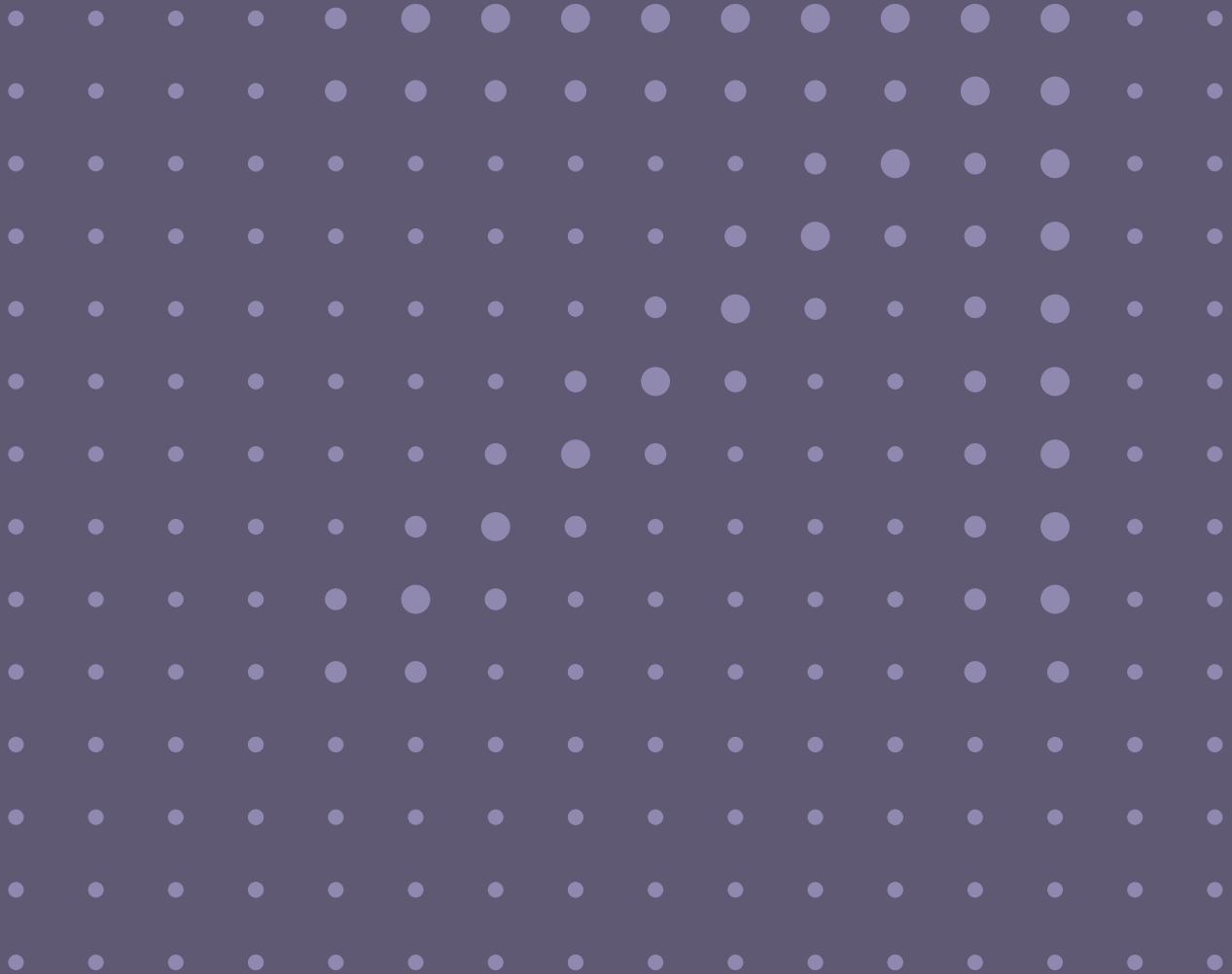


Five Things Every Cannabis Investor Needs to Know.



Five Things Every Cannabis Investor Needs to Know.



Matt Osborne
Chief Investment Officer

If legislation continues on the same trajectory, cannabis may present a rare and compelling investment opportunity. Below are five topics that potential investors should consider regarding this new and rapidly-expanding industry.

1

Cannabis and the Controlled Substances Act.

