative Wage Distributions



The model variables included in Illinois economy-wide analysis are created using data from the 2021 ACS PUMS 5-Year estimates on educational attainment, age, gender, and race and/or ethnicity (see Table IX-33) (Note: To limit the sample to those that are active participants in the Illinois economy, approximately 366,000 workers that are unemployed, reported zero annual wages, in the military, and/or enrolled as full-time students are removed.)

Table IX-32 presents a description of the outcome we are trying to estimate.

Table IX-32. Wage Disparity Dependent Variable Description

Dependent Variable	Description	Variable Form
Ln(HourlyWage)	Natural log of hourly wages	Continuous

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates.

Table IX-33 presents descriptions of the characteristics that affect the outcome.

[354] Duncan, Greg J., and Bertil Holmlund. "Was Adam Smith Right After All? Another Test of the Theory of Compensating Wage Differentials." *Journal of Labor Economics*, vol. 1, no. 4, 1983, pp. 366–79. JSTOR, accessed February 28, 2024, http://www.jstor.org/stable/2534860.

[355] Manacorda, Manning, and Wadsworth, "The Impact of Immigration on the Structure of Wages: Theory and Evidence from Britain," *Journal of European Economic Association,* October 2011, accessed February 28, 2024, https://onlinelibrary.wiley.com/doi/full/10.1111/j.1542-4774.2011.01049.x.

[356] Simon Jäger et al., "Wages and the Value of Nonemployment," *The Quarterly Journal of Economics* 135, no. 4 (2020): 1905–63, https://www.nber.org/system/files/working_papers/w25230/w25230.pdf.

Table IX-33. Wage Disparity Independent Variable Descriptions

Independent Variable	Description	Variable Form
Black	Worker categorized as Black	Dummy variable (1/0)
Hispanic	Worker categorized as non-White Hispanic	Dummy variable (1/0)
Asian	Worker categorized as Asian	Dummy variable (1/0)
Additional Race	Worker categorized as any additional race	Dummy variable (1/0)
Female	Worker categorized as female	Dummy variable (1/0)
College Degree	Worker categorized as having bachelor's degree or higher	Dummy variable (1/0)
Married	Worker categorized as married	Dummy variable (1/0)
Children	Worker categorized as having children under 6	Dummy variable (1/0)
Experience	Estimate of worker experience based on age and education	Continuous
Experience^2	Years of experience squared	Continuous

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates.

The resulting Illinois economy-wide sample is composed of almost 256,000 Illinois residents: almost half are women, 8% are Black, 13% are Hispanic, 5% are Asian, 59% are married, and 4% have young children at home (see Table IX-34). This limited sample reflects the true population of Illinois in 2021, where 51% of the population are women, approximately 47% of households are married, 14% are Black, nearly 18% are Hispanic, and almost 6% are Asian.[357,358] In 2021, the average Illinois worker earned about $28.38 in hourly wage rates, had 23 years of experience, and was 43 years old (see Table IX-34).

In 2021, men earned approximately one-third higher hourly wage rates than women in Illinois (see Table IX-35). Black women and men received similar hourly wage rates, differences in wages between men and women of the same race ranged from $3.23 to $10.62 per hour. Asian women had the largest hourly wage rate gap compared to their male counterparts, followed by White women who earned on average $9.61 less an hour than White men. Hispanic women earned the lowest hourly wage rates across all groups, and Hispanic workers reported the lowest overall hourly wage rate. Women make up nearly 56% of the Black workers in the sample. The lowest share of women in the sample is White women, where 48% of the White workers are women.

[357] U.S. Census Bureau, "2021 American Community Survey Table DP02 - Selected Social Characteristics in the United States," 2021, https://data.census.gov/table?tid=ACSDP5Y2021.DP02&g=040XX00US17.
[358] U.S. Census Bureau, "2021 American Community Survey Table DP05 - Demographic and Housing Estimates." 2021.

Table IX-34. Illinois Data Set Description

Variable	Mean	Standard Deviation	Minimum	Maximum
Hourly wage	$28.38	$37.58	$0.001	$5,326.92
Female	48%	0.50	0	1
Asian	5%	0.22	0	1
Black	8%	0.27	0	1
Hispanic	0.1	0.33	0	1
Additional Race	0.0	0.15	0	1
White	71.8%	0.45	0	1
College degree	41.0%	0.49	0	1
Married	58.6%	0.49	0	1
Has children under 6	4%	0.19	0	1
Experience	23.5	12.95	0	59
Age	43.4	12.60	18	65
Agriculture, Forestry, Fishing and Hunting	0.9%	0.09	0	1
Mining, Quarrying, and Oil and Gas Extraction	0.3%	0.05	0	1
Utilities	0.9%	0.09	0	1
Construction	5.7%	0.23	0	1
Manufacturing	13.5%	0.34	0	1
Wholesale Trade	3.3%	0.18	0	1
Retail Trade	9.7%	0.30	0	1
Transportation and Warehousing	5.8%	0.23	0	1
Information	1.8%	0.13	0	1
Finance and Insurance	6.1%	0.24	0	1
Real Estate and Rental and Leasing	1.5%	0.12	0	1
Professional, Scientific, and Technical Services	8.1%	0.27	0	1
Management of Companies and Enterprises	0.2%	0.05	0	1
Administrative and Support and Waste Management and Remediation Services	3.8%	0.19	0	1
Educational Services	9.8%	0.30	0	1

Variable	Mean	Standard Deviation	Minimum	Maximum
Health Care	13.7%	0.34	0	1
Arts, Entertainment, and Recreation	1.6%	0.13	0	1
Accommodation and Food Services	5.1%	0.22	0	1
Other Services (except Public Administration)	4.1%	0.20	0	1
Public Administration	4.2%	0.20	0	1

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates. Note: Number of observations 255,485. Industry groupings based on U.S. Census Bureau practice for grouping 2-digit NAICS codes[359]

Table IX-35. Illinois Economy-Wide Wage Rate Average by Gender

Gender	Black	Asian	Hispanic	Additional Races	White	Total
Male	$21.61	$42.18	$22.06	$29.52	$34.55	$32.25
Female	$21.07	$31.56	$18.77	$24.10	$24.94	$24.18
Total	$21.31	$37.10	$20.60	$26.83	$29.97	$28.38
Male:Female Ratio	1.03	1.34	1.18	1.22	1.39	1.33

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates. Note: Number of observations 255,485.

In the Illinois economy-wide sample, the industries with the largest share of workers are Healthcare and Social Assistance, and Manufacturing (14% of Illinois workers in the sample), followed by Education Services and Retail Trade (10% each). These four sectors combined represent almost half of all Illinois workers (see Table IX-36). The Professional Services industry is the fifth largest industry within the economy with 8% of Illinois workers in the sample.

Table IX-36. Illinois Industries by Employment

Industry	Share of Total Workers
Healthcare and Social Assistance	14%
Manufacturing	14%
Education Services	10%
Retail Trade	10%
Professional, Scientific, and Technical Services	8%

[359] U.S. Census, "Economic Census: NAICS Codes & Understanding Industry Classification Systems," August 19, 2022, *https://www.census.gov/programs-surveys/economic-census/year/2022/guidance/understanding-naics.html.*

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates. Note: Sample includes workers aged 18–65 who are not unemployed or in the military. Note: Number of observations 255,485.

ii. Illinois Cannabis-Related Industry Sample

We created a cannabis-related sample for each license type from the 2021 ACS 5-Year PUMS according to the NAICS mappings in Appendix B. North American Industry Classification System (NAICS) . Due to the 2022 NAICS codes not being released at this time, the analysis used 2017 NAICS codes.

The cannabis-related industry sample employs 3-digit NAICS, rather than more detailed 4-, 5-, or 6- digit NAICS industry codes due to data availability limitations. The ACS PUMS does not include any of the 6-digit codes for cannabis-related industries and includes limited 4- or 5- digit codes. Sample sizes for the cannabis-related industries drop substantially when the sample is limited to 4- or 5- digit NAICS codes instead of 3- digit codes (see Table IX-37).[360,361,362]

Table IX-37. Number of ACS PUMS Observations for Cannabis-Related Industry NAICS Codes

License Type Association	3-digit NAICS	4-digit NAICS	5-digit NAICS	6-digit NAICS
Dispensary	8,278	2,910	1,742	0
Craft Grower	7,136	1,183	0	0
Infuser	7,080	3,585	0	0
Transporter	16,347	1,123	0	0
Cultivation Center	30,563	5,891	254	0

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates.

To compare disparities in hourly wage rates for cannabis-related industries, we conducted five separate regression analyses—one for each associated license type (see Equation IX-7 where the subscript n is added to indicate the i^{th} individual in the nth license type). To do this, we assigned workers who worked in a cannabis-related industry to license types according to the NAICS mappings in Appendix B. North American Industry Classification System (NAICS) .

For each regression, the observations coincide with the pool of workers who work in the industries associated with the license type. This means the estimated coefficients indicate the average effect across all Illinois cannabis-related industries that map to the license type.

[360] Probit and logit regressions require a high number of observations due to the underlying estimation technique, maximum likelihood, used in the regressions. For maximum likelihood estimators to be considered consistent and efficient, a sample size of over 500 is adequate. The necessary sample sizes needed to achieve consistent and efficient estimates increases as the number of parameters in the model increases.

[361] UCLA Statistical Consulting Group, "Probit Regression | Stata Data Analysis Examples," n.d. https://stats.oarc.ucla.edu/stata/dae/probit-regression/.

[362] Williams, R., "Maximum Likelihood Estimation & Troubleshooting," 2022, https://www3.nd.edu/~rwilliam/xsoc73994/L02.pdf.

For example, for dispensaries, coefficient estimates are the difference in the average hourly wage rates for a particular racial, ethnic, or gender group (i.e., White women or Black men) compared to White men in the NAICS 445, 446, and 453. Due to sample size limitations, dummy variables for race and/or ethnicity are limited to Black, Hispanic, and "additional races" (composed of Asian, Indigenous Peoples, other and multi-race workers).

Equation IX-7. Cannabis-Related Wage Disparity Model

$$Ln(HourlyWage_{ni}) = \beta_1 Black_{ni} + \beta_2 Hispanic_{ni} + \beta_3 AdditionalRace_{ni} + \beta_4 Female_{ni} + \beta_5(Black_{ni} * Female_{ni}) + \beta_6(Hispanic_{ni} * Female_{ni}) + \beta_7(OtherRace_{ni} * Female_{ni}) + \beta_8 CollegeDegree_{ni} + \beta_9 Married_{ni} + \beta_{10} Children_{ni} + \beta_{11} Experience_{ni} + \beta_{12} Experience_{ni}^2 + \varepsilon_{ni}$$

Like the Illinois economy as a whole, women working in Illinois' cannabis industry received hourly wage rates lower than their male counterparts on average in 2021 (see Table IX-38). Women's hourly wage rates, on average, were 19% lower than males within cannabis-related industries. Black workers received the lowest hourly wage rates across all ethnic/racial groups. Additional raced workers made the highest hourly wage rates on average, followed by White workers.

Table IX-38. Illinois Cannabis-Related Industries Wage Rate Average by Gender

Gender	Black	Hispanic	Additional Races	White	Total
Male	$17.68	$19.36	$31.44	$28.79	$26.41
Female	$16.98	$16.18	$28.30	$23.77	$22.11
Total	$17.38	$18.12	$30.05	$26.92	$24.75
Male:Female Ratio	1.04	1.20	1.11	1.21	1.19

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates. Note: Sample includes workers aged 18–65 who are not unemployed or in the military. Note: Number of observations 72,902.

In 2021, the average hourly wage rates of workers differed greatly across cannabis-related industries, ranging from $20.08 per hour in the dispensary license type to $32.39 per hour in the infuser license type (see Table IX-41). Female workforce participation also varies by license type: 57% of those working at dispensaries are women, compared to just 30% of workers at growing centers. Similarly, Black workforce participation ranges from just 4% of the workforce at growing centers up to 13% of the workforce in the transporters license type. Hispanic workforce participation ranges from 12% at growing centers to 19% for transporter and infuser licenses.

Table IX-39. Wage Rate Variable Summary Statistics for Dispensary-Related Industries

Variable	Mean	Standard Deviation	Minimum	Maximum
Hourly wage	$20.08	$26.21	$0.04	$1,232.91

Variable	Mean	Standard Deviation	Minimum	Maximum
Black	8%	0.26	0	1
Hispanic	13%	0.34	0	1
Additional race	9%	0.28	0	1
Female	57%	0.49	0	1
College degree	27%	0.44	0	1
Married	48%	0.50	0	1
Has children under 6	4%	0.20	0	1
Age	41.6	13.66	18	65
Experience	22.3	13.90	0	57

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates. Note: Sample includes 8,278 observations of workers aged 18–65 who are not unemployed or in the military.

Table IX-40. Wage Rate Variable Summary Statistics for Craft Grower-Related Industries

Variable	Mean	Standard Deviation	Minimum	Maximum
Hourly wage	$27.95	$68.78	$0.00	$4,423.08
Black	4%	0.19	0	1
Hispanic	12%	0.33	0	1
Additional race	5%	0.21	0	1
Female	30%	0.46	0	1
College degree	32%	0.47	0	1
Married	62%	0.49	0	1
Has children under 6	2%	0.15	0	1
Age	43.9	12.85	18	65
Experience	24.5	13.27	0	59

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates. Note: Sample includes 5,744 observations of workers aged 18–65 who are not unemployed or in the military.

