3-SIGMA VALUE

2018 Review / 2019 Outlook

2018 In Review

For the year ended December 31, 2018, 3-Sigma Value, LP (the "Partnership") had an estimated gain of 7.2% with average gross exposure of 163.1% and net exposure of positive 5.7%.

3-Sigma Value, LP

PERFORMANCE AND EXPOSURE STATISTICS

	Monthly Performance				Average Fund Exposure			
	Gross	Net[1]	Long	Short	Long	Short	Gross	Net
2011	37.4%	29.9%	1.9%	34.8%	78.6%	89.4%	168.1%	-10.8%
2012	32.3%	25.8%	17.1%	13.1%	64.8%	79.0%	143.8%	-14.1%
2013	-12.8%	-12.8%	7.3%	-19.0%	46.7%	72.4%	119.1%	-25.7%
2014	18.1%	17.0%	-0.3%	18.4%	7.4%	54.9%	62.3%	-47.4%
2015	12.8%	10.2%	-7.0%	21.0%	22.9%	41.6%	64.5%	-18.7%
2016	12.3%	9.9%	13.0%	-1.8%	37.7%	55.6%	93.3%	-17.9%
2017	0.3%	0.2%	7.6%	-6.9%	59.6%	74.0%	133.6%	-14.4%
January	6.3%	5.0%	3.4%	3.0%	81.3%	94.4%	175.8%	-13.1%
February	10.1%	8.1%	-3.1%	13.2%	70.9%	88.5%	159.4%	-17.6%
March	1.1%	0.8%	-1.0%	2.0%	71.9%	86.8%	158.7%	-15.0%
April	-6.5%	-5.3%	-3.2%	-3.3%	82.3%	82.5%	164.8%	-0.2%
May	1.6%	1.3%	0.7%	0.8%	91.2%	79.2%	170.4%	12.1%
June	-5.7%	-4.6%	0.7%	-6.3%	93.9%	80.7%	174.6%	13.2%
July	-5.0%	-4.1%	-4.9%	-0.1%	90.0%	80.5%	170.5%	9.5%
August	-12.5%	-10.0%	-1.3%	-11.2%	90.2%	78.4%	168.6%	11.9%
September	-2.8%	-2.1%	0.2%	-2.9%	92.8%	75.5%	168.3%	17.2%
October	14.4%	11.1%	-1.0%	15.6%	90.8%	70.1%	160.9%	20.7%
November	12.1%	9.7%	6.1%	5.9%	84.3%	64.6%	148.9%	19.8%
December	-2.5%	-2.0%	-12.5%	10.1%	73.0%	63.3%	136.3%	9.7%
2018	7.2%	5.6%	-15.8%	26.2%	84.4%	78.7%	163.1%	5.7%
Cumulative	**158.2%**	**116.3%**						
Annualized	**12.6%**	**10.1%**						

(1) Net of incentive fee.

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In total, 3-Sigma Value, LP is invested long 16 companies and short 22 companies. Our investment approach is global in scope, yet, at this time, North American equities constitute the vast majority of our gross exposure. We are market-cap agnostic.

As value investors frequently targeting companies facing rapidly changing operating performance and/or market perceptions, we remain cognizant that portfolio correlation to the market can change on a dime and thus the continuity between the past and future is tenuous at best. Notwithstanding this caveat, we generally seek overall market agnosticism in the construction of the portfolio as reflected in a target range of net exposure between negative 25% and positive 25%.

We are not market timers. We do not attempt to predict, or think much about, where the S&P 500 will be at the end of the year. All we do and all we know is that if we stay disciplined to our market agnostic process and intellectually honest in its application then we wield an incredible edge over most market participants.

Reflecting on 2018, while I am certainly proud that 3-Sigma Value was able to achieve positive performance in a down year, I can't help but feel unsatisfied. The fact that the S&P 500 was down 6% is less important than the volatile journey to that end number. Last year, I complained about the lack of volatility. This year, I got my wish. Last year, I wrote, "There is positive correlation between volatility and alpha (uncorrelated return) – we need volatility in order to generate alpha. Otherwise, beta (correlated return) is the only way to generate return. When volatility rises, as is inevitable, the exiting of beta investments will turn into a stampede and remind investors why an alpha-generating strategy acts as an insurance policy." In 2018, 3-Sigma Value ended the year up 7% after ending the first quarter up 18%. In between, we grinded through the volatility with performance that reinforces our core principle of market agnosticism. We pursue investment theses based on assumptions we view as credible but acknowledge their uncertainty; we aim to buy "cheap" and sell "expensive" stocks but do so mindful of the reality that valuation disparities can persist for periods long enough to render their corrections pyrrhic victories; we have no bullish or bearish agenda, or bias; we are a data-driven investment firm that does all of its own research and builds all of its own models from scratch and draws all of its own conclusions. We pay particular attention to knowing our fellow shareholders and shortsellers. In short, we undertake the same approach we took to 2018 but do so with even greater humility and caution.