There's nothing new about cannabis, of course. Humans have cultivated this tall, flowering plant—the most biochemically diverse on earth—for millennia. The first recorded medical use of marijuana was 2737 B.C., when an ancient healer treated Chinese Emperor Shen Yeng, noting his prescription on silk. Cannabis is also authentically American. George Washington was a politician and soldier—but also an accomplished farmer, growing hemp at his Mount Vernon, Virginia estate.

Despite its long history of therapeutic use, biomedical knowledge of cannabis remains limited. Government resistance to marijuana intensified during the 1960s, a decade dominated by the civil rights movement and the Vietnam War. Fast-tracked by Richard Nixon to dampen political protest, the Controlled Substances Act (CSA) became federal law in 1970. The CSA combined existing drug laws, expanded federal law enforcement, and created five schedules (I-V) to classify controlled substances.

The CSA based its drug schedules on three factors, which remain today: potential for abuse; accepted medical use; and potential for addiction.

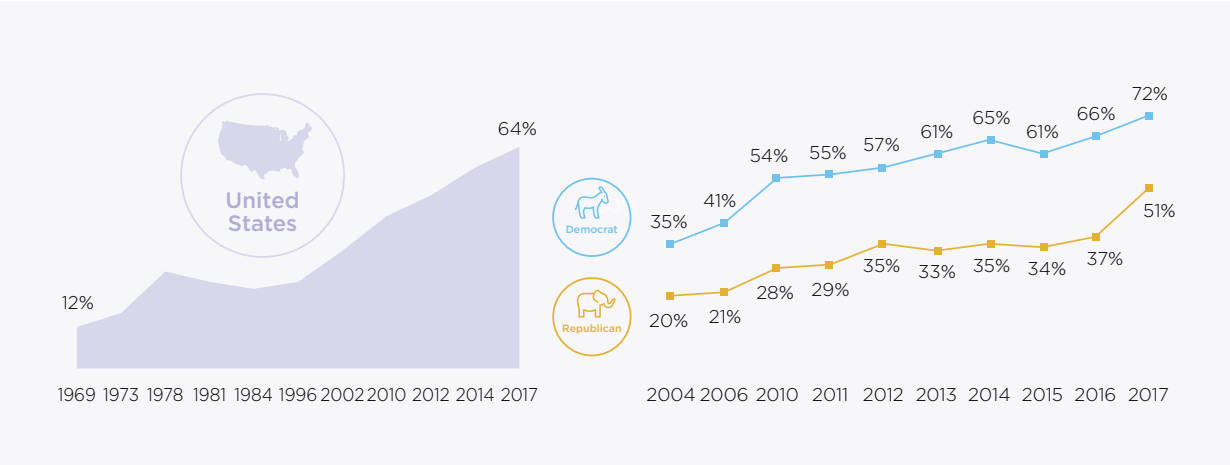
In 1970, cannabis was classified, along with heroin and LSD, as a Schedule I drug, among America’s most dangerous substances.¹ Cocaine, methamphetamine, and opioids were categorized as safer Schedule II drugs, with proven medical uses. The Schedule I classification of cannabis effectively halted all scientific research on the plant and drove cultivation and distribution down into the black market for decades.

Growing U.S. Support for Cannabis Legalization

Today, resistance to cannabis has largely eroded. Exhaustion with the costly prosecution of anti-marijuana laws has spread. Increasing public acceptance of marijuana has opened new medical frontiers. And widespread opioid abuse has fed interest in cannabis as a non-lethal alternative.² Gallup has tracked Americans’ support of marijuana legalization since 1969—which now stands at 64%—the highest level in nearly a half decade of measurement.³ In addition to surging support in the U.S., Canada passed Bill C-45 in June that legalizes adult recreational use of cannabis countrywide, effective October 17, 2018. Canada is the first G20 nation to implement legislation to permit a national marijuana market—making North America the epicenter of the world’s legal cannabis industry.⁴

Figure 1. **Gallup Poll: Do You Think Marijuana Use Should Be Made Legal?**

U.S. Public and Political Support for Cannabis Legalization | As of January 2018



Source: R.J. Reinhart, “In The News: Marijuana Legislation” (Gallup, January 2018).