Table IX-41. Wage Rate Variable Summary Statistics for Infuser-Related Industries

Variable	Mean	Standard Deviation	Minimum	Maximum
Hourly wage	$32.39	$38.37	$0.00	$1,711.54

Variable	Mean	Standard Deviation	Minimum	Maximum
Black	7%	0.25	0	1
Hispanic	19%	0.40	0	1
Additional race	8%	0.28	0	1
Female	38%	0.48	0	1
College degree	36%	0.48	0	1
Married	61%	0.49	0	1
Has children under 6	2%	0.14	0	1
Age	44.6	12.19	18	65
Experience	25.2	12.74	0	59

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates. Note: Sample includes 10,221 observations of workers aged 18–65 who are not unemployed or in the military.

Table IX-42. Wage Rate Variable Summary Statistics for Transporter-Related Industries

Variable	Mean	Standard Deviation	Minimum	Maximum
Hourly wage	$21.23	$29.71	$0.04	$2,092.31
Black	13%	0.34	0	1
Hispanic	19%	0.39	0	1
Additional race	5%	0.22	0	1
Female	33%	0.47	0	1
College degree	21%	0.41	0	1
Married	52%	0.50	0	1
Has children under 6	2%	0.15	0	1
Age	43.0	12.78	18	65
Experience	24.2	13.19	0	59

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates. Note: Sample includes 16,347 observations of workers aged 18–65 who are not unemployed or in the military.

Table IX-43. Wage Rate Variable Summary Statistics for Cultivation Center-Related Industries

Variable	Mean	Standard Deviation	Minimum	Maximum
Hourly wage	$25.95	$42.17	$0.00	$4,423.08

Variable	Mean	Standard Deviation	Minimum	Maximum
Black	10%	0.29	0	1
Hispanic	18%	0.38	0	1
Additional race	6%	0.24	0	1
Female	34%	0.47	0	1
College degree	28%	0.45	0	1
Married	56%	0.50	0	1
Has children under 6	2%	0.15	0	1
Age	43.6	12.63	18	65
Experience	24.6	13.07	0	59

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates. Note: Sample includes 32,312 observations of workers aged 18–65 who are not unemployed or in the military.

To compare disparities in hourly wage rates for cannabis-related industries, we conducted five separate regression analyses—one for each associated license type (see Equation IX-7 where the subscript *n* is added to indicate the i^{th} individual in the *nth* license type).

(b) Hourly Wage without Interactions Methodology

To further analyze evidence of wage discrimination within the Illinois-wide economy and Illinois cannabis-related industries, we examined hourly wage rates across Illinois workers without interactions between women and race or ethnicity.

i. Illinois Economy-Wide Sample

To assess disparities in hourly wage rates without interactions, the model was altered by removing the interaction terms (see Equation IX-8). This model does not allow us to draw conclusions for racial and/or ethnic minority women individually, but rather women and racial and/or ethnic minorities separately.

Equation IX-8. Hourly Wage Rate Disparity Model

$$Ln(Hourly_i) = \beta_1 Black + \beta_2 Hispanic_i + \beta_3 Asian_i + \beta_4 AdditionalRace_i + \beta_5 Female_i + \beta_6 CollegeDegree_i + \beta_7 Married_i + \beta_8 Children_i + \beta_9 Experience_i + \beta_{10} Experience_i^2 + \alpha Industry_i + \varepsilon_i$$

ii. Illinois Cannabis-Related Industry Sample

The sample of individuals participating in the cannabis-related industries for hourly wage rates is identical to the hourly wage rate sample presented above. To assess disparities in hourly wage

rate without interactions within the cannabis-related industries, the model used for hourly wage rates with interactions is adjusted (see Equation IX-9).

Equation IX-9. Illinois Cannabis-Related Hourly Wage Rate Disparity Model

$$Ln(Hourly_{ni}) = \beta_1 Black_{ni} + \beta_2 Hispanic_{ni} + \beta_3 AdditionalRace_{ni} + \beta_4 Female_{ni} + \beta_5 CollegeDegree_{ni} + \beta_6 Married_{ni} + \beta_7 Children_{ni} + \beta_8 Experience_{ni} + \beta_9 Experience_{ni}^2 + \varepsilon_{ni}$$

(c) Annual Wage with Interactions Methodology

To test the results for sensitivities to different model specifications, and to provide a more direct comparison to previous studies, we also conducted an annual earnings disparity analysis. Whereas the previous model is specific to hourly wage rates, this annual earnings model includes interaction terms between race and/or ethnicity and gender.

i. Illinois Economy-Wide Sample

The sample used to assess earnings disparities with the use of gender and race and/or ethnicity interactions for the Illinois economy is identical to the economy-wide sample presented in §IX.4(a) Hourly Wage with Interactions Methodology . We used an OLS regression model to assess patterns of earnings discrimination for female and racial and/or ethnic minority workers in Illinois in 2021 (see Equation IX-10).

Equation IX-10. Illinois Economy Wide Earnings Disparity Model with Gender Interactions

$$Ln(Earnings_i) = \beta_1 Black_i + \beta_2 Hispanic_i + \beta_3 Asian_i + \beta_4 AdditionalRace_i + \beta_5 Female_i + \beta_6 (Black_i * Female_i) + \beta_7 (Hispanic_i * Female_i) + \beta_8 (Asian_i * Female_i) + \beta_9 (OtherRace_i * Female_i) + \beta_{10} CollegeDegree_i + \beta_{11} Married_i + \beta_{12} Children_i + \beta_{13} Experience_i + \beta_{14} Experience_i^2 + \alpha Industry_i + \varepsilon_i$$

ii. Illinois Cannabis-Related Industry Sample

As with the economy-wide model, the sample is identical to that used in the Illinois cannabis-related sample presented above. The Illinois cannabis disparity study develops an OLS model to assess patterns of discrimination in earnings for racial and ethnic minority women working within Illinois cannabis-related industries (see Equation IX-11).

Equation IX-11. Illinois Cannabis-Related Earnings Disparity Model with Gender Interactions

$$Ln(Earnings_{ni}) = \beta_1 Black_{ni} + \beta_2 Hispanic_{ni} + \beta_3 AdditionalRace_{ni} + \beta_4 Female_{ni} + \beta_5 (Black_{ni} * Female_{ni}) + \beta_6 (Hispanic_{ni} * Female_{ni}) + \beta_7 (OtherRace_{ni} * Female_{ni}) + \beta_8 CollegeDegree_{ni} + \beta_9 Married_{ni} + \beta_{10} Children_{ni} + \beta_{11} Experience_{ni} + \beta_{12} Experience_{ni}^2 + \varepsilon_{ni}$$

G. Economic Regression Results

As discussed in Appendix F. Economic Regression Methodology, we conducted four regression analyses that are separate from and go beyond the assessment of disparities among adult use cannabis licensees to perform a broader analysis of existing patterns of discrimination in cannabis-related industries and the Illinois economy as a whole:

1. Assessment of disparity in business ownership
2. Assessment of disparity in business loan denial
3. Assessment of disparity in business growth indicators
4. Assessment of disparity in wages

The purpose of these regression analyses is to identify disparities in the wider economic context in which the subject sector (here, the cannabis industry) is embedded. For each of the study assessments, the disparity analysis methodology was developed by the study team to meet the requirements of an Equal Protection Clause disparity study by adapting methods used within existing disparity studies and in the broader economic literature.[363] Consequently, these results are for the Illinois economy and Illinois cannabis-related industries. This section does not represent cannabis licensees or cannabis businesses.

The marginal effects reported here are calculated from the coefficient estimates reported in Appendix H. Full Regression Estimates and are interpreted as the percentage point change in the outcome (relative to White men) when the dummy variable is applied.

1. Business Ownership Disparity Results

Results from both the Illinois economy-wide and cannabis-related industry assessments based on business ownership provide evidence of discrimination in business ownership patterns for women and Black, Hispanic, and Asian workers compared to their White, male counterparts with the same experience, education, marital status, household characteristics, and industry. For cannabis-related business owners associated with all five license types, women were less likely to be business owners compared to White men and, across all cannabis license types except dispensary licenses, Hispanic and Black male workers and women workers were less likely to be business owners compared to White men.

(a) Illinois Economy-Wide Results

In 2021, after keeping several factors constant such as education, experience, and citizenship, in comparison to the White male worker, we found statistically significant disparities in business ownership across all industries in Illinois for Black, Asian, Hispanic, additional raced, and Women

[363] See Appendix H. Full Regression Estimates.

workers in comparison to White men.[364] Black and Hispanic workers faced the largest disparity in Illinois by being 2% less likely to be business owners than White males (see Table IX-44).

Table IX-44. Illinois Economy-Wide Disparities in Business Ownership (% Change Relative to White Men)

Category	Black	Asian	Hispanic	Additional races	Women
Illinois Economy	-2.0%***	-0.4%*	-2.0%***	0.6%*	-1.2%***

Source: AEC Calculation on U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates.
*Note: Number of observations 255,485. Sample includes workers aged 18–65 who are not unemployed or in the military. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively.*

Additionally, across all racial, ethnic, and gender groups, 9% of workers were business owners in the Illinois economy-wide sample. However, 11% of businesses were White male-owned compared to just 5% of Black female-owned (see Table IX-45).

Table IX-45. Illinois Economy-Wide Business Ownership by Gender

Gender	Black	Asian	Hispanic	Additional Races	White	Combined
Male	6.7%	9.2%	7.4%	8.7%	11.3%	10.2%
Female	4.6%	7.3%	5.4%	8.0%	7.4%	6.9%
Combined	5.7%	8.4%	6.5%	8.4%	9.4%	8.6%

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates. Note: Number of observations 314,378.

(b) Illinois Cannabis-Related Industry Results

Similar to the Illinois economy as a whole, individuals of color have the smallest share of business-ownership within the cannabis-related industries: 7% of Black workers are business owners, compared to 12% of White workers (see Table IX-46). In addition, regardless of race or ethnicity, only 8% of female workers are business owners within Illinois cannabis-related industries, compared to 12% of men (see Table IX-46).

Table IX-46. Illinois Cannabis-Related Industry Business Ownership Rates by Gender

Gender	Black	Hispanic	Additional Races	White	Combined
Male	5.6%	8.0%	9.2%	14.1%	12.0%
Female	3.6%	5.1%	5.9%	9.4%	7.8%
Combined	6.8%	6.8%	7.7%	12.3%	9.9%

[364] Workers classified as additional races include Indigenous Peoples and multi-race workers. They comprised 7% of Illinois workers, or 110 survey respondents.

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates. Note: Number of observations 52,143.

The share of cannabis-related business owners varied greatly across the related cannabis license types: 19% of craft grower-related workers were business owners compared to just 2% of infuser-related workers (see Table IX-47).

For industries related to the craft grower license type, Black business owners make up only 3% of business owners, and female business owners comprise 28%—the lowest shares across all associated license types. In contrast, transporter-related industries contain the largest share of Black business owners with 14% (see Table IX-47).

The share of female ownership is largest for dispensary-related industries at 57% (see Table IX-47).

Table IX-47. Illinois Cannabis-Related Industry Business Ownership Rates by Associated License Type

License Type Association	Black	Hispanic	Additional races	Female	Combined
Dispensary	8%	14%	9%	57%	5%
Craft Grower	3%	11%	4%	28%	19%
Infuser	8%	19%	9%	38%	2%
Transporter	14%	19%	5%	34%	14%
Cultivation	10%	17%	6%	34%	12%

Source: U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates. Number of observations: dispensary, 11,663; craft grower, 7,489; infuser,11,936; transporter, 21,055; cultivation center, 40,480.

In cannabis-related industries, racial and ethnic minority and female workers face barriers impacting their likelihood to own a business. All cannabis-related industries displayed business ownership disparities for at least one racial and/or ethnic minority group and/or among women (see Table IX-48).

As also shown in Table IX-48, for cannabis-related industries associated with:

- all but one license type—infusers—the likelihood that a woman is a business owner is 1%–12% lower than a White man, on average.
- all but one license type—dispensaries—Black workers are 1%–15% less likely to be business owners.
- all but one license type—dispensaries—Hispanic workers are 1%–15% less likely to be business owners.
- cultivation, craft grower, and transport license types, workers of additional races are 5%–8% less likely to be business owners—the other types were not statistically significant or indicated higher likelihood of being a business owner.

Table IX-48. Illinois Cannabis-Related Industry Disparities in Business Ownership (% Change Relative to White Men)

License Type Association	Black	Hispanic	Additional races	Female
Dispensary	0.4%	-0.5%	2.7%***	-1.1%**
Craft Grower	-14.9%***	-15.0%***	-7.7%***	-12.4%***
Infuser	-1.4%***	-1.0%**	-0.8%	0.7%*
Transporter	-8.6%***	-5.8%***	-4.7%***	-1.8%***
Cultivation	-7.2%***	-6.4%***	-5.6%***	-3.5%***

*Source: AEC calculation on U.S. Census Bureau. 2021. ACS PUMS 5-Year Estimates. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively.*
Note: Sample includes workers aged 18–65 who are not unemployed, in school, or in the military. Number of observations: dispensary, 11,663; craft grower, 7,489; infuser,11,936; transporter, 21,055; cultivation center, 40,480.

2. Business Loan Denial Disparity Results

Results from the Illinois economy-wide assessment of loan denial provide evidence of discrimination (statistically significant racial and/or ethnicity disparities between loan denial rates) for Black loan applicants compared to their White, male counterparts with the same education, income, homeownership, financial wellbeing, urban residential status, year, and industry. In the Illinois economy, Black loan applicants were 7% more likely to be denied a loan than White male applicants (see Table IX-53).

While there were no statistically significant disparities identified within cannabis-related sectors, and these were not loans for people owning or operating cannabis businesses, it is important to note that the limited number of observations prevented us from conducting separate analyses for each license type association.

(a) Bivariate Probit Model

i. Illinois Economy-Wide Results

Black loan applicants are less likely to be approved for loans compared to White men.

