

2020 CANNABIS

INDUSTRY MID-YEAR REVIEW



Introduction

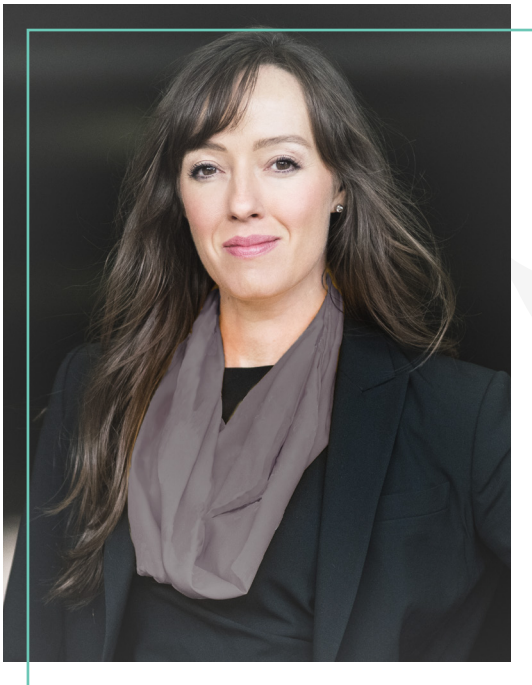
Welcome to Akerna's first mid-year review of the cannabis industry. When considering this review, a lot of thought was given to the history of the industry, where we've been and how it has shaped who we are. Eleven years ago, Barack Obama was inaugurated the 44th President of the United States, we survived the Swine Flu Pandemic, and celebrated The Miracle on the Hudson. As an industry, we took a giant step forward in my home state of Colorado. The first cannabis operators began opening for business as Colorado became the first government in the world since worldwide cannabis prohibition started in the 1300s to establish a formal model to license, regulate, and track cannabis.

Those first operators often had a close, personal mission tied to cannabis. I invested in one of the first licensed cannabis operators in Colorado because I was interested in its medical benefit for M.S. patients, as I have a close family member with a similar illness. It also became apparent very early we would need robust tracking to prove these outcomes, and to prove to the government we could safely track and regulate cannabis like other regulated products. We invented seed to sale tracking to solve these problems because no existing tracking software could meet our needs. Seed to sale tracking is the framework upon which the regulated cannabis industry is built, enabling compliance, regulation, and taxation. In those early days, cannabis operators experienced retaliation to the legal market from cartels as many operations were subjected to break-ins and damage. Today, the legal cannabis industry has handily won the fight against the cartels in the U.S. and countries that formally legalized cannabis and instituted regulatory frameworks. Today, the cannabis industry employs more than 300,000 people. It is expected to reach a market value of more than \$73.6 billion by 2027, by some estimates lifetime tax revenue from just the 11 states with legal, recreational cannabis sales, will exceed \$5 billion. Going beyond cannabis, the hemp and CBD industries more than double these numbers. And study after study is proving the many



medical, health, and wellness benefits of cannabis and its derivatives, including the most recent study detailing CBD's extremely promising results as a treatment for COVID-19.

Our mid-year review delivers on our commitment to provide more value—more value to the cannabis, hemp, and CBD industries, to investors, to governments and to consumers and patients who deserve transparency and accountability in what they are putting in and on their bodies. To this end, we have curated the most holistic and accurate picture of the cannabis industry today. We have taken a deep dive into the numbers and assembled the most important indicators in the industry, including expert analysis of the capital markets, insights on present and future legalization initiatives, as well as economic, sales, product and safety trends. This collection of actionable business intelligence serves as a reference for anyone interested in better understanding and decision making about the fastest growing industry in the world.



Overall, our review fills us with optimism. We hope you find the same. I am privileged to have spent the last decade at the forefront of this industry and to be able to continue leading and supporting the technology backbone upon which our industry relies. We hope you find this information helpful and valuable.

Sincerely,

Jessica





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The last six months have shown us what it means to be strong, innovative, and resilient not only as an industry, but as a society. Our mid-year review delivers on our commitment to provide more value...

- Jessica Billingsley, CEO, Akerna.

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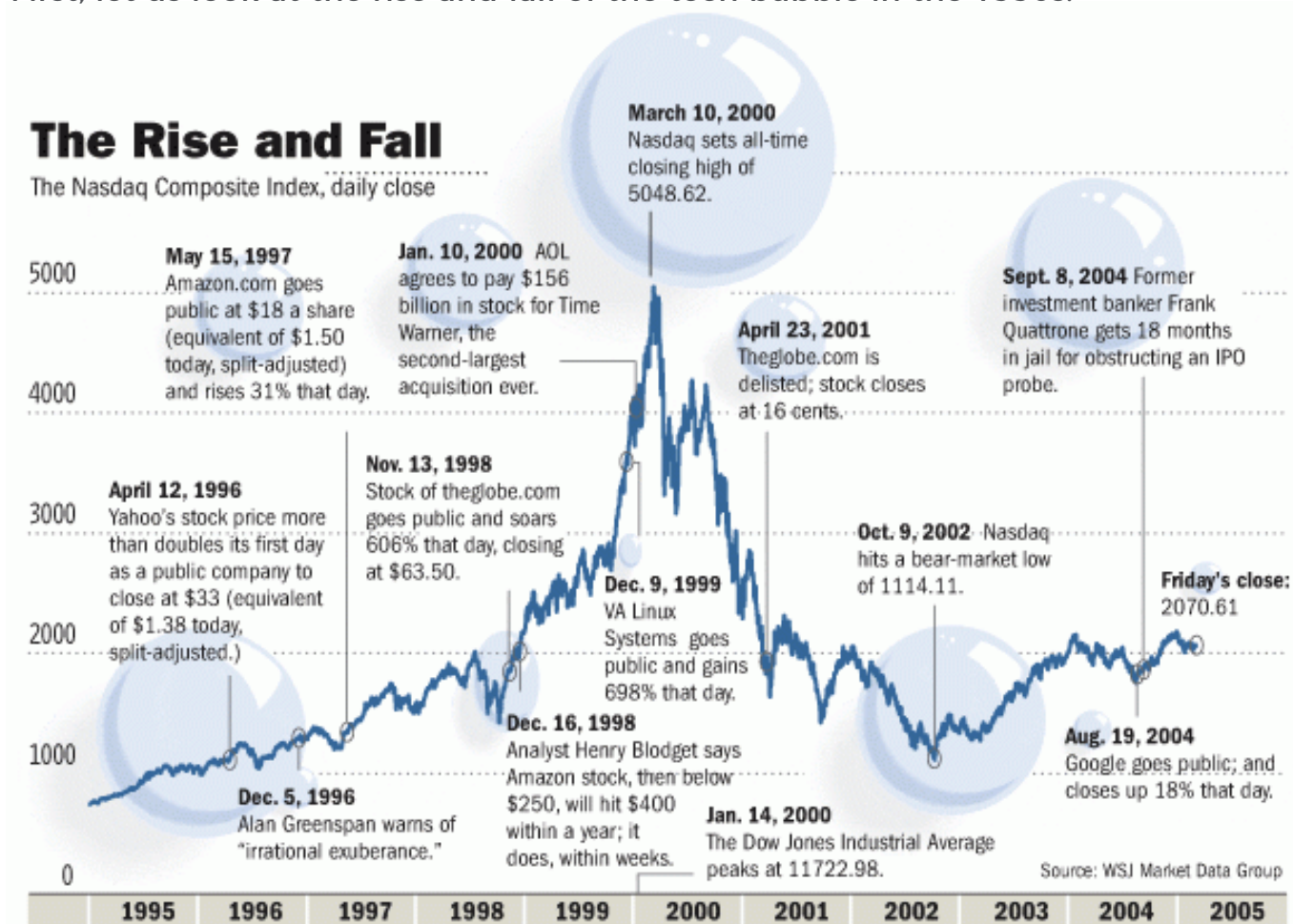
Cannabis Capital Markets

Analogy To The Tech Crash Of Early 2000, Adoption, and Opportunity For Long Term Value.

By Andy Sturner - Managing Partner, Entourage Effect Capital
and Codie Sanchez - Managing Director, Entourage Effect Capital

They say that history doesn't repeat, but it rhymes. That is why often the best investors are the most voracious historians. Yet we humans love to coin terms like the "New Normal," the world "pre and post Covid-19." We truly believe it is different this time. I would challenge that assumption by taking you on a walk through history to two times in our past where parallels abound to our present-day in cannabis.

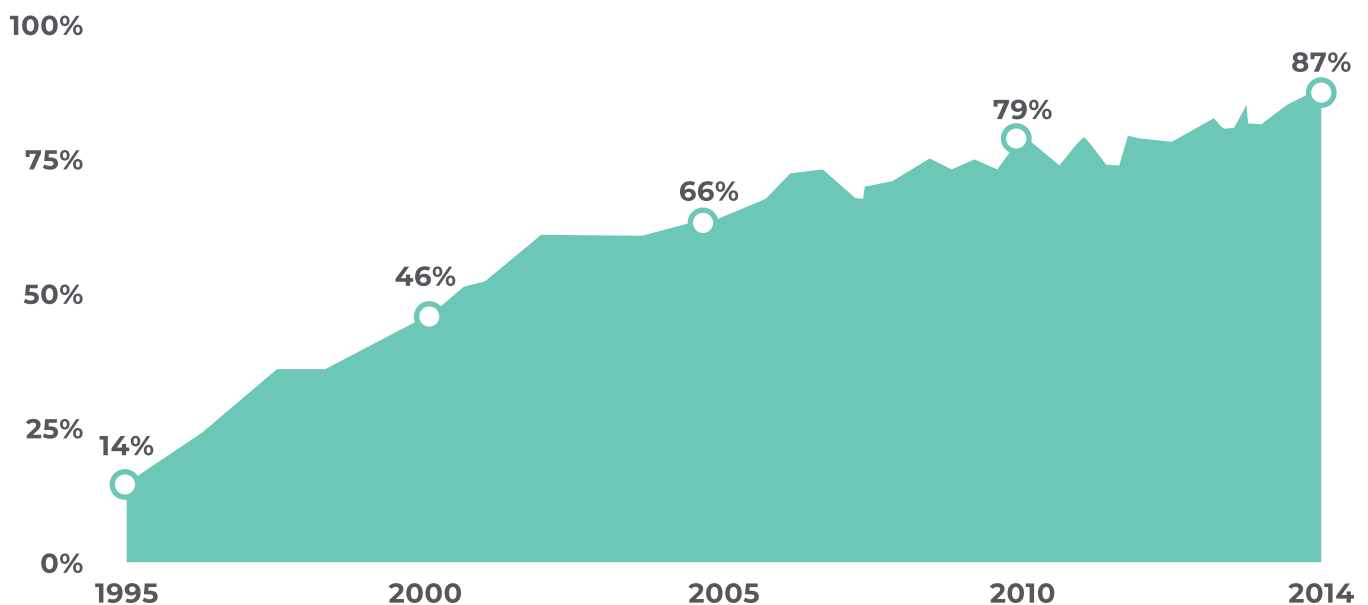
First, let us look at the rise and fall of the tech bubble in the 1990s.