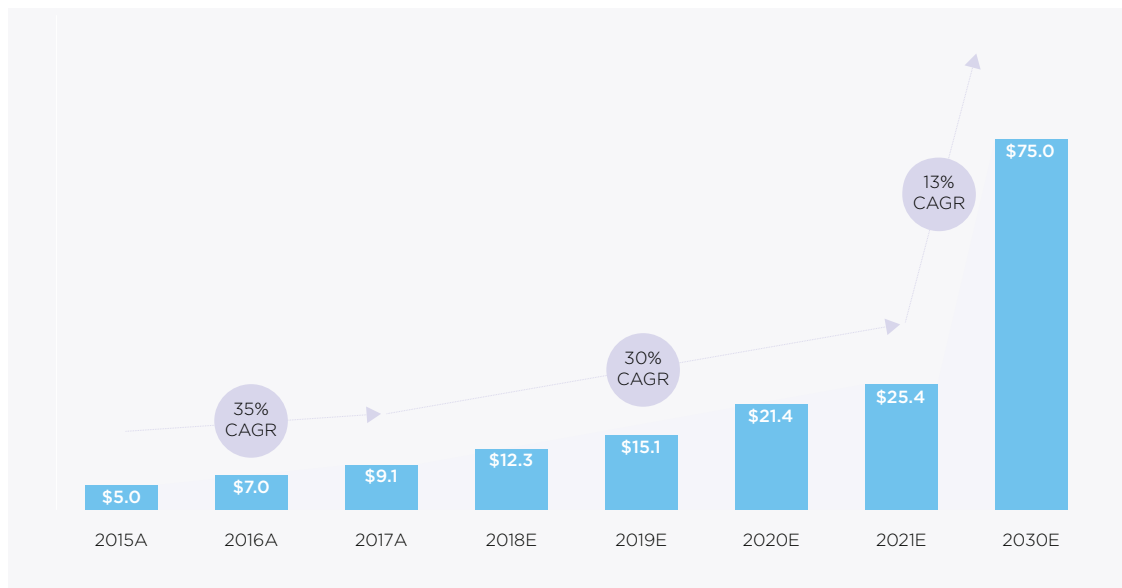
1. Title II of the CSA also established the National Commission on Marijuana and Drug Abuse, with Nixon appointing Raymond Shafer, a Republican governor and conservative, to lead a study of cannabis abuse across America. In March 1972, Shafer presented his commission’s first report to Congress, during which he recommended the decriminalization of marijuana possession. Nixon, true to his law-and-order roots, rebuked Shafer’s report and stated: “When it comes to weed, we need an all-out war on all fronts.” Paul Armentano, “35 Years of Prohibition” (NORML Foundation, March 2007).
2. Josh Katz, “Drug Deaths in America Are Rising Faster Than Ever” (*The New York Times*, June 5, 2017). In this article, Katz reported that “drug overdoses are now the leading cause of death among Americans under 50.”
3. R.J. Reinhart, “In the News: Marijuana Legislation” (Gallup, January 4, 2018).
4. Bani Sapra, “Canada Becomes Second Nation in the World to Legalize Marijuana” (CNN.com, June 20, 2018).

2

Strong Support in the World’s Largest Consumer Market.

Legal cannabis consumer sales reached \$9.5 billion globally in 2017—with North America generating \$9.1 billion or 96% of total global revenue.⁵ California, the fifth largest economy in the world, expanded its medical marijuana program on January 1st, legalizing adult recreational sales. With California’s legal market now fully online, and federal legalization coming to Canada in October, analysts have upgraded forecasts. North American cannabis sales are now predicted to reach \$75 billion by 2030, with a strong foundation provided by a \$65 billion black market, which continues its transition to a fully legal green market.⁶

Figure 2. **North American Legal Cannabis Consumer Sales (In Billions)**
2015–2017 Actuals (A) and 2018–2030 Estimates (E) | As of April 2018



Source: “The State of Legal Marijuana Markets” (Arcview Market Research and BDS Analytics, April 2018). CAGR is an acronym for compound annual growth rate, which measures the mean annual growth rate of an industry or investment over a specified period of time. Please refer to the glossary at the end of this research paper for a definition of terms. Past performance is not indicative of future results.

5. “The State of Legal Marijuana Markets” (Arcview Market Research and BDS Analytics, April 2018).

6. “Analysis of Drug Markets: World Drug Report 2018” (United Nations Office on Drugs and Crime, June 2018).