Within the Illinois economy-wide sample, 23% of men and 18% of women indicate having applied for a loan (see Table IX-49). White residents have the highest loan application rates of 28%, followed by Black and Hispanic populations with 6% and 5%, respectively (see Table IX-49).

Table IX-49. Distribution of Illinois Residents that Applied for a Loan

Gender	Black	Asian	Hispanic	Additional Races	White	Total
Male	2.2%	1.2%	3.0%	0.9%	15.7%	23.1%

Gender	Black	Asian	Hispanic	Additional Races	White	Total
Female	3.5%	1.2%	1.7%	0.3%	11.5%	18.3%
Total	**5.7%**	**2.3%**	**4.8%**	**1.3%**	**27.3%**	**41.4%**

Source: The Federal Reserve Board. 2020–2022. SHED. Note: Sample includes loan applicants who have an industrial classification. Number of observations: 858.

Table IX-50. Distribution of Illinois Residents Directly Denied for a Loan

Gender	Black	Asian	Hispanic	Additional Races	White	Total
Male	0.5%	0.1%	0.6%	0.1%	1.9%	3.1%
Female	1.0%	0.1%	0.3%	0.0%	2.1%	3.6%
Total	**1.5%**	**0.2%**	**0.9%**	**0.1%**	**4.0%**	**6.8%**

Source: The Federal Reserve Board. 2020–2022. SHED. Note: Sample includes loan applicants who have an industrial classification. Number of observations: 858.

In the economy-wide sample, 20% of women who applied for a loan were denied compared to 14% of men (see **Error! Not a valid bookmark self-reference.**). Similarly, 27% of Black residents and 20% of Hispanic residents who applied for a loan were denied compared to 15% of White residents and 10% of Asian residents (see **Error! Not a valid bookmark self-reference.**).

Table IX-51. Distribution of Illinois Residents who Applied and were Directly Denied for a Loan

Gender	Black	Asian	Hispanic	Additional Races	White	Total
Male	21.1%	10.0%	19.2%	12.5%	11.9%	13.6%
Female	30.0%	10.0%	20.0%	0.0%	18.2%	19.7%
Total	**26.5%**	**10.0%**	**19.5%**	**9.1%**	**14.5%**	**16.3%**

Source: The Federal Reserve Board. 2020–2022. SHED. Note: Sample includes loan applicants who have an industrial classification. Number of observations: 355.

In the economy-wide sample, 8% of women were directly or indirectly denied a loan (see methodology for the definitions of direct and indirect loan denial), compared to 6% of men (see Table IX-52). White residents have the highest loan denial rates of 7%, followed by Black and Hispanic populations with 4% and 2%, respectively (see Table IX-52). Note that the share or number of respondents in each group does not have any explanatory effect on denial rates within each group.

Table IX-52. Distribution of Illinois Residents Directly or Indirectly Denied for a Loan

Gender	Black	Asian	Hispanic	Additional Races	White	Total
Male	1.3%	0.3%	1.2%	0.2%	3.3%	6.3%

Gender	Black	Asian	Hispanic	Additional Races	White	Total
Female	2.2%	0.2%	1.0%	0.0%	4.1%	7.6%
Total	**3.5%**	**0.6%**	**2.2%**	**0.2%**	**7.3%**	**13.9%**

Source: The Federal Reserve Board. 2020–2022. SHED. Note: Sample includes loan applicants who have an industrial classification. Number of observations: 858.

In 2020, 2021, and 2022, statistically significant differences in loan denial rates were found for Black loan applicants living and working within Illinois. Black loan applicants were 7% more likely to be denied for a loan than White males after controlling for education, financial wellbeing, income, homeownership, urban residential status, year, and industry (see Table IX-53).

Black respondents were 8% more likely to apply for a loan than White males, however this finding was not statistically significant. No statistically significant loan application disparities were found for any racial, ethnic, or gender groups within the economy-wide assessment.

Table IX-53. Illinois Economy-Wide Disparities in Loan Applications and Direct or Indirect Loan Denial (% Change Relative to White Men)

Variable	Black	Asian	Hispanic	Additional races	Female
Loan Applications	7.5%	-3.3%	7.2%	14.9%	0.1%
Loan Denial	6.8%*	5.6%	3.3%	-3.1%	3.6%

Source: AEC Calculation on Fed's SHED data (2020, 2021 and 2022).
*Note: Number of observations 858. Sample includes loan applicants aged 18 or older who are not unemployed. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively.*

ii. Illinois Cannabis-Related Industry Results

Across the Illinois cannabis-related industries, Asian, Black, Hispanic, and female loan applicants were more likely to be denied a loan. However, results were found to be statistically insignificant and therefore cannot be interpreted as differing from zero (see Table IX-54). When assessing loan application rates, Asian, Hispanic, additional raced, and female applicants were more likely to apply for loans than White men, but, again, results were statistically insignificant.

Table IX-54. Illinois Cannabis-Related Industry Disparities in Loan Applications and Direct or Indirect Loan Denial (% Change Relative to White Men)

Metric	Black	Asian	Hispanic	Additional races	Female
Loan Applications	-2.9%	2.4%	8.4%	8.1%	0.9%
Loan Denial	8.5%	12.5%	2.5%	-11.8%	5.6%

Source: AEC calculation on Fed's SHED data (2020, 2021 and 2022).

*Note: Number of observations 462. Sample includes loan applicants aged 18 and older who are not unemployed. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively.*

(b) Simple Probit Model

i. Illinois Economy-Wide Results

The results of the simple economy-wide probit model were similar to the more complex bivariate probit model, but no results here were statistically significant (see Table IX-55). While the results are not statistically significant, the coefficient estimates show the same patterns of loan denials for Black and Hispanic loan applicants, as well as and women in the economy-wide analysis.

Table IX-55. Illinois Economy-Wide Disparities in Direct Loan Denial (% Change Relative to White Men)

Metric	Black	Asian	Hispanic	Additional races	Female
Loan Denial	7.7%	-3.3%	7.2%	15.0%	0.1%

Source: AEC Calculation.
*Note: Number of observations 858. Sample includes loan applicants aged 18 or older who are not unemployed. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively.*

ii. Illinois Cannabis-Related Industry Results

Results for loan denial disparities obtained for the cannabis-related industries sample using simple probit methodology were similar to the bivariate probit estimation. No statistically significant disparities were found for loan applicants within the Illinois cannabis-related industries (see Table IX-56).

Table IX-56. Illinois Cannabis-Related Industry Disparities in Direct Loan Denial (% Change Relative to White Men)

Metric	Black	Asian	Hispanic	Additional races	Female
Loan Denial	-2.7%	2.6%	8.5%	8.3%	1.0%

Source: AEC calculation.
*Note: Number of observations 462. Sample includes loan applicants aged 18 and older who are not unemployed. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively.*

3. Business Growth Indicator Disparity Results

(a) Illinois Economy-Wide Results

i. Using 3-digit NAICS codes

From 2017 to 2020, the number of employees and the total annual payroll increased at Illinois businesses while the number of firms decreased (see Table IX-57). In aggregate, the number of employees working at Illinois businesses grew by 11%, from 4.8 million to 5.4 million employees,

despite the Illinois total population declining by 1% from 12.9 million in 2017 to 12.7 million in 2020.[365,366]In contrast to the change in the number of employees, the total number of firms fell by 3% between 2017 and 2020 in the Illinois economy (see Table IX-57).

Among Illinois businesses, the total number of employees at women-owned businesses grew by 40%, the largest percentage of any demographic group. Businesses owned by men (of any race or ethnicity) grew by 18% (see Table IX-57).

The number of Black-owned companies declined by 66% from 2017 to 2020. The Black population in Illinois declined by just 2% over the same period, suggesting that population decline is not the only factor influencing the share of Black business-owners in the Illinois economy.

Lastly, while total annual payroll increased by 1% in aggregate, Black- and Hispanic-owned businesses faced an annual payroll decline of 42% (see Table IX-57).[367]

Table IX-57. Illinois Economy-Wide Growth Indicators Using 3-digit NAICS (% Change 2017–2020)

Growth Indicator	Black	Hispanic	White	Male	Female	All Business-Owners
Number of Employees	28%	43%	21%	18%	40%	11%
Number of Firms	-66%	-49%	-7%	-9%	-12%	-3%
Annual Payroll	-42%	-42%	-6%	-14%	-4%	1%

Source: U.S. Census Bureau. 2017–2020. "Annual Business Survey" [Table: AB2000CSA01].
Note: Each group corresponds to that category of business owner. For example, the number of employees working at Black- and Hispanic-owned firms increased by 28% and 43%, respectively, from 2017 to 2020.

ii. Using 4-digit NAICS codes

From 2017 to 2020, the number of employees, total annual payroll, and number of firms decreased at Illinois businesses (see Table IX-58). Among Illinois businesses, the total number of employees at Black-owned businesses grew by the largest percentage, 16% (see Table IX-58). The number of Black-owned companies declined by 58% from 2017 to 2020. The Black population in Illinois declined by just 2% over the same period, suggesting that population decline is not the only factor influencing the share of Black business-owners in the Illinois economy.

[365] U.S. Census Bureau, "2017 American Community Survey Table DP05 - Demographic and Housing Estimates," 2017, https://data.census.gov/table/ACSDP5Y2017.DP05?g=040XX00US17.
[366] U.S. Census Bureau, "2020 American Community Survey Table DP05 - Demographic and Housing Estimates," 2020, https://data.census.gov/table/ACSDP5Y2020.DP05?g=040XX00US17.
[367] For each economic indicator, the 2017–2020 growth rate for the Illinois economy should lie between the range of growth rates seen across different racial, ethnic, and gender groups, suggesting there is an issue with these preliminary results. This may be a result of suppressed data at the more detailed levels in the ABS database. Data are suppressed from the publicly available databases to protect personal or confidential business information.

Lastly, while total annual payroll decreased by 4% in aggregate, Black-owned businesses faced an annual payroll decline of 56% (see Table IX-58).[368]

Table IX-58. Illinois Economy-Wide Growth Indicators Using 4-digit NAICS (% Change 2017–2020)

Growth Indicator	Black	Hispanic	White	Male	Female	All Business-Owners
Number of Employees	16%	7%	2%	1%	14%	-2%
Number of Firms	-58%	-50%	-20%	-29%	-35%	-11%
Annual Payroll	-56%	-40%	-28%	-36%	-41%	-4%

Source: U.S. Census Bureau. 2017–2020. "Annual Business Survey" [Table: AB2000CSA01].
Note: Each group corresponds to that category of business owner. For example, the number of employees working at Black- and Hispanic-owned firms increased by 16% and 7%, respectively, from 2017 to 2020.

(b) Illinois Cannabis-Related Industry Results

i. Using 3-digit NAICS codes

Across **all business-owners**, the only cannabis-related industries that experienced growth in the total number of employees between 2017 and 2020 were those associated with the infuser license type (see Table IX-59). Every demographic group experienced an increase in the number of employees for the infuser-associated industries. However, male-owned (of any race or ethnicity) businesses experienced an increase over 32% while Black- and Hispanic-owned businesses saw more modest gains.

For **Hispanic-owned businesses**, the number of employees decreased from 2017 to 2020 for cannabis-related industries associated with the cultivation center, craft grower, and transporter license types.

The number of employees at **Black-owned businesses** increased by over 100% for cannabis-related industries associated with cultivation center, dispensary, and transporter license types. Black-owned businesses lost employees in the craft grower license type. Women-owned businesses experienced a growth in the number of employees for cannabis-related industries associated with all five license types with gains over 100% for craft grower and dispensary-related industries.

[368] For each economic indicator, the 2017–2020 growth rate for the Illinois economy should lie between the range of growth rates seen across different racial, ethnic, and gender groups, suggesting there is an issue with these preliminary results. This may be a result of suppressed data at the more detailed levels in the ABS database. Data are suppressed from the publicly available databases to protect personal or confidential business information.

Table IX-59. Illinois Cannabis-Related Industry Employee Growth Using 3-digit NAICS (% Change 2017–2020)

License Type Association	Black	Hispanic	White	Male	Female	All Business-Owners
Dispensary	198%	69%	1%	12%	109%	-5%
Craft Grower	-74%	-4%	-18%	-14%	180%	-7%
Infuser	3%	7%	21%	32%	20%	14%
Transporter	121%	-5%	-8%	-4%	2%	-4%
Cultivation Center	110%	-3%	-6%	-1%	18%	-2%

Source: U.S. Census Bureau. 2017–2020. "Annual Business Survey" [Table: AB2000CSA01].
Note: ABS data on number of employees was not available for the Crop Production industry. Each column corresponds to a group of business owners. For example, the number of employees working at Hispanic-owned dispensary-related businesses increased by 69% from 2017 to 2020. ABS data availability on business owner characteristics at the 3-digit NAICS level are not consistent across industries. Cells marked with "-" indicate that this industry and worker grouping were not available within the ABS in either of the study years.

Only cannabis-related businesses associate with the transporter and cultivation license types experienced growth in the total number of firms from 2017 to 2020 (see Table IX-60). Men-owned transporter-related businesses experienced the largest increase at 13%, while Black-owned craft grower-related businesses experienced the largest decrease at 64% (see Table IX-60).

Table IX-60. Illinois Cannabis-Related Industry Firm Growth Using 3-digit NAICS (% Change 2017–2020)

License Type Association	Black	Hispanic	White	Male	Female	All Business-Owners
Dispensary	-	-	-52%	-27%	-57%	-30%
Craft Grower	-64%	-	-12%	-5%	-	-18%
Infuser	-36%	-36%	-36%	-38%	-25%	-37%
Transporter	-	-45%	6%	13%	-2%	6%
Cultivation Center	1%	1%	1%	7%	-16%	-1%

Source: U.S. Census Bureau. 2017–2020. "Annual Business Survey" [Table: AB2000CSA01].
Note: ABS data on the number of firms were not available for the Crop Production and Agriculture Support industries. ABS data availability on business owner characteristics at the 3-digit NAICS level are not consistent across industries. Cells marked with "-" indicate that this industry and worker grouping were not available within the ABS in either of the study years.