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Winners and Losers

Following is a list of 3-Sigma Value's top 10 winners and losers in 2018.

	Top 10 Winners in 2018	
1	Long: DHX Media (DHXM)	Children's content provider whose stock collpased after acquiring the Peanuts and Strawberry Shortcake brands from Iconix owns an extremely undervalued collection of assets.
2	Short: Canopy Growth (WEED.TO)	Canadian cannabis growers are structurally disadvantaged compared to U.S. licensed producers.
3	Short: Control4 (CTRL)	High-end home automation provider is under attack by large cap tech including Amazon, Apple, and Google.
4	Short: Funko (FNKO)	Fad product. Gross margin has peaked - weaker than expected in Q3 2018 due to sales discounting.
5	Short: Gogo (GOGO)	Profiled in 3-Sigma Value's *Premium Wi-Fi is a Fatally-Flawed Business Model**
6	Short: Hertz (HTZ)	Profit will never return to past levels. Leading to credit risk as the capital structure rolls over.
7	Short: Impinj (PI)	RAIN RFID is no better than the RFID sold by Symbol Tech when it was acquired by Motorola in 2006.
8	Short: Roku (ROKU)	Covered Q1 2018. Streaming provider may have crossed the chasm.
9	Short: Universal Display (OLED)	Covered Q3 2018. Patent expiry will lead to lower royalty rates and new competition in material sales.
10	Short: Wayfair (W)	Covered Q1 2018. Capital markets remain open to this cash burner.
	Top 10 Losers in 2018	
1	Long: ALLY Financial (ALLY)	Strong deposit growth enabling ALLY to replace maturing debt with lower cost deposits, boosting NIM.
2	Short: Atlassian (TEAM)	Covered Q3 2018. Management has proven to be excellent.
3	Short: Carvana (CVNA)	Auto vending machine innovator was profiled in 3-Sigma Value's *Second Quarter 2017 Letter** .
4	Short: Credit Acceptance Corp (CACC)	Finally we have a catalyst! The adoption of CECL (current expected credit loss) will force CACC to abandon its misuse of purchased credit impaired loan accounting.
5	Short: Cronos (CRON)	Canadian cannabis growers are structurally disadvantaged compared to U.S. licensed producers.
6	Long: DISH Networks (DISH)	The value of DISH's spectrum holdings is more than its enterprise value, thereby ascribing negative value to an operating business that generated nearly $3 billion in 2018.
7	Long: First Internet Bank (INBK)	A unique bank trading below tangible book value; deposit beta risk is over-stated.
8	Long: Scientific Games (SGMS)	Best positioned to win in sports betting in the U.S. after making the key acquisition of OpenBet.
9	Long: Shutterfly (SFLY)	Lifetouch acquisition was brilliant strategic move; execution has disappointed. On sale at 5x 2020 EBITDA.
10	Long: Zayo Group (ZAYO)	Stock crashes upon announcing a spin-off of non-REITable assets, as opposed to all the assets being included in the REIT.

* Available at www.3sigmavalue.com

With short positions contributing *positive* 26% to 2018 performance while long positions contributed *negative* 16%, it is understandable that 9 of the 10 top winners in 2018 came from the short portfolio.

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Entering 2019, the 3-Sigma Value portfolio is comprised of three idea buckets, each representing an opportunity to generate alpha in an environment of low expected market returns.

1. **Alpha shorts** – Our short positions are not designed to hedge our long positions. Every position, long and short, is analyzed individually and must meet 3-Sigma Value's requirements for total return and risk versus reward, and therefore every position, long and short, represents an exceptional investment opportunity on a standalone basis. As of January 2, 2019, 3-Sigma Value is short 22 companies (including 6 Canadian cannabis growers). 3 of our current shorts were in the Top 10 Losers list for 2018, 1 of which (CRON) will be discussed later in this letter in the section titled Cannabis Investing in 2019. The other 2 are summarized here.