During the 1990s we saw the internet take the world by storm. The Nasdaq Index grew from less than 1,000 points to more than 5,000 at its peak in March of 2000. As stocks with .com in their names skyrocketed, industry icons such as Alan Greenspan cautioned of “irrational exuberance” in the market. History proved him to be right in the short term. From 2000 to the bottom in 2002, the Nasdaq lost 75-90% of its valuation. Investor money vanished, companies delisted and innumerable firms were relegated to the annals of history.

The Rapid Rise of the Internet

% of America adults who use the internet



And yet, a different story was happening simultaneously that Greenspan and others paid less attention. As the massive valuation decrease in public equities continued, the consumer largely ignored it. Imagine you are newly discovering how to buy books online from Amazon, or how to move from Blockbuster to Netflix, do you care about the price of their stocks? Does it even play into your consideration of purchasing? Of course not. Which is why during the crash consumer adoption continued to increase by double digits as the companies that were left profited from more consumers online, a larger userbase, increased bandwidth and a less competitive field.

Cherry picking the worlds largest company aside, let's look at Amazon. Amazon was started in 1994, enjoyed 2000%+ growth and then lost 90% of it's value during the crash of 2000. However for those who held from IPO to 2019 you would have had a 36% compounded annual return and a total return of 113,000%.¹ The same story rhymes with Google (founded 1998), Apple (1976), Netflix (1997). So while CNN Money in 2000 wrote:

“Index of 280 Internet stocks is down \$1.7 trillion from its 52-week high.”³

And...

“It's hard to think of a publicly traded Internet company that is not down at least 75 percent from its 52-week high and that hasn't trimmed its expenses or laid off workers. While industry groups have always drifted in and out of favor on Wall Street, it's rare to see an industry evaporate as quickly and completely as Web stocks did.”⁵

Out of the bowels of an eviscerated market came these industries titans. Investors who were in for the long term, who were not speculators but understood the market profited, handsomely.

Now let's turn to cannabis. The first chart should look familiar to you—it shows the absolute nosedive of cannabis stocks during the Cannabis Collapse. Companies have lost on average 75-90% of their public market value; we are still amidst this downturn today. We predict that many companies will be delisted, consolidated, or go away completely.

Cannabis Collapse. Companies have
lost on average

75-90%
of their public market value

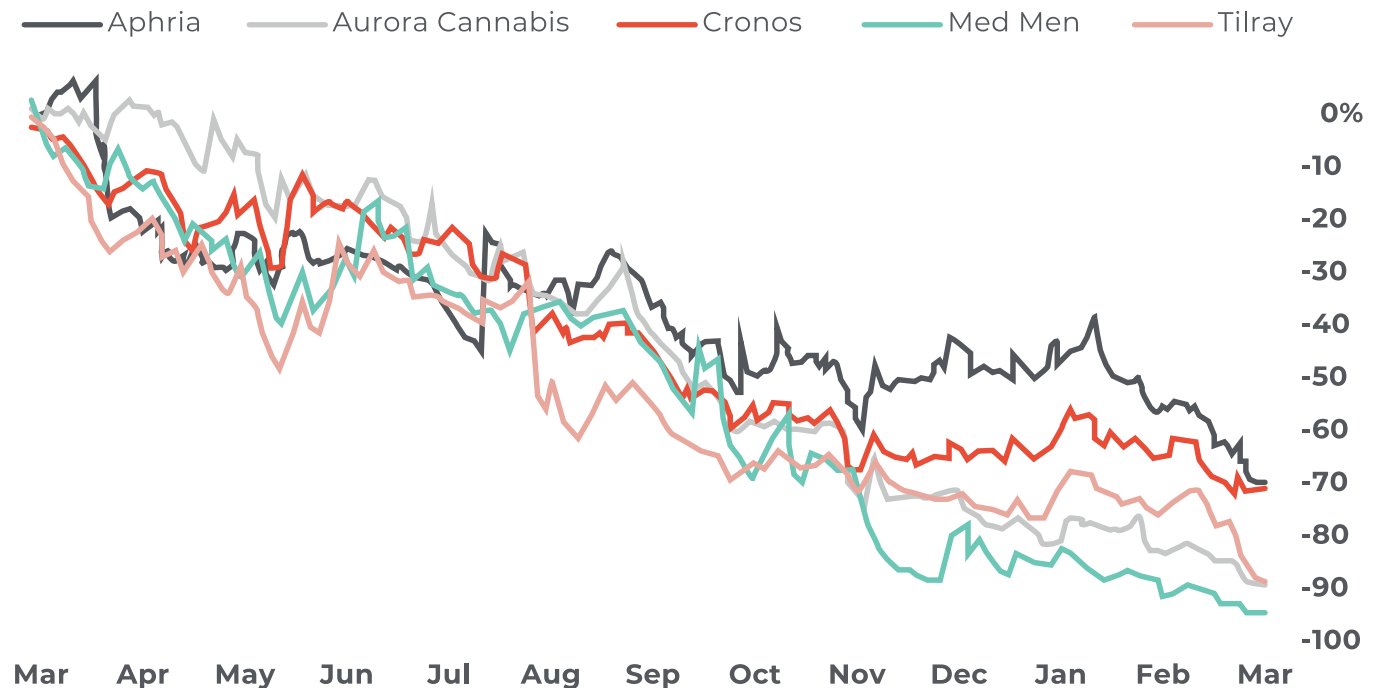
¹ <https://www.fool.com/investing/2019/11/24/if-you-invested-500-in-amazons-ipo-this-is-how-muc.aspx>

³ <https://money.cnn.com/2000/11/09/technology/overview/>

⁵ <https://money.cnn.com/2000/11/09/technology/overview/>

The Collapse of Pot Stocks

% decline from March 2019



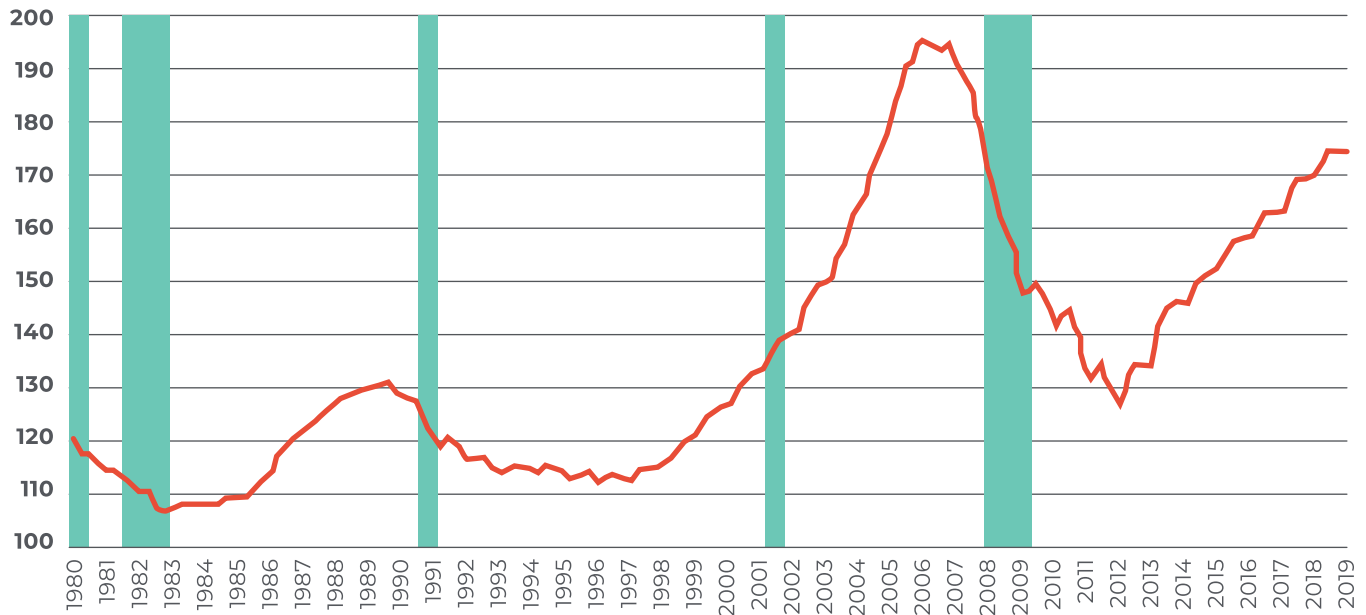
And yet, something interesting is happening simultaneously.

The cannabis consumer does not care what is happening in the public equities markets. While the equity markets crater, sales of cannabis climbs. Consumers care about access to the products they have come to rely on and are increasingly exploring. You could say, they care about the bandwidth of cannabis. It has been a slow rollout to them and it has been riddled with product delays, recalls, subpar products and outright fraud. Yet, sales are up across the industry 78% YOY even while the market falls. Net new consumers to the industry are up. Many such as Forbes, predict more than eight new states will legalize this year, which would be more than a 50% increase in new markets.

In stark contrast to the dotcom bubble where those tech companies had to struggle against creating demand for an entirely new product, we in cannabis have latent pent up demand. We have a \$50B+ market, including the illicit market, to continue to grow into and real revenue backing these companies as opposed to the hype surrounding companies who have no profits but focus on market share or eyeballs on the internet. In tandem, the removal of stigma has and is continuing to open up new markets such as the “greatest generation” and the “baby boomers,” who are increasingly using cannabis to treat pain and illness.

Shiller Real Home Price Index

■ Recessions ■ Real Home Price Index

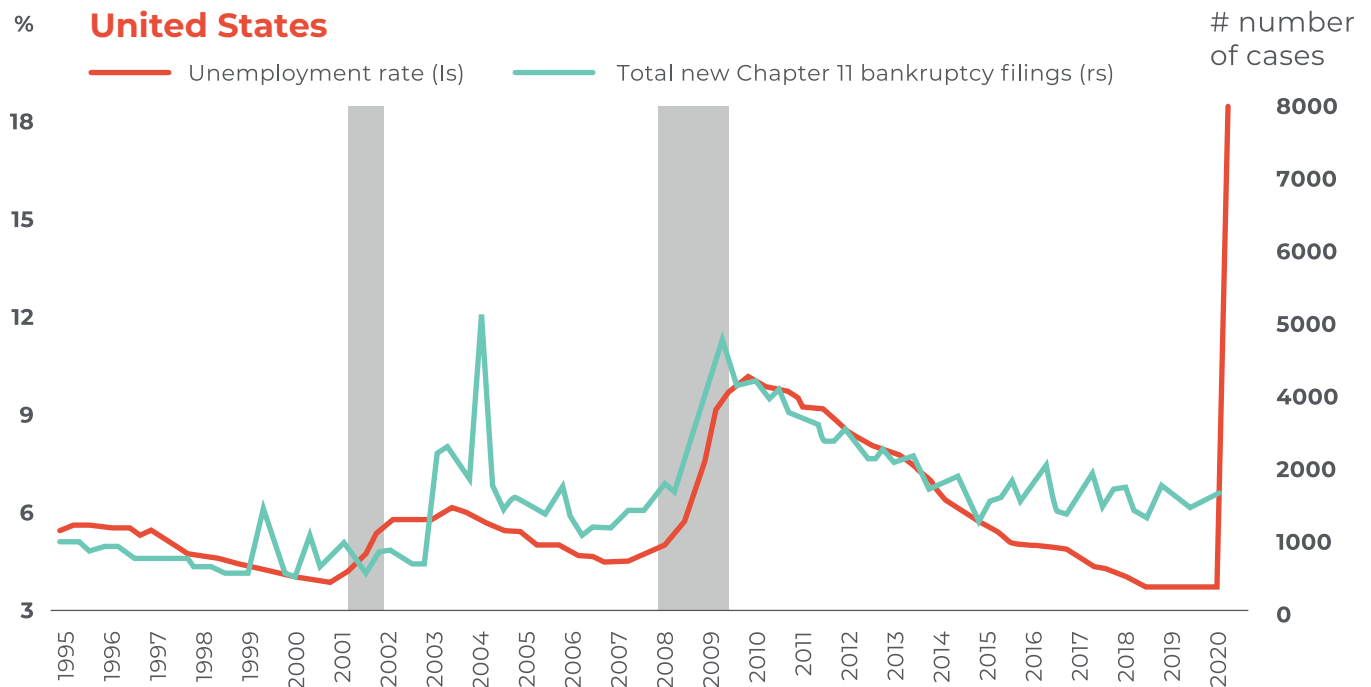


Another parallel now rears its head during this Covid-19 inspired downturn. If we were to ask you what the 2008 crisis was you'd likely say, a financially induced housing crisis. We saw housing prices plummet alongside the public stock markets. While we saw the public stock market and housing market come crashing down, what we also saw was a recovery that benefited those who bought on the dips and invested in housing and real estate.