Cannabis-related industries associated with three of the five license types experienced growth in annual payroll from 2017 to 2020: cultivation center, infuser, and transporter (see Table IX-61). Black-, White-, and women-owned businesses experienced a decrease in total annual payroll for cultivation center-related industries while Hispanic- and men-owned businesses saw an increase in total annual payroll. White-, male-, and women-owned businesses saw declines in payroll infuser-related industries, but Black-owned businesses experienced gains of nearly 400%. White-

, women-, and men-owned businesses experienced an increase in total annual payroll for transporter-related industries while Hispanic-owned businesses experienced a decline in annual payroll. Cannabis-related industries associated with dispensary and craft grower license types experienced a decline in payroll for all demographic groups. Losses were over 75% for Black-owned businesses of craft grower-related industries and women-owned businesses of dispensary-related industries.

Table IX-61. Illinois Cannabis-Related Industry Business Annual Payroll Growth Using 3-digit NAICS (% Change 2017–2020)

License Type Association	Black	Hispanic	White	Male	Female	All Business-Owners
Dispensary	-	-	-24%	-5%	-78%	-2%
Craft Grower	-76%	-	-27%	-23%	-	-7%
Infuser	382%	-	-6%	-4%	-3%	12%
Transporter	-	-27%	6%	12%	6%	4%
Cultivation Center	-14%	9%	-1%	3%	-10%	3%

Source: U.S. Census Bureau. 2017–2020. "Annual Business Survey" [Table: AB2000CSA01].
Note: ABS data on annual payroll was not available for the Crop Production and Agriculture Support industries. ABS data availability on business owner characteristics at the 3-digit NAICS level are not consistent across industries. Cells marked with "-" indicate that this industry and worker grouping were not available within the ABS in either of the study years.

ii. Using 4-digit NAICS codes

From 2017 to 2020:

- cannabis-related industries associated with:
  - all but one of the five license types—craft growers—experienced growth in the total number of employees
  - three cannabis license types—cultivation centers, infusers, and transporters—experienced growth in the number of firms
  - three cannabis license types—cultivation centers, infusers, and transporters—experienced an increase in annual payroll

Cannabis-related industries associated with four cannabis license types—cultivation centers, infusers, dispensaries, and transporters—experienced growth in the total number of employees from 2017 to 2020 (see Table IX-62). In contrast, results using the 3-digit NAICS codes only showed growth in the number of employees for infuser-related industries.

For cannabis-related industries associated with cultivation center and infuser license types, all demographic groups except Black-owned businesses experienced an increase in the number of employees (see Table IX-62). For craft grower-related industries, women-owned businesses experienced a 364% increase in the number of employees, but Hispanic-, White-, and men-owned

businesses experienced decreases over 50%. For Hispanic-owned businesses, the number of employees decreased from 2017 to 2020 for cannabis-related industries associated with the craft grower and dispensary license types.

For dispensary-related industries, Black-owned businesses experienced a striking 703% increase in the number of employees while Hispanic-owned businesses saw a decline in the number of employees. For transporter-related industries, Hispanic-owned businesses experienced a 408% increase in the number of employees while White-, men-, and women-owned businesses experienced increases of over 100%.

Table IX-62. Illinois Cannabis-Related Industry Employee Growth Using 4-digit NAICS (% Change 2017–2020)

License Type Association	Black	Hispanic	White	Male	Female	All Business-Owners
Dispensary	703%	-4%	36%	65%	1%	10%
Craft Grower	-	-93%	-55%	-50%	364%	-15%
Infuser	-89%	15%	34%	64%	24%	31%
Transporter	62%	408%	142%	174%	119%	230%
Cultivation Center	-51%	75%	8%	18%	72%	21%

Source: U.S. Census Bureau. 2017–2020. "Annual Business Survey" [Table: AB2000CSA01].
Note: ABS data on number of employees were not available for NAICS code 1114 Greenhouse, Nursery, and Floriculture Production. Each column corresponds to a group of business owners. ABS data availability on business owner characteristics at the 4-digit NAICS level are not consistent across industries. Cells marked with "-" indicate that this industry and worker grouping were not available within the ABS in either of the study years.

Cannabis-related industries associated with cultivation center, infuser and transporter license types experienced growth in the total number of firms from 2017 to 2020 (see Table IX-63). Unfortunately, due to data suppression in demographic information at the 4-digit NAICS level, ABS firm data for Black-owned businesses in Illinois was not available.

For cannabis-related industries associated with craft grower and dispensary license types, the number of White- and men-owned firms declined from 2017 to 2020. For cannabis-related industries associated with cultivation center and transporter license types, Hispanic-owned businesses experienced a decline in the number of firms while White-, and men-owned businesses experienced an increase in the number of firms. Lastly, the number of firms decreased from 2017 to 2020 for cannabis-related industries associated with the cultivation center and infuser license types for women-owned businesses.

Table IX-63. Illinois Cannabis-Related Industry Firm Growth Using 4-digit NAICS (% Change 2017–2020)

License Type Association	Black	Hispanic	White	Male	Female	All Business-Owners
Dispensary	-	-	-86%	-56%	-	-46%
Craft Grower	-	-	-60%	-52%	-	-48%
Infuser	-	12%	-52%	-54%	-26%	2%
Transporter	-	-98%	29%	40%	-	56%
Cultivation Center	-	-93%	8%	19%	-84%	15%

Source: U.S. Census Bureau. 2017–2020. "Annual Business Survey" [Table: AB2000CSA01].
Note: ABS data on number of firms were not available for NAICS code 1114 Greenhouse, Nursery, and Floriculture Production. ABS data availability on business owner characteristics at the 4-digit NAICS level are not consistent across industries. Cells marked with "-" indicate that this industry and worker grouping were not available within the ABS in either of the study years.

Cannabis-related industries associated with cultivation center, infuser, and transporter license types experienced growth in annual payroll from 2017 to 2020 (see Table IX-64). Unfortunately, due to data suppression (i.e., missing data) in demographic information at the 4-digit NAICS level, annual payroll data for Black-owned businesses in Illinois was not available. Similarly, limited detailed industry annual payroll data was available for women-owned businesses.

White- and men-owned businesses experienced an increase in total annual payroll in transporter-related industries, while Hispanic-owned businesses experienced a decline in annual payroll. White-, male-, and women-owned businesses saw declines in payroll for infuser-related industries, and Hispanic-owned businesses experienced gains of 14%. Cannabis-related industries associated with dispensary and craft grower license types experienced a decline in payroll for White- and men-owned businesses, but data was not available for other demographic groups.

Table IX-64. Illinois Cannabis-Related Industry Business Annual Payroll Growth Using 4-digit NAICS (% Change 2017–2020)

License Type Association	Black	Hispanic	White	Male	Female	All Business-Owners
Dispensary	-	-	-96%	-65%	-	-11%
Craft Grower	-	-	-70%	-71%	-	-31%
Infuser	-	14%	-38%	-31%	-46%	70%
Transporter	-	-60%	13%	22%	-	190%
Cultivation Center	-	-29%	-22%	-	-	34%

Source: U.S. Census Bureau. 2017–2020. "Annual Business Survey" [Table: AB2000CSA01].

Note: ABS data on annual payroll was not available for NAICS code 1114 Greenhouse, Nursery, and Floriculture Production. ABS data availability on business owner characteristics at the 4-digit NAICS level are not consistent across industries. Cells marked with "-" indicate that this industry and worker grouping were not available within the ABS in either of the study years.

4. Wage Disparity Results

The Illinois economy-wide and cannabis-related industry assessments of wage disparities show significant disparities in hourly wage rates earned by Black, Hispanic, Asian, and female workers relative to White men. Women and racial and ethnic minorities in Illinois make lower wages on average than their White male counterparts with the same experience, education, marital status, household characteristics, and industry. Illinois cannabis-related industries also show similar trends of wage disparities: across all five cannabis license types, women and/or racial and ethnic minorities receive significantly lower hourly wage rates than their White male co-workers.

(a) Hourly Wage with Interactions Results

i. Illinois Economy-Wide Results

In 2021, Illinois' Black, Hispanic, Asian, additional raced, and/or female workers made lower wages than White male workers on average—and women received lower wages than men of their respective race and/or ethnicity (see Table IX-65).

Black men and women faced the largest disparities at 31% and 37% lower wages than White men. Moreover, women of each race and/or ethnicity received lower wages than their counterpart men of the same race and/or ethnicity (see Table IX-65).

All of the disparities except for Asian women are statistically significant. The statistical significance is at the 0.001 level which means there is a 99.9% or higher degree of confidence that race and/or ethnicity and gender characteristics negatively impact their hourly wage rate compared to White men, while accounting for differences in experience, education, marital status, household characteristics, and industry.

Table IX-65. Illinois Economy-Wide Disparities in Hourly Wage Rate with Interactions (% Change Relative to White Men)

Category	Black	Asian	Hispanic	Additional Races	White Women
Men	-31.2%***	-3.3%***	-10.9%***	-11.8%***	--
Women	-36.6%***	-30.8%	-32.8%***	-30.4%***	-28.5%***

*Source: AEC calculation on 2021 ACS PUMS 5-Year. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively.*
Note: Sample includes workers aged 18–65 who are not unemployed, in school, or in the military. Number of observations: 255,485.

ii. Illinois Cannabis-Related Industry Results

In cannabis-related industries associated with four of the five license types—dispensary, infuser, transporter, and cultivation center—Black men made significantly lower hourly wage rates than White men on average (see Table IX-66). Moreover, Table IX-66 shows Black men faced the largest disparity among all races and ethnicities earning:

- Twenty-eight percent less than White men in dispensary-related industries
- Forty percent less than White men in infuser-related industries
- Thirty-six percent less than White men in transporter-related industries
- Thirty-seven percent less than White men in cultivation center-related industries

Table IX-66. Illinois Economy-Wide Disparities in Male Hourly Wage Rate (% Change Relative to White Men)

License Type Association	Black	Hispanic	Additional Races
Dispensary	-27.5%***	-5.6%	-11.6%*
Craft Grower	-12.8%	-2.3%	11.6%
Infuser	-40.7%***	-14.7%***	-5.5%
Transporter	-36.4%***	-12.7%***	-17.6%***
Cultivation Center	-36.6%***	-11.2%***	-6.1%*

*Source: AEC calculation on 2021 ACS PUMS 5-Year. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively.*
Note: Sample includes workers aged 18–65 who are not unemployed, in school, or in the military. Number of observations: dispensary, 8,278; craft grower, 5,744; infuser, 10,221; transporter, 16,347; cultivation center, 32,312.

Across all Illinois cannabis-related industries associated with all cannabis license types, women of one or more race or ethnicity received significantly lower hourly wage rates compared to White men (see Table IX-67). Dispensary-related businesses showed significant wage disparities for all racial, ethic, and gender groups, with Black women having the largest disparity: earning 26% less than White men. Hispanic women faced the largest significant disparity across all associated license types earning 42% less than White men in transporter-related business.

Table IX-67. Illinois Economy-Wide Disparities in Female Hourly Wage Rate (% Change Relative to White Men)

License Type Association	Black	Hispanic	Additional Races	White
Dispensary	-25.7%**	-13.7%**	-17.0%**	-23.5%***
Craft Grower	-47.5%	-26.8%*	-16.8%	-9.0%**
Infuser	-47.3%	-45.2%	-32.7%	-21.8%***

License Type Association	Black	Hispanic	Additional Races	White
Transporter	-46.5%	-41.9%**	-25.0%	-19.7%***
Cultivation Center	-48.0%	-39.0%***	-23.1%	-17.7%***

*Source: AEC calculation 2021 ACS PUMS 5-Year. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively.*
Note: Sample includes workers aged 18–65 who are not unemployed, in school, or in the military. Number of observations: dispensary, 8,278; craft grower, 5,744; infuser, 10,221; transporter, 16,347; cultivation center, 32,312.

(b) Hourly Wage without Interactions Results

i. Illinois Economy-Wide Results

In 2021, women in Illinois earned 26% lower hourly wage rates than White men (see Table IX-68). Racial and/or ethnic minority workers earned significantly lower hourly wage rates than White men, with Black workers facing the largest disparity of 19% less in hourly wage rates. Hispanic, Asian, and additional raced workers earned 3%–8% less in hourly wage rates than White males (see Table IX-68).

Table IX-68. Illinois Economy-Wide Disparities in Hourly Wage Rate without Interactions (% Change Relative to White Men)

Category	Black	Asian	Hispanic	Additional Races	Female
Illinois Economy	-18.7%***	-2.8%***	-7.8%***	-6.9%***	-25.5%***

*Source: AEC calculation. Note: Number of observations, 255,485. Sample includes workers aged 18–65 who are not unemployed, in school, or in the military. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively.*

ii. Illinois cannabis-related Results

Across all Illinois cannabis-related industries associated with all cannabis license types, racial and ethnic minorities and women receive significantly lower hourly wage rates than White men. In 2021, women earned 13%–23% lower hourly wage rates than White males, and Black workers earned 12%–35% lower hourly wage rates than White males (see Table IX-69).