In April 2018, Vivien Azer, a consumer stock research analyst with Cowen, and a perennial member of *Institutional Investor's* “All America Research Team,” reported on retail cannabis, corroborating the \$75 billion projection for 2030. In the same report, Azer presented her research findings, which indicated that “cannabis and alcohol are now substitute products” for consumers—with “beer most exposed to substitution risk.”⁷ Legal consumer cannabis, Azer said, will continue to disrupt alcoholic beverages, which posted \$1.32 trillion in 2017 global sales—with beer maintaining a 45% market share with worldwide revenue of \$593 billion.⁸

The Fourth Leg of a Total Mood-Modulation Portfolio

Constellation Brands, producer of Corona beer and Robert Mondavi wine, has been paying close attention. Instead of competing, Constellation has instead embraced social and consumer change. In October 2017, Constellation invested \$186 million in Canopy Growth Corporation, a cannabis grower headquartered in Ontario, Canada. In August 2018, Constellation announced it would invest another ~\$4 billion in Canopy, increasing its stake to 38%, including rights for majority ownership. Rob Sands, Constellation's CEO, said cannabis “is the logical fourth leg” for a beer, wine, and spirits company—and creates a “total mood-modulation portfolio.”⁹

7. Vivien Azer, “Cannabis: \$75B Opportunity; Category Cross-Currents Keep Us Cautious on Booze” (Cowen, April 11, 2018).

8. “Alcoholic Beverages: Global Market Outlook” (Statistics MRC, June 2018) and “Beer Market: Global Opportunity Analysis and Industry Forecast, 2017-2025” (Allied Market Research, March 19, 2018).

9. Jennifer Maloney and Saabira Chaudhuri, “Corona Brewer Bets \$4 Billion on Cannabis” (*The Wall Street Journal*, August 15, 2018).

3

Medical End-Markets Offer Massive Opportunity.

A Biochemical Wonder

Cannabis is a biochemical wonder, possessing a genome of ~800 million nucleotides, with 483 chemical compounds and 113 cannabinoids for scientific study.¹⁰ A cannabinoid is a class of compounds that acts on receptors, called endocannabinoids, produced naturally by the human body. Tetrahydrocannabinol (THC) and tetrahydrocannabivarin (THCV) are the only two cannabinoids that are known to be psychoactive in nature.¹¹ The remaining 111 cannabinoids are non-psychoactive and may offer immense global medical value. The endocannabinoid system is involved in essential physiological and cognitive processes, including immune responses, mood regulation, and pain sensation.

Case In Point: Epidiolex®

Developed by GW Pharmaceuticals, Epidiolex® is an oral solution formulated from purified plant-derived cannabidiol (CBD)—a non-psychoactive cannabinoid with significant anti-seizure properties. The drug was developed to treat two severe childhood-onset epileptic syndromes: Dravet and Lennox-Gastaut. An estimated 30,000 American children suffer from these conditions and experience multiple seizures daily, which can lead to disabilities and even death.

Over phased studies, decreases in seizure frequency with Epidiolex® ranged from a median decline of 42% to more than 75% in some pediatric patients. On June 25th, the FDA approved the drug for use in patients two years of age and older—a historic milestone that finally proves the plant's medical efficacy. "We anticipate rescheduling to be completed within 90 days and for product launch to take place in the fall," said Justin Gover, GW Pharmaceuticals' CEO.¹²

Dr. Phil Nadeau, a senior biotechnology research analyst with Cowen, recently forecast sales of \$1.3 billion for Epidiolex® by 2022. Nadeau added that the drug's FDA approval may soon lead to the entire cannabinoid compound of "CBD being efficiently rescheduled by the Drug Enforcement Administration." Clearly, Epidiolex® has now opened the door for biotech and big pharma to potentially develop dozens of cannabis-derived prescription medications.

10. Franjo Grotenhermen, MD and Ethan Russo, MD, "Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential" (*The Haworth Press*, 2002).

11. Adam Drury, "The Ultimate Guide to Cannabinoids in Cannabis" (*High Times*, April 6, 2018).

12. "Epidiolex® (Cannabidiol) Oral Solution Approved By FDA and On Track to Be Launched in Fall" (*GlobeNewswire*, August 7, 2018).

The second large medical end-market is nutraceuticals, a term coined from the words nutrition and pharmaceutical.

Health and wellness supplements, nutraceuticals are sold over-the-counter, regulated by the FDA, and come in many forms—with low or no euphoric effects. Products include beverages, edibles, extracts, creams, droplets, infusions, oils, and pills.