The question may be if the 2008 crisis was a housing crisis, is the 2020 crisis a small business crisis? And if that is the case, will we look back upon this period and wish that we had invested in small businesses and nascent emerging businesses, such as cannabis, in the same way, we look back upon real estate purchases in 2008? We've seen the unemployment rate hit all-time highs, and typically, bankruptcies of both businesses and persons correlate with the unemployment rate. The question then becomes even with the unprecedented government stimulus, will we see a small business opportunity in distressed businesses, and cannabis, the likes of which would also be unique?

Now if you were to question this and say, but the level of unemployment is so massive, and the pandemic so brutal on the economy, that we are going into a depressionary period and we won't even begin to rebound for decades... I'd urge you to look at institutional cash levels.

There is \$4.7T in cash sitting and waiting on the sidelines, as you can see below. The liquidity crisis we had in 2008 may not be repeated during this crisis, given the amount of dry powder held across institutions.

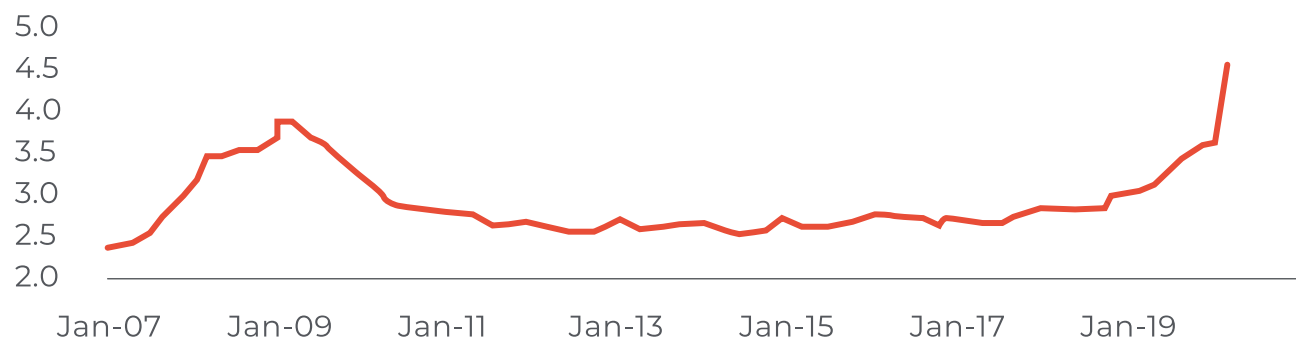


Let's be clear on another stark contrast from 2008 to 2020; this downturn was triggered by a forced shutting down of the economy based on protecting lives from a global health pandemic, not because of a failure to the system like in 2008. The result, while not ideal, sped up the disruption in specific industries and businesses which were already circling the drain. Often, these types of markets lead to an opportunity for the economy to be even more significant, as only the strong survive and innovative game-changing companies emerge. This will hopefully allow us to compete even more strongly internationally in the future. Even though economic news may seem terrible, some sectors are likely to outperform expectations, potentially resulting in gains (cannabis among them). Also, the quick and aggressive response we saw from the federal government and Congress led to a more confident stock market. With interest rates at historic lows, a stimulus package sent out, and another one potentially in the works, they may have more ammunition than we initially realized.

The Wall Street bank points out some \$4.7 trillion in now stocked away in money-market funds, and bank deposits have also surged. Even the U.S. Treasury has expanded its cash balance at the Federal Reserve.

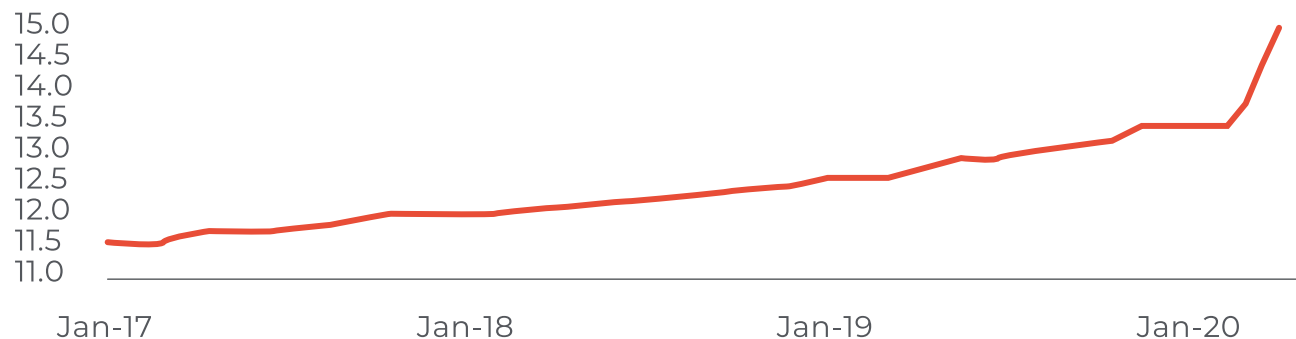
ICI money market fund assets have risen substantially

US money Market Assets (\$ Trillion)



US bank deposits: A Recent surge

US Bank Deposits (\$ Trillion)



As it is, the Fed might not even need to use their silver bullets as the economy begins to re-open, individuals who are on furlough (temporarily unemployed) will start to work again, and potential vaccines are being developed. Although gradual, all signs point to a recovery.

That said, we do expect us to experience downturns. The stock market at current levels is artificially high, our opinion, and doesn't show a substantial risk reward tradeoff in the general markets. We also expect more turbulence in the short term and continuous volatility in the coming months.

We believe that because of all of this, we may be at the precipice of a global reset in which the cannabis industry may legalize faster than ever, have revenue when most of the world is shut down, and continue to grow its sales faster than anticipated. As we said before, history doesn't repeat, but it rhymes. We have an inkling that the rhyming in this market today may lend itself to songs of the past. Time will tell.

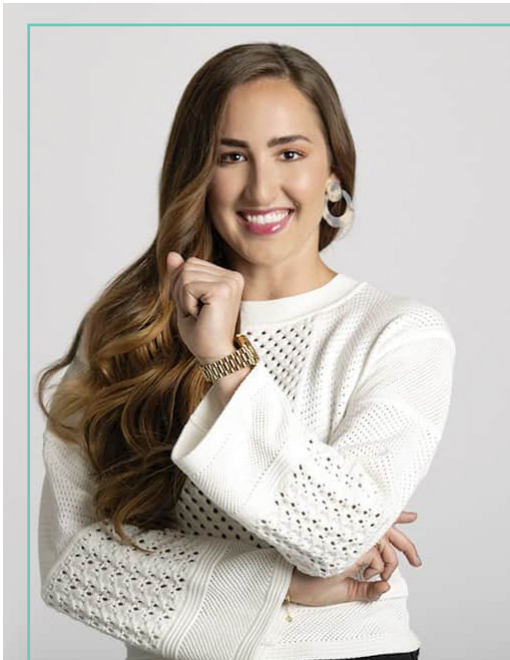


About the Author

Andy Sturner, managing partner at Entourage Effect Capital. Sturner has more than 28 year of venture capital and entrepreneurial expertise. He is a seasoned senior executive, c-suite officer, founder, serial entrepreneur and Board Member with success across technology, media, internet, real estate, and cannabis. Prior work highlights include Miami Angels, CBS SportsLine and MovieFone. While no longer a practicing attorney, he was admitted to the New York, Connecticut, and Washington, D.C. bar associations.



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About the Author

Codie Sanchez, managing director, Entourage Effect Capital, has more than 10 years of institutional investing experience and has raised over \$5B in institutional assets. She has worked at leading global investment firms to start and scale new businesses within as well as with small venture firms. She's an expert at digital, marketing, branding, sales and international JV's. Her professional highlights include Head of Investments Latin America - First Trust, SSgA - Director Institutional IR and Goldman Sachs. Sanchez has won numerous awards for her work, such as; Alumni Society Financers Award,

LATISM Influencer of the Year, DHCC Exec of the Year, a Robert F. Kennedy Award & two National SPJ Awards.



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QUICK HIT

The Cannabis Industry is Recession Resilient
During the 2020 COVID-19 Pandemic Cannabis Sales Surged

Increasing
↑ 19%

THE NUMBERS MARCH 11 - MARCH 18:

Cannabis sales thrived during the COVID-19 pandemic.



Medical cannabis sales: **Up 20.8%**



Recreational cannabis sales: **Up 11.6%**



Flower sales: **Up 22.6%**



Vape sales: **Up 9.7%**



Edible sales: **Up 12.4%**

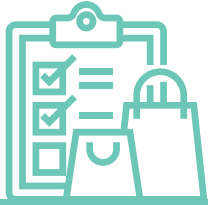
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“Cannabis operators are running an essential business.”

-Ostap Rapeyko, business intelligence analyst, Akerna

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Cannabis Legalization as a tool for Economic Recovery

By Thomas Roth

Director of Regulatory Services, Akerna

Coming into 2020, there was tremendous optimism throughout the industry that we would see a significant expansion of new legally regulated medical and recreational markets at the state level and perhaps even considerable movement in Washington D.C. regarding banking and potentially federal legalization. Our industry's national trade associations as well as state and local advocacy groups have worked extremely hard to support this effort and while we will see some positive results this November from a ballot perspective, the outbreak of COVID-19 has had an obvious impact on efforts at the state level to legalize cannabis for medical/recreational consumption.

Cannabis is essential

Despite COVID-19, we have seen this designation endorsed throughout most legally regulated states. This of course is a major development and a huge victory for the industry and our efforts to normalize our businesses and be recognized similarly to leading consumer brands found in neighborhood pharmacies, liquor and grocery stores. Many states have embraced this designation and quickly allowed for greater on-line ordering, curbside pick-up, and medical cannabis home delivery to support patient and consumer needs during this lengthy quarantine signifying the importance to state economies.

Jobs and tax revenue

Few, if any, industries are creating jobs at the rate of the legally regulated cannabis industry at the moment and the tax revenue generated through legally regulated sales will become an important element of our economic recovery as a nation.