Table IX-69. Illinois Cannabis-Related Industry Disparities in Hourly Wage Rate (% Change Relative to White Men)

License Type Association	Black	Hispanic	Additional Races	Women
Dispensary	-12.4%**	2.7%	-1.6%	-18.0%***
Craft Grower	-20.8%**	-7.5%*	3.4%	-13.1%***
Infuser	-34.3%***	-18.3%***	-7.8%**	-23.0%***

License Type Association	Black	Hispanic	Additional Races	Women
Transporter	-32.6%***	-15.8%***	-13.3%***	-19.6%***
Cultivation Center	-34.1%***	-14.9%***	-5.7%**	-18.9%***

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Note: Sample includes workers aged 18–65 who are not unemployed, in school, or in the military. Number of observations: dispensary, 8,278; craft grower, 5,744; infuser, 10,221; transporter, 16,347; cultivation center, 32,312.*

(c) Annual Wage with Interactions Results

i. Illinois Economy-Wide Results

In 2021, racial and/or ethnic minority men earned 9%–41% less than White men in Illinois (see Table IX-70). Similarly, women of all races and ethnicities earned significantly less (42%–52%) than White men. Black women faced the most severe earnings disparity, earning half the annual wage of White men with similar education, experience, household composition, and industry (see Table IX-70).

Table IX-70. Illinois Economy-Wide Wage Rate Assessment Results (% Change Relative to White Men)

Category	Black	Asian	Hispanic	Additional Races	White Women
Men	-41.3%***	-9.4%***	-12.3%***	-14.6%***	
Women	-52.0%***	-45.5%***	-44.4%***	-43.3%***	-42.3%***

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Note: Sample includes workers aged 18–65 who are not unemployed, in school, or in the military. Number of observations: 255,485.*

ii. Illinois Cannabis-Related Industry Results

Across all Illinois cannabis-related industries associated with all cannabis license types, women and racial and ethnic minority men earned significantly less than White men on average (see Table IX-71 and Table IX-72). Across all associated license types, White women earned 25%–40% less than White men on average. The largest disparity for Black women is in transporter-related business where they earn 69% less than White men.

Table IX-71. Illinois Cannabis-Related Industry Disparities in Annual Male Earnings (% Change Relative to White Men)

License Type Association	Black	Hispanic	Additional Races
Dispensary	-36.3%***	-4.5%	-10.7%*
Craft Grower	-19.4%*	-5.5%	7.4%
Infuser	-49.5%***	-16.2%***	-13.3%***

License Type Association	Black	Hispanic	Additional Races
Transporter	-51.3%***	-17.4%***	-27.4%***
Cultivation Center	-49.9%***	-14.9%***	-14.5%***

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Note: Sample includes workers aged 18–65 who are not unemployed, in school, or in the military. Number of observations: dispensary, 8,278; craft grower, 5,744; infuser, 10,221; transporter, 16,347; cultivation center, 32,312.*

Table IX-72. Illinois Cannabis-Related Industry Disparities in Annual Female Earnings (% Change Relative to White Men)

License Type Association	Black	Hispanic	Additional Races	White Women
Dispensary	-40.5%***	-23.5%**	-28.4%*	-36.1%***
Craft Grower	-70.6%	-40.5%	-35.4%	-24.9%***
Infuser	-61.0%	-51.9%	-45.0%	-28.8%***
Transporter	-69.0%***	-61.2%	-40.6%**	-39.5%***
Cultivation Center	-68.8%**	-52.6%	-37.7%	-32.3%***

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Note: Sample includes workers aged 18–65 who are not unemployed, in school, or in the military. Number of observations: dispensary, 8,278; craft grower, 5,744; infuser, 10,221; transporter, 16,347; cultivation center, 32,312.*

H. Full Regression Estimates

The following appendix provides full regression estimates for three of the four regression analyses we conducted:

1. Assessment of disparity in business ownership
2. Assessment of disparity in business loan denial
3. Assessment of disparity in wages

The fourth assessment—the assessment of disparity in business growth indicators—is not a regression analysis. The marginal effects reported here are calculated from the coefficient estimates and are interpreted as the percentage point change in the outcome (relative to White men) when the dummy variable is applied.

1. Business Ownership Regression Estimates

(a) Illinois Economy-Wide Results

Table IX-73 presents the economy-wide marginal effects for all independent variables.[369]

Table IX-73. Illinois Economy-Wide Marginal Effect of All Variables on Business Ownership (Change Relative to White Men)

Independent Variable	Marginal Effect	Standard Error
Black	-0.02 ***	0.001
Asian	-0.004*	0.002
Hispanic	-0.02 ***	0.001
Additional race	0.006*	0.003
Women	-0.012***	0.001
College degree	0.013***	0.001
Married	0.019***	0.001
Has children under 6	0.007**	0.003
Experience	0.002***	0.000
Citizenship	-0.021***	0.002
Agriculture, Forestry, Fishing and Hunting	0.315***	0.009
Mining, Quarrying, and Oil and Gas Extraction	-0.024***	0.007
Utilities	-0.054***	0.002
Construction	0.128***	0.004
Manufacturing	-0.044***	0.001
Wholesale Trade	-0.017***	0.002
Retail Trade	0.001	0.002
Transportation and Warehousing	0.042***	0.003
Information	0.004	0.004
Finance and Insurance	-0.021***	0.002
Real Estate and Rental and Leasing	0.14 ***	0.006

[369] Sample includes workers aged 18–65 who are not unemployed or in the military.

Independent Variable	Marginal Effect	Standard Error
Professional, Scientific, and Technical Services	0.07 ***	0.003
Management of Companies and Enterprises	-0.05 ***	0.004
Administrative and Support and Waste Management and Remediation Services	0.079***	0.004
Educational Services	-0.05 ***	0.001
Arts, Entertainment, and Recreation	0.095***	0.005
Accommodation and Food Services	0.001	0.002
Other Services (except Public Administration)	0.149***	0.004

*Source: AEC calculations. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Note: 327,054 observations.*

Table IX-74. Illinois Economy-Wide Business Ownership Full Regression Results[370]

Independent Variable	Coefficient	Standard Error
Black	-0.185***	0.014
Hispanic	-0.183***	0.012
Asian	-0.033*	0.016
Additional race	0.05*	0.023
Female	-0.101***	0.008
College degree	0.109***	0.008
Married	0.161***	0.008
Has children under 6	0.056**	0.021
Experience	0.015***	0.000
Citizenship	-0.159***	0.014
Agriculture, Forestry, Fishing and Hunting	1.238***	0.024
Mining, Quarrying, and Oil and Gas Extraction	-0.239**	0.080
Utilities	-0.84***	0.070
Construction	0.684***	0.015

[370] Coefficient estimates of probit models cannot be interpreted as a percentage point change in the probability of being a business owner, marginal effects must be examined to do this. To get from coefficient estimates seen here to marginal impacts presented above, take the partial derivative of the function with respect to that variable. Results in the main body of this assessment are converted to marginal effects which present the differences in probabilities.

Independent Variable	Coefficient	Standard Error
Manufacturing	-0.469***	0.017
Wholesale Trade	-0.152***	0.024
Retail Trade	0.01	0.015
Transportation and Warehousing	0.286***	0.017
Information	0.03	0.028
Finance and Insurance	-0.202***	0.019
Real Estate and Rental and Leasing	0.714***	0.023
Professional, Scientific, and Technical Services	0.436***	0.014
Management of Companies and Enterprises	-0.732***	0.141
Administrative and Support and Waste Management and Remediation Services	0.474***	0.017
Educational Services	-0.588***	0.019
Arts, Entertainment, and Recreation	0.539***	0.022
Accommodation and Food Services	0.006	0.019
Other Services (except Public Administration)	0.759***	0.015
Constant	-1.816***	0.021
Pseudo R-squared	**0.127**	

*Source: AEC calculations. Note: 327,054 observations. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively.*

(b) Cannabis-Related Industries[371]

Table IX-75 presents the cannabis-related industry marginal effects for remaining independent variables.[372]

Table IX-75. Illinois Cannabis-Related Industry Full Regression Results for Dispensaries

Independent Variable	Coefficient	Standard Error
Black	0.047	0.081

[371] Coefficient estimates of probit models cannot be interpreted as a percentage point change in the probability of being a business owner, marginal effects must be examined to do this. To get from coefficient estimates seen here to marginal impacts presented above, take the partial derivative of the function with respect to that variable. Results in the main body of this assessment are converted to marginal effects which present the differences in probabilities.

[372] Sample includes workers aged 18–65 who are not unemployed or in the military.

Independent Variable	Coefficient	Standard Error
Hispanic	-0.053	0.070
Additional race	0.253***	0.065
Female	-0.116**	0.041
College degree	0.232***	0.042
Married	0.324***	0.045
Has children under 6	0.001	0.116
Experience	0.017***	0.002
Citizenship	0.085	0.093
Constant	-2.311***	0.108
Pseudo R-squared	**0.096**	

*Source: AEC calculations. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 11,663.*

Table IX-76. Illinois Cannabis-Related Industry Full Regression Results for Craft Growers

Independent Variable	Coefficient	Standard Error
Black	-1.102***	0.178
Hispanic	-0.913***	0.095
Additional race	-0.382***	0.101
Female	-0.579***	0.046
College degree	0.175***	0.038
Married	0.253***	0.040
Has children under 6	-0.025	0.161
Experience	0.017***	0.001
Citizenship	0.041	0.118
Constant	-1.368***	0.127
Pseudo R-squared	**0.106**	

*Source: AEC calculations. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 7,489.*

Table IX-77. Illinois Cannabis-Related Industry Full Regression Results for Infusers

Independent Variable	Coefficient	Standard Error
Black	-0.358**	0.124
Hispanic	-0.228**	0.083
Additional race	-0.167	0.102
Female	0.122*	0.053
College degree	0.024	0.054
Married	0.093	0.056
Has children under 6	0.228	0.146
Experience	0.007***	0.002
Citizenship	0.112	0.107
Constant	-2.317***	0.132
Pseudo R-squared	**0.020**	

*Source: AEC calculations. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 11,936.*

Table IX-78. Illinois Cannabis-Related Industry Full Regression Results for Transporters

Independent Variable	Coefficient	Standard Error
Black	-0.492***	0.040
Hispanic	-0.299***	0.033
Additional race	-0.248***	0.053
Female	-0.085***	0.024
College degree	0.047	0.025
Married	0.209***	0.024
Has children under 6	-0.205*	0.088
Experience	0.011***	0.001
Citizenship	-0.302***	0.037
Constant	-1.051***	0.046
Pseudo R-squared	**0.043**	

*Source: AEC calculations. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 21,055.*

Table IX-79. Illinois Cannabis-Related Industry Full Regression Results for Cultivation Centers

Independent Variable	Coefficient	Standard Error
Black	-0.509***	0.035
Hispanic	-0.411***	0.028
Additional race	-0.379***	0.041
Female	-0.2 ***	0.019
College degree	0.019	0.018
Married	0.18 ***	0.018
Has children under 6	-0.074	0.067
Experience	0.011***	0.001
Citizenship	-0.218***	0.032
Constant	-1.208***	0.039
Pseudo R-squared	**0.045**	

*Source: AEC calculations. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 40,480.*

2. Business Loan Denial Regression Estimates

(a) Illinois Economy-Wide Results

Table IX-80. Illinois Economy-Wide Marginal Effect of All Variables on Loan Applications (Change Relative to White Men)

Independent Variable	Marginal Effect	Standard Error
Asian	-0.033	0.071
Black	0.075	0.055
Hispanic	0.072	0.057
Additional race	0.149	0.109
Female	0.001	0.034
College Degree	0.024	0.039
Self-reported financial wellbeing	-0.096*	0.045
Bank account	0.492*	0.215
Credit card	0.089	0.084

Independent Variable	Marginal Effect	Standard Error
Property	-0.059	0.046
Location	-0.030	0.057
Agricultural	-0.102	0.166
Manufacturing	0.042	0.049
IT services	-0.005	0.044
$10,000 to $24,999	0.228	0.138
$25,000 to $49,999	0.066	0.119
$50,000 to $74,999	0.141	0.120
$75,000 to $99,999	0.118	0.122
$100,000 to $149,999	0.176	0.121
$150,000 or more	0.143	0.122
2021	0.007	0.041
2022	-0.010	0.040

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 858.*

Table IX-81. Illinois Economy-Wide Marginal Effect of All Variables on Loan Denial (Change Relative to White Men)

Independent Variable	Marginal Effect	Standard Error
Asian	0.056	0.048
Black	0.068*	0.029
Hispanic	0.033	0.032
Additional race	-0.031	0.077
Female	0.036	0.021
College Degree	-0.081***	0.025
Self-reported financial wellbeing	-0.127***	0.022
Bank account	0.115	0.075
Credit card	-0.074	0.039
Property	-0.063*	0.025

Independent Variable	Marginal Effect	Standard Error
Location	0.013	0.036
Agricultural	0.168*	0.082
Manufacturing	0.02	0.030
IT services	-0.008	0.031
$10,000 to $24,999	0.118	0.063
$25,000 to $49,999	0.121**	0.046
$50,000 to $74,999	0.119*	0.047
$75,000 to $99,999	0.04	0.045
$100,000 to $149,999	0.056	0.046
$150,000 or more	0.011	0.044
2021	0.031	0.026
2022	0.008	0.025

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 858.*

Table IX-82. Illinois Economy-Wide Loan Application Full Regression Results[373]

Independent Variable	Coefficient	Standard Error
Asian	-0.086	0.188
Black	0.198	0.145
Hispanic	0.190	0.151
Additional race	0.394	0.289
Female	0.003	0.090
College Degree	0.063	0.103
Self-reported financial wellbeing	-0.252*	0.119
Bank account	1.296*	0.572
Credit card	0.234	0.223

[373] Coefficient estimates of probit models cannot be interpreted as a percentage point change in the probability of being a business owner, marginal effects must be examined to do this. To get from coefficient estimates seen here to marginal impacts presented above, take the partial derivative of the function with respect to that variable. Results in the main body of this assessment are converted to marginal effects which present the differences in probabilities.