Credit Acceptance (CACC) – Finally we have a catalyst! The December 2019 adoption of the CECL (current expected credit loss) model for accounting for credit losses (ASU 2016-13) will force CACC to abandon its misuse of purchased credit impaired loan accounting, also known as level yield accounting (FAS ASC 310-30), and replace it with either a more traditional originated methodology or the so-called fair value option, which would lead to increased volatility and complexity given the multiple external factors that impact a loan's valuation. Either way, CECL or fair value, CACC's balance sheet is under attack. A massive write-down is inevitable along with a lower level of profitability.

Carvana (CVNA) – as growth slows in 2019, valuation will compress in line with other used car dealers. CVNA burned $120 million in Q3 and $375 million though the first three quarters of 2018, leaving a cash balance of $440 million at 9/30/18. $110 million of the cash burn was from building inventory. The company runs very tight on inventory and even if inventory remains flat, CVNA will still burn $80M+ per quarter for the next few quarters. Thus far, the capital markets remain open despite the ongoing cash burn. However, that won't last forever, especially as growth decelerates. If (in an Upside Case) sales were to grow from $2 billion in 2018 to $5 billion in 2020 (still no EBITDA, still burning cash, still diluting shareholders) and the multiple reverts to that of its peer group (PAG, LAD, GPI, SAH, ABG) at 0.4x, then enterprise value = $2.3 billion less $300 million of net debt equals $2.0 billion or $14 per share.

2. **Core longs** – 3 of our current long positions were in the Top 10 Losers list in 2018; they are: **First Internet Bank (INBK)** – featured in 3-Sigma Value's *Bank Investing* in 2019, and **Scientific Games (SGMS)** and **Shutterfly (SFLY)** – both featured in 3-Sigma Value's *Third Quarter 2018 Letter*[1]. In the fourth quarter of 2018, we added one new long position, **NXP Semiconductors (NXPI)**, a deeply undervalued semiconductor maker.

[1] Available at www.3sigmavalue.com.

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In July 2018, Qualcomm (QCOM) terminated its $47 billion acquisition of NXP Semiconductors (14x EBITDA) after failing to secure Chinese regulatory approval. Leaving NXPI with a $2 billion cash break-up fee received and a stock price down from $125 to $73 at year end.

NXPI was coveted by QCOM because its portfolio of semiconductors captures three powerful secular trends: (1) Automotive (~$4 billion out of ~$9.5 billion of 2018E revenue) – the expansion of semiconductor content in autos, including radar, Ethernet connectivity, battery management will lead to 5-10% annual growth. (2) Mobile payments – the securing of connected devices will continue to dominate technology spend while NXPI dominates Near Field Communications or NFC. Management expects ~5% growth. (3) 5G communications / IoT – early 5G network trials with North American carriers lifted segment revenue by 5% in 3Q 2018, providing a glimpse into the double-digit revenue growth that will accompany 5G roll-out.

With revenue growing 5-7% and GM stable in the range of 53-57%, EBITDA should increase from $3 billion to $3.6 billion by 2020, rendering a future value of $140 at 14x.

NXP Semiconductors (NXPI)			
	2018	2019	2020
Revenue	9,500	9,975	10,474
% growth (5-7% growth target)		5%	5%
Gross Profit	5,225	5,486	5,761
% margin (53-57% GM)	55%	55%	55%
R&D	1,750	1,750	1,750
SG&A	1,000	1,000	1,000
Amort of Intangibles	1,440	1,440	1,440
Total Operating Expenses	4,190	4,190	4,190
EBIT	1,035	1,296	1,571
% margin	11%	13%	15%
D&A	2,000	2,000	2,000
EBITDA	3,035	3,296	3,571
% margin	32%	33%	34%
Interest Expense (Income)	200	200	200
Pre-tax Income	835	1,096	1,371
Taxes	52	69	86
% rate	6%	6%	6%
Net Income	783	1,028	1,285
D&A	2,000	2,000	2,000
Stock Comp	300	300	300
Change in WC	0	0	0
Capex	-500	-500	-500
Free Cash Flow	2,583	2,828	3,085
NXPI/QCOM take-out multiple			14.0x
Terminal Value			49,988
Debt			6,356
Noncontrolling Interests			172
Cash (recived $2B break-up fee from QCOM)			1,944
Equity Value			45,404
FD Shares Out			325
Target Price			139.70
Price at December 31, 2018			73.28
% Upside (Downside)			90.6%

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The only significant winner on the long side of the portfolio in 2018 was **DHX Media (DHX.TO)**, and that was only because of tactical trading. In mid-September, DHX was caught in a technical spiral as mutual funds were forced to sell a stock that dropped below minimum requirements for stock price and market cap. After re-confirming the company's capital structure and ability to pay down debt, I more than doubled the size of our position. Although we have since sold 40% of the position, DHX is still one of 3-Sigma Value's largest holdings entering 2019.