According to Leafly, the \$10.73 billion dollar cannabis industry has created 243,700 full time equivalent jobs as of early 2020 and likely a much larger number when indirect jobs associated with the industry are included making cannabis jobs one of the fastest growing occupations in the country. This fact has and will catch the attention of local, state, and federally elected officials working to address high unemployment numbers across the country. Add to this, the Institute on Taxation and Economic Policy reports that the excise and sales taxes on legal cannabis products generated \$1.9 billion dollars in tax revenue in 2019., including \$538mm from California, \$290mm from Colorado, \$354mm from Washington, and \$155mm from Oregon (Marijuana Policy Project – 2019 state tax revenue). This new revenue source will become an important factor as state governments look to address growing budget gaps related to the pandemic.

Due to these unfortunate circumstance, we could see an influx of state governments looking to the cannabis industry to provide jobs and new tax revenues leading to an increase in legislative and ballot activities in 2021, perhaps even later this year for those states with year round legislatures or in those planning late year veto or special sessions in order to address budget gaps created by the downturn in general economic activity.

Because of this, providing the cannabis industry access to traditional banking services becomes even more important. Fortunately, elements of

\$10.73

billion dollar cannabis industry
has created

243k

full time equivalent jobs

Excise & sales taxes

\$1.9

billion dollars in tax revenue
in 2019

\$538

Million from California

\$290

Million from Colorado

\$354

Million from Washington

\$155

Million from Oregon

the SAFE Banking Act have been included in the current COVID relief package, also known as the HEROS ACT, that was recently introduced and passed by the U.S. House. Access to traditional banking and financial services would produce a number of positive results from helping federal, state, and local officials fight the unregulated black market by creating more financial visibility to helping this fast growing industry emerge from this quarantine in the best possible position to continue to add jobs and grow tax revenues, with the added bonus of also minimizing person-to-person contact during this pandemic.

While the HEROS ACT was recently passed by the U.S. House with SAFE Banking language included but now faces the difficult task of getting through the U.S. Senate. With the 2020 presidential election fast approaching and seemingly endless amounts of partisan rancor in D.C and throughout the country, passage of the HEROS Act with the SAFE Banking language may require a herculean effort by the industry and its advocates so we encourage everyone to reach out to their federally elected officials and voice their support for passage with this crucially necessary banking language included.

While the STATES ACT and MORE ACT and the lobbying efforts to support their passage are not dead, it is looking more and more likely that both pieces of legislation will not see passage during this Congress. The prospects for elements found in both bills may improve after this November's elections but only time will tell.

At the state level, ballot efforts are still underway Arizona, Mississippi, Montana, Nebraska, New Jersey, and South Dakota but their successes are far from secure. Voter education is always important but acutely so in states like Mississippi with competing medical legalization ballot questions and, of course, voter mobilization and turn-out will be essential to the success of all ballot efforts. Some states are now allowing citizens to mail in ballots while others are allowing electronic signatures collections in support of citizen-initiated ballot questions. Since many states only allow for ballot referendums or citizen-initiated ballot question during general election years, it is essential that take advantage these opportunities as they may not appear again until 2022. While there are still opportunities, state

11 states have cannabis initiatives on the ballot:

Arizona

Arkansas (2022)

Mississippi

Montana

Nebraska

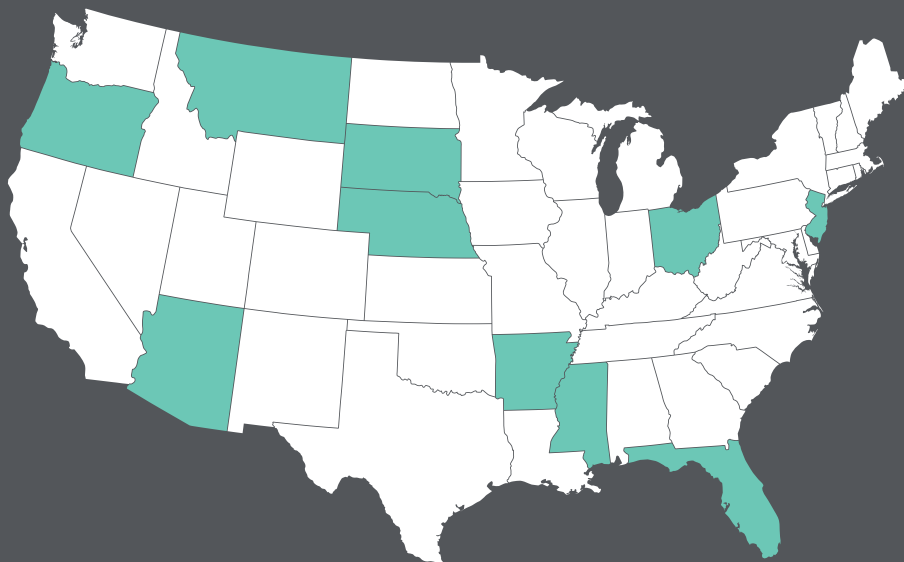
New Jersey

Ohio

Oregon (amendment)

South Dakota

Florida (2022)



legislative efforts to legalize for medical or recreational consumption have all but been tabled due to COVID-19 and understandably so look for some of these legislative efforts to pick back late this year and expect an significant expansion of these efforts in 2021 due to unanticipated budget and employment needs.

Speculation is always one of the more fun and interesting parts of politics, so we will have to wait and see what unfolds as we resume life post-quarantine. Akerna and its family of brands are in an excellent position to support these states as they manage and grow their new legal and regulated cannabis industries. Not only has Akerna rigorously tracked and monitored legislative efforts but we have been actively contributing to regulator's development of cannabis/hemp policies to ensure the integrity of both industries not only within but outside the states we currently work with. As many states continue to evolve regulations incorporating Hemp CBD products into the medical cannabis retail market such as Utah, Montana, Louisiana, and Colorado, Akerna provides feedback and technical solutions for successful frameworks. While working with regulators in Utah, Akerna is helping shape the existing industry framework to help industrial hemp establish a solution for "hot hemp" by applying UID's to verified state hemp products coming into an operator's facility (allowing traceability back to the farmer/processors). With regulator's among various states deciding to allow CBD (Low-THC) products in the medical cannabis market while technically meeting the Federal label of "hemp" this means interstate commerce between state cannabis operators will be inevitable.



About the Author

Thomas Roth is a government and regulatory affairs professional with more than 15 years of experience working at all levels of government. Roth is a respected author and speaker who regularly shares insights from his interactions with lawmakers. Roth holds a master's degree in public administration and policy analysis from Southern Illinois University. Connect with him on LinkedIn for news, insights and updates.



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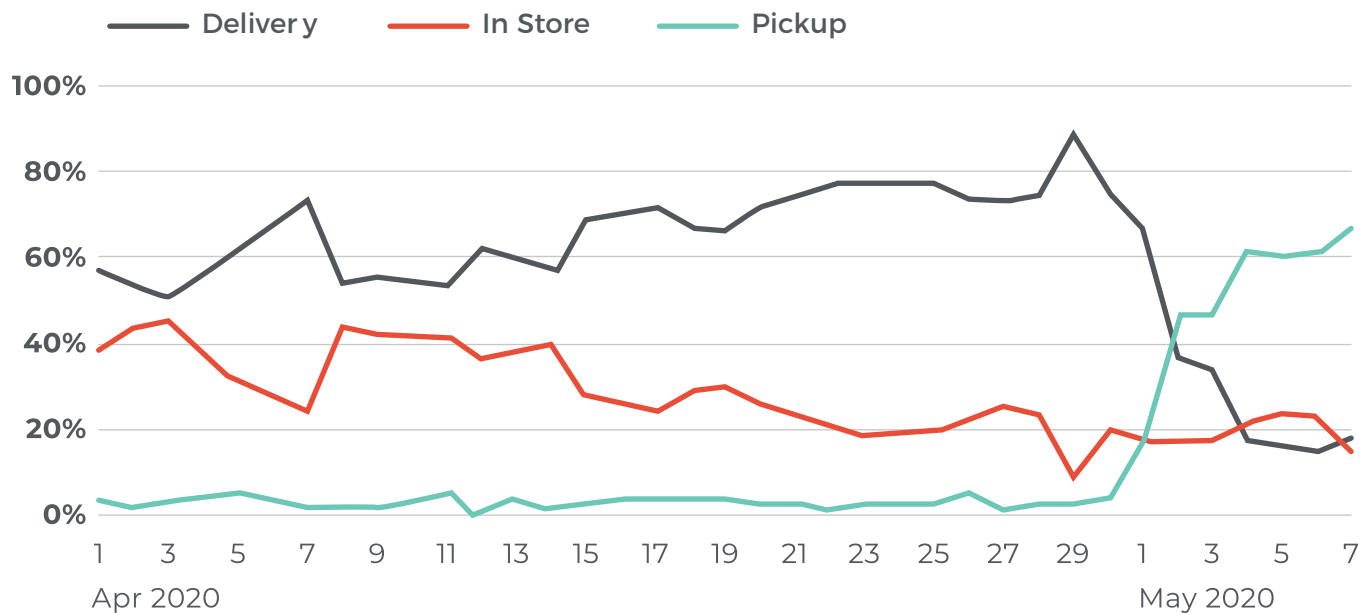
Policy Changes Can Help Economic Recovery

Nevada Eases Restrictions on Curbside Pickup as a Fulfillment Sales Increase

3% → 67%

On May 7, when the Governor eased restrictions in Nevada, curbside pick-up as a fulfillment method surged from 3% to 67% of total sales.

Nevada's Percentage of Total Sales by Fulfillment Method



The state eased restrictions on curbside pickup as a fulfillment method late last week. Before restrictions being lifted, recreation sales in the state declined 56% when compared to the rest of the recreational market's average decline of only 1%. On March 21, when communities started to realize the full effect of travel bans and shelter in place orders, recreational cannabis sales in Nevada dropped to a year low.

“When governor Steve Sisolak announced the state is allowing curbside pickup of marijuana products at Nevada dispensaries starting Friday, May 1, we started watching to see if it would help sales in the state increase,” said Ryan Ballman business intelligence engineer, Akerna.

“Over the weekend, pick up as a fulfillment method surged from 3% to 47% of total sales.”

In the state of Nevada, since curbside became an easier fulfillment option, the number of daily pickup orders have soared 2,746%. Overall, total daily sales in the state have increased 20% compared to April.

“While total sales have not seen dramatic increases, what is interesting is the rapid adoption of this fulfillment method for the state,” said Ballman.

“Another interesting point from the data is most of the pickup orders have been on the recreational side, accounting for 95% of those orders. Not many medical customers seem to have taken advantage of curbside pickup.”

Nationwide, 17 states and the District of Columbia allow curbside pickup for cannabis. Throughout the pandemic, alternative fulfillment methods like delivery and pickup have seen steady growth. Business intelligence from Akerna also shows, year-over-year, April 2019 to April 2020, recreational cannabis spending is up with a 39% increase in ticket size. The ticket size for the under 30 age group also increased by 49%. As the industry evolves to meet customer needs, product pickup as a fulfillment method increased 541%, accounting for 15% of total sales.

Over the weekend:

The average recreational ticket size
nationwide (excluding N.V.)