Independent Variable	Coefficient	Standard Error
Property	-0.156	0.121
Location	-0.078	0.149
Agricultural	-0.269	0.438
Manufacturing	0.111	0.130
IT services	-0.014	0.116
$10,000 to $24,999	0.618	0.398
$25,000 to $49,999	0.193	0.360
$50,000 to $74,999	0.393	0.362
$75,000 to $99,999	0.333	0.368
$100,000 to $149,999	0.484	0.366
$150,000 or more	0.40	0.367
2021	0.018	0.108
2022	-0.028	0.106
Constant	-1.8 **	0.637
Wald test of rho	**12.683*** **	

Source: AEC calculation. Number of observations 858.

Table IX-83. Illinois Economy-Wide Loan Denial Full Regression Results[374]

Independent Variable	Coefficient	Standard Error
Asian	0.331	0.281
Black	0.396*	0.171
Hispanic	0.192	0.191
Additional race	-0.182	0.450
Female	0.214	0.124
College Degree	-0.474***	0.149
Self-reported financial wellbeing	-0.747***	0.135

[374] Coefficient estimates of probit models cannot be interpreted as a percentage point change in the probability of being a business owner, marginal effects must be examined to do this. To get from coefficient estimates seen here to marginal impacts presented above, take the partial derivative of the function with respect to that variable. Results in the main body of this assessment are converted to marginal effects which present the differences in probabilities.

Independent Variable	Coefficient	Standard Error
Bank account	0.675	0.440
Credit card	-0.437	0.228
Property	-0.370*	0.148
Location	0.075	0.210
Agricultural	0.985*	0.485
Manufacturing	0.116	0.178
IT services	-0.049	0.185
$10,000 to $24,999	0.718	0.398
$25,000 to $49,999	0.731*	0.357
$50,000 to $74,999	0.723*	0.366
$75,000 to $99,999	0.309	0.383
$100,000 to $149,999	0.406	0.382
$150,000 or more	0.097	0.395
2021	0.181	0.150
2022	0.047	0.151
Constant	-1.182*	0.522
Wald test of rho	**12.683***	

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 858.*

(b) Cannabis-Related Industries

Table IX-84. Illinois Cannabis-Related Industry Marginal Effect of All Variables on Loan Applications (Change Relative to White Men)

Independent Variable	Marginal Effects	Standard Error
Asian	0.024	0.097
Black	-0.029	0.074
Hispanic	0.084	0.076
Additional race	0.081	0.146
Female	0.009	0.046

Independent Variable	Marginal Effects	Standard Error
College Degree	0.021	0.052
Self-reported financial wellbeing	-0.081	0.056
Bank account	0.408	0.229
Credit card	0.093	0.095
Property	-0.107	0.058
Location	-0.085	0.074
Agricultural	-0.094	0.167
Manufacturing	0.040	0.058
IT services	-0.210	0.183
$10,000 to $24,999	0.195	0.154
$25,000 to $49,999	0.068	0.132
$50,000 to $74,999	0.131	0.135
$75,000 to $99,999	0.162	0.140
$100,000 to $149,999	0.127	0.140
$150,000 or more	0.190	0.140
2021	0.014	0.056
2022	-0.015	0.055

*Source: AEC calculation.***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 462.*

Table IX-85. Illinois Cannabis-Related Industry Marginal Effect of All Variables on Loan Denial (Change Relative to White Men)

Independent Variable	Marginal Effects	Standard Error
Asian	0.125	0.072
Black	0.085	0.046
Hispanic	0.025	0.051
Additional race	-0.118	0.131
Female	0.056	0.032
College Degree	-0.122**	0.041

Independent Variable	Marginal Effects	Standard Error
Self-reported financial wellbeing	-0.164***	0.033
Bank account	0.127	0.097
Credit card	-0.066	0.054
Property	-0.025	0.039
Location	0.036	0.054
Agricultural	0.194	0.107
Manufacturing	0.054	0.043
IT services	-0.050	0.141
$10,000 to $24,999	0.138	0.095
$25,000 to $49,999	0.111	0.076
$50,000 to $74,999	0.128	0.080
$75,000 to $99,999	0.043	0.081
$100,000 to $149,999	0.010	0.081
$150,000 or more	-0.046	0.077
2021	0.102*	0.040
2022	0.049	0.038

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 462.*

Table IX-86. Illinois Cannabis-Related Industry Loan Application Full Regression Results[375]

Independent Variable	Coefficient	Standard Error
Asian	0.065	0.259
Black	-0.078	0.198
Hispanic	0.226	0.205
Additional race	0.217	0.391
Female	0.024	0.124

[375] Coefficient estimates of probit models cannot be interpreted as a percentage point change in the probability of being a business owner, marginal effects must be examined to do this. To get from coefficient estimates seen here to marginal impacts presented above, take the partial derivative of the function with respect to that variable. Results in the main body of this assessment are converted to marginal effects which present the differences in probabilities.

Independent Variable	Coefficient	Standard Error
College Degree	0.057	0.140
Self-reported financial wellbeing	-0.217	0.151
Bank account	1.091	0.618
Credit card	0.248	0.254
Property	-0.287	0.156
Location	-0.227	0.198
Agricultural	-0.251	0.447
Manufacturing	0.108	0.154
IT services	-0.562	0.492
$10,000 to $24,999	0.541	0.447
$25,000 to $49,999	0.201	0.403
$50,000 to $74,999	0.373	0.409
$75,000 to $99,999	0.453	0.422
$100,000 to $149,999	0.361	0.423
$150,000 or more	0.528	0.423
2021	0.037	0.149
2022	-0.041	0.148
Constant	-1.409*	0.691
Wald test of rho	**9.460****	

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 462.*

Table IX-87. Illinois Cannabis-Related Industry Loan Denial Full Regression Results[376]

Independent Variable	Coefficient	Standard Error
Asian	0.596	0.347
Black	0.403	0.221

[376] Coefficient estimates of probit models cannot be interpreted as a percentage point change in the probability of being a business owner, marginal effects must be examined to do this. To get from coefficient estimates seen here to marginal impacts presented above, take the partial derivative of the function with respect to that variable. Results in the main body of this assessment are converted to marginal effects which present the differences in probabilities.

Independent Variable	Coefficient	Standard Error
Hispanic	0.12	0.240
Additional race	-0.56	0.624
Female	0.265	0.155
College Degree	-0.58 **	0.197
Self-reported financial wellbeing	-0.781***	0.167
Bank account	0.602	0.461
Credit card	-0.315	0.256
Property	-0.121	0.185
Location	0.171	0.258
Agricultural	0.923	0.514
Manufacturing	0.255	0.204
IT services	-0.236	0.670
$10,000 to $24,999	0.599	0.432
$25,000 to $49,999	0.499	0.392
$50,000 to $74,999	0.562	0.405
$75,000 to $99,999	0.218	0.430
$100,000 to $149,999	0.055	0.443
$150,000 or more	-0.297	0.461
2021	0.483*	0.194
2022	0.254	0.196
Constant	-1.363*	0.573
Wald test of rho	**9.460****	

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 462.*

3. Wage Disparity Regression Estimates

(a) Illinois Economy-Wide Results

Table IX-88. Full Illinois Economy-Wide Regression Results

Independent Variable	Coefficient	Standard Error
Black	-0.312***	0.010
Black*female	0.231***	0.014
Hispanic	-0.109***	0.006
Hispanic*female	0.066***	0.009
Asian	-0.033***	0.010
Asian*female	0.010	0.015
Additional race	-0.118***	0.017
Additional race*female	0.099***	0.024
Female	-0.285***	0.004
College degree	0.601***	0.004
Married	0.177***	0.004
Has children under 6	0.080***	0.009
Experience	0.047***	0.001
Experience-squared	-0.001***	0.000
Agriculture, Forestry, Fishing and Hunting	-0.388***	0.021
Mining, Quarrying, and Oil and Gas Extraction	0.093**	0.030
Utilities	0.396***	0.015
Construction	0.028***	0.008
Manufacturing	0.035***	0.006
Wholesale Trade	0.058***	0.009
Retail Trade	-0.274***	0.007
Transportation and Warehousing	-0.053***	0.008
Information	0.054***	0.013
Finance and Insurance	0.308***	0.007

Independent Variable	Coefficient	Standard Error
Real Estate and Rental and Leasing	0.021	0.015
Professional, Scientific, and Technical Services	0.235***	0.007
Management of Companies and Enterprises	0.252***	0.034
Administrative and Support and Waste Management and Remediation Services	-0.322***	0.011
Educational Services	-0.244***	0.007
Arts, Entertainment, and Recreation	-0.408***	0.016
Accommodation and Food Services	-0.472***	0.009
Other Services (except Public Administration)	-0.263***	0.010
Public Administration	0.151***	0.008
Constant	2.290***	0.008
R-squared	**0.268**	

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 255,485.*
Note: Sample includes workers aged 18–65 who are not unemployed, in school, or in the military.

(b) Cannabis-Related Industries

Table IX-89. Illinois Cannabis-Related Industry Regression Results for Cultivation Centers

Independent Variable	Coefficient	Standard Error
Black	-0.366***	0.026
Black*female	0.063	0.042
Hispanic	-0.112***	0.014
Hispanic*female	-0.101***	0.025
Additional race	-0.061*	0.027
Additional race*female	0.007	0.045
Female	-0.177***	0.013
College degree	0.735***	0.012
Married	0.237***	0.011
Has children under 6	-0.007	0.038
Experience	0.049***	0.002

Independent Variable	Coefficient	Standard Error
Experience-squared	-0.001***	0.000
Constant	2.057***	0.018
R-squared	**0.215**	

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 32,312.*
Note: Sample includes workers aged 18–65 who are not unemployed, in school, or in the military

Table IX-90. Illinois Cannabis-Related Industry Regression Results for Dispensaries

Variable	Coefficient	Standard Error
Black	-0.275***	0.067
Black*female	0.253**	0.083
Hispanic	-0.056	0.042
Hispanic*female	0.154**	0.056
Additional race	-0.116*	0.048
Additional race*female	0.181**	0.069
Female	-0.235***	0.023
College degree	0.769***	0.024
Married	0.21 ***	0.021
Has children under 6	0.128*	0.052
Experience	0.042***	0.003
Experience-squared	-0.001***	0.000
Constant	1.966***	0.032
R-squared	**0.209**	

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 8,278.*
Note: Sample includes workers aged 18–65 who are not unemployed, in school, or in the military

Table IX-91. Illinois Cannabis-Related Industry Regression Results for Craft Growers

Variable	Coefficient	Standard Error
Black	-0.128	0.082
Black*female	-0.257	0.150

Variable	Coefficient	Standard Error
Hispanic	-0.023	0.038
Hispanic*female	-0.155*	0.065
Additional race	0.116	0.067
Additional race*female	-0.194	0.110
Female	-0.09 **	0.029
College degree	0.686***	0.026
Married	0.203***	0.025
Has children under 6	0.112	0.082
Experience	0.056***	0.004
Experience-squared	-0.001***	0.000
Constant	2.02 ***	0.039
R-squared	**0.191**	

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 5,744.*
Note: Sample includes workers aged 18–65 who are not unemployed, in school, or in the military

Table IX-92. Illinois Cannabis-Related Industry Regression Results for Infusers

Variable	Coefficient	Standard Error
Black	-0.407***	0.050
Black*female	0.152	0.081
Hispanic	-0.147***	0.024
Hispanic*female	-0.087*	0.039
Additional race	-0.055	0.035
Additional race*female	-0.054	0.059
Female	-0.218***	0.020
College degree	0.892***	0.017
Married	0.236***	0.017
Has children under 6	-0.014	0.061
Experience	0.05 ***	0.003
Experience-squared	-0.001***	0.000

Variable	Coefficient	Standard Error
Constant	2.141***	0.032
R-squared	**0.327**	

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 10,221.*
Note: Sample includes workers aged 18–65 who are not unemployed, in school, or in the military

Table IX-93. Illinois Cannabis-Related Industry Regression Results for Transports

Variable	Coefficient	Standard Error
Black	-0.364***	0.033
Black*female	0.096	0.052
Hispanic	-0.127***	0.019
Hispanic*female	-0.095**	0.036
Additional race	-0.176***	0.045
Additional race*female	0.123	0.075
Female	-0.197***	0.019
College degree	0.538***	0.018
Married	0.225***	0.015
Has children under 6	-0.027	0.055
Experience	0.043***	0.002
Experience-squared	-0.001***	0.000
Constant	2.084***	0.027
R-squared	**0.143**	

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: 16,347.*
Note: Sample includes workers aged 18–65 who are not unemployed, in school, or in the military

I. Analysis of Reliability

All regressions have problems, but many studies are not as transparent about the problem as we attempt to be here. Our “problems” are no larger or different than most. They are normal pitfalls of all regressions.

In accordance with best practices in econometric analysis, tests were conducted on the coefficient estimates to assess the reliability of these modeling results and to determine if any model

assumptions have been violated—such as equal error terms, uncorrelated independent variables, or model specification. These post-estimation tests are considered best practice in empirical research and do not compromise the validity of regression results and only serve as supplementary assessments to account for data limitations.

These analyses provide valuable information about the reliability and significance of the estimated coefficients to gauge the precision, validity, and credibility of the findings. By incorporating additional tests, the robustness of the regression model is assessed and, often, improved—a step that is often missing from previous disparities studies.

The following appendix provides the results of an analysis of reliability for three of the four regression analyses we conducted:

1. Assessment of disparity in business ownership
2. Assessment of disparity in business loan denial
3. Assessment of disparity in wages

The fourth assessment—the assessment of disparity in business growth indicators—did not include an analysis of reliability because the assessment is not a regression analysis.