In 2017, cannabis nutraceutical retailers reported record sales among retirees, as these supplements address many age-related conditions, including arthritis, asthma and bronchodilation, elderly anorexia, cognitive decline, glaucoma, inflammation, insomnia, muscle spasms, and neuropathic pain. The combined total revenue of these two medical subsectors—pharmaceuticals and nutraceuticals—are comparable in size to the world’s alcoholic beverages market.

The Endocannabinoid System Regulates Bodily Functions*

- Analgesia
- Appetite
- Immune Function
- Female Reproduction
- Motor Control
- Memory
- Mood
- Pain
- Pleasure and Reward
- Sleep
- Stress Response
- Temperature Regulation

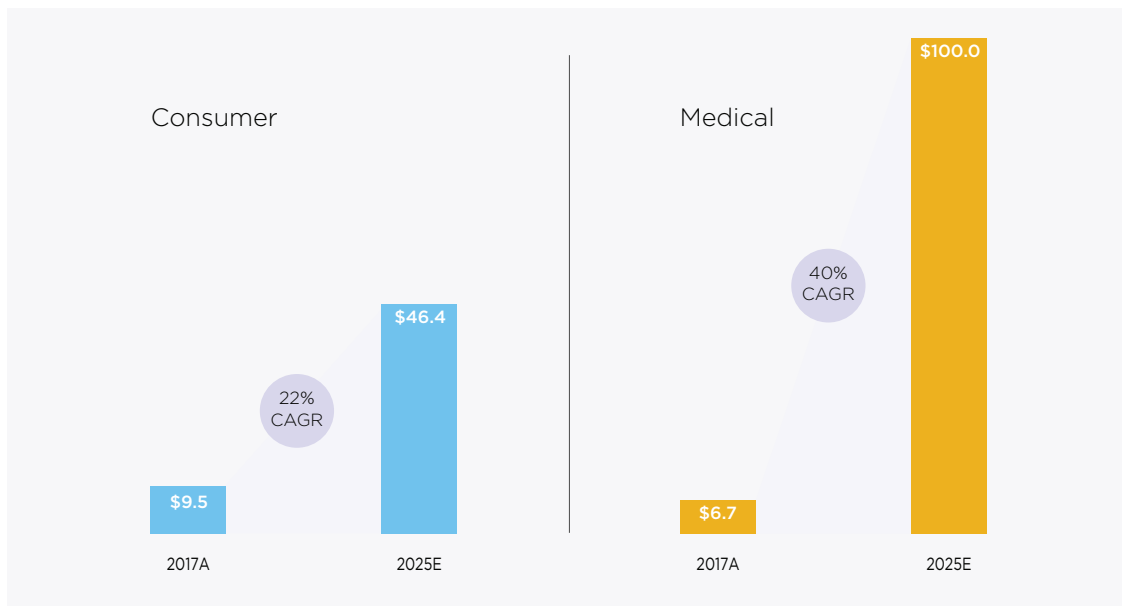
Cannabinoids’ Therapeutic Potential Across a Myriad of Medical Conditions*

- Alzheimer’s
- Anorexia
- Arthritis
- Cachexia
- Cancer
- Chronic Pain
- Crohn’s Disease
- Diabetes
- Epilepsy
- Glaucoma
- Huntington’s Disease
- Insomnia
- Multiple Sclerosis
- Parkinson’s Disease
- PTSD

* Source: The National Center for Biotechnology Information (NCBI). NCBI reports referenced include: “The Endocannabinoid System as an Emerging Target of Pharmacotherapy (2006); “The Endocannabinoid System, Cannabinoids, and Pain” (2013); “An Introduction to the Endogenous Cannabinoid System” (2016); and “The Endocannabinoid System: Role in Depression, Reward, and Pain Control” (2016).

Worldwide pharmaceutical sales were \$996 billion in 2017, with nutraceuticals generating another \$299 billion in global revenue.¹³ Together they provide a \$1.29 trillion medical end-market for cannabis. Analysts are now forecasting that medical cannabis will surpass \$100 billion in sales by 2025, scaling far faster than the cannabis consumer market.¹⁴

Figure 3. **Cannabis Medical End-Markets Are Forecast to More Than Double Legal Cannabis Consumer Sales by 2025 (In Billions)**
2017 Actuals (A) and 2025 Estimates (E) | As of April 2018



Source: Legal Consumer Cannabis - 2017A: “The State of Legal Marijuana Markets: Executive Summary, Sixth Edition” (Arcview Market Research and BDS Analytics, April 2018). Legal Consumer Cannabis - 2025E: “Legal Marijuana Market Worth \$146.4 Billion By 2025” (Grand View Research, April 2018). CAGR is an acronym for compound annual growth rate, which measures the mean annual growth rate of an industry or investment over a specified period of time. Please refer to the glossary at the end of this research paper for a definition of terms. Past performance is not indicative of future results.