\$75.38

The average recreational ticket
size in Nevada

\$108.41

The Numbers, Year-over-Year, April 2020 compared to April 2019: Total cannabis sales increased **68%**, with an average ticket size of **\$123**. Top categories:

Concentrates increased

22%

accounting for **11%** of total
product sales

Cartridges / Pens increased

3%

accounting for **35%** of total
product sales

Infused Edibles decreased

18%

accounting for **9%** of total
product sales

Flower maintained

43%

of total product sales



Counterfeiting and Product Safety

An examination of how soloCode* can improve consumer confidence

By Gordon Wade

Chief Researcher, solo* sciences

The counterfeiting of products is a worldwide issue that has many ramifications. It represents 3% of international trade and hurts economies, endangers public health, and supports dangerous illegal organizations. However, despite its severity, no technology to date has adequately or successfully addressed the growing threat. While attempts have been made to utilize Q.R. codes (Quick Response codes), holograms, and other options, none of these adequately address the increasingly sophisticated techniques that counterfeiters employ to fool consumers and regulators.

The solo* technology created by solo* sciences is an approach years in the making that alters the dynamic of anticounterfeiting efforts. solo* creates a secure channel through which shoppers or government agencies can confirm a product's authenticity through a simple, yet advanced, mobile application accessible on any modern cellular device. The app allows brands to communicate with consumers, enabling transparency and ensuring that product users can be informed about a product's contents and authenticity.

This paper demonstrates how this patented technological breakthrough enables branded manufacturers and retailers to protect consumers from the dangers of counterfeiting. Additionally, it illustrates how solo* technology allows product creators to communicate directly and instantly to shoppers, strengthening brand loyalty and providing a low-cost communication channel between brands and customers.

At the end of 2019, Akerna Corp. (Nasdaq: KERN), a leading seed-to-sale regulatory compliance technology provider and developer of MJ Platform®, the cannabis industry's first enterprise resource planning (ERP) software technology, made a majority investment in solo* sciences. Previously a key strategic partner, the integrative partnership has significantly expanded the traction in commercializing the solo* technology, including a major contract win with the state of Utah.

Counterfeiting costs governments and brands billions of dollars a year and has other serious implications. Sales losses from counterfeiting affect all aspects of economies because, in addition to lost revenue, they result in job losses and related second and third-order effects. Counterfeiting also has adverse effects on economies, public health, and consumer trust. The seriousness of the issue was glaringly underscored in the recent “vapegate” crisis where consumers began getting ill, hospitalized, and – in a growing number of cases – dying from counterfeit vaping devices that had contained unsafe substances. The threat is only getting larger with one study estimating that the global economic costs related to counterfeiting potentially reaching \$2.3 trillion by 2022.



Counterfeiting:

The Organization for Economic Co-operation and Development (OECD) reports international trade in counterfeit and pirated goods amounted to as much as half a trillion dollars in 2016 and governments additionally lose billions in efforts to detect, capture, and prosecute counterfeiters to stop their activities and prevent losses in tax revenue. While often considered an issue primarily affecting luxury goods, designer clothing, and electronics, it is truly a global problem that effects nearly every industry; counterfeiters have been caught producing illicit cigarettes, automotive parts, baby formula, and medical devices.

Counterfeiting hurts labor populations as well. It is not a victimless crime. Black market products are often being made in factories which utilize forced labor and child workers, and profits from illegally manufactured goods have been found to finance criminal organizations, terrorist groups, and human traffickers. The economic implications of counterfeiting also continue to grow enormously. From 2008 through 2018, seizures of infringing goods by the U.S. Customs and Border Protection (CBP) and Immigration and Customs Enforcement (ICE) increased by a factor of five, while the domestic value of seized merchandise – as measured by the manufacturer's suggested retail price (MSRP) – increased from \$94M in 2003 to \$1.4B in 2018.

Counterfeiting: a public health concern While counterfeiting is an enormous economic issue, it also presents severe consequences for consumers and their families, especially when products believed safe turn out to be dangerous. The use of cheap, sometimes banned, toxic, and dangerous ingredients is typical of counterfeit products. Substandard manufacturing practices also cause serious problems.

Counterfeit child-safety seats, sold at a fraction of the cost when compared to the real versions, look identical but break into pieces during a 30mph car accident. Fake medicines, £2+ million of which were seized by the U.K. Medicines and Healthcare products Regulatory Agency in 2018, can not only completely fail to treat intended diseases, but can lack active ingredients, contain incorrect dosages, and/or include dangerous additives.

As early as 2001, the Chinese government recognized this growing threat when they investigated 480,000 incidents and attributed 192,000 deaths to counterfeit drug use.

Branding is a ubiquitous and powerful way of assuring shoppers that they will get what they pay for. Companies rely on effective product design, as well as complex marketing campaigns, to protect their brand names and ensure that consumers will trust their trademarks. Shoppers will choose to pay higher prices for products from a trusted brand. Graphic symbols, logos, wordmarks, and brand personas affiliated with companies become trustmarks. In many industries this is critical to a brand's survival and success. Laundry detergent is a perfect example where one study showed that 70% of consumers prefer familiar name brands. Regardless of an identical ingredient list, a shopper who sees the orange bullseye on the side of a Tide carton may believe it is more reliable and less likely to irritate sensitive skin than a more affordable but unrecognized generic brand.

Counterfeiters undermine branding and marketing efforts by reproducing trusted packaging and filling those packages with inferior products. Modern techniques available throughout the manufacturing ecosystem enable counterfeiters to imitate trusted brands with astonishing verisimilitude. One such fake, a counterfeit Christian Dior handbag priced at \$3,600, recently slipped through the highly respected authentication process run by online luxury resale company, The RealReal. In such cases, the damage to a brand can be two-fold. In the best-case scenario, consumers must become additionally fastidious in checking for fakes. However, in the worst-case scenario, shoppers may not realize that an inferior product is a counterfeit and may lose faith in a brand which had previously instilled trust and consumer loyalty. As noted by the OECD, "E-commerce platforms represent ideal storefronts for counterfeits and provide a powerful platform for counterfeiters and pirates to engage large numbers of potential consumers." Combined with the meteoric rise of e-commerce's populations (in the U.S., e-commerce year-over-year retail sales grew 13.3% in the Q2 2019 while total retail sales only increased 3.2%), this presents a serious boon to counterfeiters – and a difficult challenge for governments, brands, and consumers.

Amazon, in particular, has been accused of fueling the issue. Their vast e-commerce platform has come under fire regularly and repeatedly for not doing enough to combat third-party sellers who list counterfeit products on their site. In an exposé, the Wall Street Journal wrote that the site “increasingly resembles an unruly online flea market.” During their investigation, WSJ found 10,000+ items on Amazon’s U.S. marketplace that had been “deemed unsafe by federal agencies, are deceptively labeled, lacked federally required warnings or are banned by federal regulators.” In addition to actual crimes, perceptions that “you can’t trust anything” chip away at the public’s overall trust in brands.

A reliable anti-counterfeiting technology

In order to protect consumers, brands, and economic interests, a dependable and technologically advanced solution is required. Many approaches have previously been attempted. Some brands employ the use of early 1990s technology – QR codes – which users scan in hopes of verifying that a product is real. But QR codes are very easily duplicated and – because the software to write and read them is freely available – easily hacked. Other companies create increasingly complex packaging, which is supposed to suggest security and is allegedly hard to duplicate. However, in many cases, near-perfect replicas are for sale only weeks after a product launch. Brand owners have been shocked to find their own packaging available in bulk online.

To circumvent the ways that counterfeiters create fake products, solo* sciences developed and is leveraging proprietary technology.

Mobile first

The free solo* app, available at the App Store and Google Play Store can be downloaded onto any mobile device that has a camera. The goal of the solo* app is to empower consumers by letting them play a critical part in anti-counterfeiting efforts. A key strategy is that every user can become integral to a system that determines whether or not a product is counterfeit, with similarities to user participation in the Waze app. The application’s architecture is engineered to address multiple purposes. It creates a direct line of communication between brands and their end-users, with the goal of boosting consumer confidence and

establishing/reinforcing brand loyalty. Through the platform, companies can amplify their commitment to transparency by providing end users information and data about the product they purchased.

Cryptologically secure closed loop

By utilizing a proprietary and secure end-to-end encryption, solo* ensures that only confirmed products and data can make it into the solo* system. The patented solo*CODE™ is readable only through solo* technology so other application developers cannot create a way to circumvent this closed loop. This process protects consumer data because the closed-loop ensures that third parties are not able to access data without brand-level agreements being in place. If an aggressive counterfeiter attempted to compromise the solo* system by imitating the solo*CODE or collaborating with a rogue printer, the code would fail. Because the trustmark must be activated through the closed-loop system, the inactivated code created by a counterfeiter would read as fake when checked by a consumer or retailer – or law enforcement agency.



“Seed-to-sale-to-self” tracking™

The solo* system is designed to be used through the entirety of a product’s lifecycle. Brands utilize solo* to track an item from the moment it is created, through the point of sale, to the second that a user scans it and provides feedback. With products such as cannabis, brands can also associate specific testing and compliance data with each unique solo*CODE. For example, when scanned, an item can have its full certificate of analysis linked to the customized product display page presented in the solo* mobile app.

Brand friendly

The process through which brands utilize solo* is architected to be as unobtrusive as possible, both in terms of implementation and design. The method of application depends on several factors, such as the specifics of the packaging material, sizes, and processes impacting the overall finished package. However, the solo sciences team works collaboratively with brands to develop optimal approaches for each given solo* member client. Designers ensure that the solo*CODE is incorporated seamlessly into a brand’s proprietary look and feel, and an implementation team establishes processes designed to integrate seamlessly with a company’s workflow. In short, it is a fully considered, easily integrated solution to effectively fight counterfeiting.

A superior system

The solo* system was, effectively, reverse engineered by examining existing anticounterfeiting technologies and then fixing their drawbacks. QR codes are applied to whole batches of products, and the technology to write and read them is publicly available. However, because every individual product has a unique solo*CODE, this system cannot be circumvented in similar ways. Additionally, through the usage of a proprietary closed-loop and encoding technology, third parties cannot create their own codes that will be readable by the app.

Radio-frequency identification (RFID) and Near Field Communication (NFC) technologies require specialized equipment to both insert a code and read a code. By utilizing existing mobile technology that is readily available to brands as well as consumers, solo* avoids this issue. Further, the solo*CODE is far more

robust than these technologies, which are comparatively delicate and more prone to failure when handled roughly.

Deployment of solo* is also far more affordable than anticounterfeiting systems such as RFID. For most categories of products, the average price of a solo*CODE is 2.5 pennies per label. This base cost enables shoppers with the solo* app to guard against counterfeit products and to see a product display page that confirms and expands on an item's basic data.

Brands can also choose to pay an additional charge of 10 cents per label to activate direct-to-consumer communication and marketing capabilities. This personal and interactive targeting capability is built upon a respondent data base similar to but in many ways more robust than the IRI/Nielsen household panel data. For example, marketers can poll specific attitudinal cohorts enabling low cost insights into shopper needs and attitudes.

A solution for every step of the product lifecycle

The goal of solo* technology is to protect everyone involved in a product's lifecycle. The system is designed to empower product creators, regulators, retailers, as well as end-users. In addition to providing a superior anticounterfeiting solution, solo* has multiple other advantages. The ancillary benefits of this cutting-edge technology benefit actors at every level. For consumers solo* provides a level of safety that can help prevent the public health concerns related to counterfeit products. Recent information about the "vaping crisis," for example, points to counterfeit cannabis cartridges which had been sold illegally at black market dispensaries. Some of these packages looked so realistic that even brand owners couldn't tell that they were fake duplicates. Had those packages been protected by the solo* system, consumers would have been able to immediately identify fake products. The data provided by solo* would have facilitated the rapid identification of the illicit products.