DHX Media (DHX.TO) is a Canadian-based owner of children's content including Peanuts, Strawberry Shortcake, Teletubbies, Caillou, Yo Gabba Gabba, Bob The Builder, Inspector Gadget, and many more. Since the stock price peaked at $10 in late 2014, management has continually missed guidance and organic revenue growth has stalled. To mask internal problems, DHX announced on May 10, 2017 the US$345 million acquisition of 80% of the Peanuts brand (Schultz family continues to own 20%) and 100% of the Strawberry Shortcake brand from Iconix (ICON). Since ICON is mainly a licensor of brands for clothing, which accounted for ~90% of Peanuts revenue, the brand was severely under-monetized. Media, toys and other consumer products typically represent 60% or more of revenue, with no more than 40% derived from clothing.

On the day after the Peanuts acquisition, DHX.TO closed at C$6.40. Since then the stock has tumbled. The primary risk spooking investors has been credit risk as DHX financed the transaction with a new Senior Secured Credit Facility and a 5.875% convertible debenture with x=C$8 (busted). However, DHX turned around and sold 49% of its 80% stake in Peanuts to Sony Music Entertainment (Japan) Inc. ("SMEJ"), the brand's agent in Japan since 2010, during which time Peanuts business in Japan has grown by over 200%. Management says the partnership structure globally aligns DHX with Peanuts' largest agent worldwide. SMEJ paid C$237 million for a 39% stake (total value = C$608 million, 14x EBITDA), which values DHX's remaining 41% stake at C$249 million (US$187 million).

China is a huge untapped market for DHX. Black market sales of Peanuts products in China are reported to be in the hundreds of millions of dollars. Taking a more active approach to the brand then when it was under Iconix, DHX signed an exclusive agency representation agreement with CAA-GBG (Global Brands Group) for Peanuts in China and Asia (excluding Japan). According to management, the GBG deal will increase revenue in the region by 35%, or ~C$20 million. Agency deals such as this one and the one with Sony in Japan carry high margins (70-80%) and therefore we expect an additional C$15 million of EBITDA by 2020. At 20x, the China business

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is arguably worth C$300 million. Ultimately, we expect DHX to monetize a portion of the China business and use the proceeds to paydown more debt.

DHX is a collection of media assets and thus the way to value it is by a sum-of-the-parts analysis. In addition to the catalog of children's brands, DHX owns the top Youtube channel for children's content (WildBrain), and the ABC Family / Disney channels in Canada. While DHX is more likely to monetize the Family channels outright, it will likely sell a minority stake in Wildbrain that will establish a valuation for this fast-growing asset.

DHX.TO Valuation Summary		
I. Sum-of-the-Parts:	CAD	USD
Peanuts - 41% stake @ 14x Sony valuation	249,280	186,960
Peanuts - China JV - Assume sale of 60% at 20x EBITDA	400,000	300,000
Strawberry Shortcake - Implied in ICON deal	50,000	37,500
Non-Peanuts and Strawberry IP / Library @ 11.8x	225,463	169,097
Wildbrain - Assume sale of 20% at 15x EBITDA	644,805	483,604
Family Channel - Assume sale at 5x EBITDA	75,000	56,250
CPLG - Europe-based consumer product licensing agency	50,000	37,500
Consolidated Enterprise Value	1,694,548	1,270,911
Cash	46,286	34,715
Debt	-639,228	-479,421
Equity Value	1,101,606	826,204
FD Shares Outstanding	134,463	
Per Share	**8.19**	
Price as of January 25, 2019	**2.68**	
Upside (Downside)	**206%**	

As of 9/30/2018, DHX had C$493 million of net debt (excluding C$100 million of Interim Production Financing) versus C$92 million of LTM 9/30/18 EBITDA = 5.36x leverage. The governing covenant requires a Total Net Leverage Ratio of no more than 7.25x. Conclusion – credit risk is minimal, risk/reward is maximal.