1. Business Ownership

To assess the reliability of the result, tests were conducted on the coefficient estimates to determine if any model assumptions have been violated—such as misspecification—or if the estimates statistically differ from zero:

- **Coefficients jointly equaling zero:** A Wald test determines if all coefficients in the regression jointly differ from zero. When the test statistic is found to be significant, at least one coefficient estimate significantly differs from zero. The Wald test indicates that at least one of the estimated coefficients for both the Illinois economy-wide and cannabis-related industry models do significantly differ from zero, implying the coefficient estimates are jointly significant.
- **Misspecification:** The Link test is used to determine if the models suffer from misspecification of included variables, for example the incorrect form of the dependent variables, or if the model is missing key variables. Results from the link test, which test the predictive power of the squared dependent, indicates there is misspecification in both the Illinois economy wide and cannabis-related industry models.
- **Model Goodness-of-Fit:** Pearson Goodness-of-Fit test was used to assess the fit of the probit model on the data, or in other words how closely the predicted wage rate, based on model coefficients, aligns with the actual wage rate seen in the data. Significant test statistics indicate there is poor model fit. The Pearson Goodness-of-Fit test results indicate there is a poor fit for both the Illinois economy-wide and cannabis-related industry models.

(a) Wald test

To test the theory that jointly, the coefficient estimates of each model are equal to zero, a Wald test is used. The Wald test produces a chi-square test statistic, a measure of the relationship between the expected outcomes and the actual data value. When the chi-squared test statistics are significant, the test indicates that at least one coefficient is statistically different from zero. Post-estimation tests of the initial estimation of the Illinois economy-wide and cannabis-related industry wage models revealed that jointly, the coefficient estimates are significant—they do differ from zero (see Table IX-94).

Table IX-94. Wald Test of Coefficients

License Type Association	Test Statistic
Dispensary	330.46***
Craft Grower	622.81***
Infuser	49.45***
Transporter	688.32***
Cultivation Center	1,193.07 ***
Economy Wide	20,376.35***

*Source: AEC calculations. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: Economy Wide, 314,378; dispensary, 11,663; craft grower, 7,489; infuser, 11,936; transporter, 21,055; cultivation center, 40,480.*

(b) Link test

The Link test examines how well the predicted value of the outcome variable squared can explain variation in the dependent variable—here, if the predicted value of business ownership-squared can explain business ownership. The test statistic in the Link test is coefficient associated with the predicted value of the outcome variable squared. If the test statistic is significant, it indicates that the independent variables may be specified incorrectly, or key independent variables are missing. The coefficients produced within this test indicate how well the predicted value of business ownership-squared can predict business ownership itself. Significant values on the test statistic are seen in the economy wide model, as well as cannabis-related industries associated with craft grower and transporter license types (see Table IX-95). This indicates that there may be missing variables within the models, or that a variable is specified incorrectly.

Table IX-95. Postestimation Link Test

License Type Association	Test Statistic
Dispensary	-0.06
Craft Grower	0.22***

License Type Association	Test Statistic
Infuser	0.42
Transporter	-0.27*
Cultivation Center	0.12
Economy Wide	0.04***

*Source: AEC calculations. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: Economy Wide, 314,378; dispensary, 11,663; craft grower, 7,489; infuser, 11,936; transporter, 21,055; cultivation center, 40,480.*

The addition of further control variables may improve the fit of the model. The current model specifications include variables and functional forms supported in the economic literature.[377,378,379] Data limitations prevent a wide range of possible independent variables from being added to the specification, which limits the ability to correct misspecification.

(c) Pearson Goodness-of-Fit

The Pearson goodness-of-fit test determines if the data fits the distribution of the model used. The test compares the observed outcome with the expected outcome predicted by the model using a chi-squared test statistic, like the Wald test discussed above. The chi-squared test statistic is used to determine the likelihood of the null hypothesis, that there is no difference between observed and expected values. Significant test statistics were found for the economy wide model, as well as cannabis-related industries associated with cultivation center, craft grower, infuser, and transporter license types (see Table IX-96). Significance in the test statistic indicates that there is an issue with the fit of the model, and that underlying assumption about the model may be incorrect. The addition of control variables found in past disparities studies may improve the fit of the model. However, due to data limitations, variables on financial characteristics are not available.

Table IX-96. Postestimation Pearson Goodness-of-Fit Test

License Type Association	Test Statistic
Dispensary	1,808.13
Craft Grower	1,679.6 ***

[377] E.D. Hahn and R. Soyer, "Probit and Logit Models: Differences in the Multivariate Realm," *The Journal of the Royal Statistical Society, Series B* 67 (2005): 1–12, https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=c45e142a45851c8b4da074ac38fd56bb5ff78749.

[378] Mason Tilman Associates, "Illinois Department of Transportation and Illinois Tollway Disadvantaged Business Enterprises Disparity Study Vol 2," September 2011, accessed February 28, 2024, https://www.illinoistollway.com/documents/20184/87215/Final+Disparity+Study+Report.pdf/bf922c9f-5cb8-4419-bf53-c5ab6d180f9c?version=1.0.

[379] BBC Research & Consulting, "2017 Illinois Department of Transportation Disparity Study," 2018, accessed February 28, 2024, https://idot.illinois.gov/Assets/uploads/files/Doing-Business/Reports/OBWD/DBE/2017%20IDOT%20Disparity%20Study_Final%20Report.pdf.

License Type Association	Test Statistic
Infuser	22,16.52***
Transporter	2,657.96***
Cultivation	3,352.14***
Economy Wide	42,663.77***

*Source: AEC calculations. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: Economy Wide, 314,378; dispensary, 11,663; craft grower, 7,489; infuser, 11,936; transporter, 21,055; cultivation center, 40,480.*

While tests for misspecification and poor model fit were positive, the inclusion of each independent variable in the Illinois economy-wide and cannabis-related industry models are supported by past disparity studies and economic literature.[380,381,382] Additional control variables on a worker's finances—which were seen in past disparity studies—may improve the fit of the models, however, this study is limited by the variables available within the ACS PUMS. Therefore, no changes were made to the model specification to address potential misspecification and coefficient estimates should be interpreted with this in mind. The inclusion of post-estimation tests serves as a guideline for any recommendations given based on the regression results. This does not compromise the validity of the results but rather enhances the analysis by providing a more rigorous review compared to past disparity studies.

2. Loan Denial

To assess the reliability of the result, tests were conducted on the coefficient estimates to determine if any model assumptions have been violated—such as misspecification—or if the estimates statistically differ from zero:

- **Coefficients jointly equaling zero:** A Wald test determines if all coefficients in the regression jointly differ from zero. When the test statistic is found to be statistically significant, at least one coefficient estimate statistically differs from zero. The Wald test indicates that at least one of the estimated coefficients within the bivariate probit loan denial models statistically differs from zero, implying the coefficient estimates are jointly statistically significant.

[380] E.D. Hahn and R. Soyer, "Probit and Logit Models: Differences in the Multivariate Realm," *The Journal of the Royal Statistical Society, Series B* 67 (2005): 1–12, https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=c45e142a45851c8b4da074ac38fd56bb5ff78749.

[381] Mason Tilman Associates, "Illinois Department of Transportation and Illinois Tollway Disadvantaged Business Enterprises Disparity Study Vol 2," September 2011, accessed February 28, 2024, https://www.illinoistollway.com/documents/20184/87215/Final+Disparity+Study+Report.pdf/bf922c9f-5cb8-4419-bf53-c5ab6d180f9c?version=1.0.

[382] BBC Research & Consulting, "2017 Illinois Department of Transportation Disparity Study," 2018, accessed February 28, 2024, https://idot.illinois.gov/Assets/uploads/files/Doing-Business/Reports/OBWD/DBE/2017%20IDOT%20Disparity%20Study_Final%20Report.pdf.

- **Misspecification**: The Link test is used to determine if the models suffer from misspecification of included variables, for example the incorrect form of the dependent variables, or if the model is missing key variables. Results from the link test, which test the predictive power of the squared dependent, indicate there is no misspecification in simple probit models.
- **Model Goodness-of-Fit**: Pearson Goodness-of-Fit test was used to assess the fit of the probit model on the data, or in other words how closely the predicted wage rate, based on model coefficients, aligns with the actual wage rate seen in the data. Statistically significant test statistics indicate there is poor model fit. The Pearson Goodness-of-Fit test results indicate there is no misspecification in the simple probit models.
- **Wald test of Rho**: A Wald test of the rho coefficient is used in bivariate probit analysis to determine if the model is needed—if the two outcomes are correlated—or if a simple probit model for the outcome of interest would produce the same results. For both the economy-wide and cannabis-related industries assessments, the Wald test statistic was statistically significant, indicating the bivariate probit model should be utilized.

(a) Wald Test

To test the theory that jointly, the coefficient estimates of each model are equal to zero, a Wald test is used. The Wald test produces a chi-square test statistic, a measure of the relationship between the expected outcomes and the actual data value. When the chi-squared test statistics are statistically significant, the test indicates that at least one coefficient is statistically different from zero. Post-estimation tests of the bivariate probit and simple probit models indicate that only the estimates from the loan denial bivariate probit models are jointly statistically significant—they do differ from zero (see Table IX-97).

Table IX-97. Wald Test of Coefficients

Model	Loan Application Test Statistic	Loan Denial Test Statistic
Economy Wide Probit	-	23.97
Cannabis Related Probit	-	19.37
Economy Wide Bivariate Probit	23.97	125.34***
Cannabis Related Bivariate Probit	19.52	76.19***

*Source: AEC calculations. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: Economy Wide, 858; Cannabis-Related, 462.*

(b) Link test

The Link test examines how well the predicted value of the outcome variable squared can explain variation in the dependent variable—here, if the predicted value of business ownership-squared can explain business ownership. The test statistic in the Link test is coefficient associated with the predicted value of the outcome variable squared. If the test statistic is statistically significant,

it indicates that the independent variables may be specified incorrectly, or key independent variables are missing. The coefficients produced within this test indicate how well the predicted value of loan denial-squared can predict loan denial itself. Statistically insignificant values are found for both the economy-wide and cannabis-related probit models (see Table IX-98). This indicates that adequate controls are included and/or that variables are specified correctly.

Table IX-98. Postestimation Link Test

Model	Test Statistic
Economy Wide Probit	-0.16
Cannabis Related Probit	-0.02

Source: AEC calculations. Number of observations: Economy Wide,858; Cannabis-Related, 462.

(c) Pearson Goodness-of-Fit

The Pearson goodness-of-fit test determines if the data fits the distribution of the model used. The test compares the observed outcome with the expected outcome predicted by the model using a chi-squared test statistic, like the Wald test discussed above. The chi-squared test statistic is used to determine the likelihood of the null hypothesis, that there is no difference between observed and expected values. Statistical significance in the test statistic indicates that there is an issue with the fit of the model, and that underlying assumption about the model may be incorrect. Results indicate that the model is well fitted to the data in the simple probit loan denial model for both the economy-wide and cannabis-related industries assessments (see Table IX-99).

Table IX-99. Postestimation Pearson Goodness-of-Fit Test

Model	Test Statistic
Economy Wide Probit	533.75
Cannabis Related Probit	347.84

Source: AEC calculations. Number of observations: Economy Wide,858; Cannabis-Related, 462.

(d) Bivariate probit fit

The bivariate probit model jointly estimates the decision to apply for a loan and if an individual was denied a loan (either directly or indirectly: see Appendix F. Economic Regression Methodology) by considering variables that may affect both outcomes. In doing this, a correlation term (rho) is estimated and tested for statistical significance. If test statistic on the Wald test of rho is statistically significant, it indicates that there is correlation between the two equations, and they should be jointly modeled. Results from the economy-wide and cannabis-related loan denial assessments indicate that the bivariate probit model is needed to identify disparities in loan denials (see Table IX-100).

Table IX-100. Wald Test of Rho

Model	Test Statistic
Economy Wide Probit	12.683***
Cannabis Related Probit	9.460**

*Source: AEC calculations. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: Economy Wide, 858; Cannabis-Related, 462.*

While the bivariate probit model is identified as necessary for this analysis, a variety of studies in the literature utilize just the simple probit model, or both the simple probit model and bivariate probit.[383,384] Using both methods of analysis serves as robustness checks for the results.

3. Wage Disparity

In accordance with best practices in econometric analysis, tests were conducted on the coefficient estimates to assess the reliability of these modeling results and to determine if any model assumptions have been violated—such as equal error terms, uncorrelated independent variables, or model specification. The assessments of analysis reliability and their results are as follows, with more detailed results in the following sections:

- **Heteroskedasticity:** Post-estimation tests of initial modeling runs of the regressions of the Illinois economy-wide and cannabis-related industry wage models revealed that coefficient estimates from both models may have heteroskedasticity, or over- or under-stated wage disparity across race, ethnicity, and gender, due to misspecification. These issues were addressed in the final models through robust standard.[385]
- **Misspecification:** The addition of more control variables would aid in the correction of potential misspecification bias; however, data limitations prevent the addition of extra control variables which could help further explain differences in wages. This is a generic critique that applies to all statistical models: More or better data could improve the accuracy of results.
- **Multicollinearity:** High correlation between independent variables skewing our results was tested for, but not found to be of concern to the models.

[383] L. Blanchard, B. Zhao, and J. Yinger, "Do Lenders Discriminate against Minority and Woman Entrepreneurs?," *Journal of Urban Economics,* 63(2), March 2008, accessed February 28, 2024, https://www.sciencedirect.com/science/article/abs/pii/S0094119007000320.

[384] E. Asiedu, J.A. Freeman, and A. Nti-Addae, "Access to Credit by Small Businesses: How Relevant Are Race, Ethnicity, and Gender?," *American Economic Review, 101(3), May* 2012, accessed February 28, 2024, https://www.aeaweb.org/articles?id=10.1257/aer.102.3.532.

[385] Hill, R.C., Griffiths, W. E., and Lim, G. C., "Chapter 8: Heteroskedasticity." Principles of Econometrics (4th edition), Hoboken, NJ: John Wiley & Sons, Inc, 2011.