Solo* also provides transparency and creates confidence between the consumer and the brand. Consumers feel good when they know that a brand is going out of its way to provide data regarding the product they've created. The solo* app

not only performs this function, but it goes further in protecting consumer safety by allowing a brand to convey information such as allergens, dietary information, and even the chemical composition of an item as presented on a certificate of analysis.

For brands

A key benefit of the solo* system for brands is ensuring that end users can self-determine that what they have in their hand is an authentic product. This ability to protect brand reputation against negative experiences from counterfeits is crucial. However, solo* provides multiple tangential benefits to brands as well. One of the most comprehensive and versatile benefits is how solo* presents product creators with a new channel of communication. No other marketing tool offers the 360° advantages of counterfeit prevention via shopper-enabled transparency combined with enhanced user engagement opportunities.

A brand can opt to use the solo* mobile application to offer tailored incentives like coupons, or to notify shoppers of new and/or improved products. It can also actively push recall or other time-sensitive notifications to users to immediately warn if a defective or otherwise hazardous product gets in the supply chain.

At a time when shopper loyalty to every brand is threatened from numerous factors in the ecosystem, the solo* app becomes a powerful low-cost option for brands to strengthen the bonds between themselves and their target demographics. The solo* app becomes a new marketing weapon, giving brands the capability to build loyalty with consumers by enabling targeted personalized marketing communications and incentives.

Additionally, brands can utilize solo* to gain market insights in a direct and immediate fashion. The system can provide all the metrics available for conventional data suppliers like Nielsen and IRI plus data emulating a robust version of standard household panel data-gathering. And where Nielsen and IRI gather data on all products from a sampling of 125K monitored households, the solo* system will provide anonymized data on every household purchasing an item with a solo*CODE. This includes metrics such as loyalty, exclusivity of

purchase, substitutability, and a shopper's "high-medium-low" (HML) worth evaluations. Other information regarding purchases by brand, price, purchase size, retail purchase location, and all the permutations and possible combinations is obtainable. Any data provided by a manufacturer in any product category can be captured, curated, and converted into multiple datasets identified to be of value to marketers.

For retailers

To retailers, solo* provides assurance that products being offered to shoppers are authentic and safe. At the same time, solo* discourages sales by unscrupulous retailers, including internet sites that offer counterfeit "brand names" as bargains for unsuspecting shoppers. In this respect, solo* builds loyalty and trust for legitimate brick-and-mortar retailers working to maintain shopper loyalty and market share against online retailers. This is critical because even retailers making an effort to respond to the consumer outcry and regulatory steps regarding illicit products, often continue to be a paradise for counterfeiters. This creates significant marketing potential and allows a retailer to also push out a message that they are dedicated to protecting consumer safety by featuring products which have unquestionable authenticity.

The data collected through the solo* system and the product feedback that users provide can prove crucial to retailers. No other platform can combine sales data with accurate and detailed reactions from individual product users. This type of actionable information and data can be utilized by retailers to predict future sales, price specific items competitively, identify products with growth potential, and make other critical informed decisions which would otherwise be guesswork.

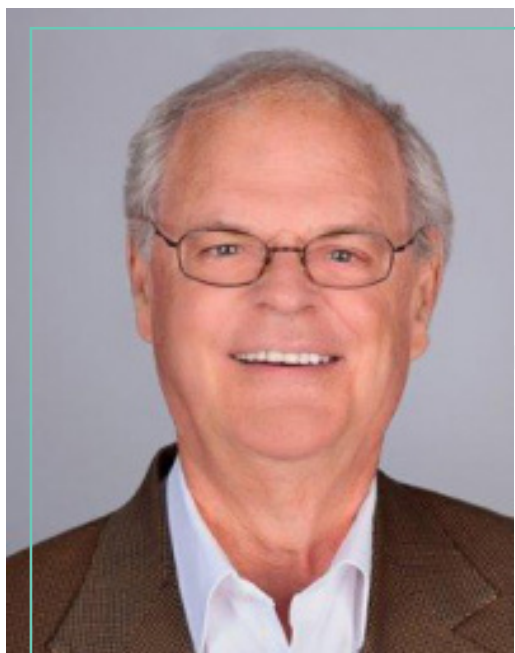
For regulators

The largest concern for regulators is consumer safety. The inherent anticounterfeiting abilities of solo* technology make it an effective tool for defending against the wide range of threats posed by illicit products. Additionally, there are other benefits for regulatory agencies to leverage. By reducing the illicit trade's market share in sectors, governments can track and tax products more reliably. Further, the "seed-to-sale" tracking available through solo* technology allows agencies dedicated to

product safety to remain aware about an individual product's progress through its lifecycle. By requiring a solo*CODE to be scanned at various points in a product's lifecycle, agencies can perform their tasks far more efficiently. With solo* they can track a company's output and easily reference real-time and historical scan data. This simplifies processes where there is a need for such information; such as performing an audit or calculating future tax revenues.

Conclusions

Innovative and cutting-edge technology from solo* sciences is dedicated to protecting brands, retailers, regulators, and - most importantly - product consumers against the increasingly present and sophisticated threat of counterfeiting. At a time where national governments and international organizations alike continue to be stymied by this constantly growing threat, solo* offers an affordable and easily implemented option to protect against illicit product creators.



About Gordon Wade

Gordon Wade, one of the founders of category management for the consumer packaged goods (CPG) industry, is an honors graduate of Harvard and is an alumnus of Procter & Gamble, where he was the youngest product manager in company history. Wade is one of the three people who created the discipline of category management for the CPG industry which is now used by every major manufacturer and CPG retailer globally. In 1993 when category management was originally conceived, he created over 80 analytical templates

to drive the process and then trained hundreds of practitioners on the data types, analytical approaches, order of operations, and analytical pathways required by the discipline. He is on the board of advisors of r4, whose AI platform recently received Gartner's Eye on Innovation Award for Platform of the Year. Wade has written several white papers on the new data and analytics in recent years. For insights and information, connect with Wade.

 [Connect](#)



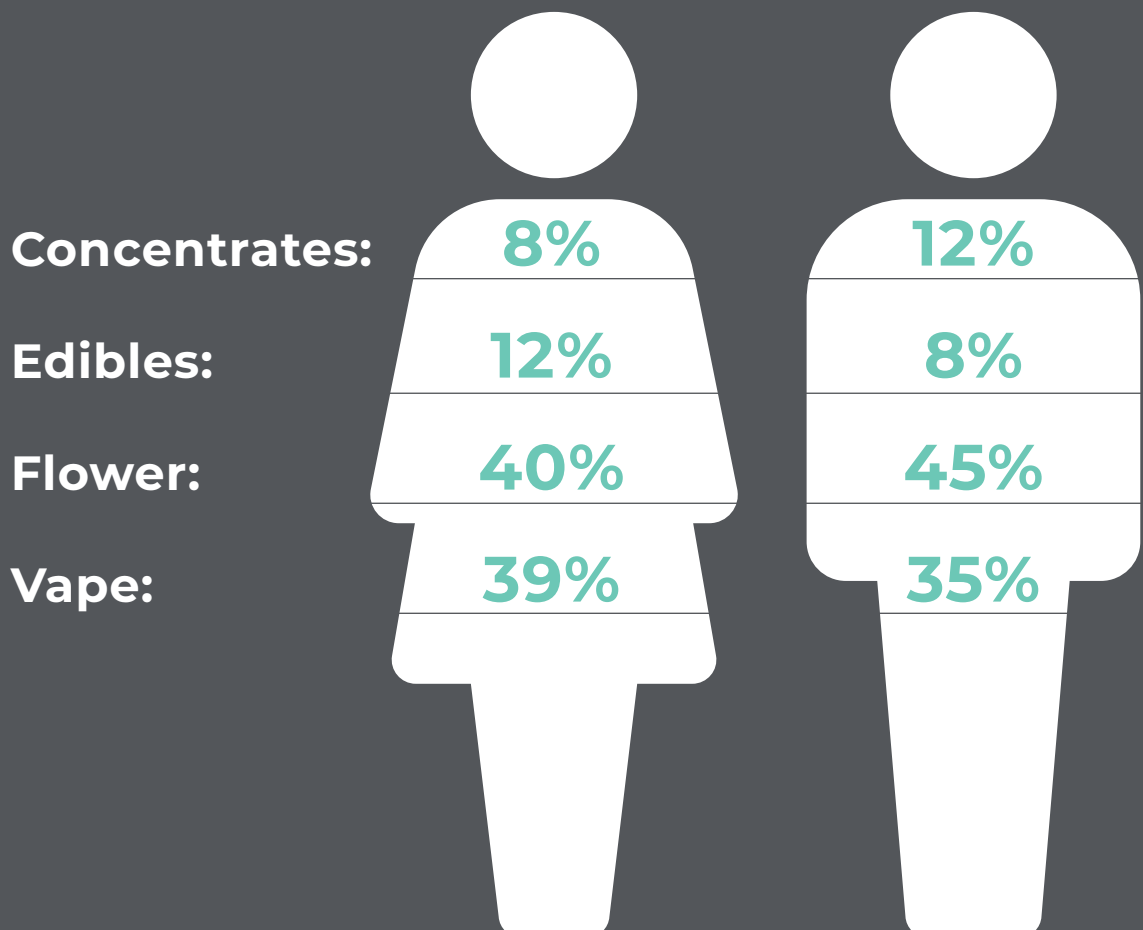
QUICK HIT

In Q1 2020 Women Outspent Men on Cannabis

Flower is the Top Purchase with Vape a Close Second as Concerns about Counterfeit Products Eases

Women, across all age groups **18-55+** drove cannabis sales in the first quarter, 2020. The average amount spent by women increased by **50%** in March.

Total cannabis sales increased in Q1 2020 by **16%** over Q4 2019. The top products purchased in Q1 in each category:



“

“In March, the average basket size for women hit an all time high above \$105, while for men basket size was below that for March 2019.”

-Aryeh Primus, Vice President of Analytics, Akerna

”



Since the height of the vape issue in 2019, Akerna's business intelligence team has been evaluating vape sales and consumer preference related to the category. In general, vape sales have remained steady nationwide.



Data shows:

- Vape sales in August 2019, at the height of the issue, had 31% of market share based on total sales, today, vape has 36% of the market share based on total sales.
- In Sept. 2019, vape sales declined 7%. However, in September, sales across the industry dipped. By October, vape sales were up over 9% and sustained steady growth for the balance of the year.
- Overall, vape sales have continued to slowly gain market share by a couple of percentage points each month since October 2019.
- During the Covid-19 pandemic, vape sales were up over 9%

“The sustained trend in vape sales is interesting. It seems once consumers realized the products with the potential to threaten their health were those purchased on the illicit market, sales of legal products resumed an upward trend.”

-Aryeh Primus, Vice President of Analytics, Akerna.



Cannabis as an Essential Business

Observations of Innovation and Resilience During the COVID-19 Pandemic

By Nina Simosko

Chief Commercial Officer, Akerna

Transforming How You Do Business to Meet Demand Now and Into the Future

The COVID-19 pandemic has drastically changed the way we collectively live, work, and play. As shelter-in-place orders expand, certain types of businesses are considered “essential,” like grocery stores, pharmacies, banks, and gas stations. When officials from Colorado issued a shelter-in-place order, cannabis dispensaries were not included as essential businesses. Within three hours, however, the order was reversed. Dispensaries are now classified as essential and critical.