3. **Long/short cannabis** – the third of three idea buckets is in the cannabis industry as 3-Sigma Value is long U.S.-based state specific and multi-state licensed providers and short Canadian-based licensed growers.

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Cannabis Investing in 2019

3-Sigma Value introduced a short thesis on Canadian cannabis growers ("The Cannabis Bubble") in its second quarter 2018 letter to investors, which is available at www.3sigmavalue.com. In this follow-up analysis, we update the original thesis and add a long side to the cannabis trade.

A Textbook Case of Buy the Rumor Sell the News

Canadian cannabis stocks inflated on irrationally exuberant assumptions ahead of adult-use legalization on October 17, 2018. The supply response has been astronomical as 3-Sigma Value identifies 14 Canadian companies with 100,000 or more kilograms of planned cannabis[2] production capacity, and total supply in excess of 3.3 million kilos annually. This is 3.3x the high end of projected demand (~1 million kilos).

In order to offset domestic over-capacitation, many of the Canadian producers have announced international expansion plans – in Germany, Denmark, Australia, South America, etc. However, this is all hype, or what we refer to as a "TAM Fallacy" (Total Addressable Market). Canadian cannabis is vastly cost uncompetitive with either (1) locally-grown cannabis, or (2) cannabis from tropical countries. Canada is not the natural place to grow cannabis and therefore global export is a false promise. What really crushes the Canadian growers is the fact that the U.S. market remains closed to Canadian companies until Federal legalization. As we discuss later in this report, California alone is a bigger market than Canada, and a more profitable one. By the time the U.S. legalizes federally, the state-specific and multi-state licensed providers will already have in-state vertical integration and a lock on the retail market. The Canadian companies have no chance. That leaves them carving up Canada.

Because the amount of cannabis supply will exceed 3x the high end of projected cannabis demand, the price of cannabis (marginal revenue) will approach its marginal cost of production. According to Cannabis Benchmarks' weekly report dated December 28, 2018, the U.S. Cannabis Spot Index is down to $1,175 per pound[3], equivalent to $2.59 per gram. Meanwhile, wholesale prices in Colorado, Oregon, and Washington are all below $2 per gram. While pricing varies depending on where the product is grown, in all states where cannabis has been legalized prices have collapsed. It has been reported that the Canadian provinces are negotiating to pay licensed

[2] Or cannabis equivalent.

[3] Indoor = $1,538 per pound / Greenhouse = $967 per pound / Outdoor = $699 per pound (all benchmarks are weighted-average).

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producers C$4.50 per gram or less, a level that implies a C$2.25 per gram wholesale price (100% mark-up is industry standard).

Another problem with selling cannabis in Canada is the government. True vertical integration is prohibited – farmers must sell into provincial warehouses that turn around and sell to the retail stores. A Canadian cannabis company is either a licensed producer and/or a licensed distributor, with the government in between. As a result, the Canadian licensed operators are hugely disadvantaged compared to their U.S. licensed counterparts. Besides the market size differential, most U.S. states that legalize cannabis allow for in-state vertical integration that controls pricing from seed to sale, protecting margins from the volatility inherent in a pure commodity business. Also, marketing restrictions in Canada limit the ability to differentiate product/packaging (everything looks the same), which hinders the ability to build brands.

As of January 25, 2019, 3-Sigma Value was short 6 of the following 7 Canadian cannabis growers (not APHA), worth 1x-2x future revenue and 5x-6x future EBITDA. Over the course of 2018, 3-Sigma Value was short all 7 at different times.

Canadian Cannabis Short Portfolio

C$ in millions, except per share data	Price at 1/25/2019	Shares Out	Market Cap	Net Debt	Enterprise Value	Revenue LQA	Revenue 2019	Target Price	% Upside/ Downside
1 **Canopy Growth (WEED.TO / CGC)**	64.10	379	24,274	-4,310	19,964	104	579	14.75	-77.0%
						192.6x	34.5x		
2 **Tilray (TLRY) - 1/15/19 Lock-up expiry**	75.35	110	11,032	-110	10,922	40	133	12.51	-83.4%
						271.8x	82.1x		
3 **Aurora Cannabis (ACB.TO / ACB)**	8.88	1,032	9,164	147	9,310	143	385	3.11	-65.0%
						65.0x	24.2x		
4 **Aphria (APHA.TO / APHA)**	9.43	257	2,420	-188	2,232	53	240	6.57	-30.3%
						42.0x	9.3x		
5 **Cronos Group (CRON.TO / CRON)**	21.15	363	7,684	-2,436	5,248	15	82	8.16	-61.4%
						348.9x	64.0x		
6 **The Green Organic Dutchman (TGOD.TO)**	3.72	352	1,311	-208	1,104	0	0	1.35	-63.7%
						NM	NM		
7 **Emerald Health Therapeutics (EMH.CSE)**	2.84	157	447	-48	399	1	2	1.45	-48.9%
						332.4x	199.4x		
						Average	**68.9x**		