13. “What Science Can Do: 2017 Annual Report” (AstraZeneca and IQVA/Midas Quantum, March 2018) and “Global Smart Food Market: Analysis and Forecast” (BIS Research, 2018).

14. “Legal Marijuana Market Worth \$146.4 Billion by 2025” (Grand View Research, April 2018).

4

The Early Innings of Cannabis Investing.

Industry Expansion and the Cannabis Supply Chain

One 21st century industry reached billions in early spending—and boomed for years after: broadband internet. As with broadband, cannabis is being divided into sectors and subsectors to create an industry supply chain. Respected equity research analysts, such as Vivien Azer, have segmented cannabis into nine sectors so far. And, as with broadband internet, value within the cannabis supply chain is predicted to accrue unevenly, with higher margins achieved by certain sectors versus others.



Consumer and Retail



Financial and Business Services



Research and Testing



Equipment and Devices



Technology



Real Estate



Cultivators



Processors



Post-Processing

With Continued Federal Enforcement, U.S. Cannabis Operators Are Faced With Just Three Financing Options:

- Private Investments
- Lightly Regulated Over-The-Counter Markets (OTC)
- The Canadian Securities Exchange (CSE)

Challenges for Investors Seeking Cannabis Stock Ownership

MedMen, a Los Angeles-based cultivator and retailer, went public on the CSE in May. MedMen CEO Adam Bierman told CNBC that cannabis is a complicated industry with “no straight roads and no clear paths.”

The scarcity of funding for cannabis companies also creates challenges for investors seeking ownership of marijuana stocks. Currently, cannabis cultivation or grower stocks appear to be trading at sky-high prices with questionable valuations. One metric often used to value early-stage public companies is price-to-sales ratio (PSR), also known as the “revenue multiple.” PSR simply compares a company’s stock price to its total sales over the trailing 12-month period.

In a March 2018 cover story, *Barron’s* senior writer Bill Alpert cited cannabis stocks’ price-to-sales ratios as cause for concern: “many of these companies trade for more than 100 times their 2017 sales.”¹⁵

MedMen’s current PSR is a relevant and timely example of how investors may be overpaying for access to publicly-traded cannabis growers. On September 28, 2018, MedMen’s stock price (CSE: MMEN) closed at \$4.97 with a market cap of \$3.98 billion and a PSR of 330.43. Meanwhile, MedMen’s total sales for the trailing 12 months were just \$11.2 million and offset by a \$33.9 million operating loss.

To put MedMen’s valuation in perspective, revenue multiples between 1.0 and 3.0 are considered respectable by Wall Street equity research analysts, with 1.0 or lower deemed excellent. MedMen’s PSR is more than 100-times higher than the desired range. This may explain why *Barron’s* Bill Alpert began his March cover story by stating: “at current valuations, marijuana stocks are already too high for investors tempted to join the party.”

15. Bill Alpert, “Marijuana Stocks Could Be a Buzzkill” (*Barron’s*, March 30, 2018). Alpert has been a reporter with Dow Jones since 1984. Alpert left *Barron’s* from 1989–1995 to work as an equity research analyst for Water Street Capital, a \$5.9 billion hedge fund, seeded by hedge-fund titan Julian Robertson, founder of Tiger Management.