Why Cannabis is an Essential Industry?

For the last ten years, the cannabis industry has moved out of the shadows and into the mainstream all across the country. It has grown in acceptance and legalization nationwide. While recognized as being recession-resilient, the question remains: “Is cannabis truly essential?”

Consider this: Medical marijuana is a \$5 billion industry, with more than 2,000 retailers serving more than 2,132,769 patients nationwide. Among these are people fighting cancer and using cannabis to manage their symptoms, veterans working to manage post-traumatic stress

\$5

billion industry,
with more than

2000

retailers serving more than

2.13

million patients nationwide

syndrome, and those being treated for severe forms of epilepsy, Dravet syndrome, and Lennox-Gastaut syndrome. For patients like these, the cannabis industry is a critical component of their overall health care. As an industry, we contribute to the health and wellbeing of thousands of people across the globe.

Smartweed Collective tackles surge in orders with MJ Platform

MJ Freeway customer Smartweed Collective, a Los Angeles-based dispensary, illustrates this point perfectly. According to Sharif El-Mazati, Smartweed Collective's Director of Operations, last week the company saw order volume and deliveries jump three times beyond expected. Deliveries to first-time customers spiked more than 30%. As Mr. El Mazati puts it, "MJ Platform has enabled us to handle the influx of orders as we've become more efficient and streamlined – and, because we have real-time data about our inventory, we are able to respond to the fluctuations of supply and demand with greater confidence and accuracy."

Smartweed Collective's experience is becoming more the "norm" in today's environment. While being designated as an essential business is a big step forward for the cannabis industry, business owners need to strategically plan and implement operational changes to protect their businesses, customers, and employees. All business owners should be asking:

- How are we changing our ordering and delivery methods to comply with social distancing regulations?
- How do we handle payments to keep everyone safe, especially since we offer a curbside service?
- With the industry experiencing a surge in sales, how nimble is our business to manage increased product demand?

New Ways to Connect with Customers

Historically, most cannabis dispensaries have sold and delivered products through in-person and in-store interactions. Budtenders are trained to listen to customers, learn their needs, and discuss the most suitable products. After the products are presented, the customers ultimately decide on what they want and then make

their purchases. However, with the COVID-19 pandemic and the resulting social distancing restrictions put in place in most states, this “old way” of doing business is no longer possible.

As an essential business, cannabis dispensaries are adapting, adjusting their operations so they can safely deliver products in ways compliant with CDC guidelines for social distancing. Over the past few weeks, we have seen what some dispensaries are doing to keep their customers and employees safe. Business Intelligence from Akerna, MJ Freeway’s parent company, shows many cannabis business owners have shifted their approach to fulfillment. From **March 11 to 31**, we saw an:

Increase in online ordering

355%

Increase in delivery sales

280%

Increase in pickup orders

118%

Connecting With Customers In A Social Distancing World

As with any industry during times of great challenge, some cannabis businesses will struggle to adapt to the changing demands of their customers within the boundaries set by COVID-19 related-orders. One way to mitigate these growing pains is to embrace new methods of staying connected with and selling to customers.

As shared by Danny Gold, CEO of Zoltrain, an online learning and training platform for the cannabis industry, “Until recently, 90% of sales were driven by budtender recommendations, and up to a few weeks ago, this was an in-person business. Digital conversion is being accelerated. Stores will continue to push with online order and delivery, and legislation in more states will probably allow for delivery in more locations.”

A valued customer of MJ Freeway, The Apothecarium Dispensary, which has three locations in San Francisco and one dispensary in Las Vegas, is a prime example of a company shifting to this new way of doing Business.

According to Sara Moser, the company's Marketing Director for California, "Business has to be about online sales with pickup and delivery. As a retailer that has been differentiated by our product knowledge, in-person consultations, and technology. We are looking at ways to translate that into online channels – bundling and promotions around themes (e.g., calm or sleep), better merchandising, and educational offerings. We see this is especially important for connecting with and educating new customers who have limited knowledge about different offerings, brands, and uses. This is particularly true for some of the more innovative products that have been developed over the past year."

How Technology Can Help Cannabis Businesses Keep Up With The Changing Landscape

Many states have created regulatory provisions for curbside pickup or have fast-tracked licensing for delivery. Other challenges within the industry still exist, such as an individual's exposure to frequently touched cash for payment and the increased risk of theft during exchanges made outside the confines of the dispensary.

MJ Freeway and our partners like Jane and Hypur are working together to address these issues and create solutions to improve the safety of employees and customers. Jane and Hypur enable cannabis business owners to use technology to manage cash while meeting regulatory requirements seamlessly. We are also working with providers like I Heart Jane to address the issues around curbside pick up, payment, and alternative forms of ordering.

For dispensaries interested in streamlining their delivery services, MJ Platform has an out-of-the-box delivery solution that enables businesses to easily track inventory, optimize delivery routes, set automated reminders for re-orders, and review past sales records and purchase history in real-time from any place or any device.

As an essential business, cannabis dispensaries are embracing this new way of connecting with and selling to customers. The creative and collaborative use of technology is what will enable this shift. Only then can business owners improve engagement with customers, create brand loyalty, generate more revenue and thrive during these challenging times.

Cannabis dispensaries moving to non-cash payments

In an effort to slow the spread of COVID-19, essential businesses are increasingly trying to find new ways to accept payment methods outside of cash transactions. Traditionally, dispensaries have operated as cash-only businesses since banking restrictions inhibit traditional cashless payment methods. Cashless payments in the cannabis industry require specialized technology in order to reduce person-to-person interaction and allow for a fully executable online ordering experience. During the COVID-19 pandemic, dispensaries are attempting to adjust how they currently operate by implementing online ordering and delivery. With that shift, business owners must also change how they accept payments – an adjustment not limited to cannabis dispensaries. For instance, the Publix Super Markets chain introduced contactless payment methods in all of its 1,200 grocery stores, Chick-fil-A restaurants in Florida, Indiana, Georgia and Virginia are moving to cashless payments, and even toll takers in several states no longer accept cash.

Technology Enables Non-Cash Payments to Maintain Social Distancing

Being a cash-only business is a challenge many cannabis dispensaries have faced for years. Social distancing guidelines mandated to maintain the health and wellbeing of employees, customers, and the community have only added to the complexities of operating a primarily cash-based business.

COVID-19 is transforming how consumers interact with businesses, as individuals increasingly move to online purchases, on-demand deliveries, and curbside pickups, and as a natural progression, touchless payments. Businesses that have adopted these new, innovative technologies now are the ones who will survive beyond COVID-19.

One such innovative technology, MJ Freeway's partner Hypur, provides secure, electronic payments through its mobile app. In fact, Hypur was created to fill the special needs of cannabis business owners, enabling them to provide customers with a safe, reliable electronic payment option and a shopping experience that would be expected from any other type of business. Built on the Automated Clearing House (ACH) network, Hypur seamlessly transfers payments from the customer's bank account to the cannabis business' bank account for a touchless interaction that keeps cannabis employees and customers safe and in compliance with CDC guidelines for social distancing.

According to Tyler Beuerlein, Chief Revenue Officer of Hypur and Chairman of NCIA Banking and Financial Services Committee, "COVID-19 has only sped up the inevitable for the industry. Today's consumer prefers a convenient, reliable experience when purchasing goods. Hypur Pay's best-in-class options provide that experience for the consumer." Case in point, Hypur has seen a significant uptick in order amounts and consumer adoption during the pandemic. Furthermore, the launch of the company's "Safe Checkout" feature for delivery and pre-order enables commerce without the need for the consumer and the delivery driver or budtender to interact physically.

Technology is Crucial to Allowing Essential Businesses to Operate

As governments continue to take measures to protect their citizens from the spread of COVID-19, human and economic costs are becoming increasingly evident. However, technology is the common enabler for essential businesses to operate and serve their communities and for individuals to continue with their daily lives while complying with social distancing.

COVID-19 and the restrictions that have accompanied it has changed the way we do business and interact with one another in ways we could not have predicted. While cashless payment options have been available for some time, the technology has become a crucial need stake for short-term and long-term viability and success. As the country emerges from the immediate crisis, it is clear that the solutions that have been put in place now will continue to shape and define the industry moving forward. For cannabis business owners, now is the time to embrace the

technologies that will enable them to operate efficiently and ultimately allow them to thrive in the future.

Leverage digital technology to create and curate customized marketing for customers

As communities across the country continue to practice social distancing, how individuals and brands engage with one another has shifted. People have been looking for safer alternatives to human-to-human interaction. Before the pandemic, tech-savvy consumers primarily engaged with dispensaries through multiple channels, yet with the spread of COVID-19, this has now become a necessary way of life.

For cannabis dispensary business owners, current times have forced them to drastically shift how they operate, including in what manner they market their products. And it's not just the cannabis industry – with COVID-19 and the evolution of today's connected consumer, the relationship between brands and individuals has dramatically shifted in regards to the customer journey.

Technology Enables Cannabis Businesses to Create Personalized Marketing for Better Engagement

In the age of COVID-19, consumers are no longer walking into their local dispensaries where the budtenders know who they are, what they like, and what products are best suited for their needs. Instead, customers are gravitating towards contactless methods of getting goods – primarily by shopping online or on their mobile devices. This means cannabis business owners no longer have the luxury of relying solely on their budtenders to educate customers, sell products, and build customer loyalty.

With the right technology, tools, and data insights, business owners avoid missing opportunities to provide personalized interactions when it comes to selling products and engaging with customers. Cross-selling and upselling can be customized to the individual to create a personal experience that builds brand loyalty.

Happy Cabbage Analytics Helps Create Meaningful Marketing Campaigns to Cannabis Consumers

One such technology company is Happy Cabbage Analytics, an integrated data platform that helps cannabis businesses understand customer preferences and behaviors so businesses can then create customized and meaningful marketing campaigns. For instance, rather than sending out a mass marketing message to all customers, Happy Cabbage Analytics identifies different groups of customers likely to make a purchase of a particular type of product during a certain timeframe. Cannabis business owners can then send a targeted message about a specific product to that individual customer.

According to Ryan Herron, Co-Founder of Happy Cabbage Analytics, “We have seen an uptick in customers approaching us during COVID-19 for two primary reasons. First, dispensaries need a way to communicate with their customers and let them know what they are doing, like new delivery areas and curbside pickups. Second, we have businesses who want to explore new ways to expand on personal experiences, and we can help them achieve that through customer segmentation.”

Bringing the Budtender to the Consumer with Zoltrain

Zoltrain, an online learning and training platform for the cannabis industry, is another technology resource that is enabling cannabis business owners to engage and connect with consumers through personalized text messaging. As shared by Danny Gold, CEO of ZolTrain, “We are helping dispensaries to unlock customer information and send them compelling, targeted content. Basically, we are bringing the budtender to them. Text message campaigns are now the way to push out product information since you can no longer interact in person, and with this communication, we need to be targeted and send information that appeals to the individual.”

Together, MJ Freeway with our robust reporting and analytics and personalized marketing companies like Happy Cabbage Analytics and Zoltrain are enabling cannabis business owners to create end-to-end meaningful, personalized

marketing campaigns to generate consumer engagement, sales, and brand loyalty. Armed with the right tools and solutions, cannabis business owners are now able to deliver a truly unique experience that their customers will pay attention to and remember. And now more than ever, this is essential for them to stay in operation and connect with new and existing customers.