(a) Heteroskedasticity

A regression model is typically affected by heteroskedasticity if the error terms—the set of differences between the predicted wage estimated by the regression versus actual wages seen in the data—are not consistent, reducing the accuracy of the coefficient estimates. More specifically, heteroskedasticity concerns arise when the residuals of a regression have different variances, indicating that there is something impacting wages that is not accounted for by current independent variables.

Heteroskedasticity does not bias the estimates produced in OLS regressions but can lead to incorrect standard errors and an inefficient OLS estimator. To test for heteroskedasticity in both the economy-wide and cannabis-related industry analyses, this assessment employs the Breusch-Pagan/Cook-Weisberg test that produces a chi-square test statistic, a measure of the relationship between the expected outcomes and the actual data values (see Table IX-101).

This chi-square test statistic is compared to the sample's critical value, the value of the test statistic defined by the upper and lower bounds of a confidence interval, the test statistic is significant (denoted by "**" or "***"), which indicates that heteroskedasticity is present. The larger the test statistic, the more confident modelers can be that heteroskedasticity is present. In the main model results presented above, heteroskedasticity is addressed using robust standard errors. The current model specifications include variables and functional forms supported in the economic literature.

Table IX-101. Breusch-Pagan/Cook-Weisberg Chi-Square Statistics

License Type Association	Test Statistic
Dispensary	20.77***
Craft Grower	13.12***
Infuser	131.13***
Transporter	134.32***
Cultivation Center	99.03***
Economy Wide	873.75***

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: Economy Wide, 255, 485; dispensary, 8,278; craft grower, 5,744; infuser, 10,221; transporter, 16,347; cultivation center, 32,312.*

(b) Misspecification

The models estimated in this analysis contain a statistical imprecision referred to as "misspecification", which can arise when key independent variables are missing, or existing variables are included in the wrong form. Incorrect model specifications, such as using OLS models for binary dependent variables, or including squared terms when unneeded, can lead to

incorrect or misleading results. This is because incorrectly specified models may be a poor fit for data, may include variables unrelated to the dependent variable, or may have different coefficient interpretations. To improve model specification, economic literature is typically consulted to identify the standard models used for the type of data, as well as control variables and their forms that strongly predict the dependent variable.

The models used to assess disparities in wages within the Illinois economy-wide and cannabis-related industries included limited controls variables (age, experience, children, etc.), as well as race and ethnicity variables to predict wages. Other individual characteristics not included in these models are likely to affect wages, and their exclusion could lead to misspecification of the models.[386,387]

To test for errors in model specification, the Ramsey Regression Equation Specification Error Test was used. This test compares the model specified to models that include polynomial terms of the predicted dependent variable (the squared, cubed, or otherwise mathematically transformed form of estimated wages) to see if they can explain any variance in the model. Significant values resulting from the Ramsey test indicate that the specification of the model specification is poor or is missing explanatory variables. Postestimation results indicate that the economy-wide, cultivation centers, craft growers, infusers, and transporters model suffer from misspecification (see Table IX-102). Common actions taken to address misspecification include modifying models to include additional independent variables that are expected to impact the dependent variable.

Table IX-102. Ramsey Regression Equation Specification Error test statistics

License Type Association	Test Statistic
Dispensary	2.09
Craft Grower	4.83**
Infuser	3.87**
Transporter	6.58***
Cultivation Center	7.06***
Economy Wide	26.91***

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: Economy wide, 255,485; dispensary, 8,278; craft grower, 5,744; infuser, 10,221; transporter, 16,347; cultivation center, 32,312.*

While tests for misspecification were positive, the inclusion of each independent variable in the Illinois economy-wide and cannabis-related industry models are supported by past disparity

[386] Winkle, Z. V. and Fasang, A. E., "Parenthood Wage Gaps Across the Life Course: A Comparison by Gender and Race," *Journal of Marriage and Family, Volume 82(5),* 2020, 1515-1533. DOI: https://doi.org/10.1111/jomf.12713.

[387] Bach, P., Chernozhukov, M. S., "Heterogeneity in the US gender wage gap," J*ournal of the Royal Statistical Society, Series A: Statistics in Society*, 2023, https://doi.org/10.1093/jrsssa/qnad091.

studies and economic literature. In addition, this study is limited by the variables available within the ACS PUMS. Therefore, no changes were made to the model specification to address potential misspecification and coefficient estimates should be interpreted with this in mind. The inclusion of post-estimation tests serves as a guideline for any recommendations given based on the regression results. This does not compromise the validity of the results but rather enhances the analysis by providing a more rigorous review compared to past disparity studies.

(c) Multicollinearity

The results presented for this analysis are not impacted by multicollinearity. This occurs when two or more independent variables are highly correlated, making it difficult to distinguish an accurate impact of each variable on the dependent variable in isolation.

The variance inflation factor (VIF) test statistic is an indicator of multicollinearity (see Table IX-103) where a value above 5 is considered highly collinear. Based on our post-estimation test, there is no evidence of high collinearity for either the Illinois economy or the cannabis license models. However, the "experience" and "experience-squared" variables are collinear by design, due to "experience-squared" being a function of "experience"; this means that the multicollinearity is structural in form (i.e., it has been imposed by the creation of the "experience-squared" variable). The inclusion of both experience variables is supported by the economic literature and, therefore, not changed.

Table IX-103. VIF Test Statistics

License Type Association	Test Statistic
Dispensary	4.53
Craft Grower	4.23
Infuser	4.17
Transporter	4.13
Cultivation Center	4.15
Economy Wide	2.47

*Source: AEC calculation. ***/**/* Indicate statistical significance at the 0.001/0.01/0.05 levels respectively. Number of observations: Economy wide, 255,485; dispensary, 8,278; craft grower, 5,744; infuser, 10,221; transporter, 16,347; cultivation center, 32,312.*

J. Existing Disparity Studies Reviewed and Utilized

To prepare the most comprehensive disparity methodologies, we reviewed existing wage disparity studies and economic literature. The models and theories presented in these bodies of work provided the basis for the methodology, where each regression analysis adapted methods used in existing disparity studies, as follows:

Study Title	Study Purpose	Used as Comparison for
IDOT 2011[388]	Estimates difference in wages within Illinois' construction, architecture, and engineering industries across a wide range of determinants including race, ethnicity, gender, and marital status. Using Ordinary Least Squares (OLS) methodology, IDOT 2011 finds evidence of discrimination in wages for women and racial and/or ethnic minority workers.	Wages Business Ownership Business Growth Loan Denials
IDOT 2017[389]	Estimates difference in wages within Illinois' economy across a wide range of determinants including race, ethnicity, gender, and industry participation. Using OLS methodology, IDOT 2017 finds evidence of discrimination in wages for women and racial and/or ethnic minority workers.	Wages Business Ownership Business Growth
IL CMS[390]	Estimates differences in wages across all industries, as well as construction, construction related services, information technology, and goods and service industries, within the United States while controlling for possible effects of residing in Illinois. Using OLS methodology, IL CMS finds evidence of discrimination in wages for women and racial and/or ethnic minority workers across the economy at large, with similar finds for specific industry analysis.	Wages Business Ownership
Chicago[391]	Estimates differences in wages within Chicago's construction industry over determinants such as race, ethnicity, and gender. Using OLS methodology, Chicago finds evidence of wage discrimination for women and racial and/or ethnic minority workers.	Wages Business Ownership
DFW[392]	Estimates differences in wages across all industries, as well as construction, construction related services, goods, services, and information and technology industries, within the Dallas Fort Worth Metropolitan Area. Using OLS methodology, over race, ethnicity, and gender determinants, DFW finds evidence of discrimination in wages for women and racial and/or ethnic minority workers for the overall economy, with similar finds for industry specific models.	Wages Business Ownership
Miami-Dade County[393]	Estimates differences in annual self-employment wages across construction, professional services, and goods and services industries within Miami-Dade County. Using OLS methodology, over race, ethnicity, gender, education, and financial determinants, Miami-Dade County finds evidence of discrimination in wages for White women within the professional services industry.	Wages Business Ownership Loan Denials

[388] Mason Tilman Associates, "Illinois Department of Transportation and Illinois Tollway Disadvantaged Business Enterprises Disparity Study Vol 2," September 2011, accessed February 28, 2024, https://www.illinoistollway.com/documents/20184/87215/Final+Disparity+Study+Report.pdf/bf922c9f-5cb8-4419-bf53-c5ab6d180f9c?version=1.0.

[389] BBC Research & Consulting, "2017 Illinois Department of Transportation Disparity Study," 2018, accessed February 28, 2024, https://idot.illinois.gov/Assets/uploads/files/Doing-Business/Reports/OBWD/DBE/2017%20IDOT%20Disparity%20Study_Final%20Report.pdf.

[390] Colette Holt & Associates, "State of Illinois Department of Central Management Services Disparity Study 2015," 2015, accessed February 28, 2024, http://www.mwbelaw.com/wp-content/uploads/2021/04/2015-State-of-Illinois-Department-of-Central-Management-Services-Disparity-Study.pdf.

[391] Colette Holt & Associates, "City of Chicago Disparity Study for Construction Contracts 2021," 2021, accessed February 28, 2024, https://www.chicago.gov/content/dam/city/depts/dps/Outreach/City%20of%20Chicago%20Disparity%20Study%20for%20Construction%20Contracts%202021.pdf.

[392] Colette Holt & Associates, "Dallas Fort Worth International Airport Disparity Study 2019," 2019, accessed February 2024, http://www.mwbelaw.com/wp-content/uploads/2021/03/2019-Dallas-Fort-Worth-International-Airport-Disparity-Study.pdf.

[393] Mason Tillman Associates, Ltd, "Miami-Dade County Comprehensive Disparity Study: Final Report," 2015, accessed February 28, 2024, https://www.mbda.gov/miami-dade-county-comprehensive-disparity-study-final-report.

Study Title	Study Purpose	Used as Comparison for
Maryland[394]	Estimates differences in wages across all industries, as well as construction, AE_CRS, Maintenance, IT, services and CSE, within the United States while controlling for possible effects of residing in Maryland. Using OLS methodology, over race, ethnicity, gender, and age determinants, Maryland finds evidence of discrimination in wages for women and racial and/or ethnic minority workers.	Wages Business Ownership Loan Denials
MDOT[395]	Estimates differences in wages across medical cannabis business NAICS codes for craft growers, infusers, dispensaries, independent testing laboratories, and ancillary activities, both independently and in a pooled sample across Maryland. Using OLS methodology, MDOT finds evidence of discrimination in wages for women and racial and/or ethnic minority workers.	Wages Business Ownership
Palm Beach County[396]	Estimates differences in self-employment wages across construction, professional services, and goods and services industries, within Palm Beach County, Florida. Using OLS methodology, over race, ethnicity, gender, and financial determinants, Palm Beach County finds evidence of discrimination in wages across all industries for women, Hispanic and Black workers. Evidence of discrimination in wages is also found for other racial and/or ethnic minority workers, but not consistently throughout the industries.	Wages Business Ownership
Jacksonville[397]	Estimates differences in self-employment wages across the construction, professional services, and goods and other services industries, within Duval, St. Johns, Clay, and Nassau County, Florida. Using OLS methodology, over race, ethnicity, and gender determinants, Jacksonville finds evidence of discrimination in wages for women across all industries excluding construction.	Wages Business Ownership Loan Denials
Broward County[398]	Estimates differences in wages across all industries, as well as construction and related industries, within the United States while controlling for possible effects of residing in Miami-Fort Lauderdale-Pompano Beach, Florida. Using OLS methodology, over race, ethnicity, and gender, Broward County finds evidence of discrimination in wages for women and racial and/or ethnic minority workers.	Business Ownership Loan Denials
JWA[399]	Estimates differences in self-employment wages across construction, architecture and engineering, professional services, nonprofessional services, and goods and commodities, within counties in the Los Angeles-Long Beach-	Wages

[394] NERA Economic Consulting, "Business Disparities in the Maryland Market Area," 2017, accessed February 28, 2024, https://www.mdot.maryland.gov/MBE_DOCS/2016_md_disparity_study.pdf.

[395] NERA Economic Consulting and Jon Wainwright, "Examination of Analysis of the Maryland Medical Cannabis Industry," 2018, accessed February 28, 2024, https://dokumen.tips/documents/jon-wainwright-managing-director-maryland-managing-director-national-economic.html.

[396] Mason Tillman Associates, Ltd., "Palm Beach County Disparity Study," December 2017. Prepared on behalf of Palm Beach County, accessed February 28, 2024, https://discover.pbcgov.org/oebo/PDF/Publications/Palm_Beach_County_Final_Report.pdf.

[397] Mason Tillman Associates, Ltd. 2013. "Jacksonville Multi-Jurisdictional Disparity Study: Volume 1." Prepared on behalf of the City of Jacksonville, https://www.coj.net/departments/jedc/docs/equal-business-opportunity/contract-compliance/final-city-of-jacksonville-disparity-study-report-.aspx.

[398] NERA Economic Consulting. November 22, 2010. "The State of Minority- and Women-Owned Business Enterprise: Evidence from Broward County." Prepared for Broward County, Florida, https://docplayer.net/9036494-The-state-of-minority-and-women-owned-business-enterprise-evidence-from-broward-county.html.

[399] MGT of America, Inc. December 1, 2016. "2015 Disadvantaged Business Enterprise Disparity Study." Prepared for John Wayne Airport, Orange County, https://files.ocair.com/media/2020-12/DisparityStudyJWA_ExecutiveSummary_2015.pdf?VersionId=vdpjfFc8I5Uz2YiZSe2W3yDtbmHM6hi9.

Study Title	Study Purpose	Used as Comparison for
	Anaheim, California Metropolitan Statistical Area. JWA finds evidence of discrimination in self-employment wages for racial and/or ethnic minority males.	