Figure 5. **The Five Largest Publicly-Traded Cannabis Cultivators**

All Five Growers Below have Price-to-Sales Ratios (PSRs) that Run 100-Times Equity Research Analysts' Preferred PSR Range | As of September 28, 2018

BERKSHIRE HATHAWAY IS LISTED BELOW FOR PSR AND ANNUAL REVENUE COMPARISON PURPOSES ONLY *

	Cannabis Cultivators	Corporate Headquarters	Stock Symbol	Stock Exchange	Market Cap	Price-to-Sales Ratio	Annual Revenue
1.	Tilray	Nanaimo, British Columbia	TLRY	NASDAQ	\$13.38B	476.55	\$87.9M
2.	Aurora Cannabis	Vancouver, British Columbia	ACB	TSX	\$11.93B	216.06	\$41.9M
3.	Canopy Growth	Smith Falls, Ontario	CGC	NYSE	\$11.10B	167.79	\$27.6M
4.	Aphria	Leamington, Ontario	APH	TSX	\$4.18B	113.33	\$26.9M
5.	MedMen	Culver City, California	MMEN	CSE	\$3.98B	330.43	\$11.3M
	*Berkshire Hathaway	Omaha, Nebraska	BRK-A	NYSE	\$526.32B	2.21	\$238.0B

Source: All stock table data and statistics are provided by Yahoo Finance and S&P Global Market Intelligence. All securities information provided to S&P Global Market Intelligence is produced by ICE Data Services, a division of Intercontinental Exchange (NYSE: ICE). Past performance is not indicative of future results.

5

Private Equity May Provide an Early Advantage.

A Capital Provider's Market

With larger financial institutions off limits—the cannabis industry remains in acute need of financing. “This is a capital starved industry,” Nick Kovacevich, CEO of Kush Bottles, told *TheStreet.com* in April. Kush (OTC: KSHB) provides child- and tamper-proof containers and packaging to 4,000 cultivators and dispensaries. With a \$462 million market cap (as of the 9/28/18 market close), Kush is profitable and its stock carries an “outperform” rating from Cowen. Still, Kush is significantly more vulnerable to capital shortages than most U.S. small-cap companies, due to restricted access to banks and commercial loans. Legal cannabis, as Kovacevich has learned, is a “capital provider’s market,” as growth funding, capital markets expertise, merger and acquisition advice, and strategic planning are all in short supply.

As investors assess cannabis stocks and global banks wait for regulatory hurdles to clear, private equity (PE) has quietly waded in. Where major banks balk at investing in an industry that is federally illegal, a handful of cannabis-focused private equity funds, operated by Wall Street’s elite and the brightest minds from Silicon Valley, have planted a flag in the ground.¹⁶

In February 2018, Merida Capital, a New York-based cannabis PE firm provided Kush with \$6 million in growth funding, along with an active private-equity approach. “A good investment partner brings more to the table than just capital,” Kovacevich said. Merida brought expertise on operations and strategic growth to Kush—and became an extension of the company’s senior management team.

A second private market example is Privateer, another cannabis-oriented operating company, headquartered in Seattle. Brendan Kennedy, Privateer’s founder and chairman, was previously COO of Silicon Valley Bank (NASDAQ: SIVB). Privateer has raised ~\$200 million from affluent individuals—but also secured a sizable investment from Founders Fund, a forward-looking venture capital concern run by PayPal co-founders Peter Thiel and Ken Howery. To date, Privateer has made private investments in some of cannabis’ biggest brands, including Goodship, Leafly, Marley Natural, and Tilray.

16. Kinsey Grant, “Private Equity Has Become the Lifeblood of the Legal Weed Industry” (*TheStreet.com*, April 20, 2018).

A Promising Growth Curve

Investing in private equity is not available to all investors, but those who qualify can gain the potential benefits of professional investment management and diversification, at terms only PE funds tend to secure. While *Forbes* magazine was telling investors last year to “Avoid Most Cannabis Stocks for Now,” private equity was moving ahead of the market, offering a measured investment approach for an emerging industry with a promising growth curve.

About Matt Osborne

Matt Osborne is the Chief Investment Officer (CIO) of Artinvest, a provider of premier alternative funds and technology solutions, where he oversees the firm’s 15-person investment research, product structuring, and portfolio strategy team.

Artinvest completed its merger in 2018 with Altegris, an established alternative asset manager, which Mr. Osborne co-founded in 2002 and where he served as CIO. The Altegris family of private and public alternative funds has retained its name and now operates as the asset management division of Artinvest.

Osborne has more than 30 years of finance, international business, and investment industry experience. As the CIO of Artinvest, Matt is responsible for all investment product development and is co-portfolio manager of several Altegris alternative funds. Mr. Osborne is a senior member of the Artinvest Investment Committee, responsible for the qualification, approval, and ongoing review of all alternative strategies and managers on both the Artinvest and Altegris platforms.