About the Author

Nina Simosko is an international speaker and enterprise software executive advising numerous startups including: DeepSense.ai, Scanta Inc., AppOrchid Inc. and Reflektion. Nina currently serves as Chief Commercial Officer at Denver based Akerna Corporation. Akerna (Nasdaq: KERN) is a regulatory compliance technology company. Previously, she served as President and CEO of NTT i3, the prestigious Silicon Valley-based innovation center for NTT Group, one of the world's largest ICT companies. Prior to that, Simosko held numerous IT roles at Nike, SAP and Oracle. Simosko provides regular

insights and updates, connect with her.

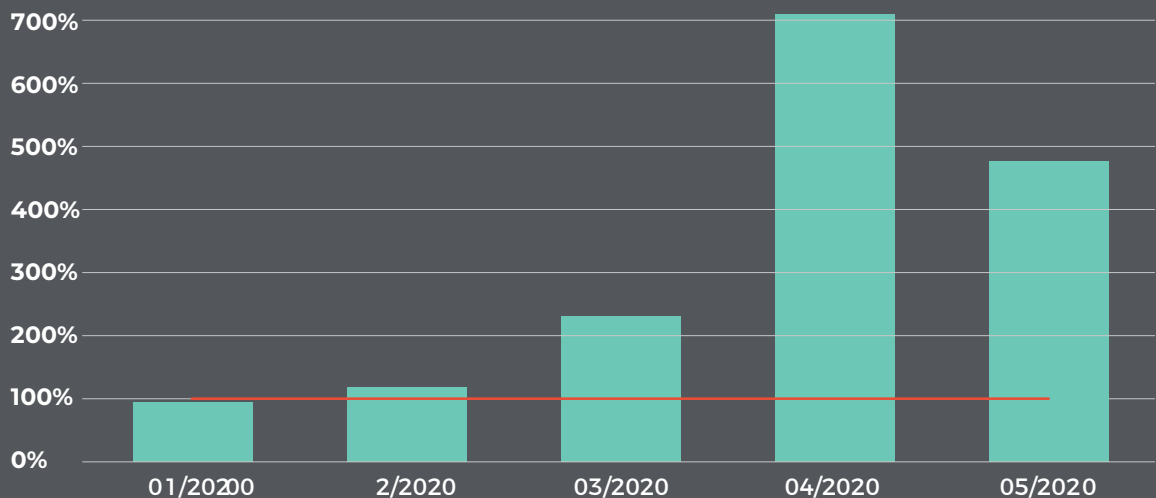
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QUICK HIT

Online Cannabis Orders and Delivery Dip as States Reopen Delivery Rates in May are 50% Lower Than April High

At the height of the COVID-19 pandemic, consumers adopted alternative fulfillment methods. Now, with restrictions easing so is the choice to order online or take delivery. In the wake of many states re-opening, online cannabis orders and pickup as a fulfillment method have started to decline.



“The number of delivery orders skyrocketed in March and April, but in May we’re seeing a shift back towards in person transactions. The average number of daily deliveries kept climbing through April but appears to be trending downward in the last two weeks, so we may have hit a peak,” said Aryeh Primus, vice president of analytics, Akerna. **“We continue to see that the in-store interaction between consumer and budtender is key for people purchasing cannabis, and delivery takes away that.”**

Looking at the numbers relative to January 2020, before anything was affected by COVID-19, March saw a 220% increase in daily deliveries and that ballooned to 710% in April. Beginning March 14, the number of in store purchases declined steadily, in some cases dropping by over half, presumably due to stay at home orders. Now that states are re-opening, more people are going back to dispensaries.

“When we saw the increase in alternate modes of fulfillment, like delivery and curbside pickup, our initial thought was that this might be a sustainable trend because of increased consumer convenience.”

-Aryeh Primus, Vice President of Analytics, Akerna.

“There will likely be a long-term increase, but the April bump doesn’t seem sustainable; at least some of the shoppers want to return to in person transactions. May deliveries are about five times what we saw in January, but that’s a 50% reduction compared to the highs in April.”

Business intelligence from Akerna also shows, year-over-year, May 2019 to May 2020, recreational order **sales are up 157%** with an average **ticket size of \$77.73**. The **30 – 40 age group** had the strongest order **sales growth at 103%**. As the industry evolves to meet customer needs, product pickup as a fulfillment method **increased 141% year-over-year**, accounting for **16% of order sales** for 2020.

Recreational order sales up

157%

Average ticket size

\$77.73

Strongest order sales growth

103%

Product pickup as a fulfillment method increased

141%

The Numbers, Year-over-Year, April 2020 compared to April 2019: Total cannabis sales increased **68%, with an average ticket size of **\$123**. Top categories:**

Concentrates increased

22%

accounting for **11%** of total product sales

Cartridges / Pens increased

3%

accounting for **35%** of total product sales

Infused Edibles decreased

18%

accounting for **9%** of total product sales

Flower maintained

43%

of total product sales



TRELLIS

California Based Cannabis Company Improves Processes and Removes Redundancies with Trellis, Saving Company up to 3 Hours Daily

Case Study of Brite Labs

Client Overview:

Brite Labs, based in Oakland, California, produces cannabis products cultivated on California farms and crafted to maintain botanical integrity. Founded in 2014, Brite Labs pioneered a unique extraction process which creates whole plant cannabis concentrates. This full-spectrum oil is the closest alternative to flower and enables their patients and partners to explore the wellness potential of whole plant cannabis products.

Business Challenge:

Brite Labs was in need of a software solution that could help reduce unnecessary man hours resulting from employees having to input data multiple times into different systems. They also needed a platform for tracking and to keep them compliant with regulatory agencies.

Solution:

Brite Labs signed on with Trellis in 2018. What initially drew them to Trellis was the platform's similarities to a laboratory information management system (LIMS), a software-based solution that supports the operations of many laboratories. Additionally, as an early customer, Brite Labs beta tested many of the platform's features. The company was impressed by how quickly Trellis responded to their feedback to customize the platform to meet their business needs.

Brite Labs had been a Trellis customer for approximately one year before Metrc was implemented. Because the company was already a Trellis customer, the integration between the two platforms was seamless. Throughout the process, Trellis' customer support was responsive to the company's questions and quickly problem solved any issues.

One of the key benefits the company realized with Trellis is they could now automate parts of their operations. For instance, Trellis is fully integrated with their sales platform, so once an order is received a template is automatically uploaded. Additionally, Trellis' integration with various client service platforms means that the company has an accurate view of inventory count and depletion. With Trellis' integration with QuickBooks, the company can quickly generate user-friendly reports, drill down and filter data as needed, and save on valuable man hours as they no longer have to enter numbers into multiple platforms. Trellis removed the need for Brite Labs' employees to enter data into more than one platform, reducing data entry by 30 minutes per order.

Key business benefits for Brite Labs include:

- Compliance with state regulations
- Automated processes and improved productivity
- Streamlined operations
- User-friendly data insights



About Trellis:

Trellis is the developer of cannabis inventory management software designed to optimize workflows and ensure regulatory compliance. The company's inventory management platform provides tools and analytics for cultivators, manufacturers, and distributors in regulated markets. Trellis enables cannabis businesses to scale their business, while remaining compliant. For more information, visit trellisgrows.com.



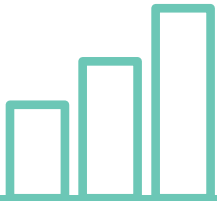
“

“I have recommended Trellis to others in the cannabis industry because the data transfer is so seamless for us and our partners. If someone were to use a different platform, they will not get the same quality of data coming in.”

-Joyce Machado Director, Quality Control & Compliance

”





What's selling? Cannabis by the numbers

What people are buying January 1 - June 29, 2020



Flower:

45.2%



Cartridges / Pens:

32.7%



Concentrates:

10.7%



Edible:

9.2%



Other

2.2%

Gender

Infused Edible:

46.59%

53.41%

Cartridges / Pens:

39.35%

60.65%

Flower:

33.81%

66.19%

Concentrates:

29%

71%

**Days of
the week**



**Cartridges
Pens**



Concentrates



Flower



Infused Edible



7.71%

7.49%

8.24%

8.23%

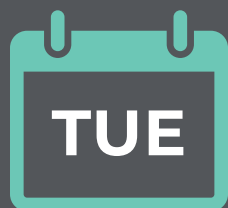


12.30%

11.81%

12.42%

14.28%



13.19%

13.32%

13.87%

13.17%



14.28%

15.11%

15.23%

13.77%



15.75%

16.47%

15.39%

15.32%



21.55%

19.99%

19.81%

15.83%







15.23%

15.83%

15.02%

15.78%



Age Range	 Cartridges Pens	 Concentrates	 Flower	 Infused Edible
UNDER 30	26.15%	38.14%	25.99%	17.56%
30-40	29.89%	32.14%	29%	23.59%
40-50	20.63%	16.22%	18.79%	19.61%
50-60	13.23%	8.63%	14.22%	16.27%
60+	10.11%	5.14%	12%	22.97%

First Time Order

Cartridges / Pens:

Concentrates:

Flower:

Infused Edible:



Repeat

92.21%

93.15%

90.47%

85.69%



First Time

7.79%

6.85%

9.53%

14.31%



Order Consumer Type*



Medical



Cartridges / Pens: **90.41%**



Concentrates: **88.8%**



Flower: **81.97%**



Edible: **75.3%**



Recreational



Cartridges / Pens: **9.59%**



Concentrates: **11.2%**



Flower: **18.03%**



Edible: **24.7%**

*This is indicative of our data and clients using platform. Not necessarily a complete representation of market



Conclusion

Akerna's company ecosystem has been developed to provide a wide range of solutions and insights to both our clients and the larger cannabis industry. Our platform allows cannabis operators to manage every detail of their business, while our business intelligence helps them make the most impactful decisions for their operations. With our 80+ integration partners, our functionality is at maximum capacity, allowing us to provide the full range of services that enhance cannabis businesses; including inventory management, on-line ordering, digital menus, delivery capabilities, and numerous payment options, just to name a few.

Our breadth of business intelligence has enabled Akerna to share predictions for the cannabis industry for the past two years. In 2020, those predictions included: cannabis becomes cool beyond THC and CBD, data is the new cannabis currency, consumers become savvier, cannabis businesses focus on fundamentals and legislative action on legalization--all of which we've seen come to fruition.

Akerna is also prepared to navigate the unexpected changes and challenges that have been thrown our way. In the first half of 2020, we have all been affected by a global pandemic, protests demanding justice, and a desire to be part of a better world. We are proud to be a part of the cannabis industry, a community that fosters inclusivity, creativity, and support for those who have been disenfranchised, is on the cusp, once again of another great leap forward. The cannabis industry is resilient, and we stand ready to grow with the global community, excitedly anticipating what the future holds for our clients and our industry.

Resources:

Jobs #: <https://www.forbes.com/sites/kevinmurphy/2019/05/20/cannabis-is-becoming-a-huge-job-creator/#62a229fc49bf>

Tax \$: <https://www.ais-cpa.com/deep-dive-recreational-marijuana-tax-revenue-in-the-united-states/>

Prohibition: https://en.wikipedia.org/wiki/Timeline_of_cannabis_law





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