Prior to founding Altegris in 2002, Osborne was the Director of Research for the Managed Investments Division of Man Financial, with responsibility for manager selection and research. Previously, Matt had a 12-year career with a prominent family investment office in his native New Zealand. In his role as senior investment manager, Osborne was responsible for formulating investment policies and implementing a global asset allocation program that focused on alternative investments, including hedge funds, managed futures, private equity, and real assets.

Osborne has significant trading expertise in equities, fixed income, foreign currencies, global futures, and options, among other securities. Matt currently holds FINRA Series 3, 7, 24, and 63 licenses.

Risks and Other Important Considerations

This material is being provided for informational purposes only. The author's assessments do not constitute investment research and the views expressed are not intended to be and should not be relied upon as investment advice. This document and the statements contained herein do not constitute an invitation, recommendation, solicitation, or offer to subscribe for, sell, or purchase any securities, investments, products, or services. The opinions are based on market conditions as of the date of writing and are subject to change without notice. No obligation is undertaken to update any information, data or material contained herein. The reader should not assume that all securities or sectors identified and discussed were or will be profitable.

Past performance is not indicative of future results. There is no guarantee that any forecasts made will come to pass. Due to various risks and uncertainties, actual events, results, or performance may differ materially from those reflected or contemplated in any forward-looking statements. There can be no assurance that any investment product or strategy will achieve its objectives, generate profits, or avoid losses. Diversification does not ensure profit or protect against loss in a positive or declining market.

All investments carry a certain degree of risk, including the possible loss of principal. Alternative, complex, or non-traditional investment strategies may not be suitable for all investors and the value of any portfolio will fluctuate based on the value of the underlying securities.

Special Considerations Regarding Investments in the Cannabis Industry

If you are considering a cannabis industry, marijuana-related investment, you should be aware of the risk of investment fraud and market manipulation. Investment promoters may be unlicensed and unregistered, and therefore some of the recourse typically available to investors of registered products may not be available. Investments in the cannabis industry are inherently risky, returns are not guaranteed, and you may lose all or a substantial amount of your investment. Market manipulators may cause stock prices to fluctuate dramatically and this can be more prevalent in microcap stocks due to their lack of transparency and limited liquidity. Be wary of trading suspension, changes to business name and/or type, and implausible press releases.

In addition to the risks above, companies engaged in the marijuana business industry could potentially be at risk of criminal prosecution due to the nature of their business. Should this occur, the value of your investment may be materially impacted.

Glossary

Compound Annual Growth Rate (CAGR) is the mean annual growth rate of an investment over a specified period of time longer than one year. To calculate compound annual growth rate, divide the value of an investment at the end of the period in question by its value at the beginning of that period, raise the result to the power of one divided by the period length, and subtract one from the subsequent result. Source: “Compound Annual Growth Rate - CAGR” (Investopedia.com, 2018).

Market Capitalization refers to the total dollar market value of a company’s outstanding shares. Commonly referred to as “market cap,” it is calculated by multiplying a company’s shares outstanding by the current market price of one share. The investment community uses this figure to determine a company’s size, as opposed to using sales or total asset figures. Using market capitalization to show the size of a company is important because company size is a basic determinant of various characteristics in which investors are interested, including risk. It is also easy to calculate. A company with 20 million shares selling at \$100 a share would have a market cap of \$2 billion. Source: “Market Capitalization” (Investopedia.com, 2018).

Price-to-Sales Ratio is a valuation metric that compares a company’s stock price to its revenues. The price-to-sales ratio is an indicator of the value placed on each dollar of a company’s sales or revenues. It can be calculated either by dividing the company’s market capitalization by its total sales over a 12-month period, or on a per-share basis by dividing the stock price by sales per share for a 12-month period. Abbreviated as P/S ratio or PSR, the price-to-sales ratio is also known as the “revenue multiple.” Source: “Price-To-Sales Ratio - PSR” (Investopedia.com, 2018).

About Artivist

Powering the Future of Alternative Investing.[™]

Artivist, a financial technology firm, and Altegris, an alternative asset manager, announced the successful closing of their merger in June 2018. Now known as Artivist, we are the leading provider of premier alternative investment and technology solutions, serving more than 10,000 investors, advisors, and enterprises. The Altegris family of private and public alternative funds has retained the Altegris name and today operates as the asset management division of Artivist Holdings. Artivist remains privately held by its employees and renowned outside investors, led by KKR, Thiel Capital, Genstar Capital, and Aquiline Capital Partners.