Company Updates:

Canopy Growth (WEED.TO / CGC) – in August 2018, Constellation Brands (STZ) announced an investment of C$5 billion (US$4 billion) in Canopy by acquiring 104.5 million shares at C$48.60 per share (38% ownership). Plus, STZ received 139.7 million new warrants exercisable over 3 years at C$50.40 (up to a 55% stake). While this is effectively a take-over, it doesn't

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change the underlying fundamentals of Canadian cannabis. Is it a coincidence that shortly after the announcement Constellation's CEO resigned?

In the third quarter of 2018, revenues at Canopy were <u>down</u> sequentially from C$25.9 million to C$23.3 million. Enterprise value is $20 billion, which means WEED is trading ~200x LQA revenues. Assuming the Canadian provinces pay an average C$4.50 per gram, Canopy's revenue from adult-use in Canada will grow to ~C$550 million. Add ~C$50 million of medicinal and ~$C50 million of international and total future revenue approximates C$650 million. Apply a 2x revenue commodity multiple, add net cash of C$4.3 billion, and the equity is worth ~C$5.6 billion, equal to C$14.75 per share (down 77%).

If Canopy were able to sell 100% of its 500,000 kilos of planned capacity, 31%[4] at the C$4.50 per gram price that the Canadian provinces are reportedly paying, and 69% into the wholesale market at C$2.25 per gram, then revenues would approach C$1.5 billion (EV / future revenue = 7.5x). Applying a potential steady-state 10% free cash flow margin, Canopy could generate free cash flow (excluding growth capex) ~C$150 million. Potentially, that's worth 20x or C$3 billion (equal to C$19.14 per share).

Cronos Group (CRON.TO / CRON) – in December 2018, Altria Group (MO) announced an investment of C$2.4 billion in Cronos by acquiring 146.2 million shares at C$16.25 per share (45% ownership). Plus, MO received 72.2 million new warrants exercisable over 4 years at C$19 (up to a 55% stake). The deal is nearly identical to Canopy's deal – it provides the company with more cash than it can prudently spend and does nothing to generate meaningful revenue in the near-term. Altria says the investment is not based on production capabilities but on the long-term development of consumer products.

Revenues at Cronos are basically immaterial at C$15 million LQA (last quarter annualized), and with an enterprise value of $5.2 billion, CRON, like WEED, is trading at a NM (not meaningful) multiple of last quarter annualized revenues. Unlike WEED, however, there is no clear path to revenue growth and therefore we make the fundamental assumption that CRON sells 100% of its 117,150 kgs of planned capacity at a wholesale price of C$2.25 per gram. Under these assumptions, CRON might generate ~C$264 million of future revenue (EV / future revenue = 5.2x). Applying a potential steady-state 10% free cash flow margin, Cronos could generate free

[4] The 31% represents Canopy's pro rata share of consumer demand. We have identified over 3.3 million kilos of cannabis capacity coming online in Canada over the next year-plus versus estimated demand of maybe 1 million kilos. Kilos that are not sold to the provinces are sold into the wholesale market at C$2.25.

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cash flow (excluding growth capex) ~C$26 million. Potentially, that's worth 20x or C$526 million, equal to C$8.16 per share (down 61%).

Aurora Cannabis (ACB.TO / ACB) – Aurora is a sprawling, high-cost producer that is the messy result of a rapid roll-up culminating in May 2018 when Aurora closed its C$1.1 billion acquisition of CanniMed (CMED.TO) and then turned around and later that month announced the C$3.2 billion acquisition of MedRelief (LEAF.TO). Pro forma, Aurora surpasses Canopy as the leader in planned capacity with 570,000 kilos per year (vs. 500,000). This is not a good thing as these two companies alone will be able to supply the entire Canadian market.

Enterprise value is $9.3 billion, which translates to 65x LQA revenues. Assuming the Canadian provinces pay an average C$4.50 per gram, Canopy's revenue from adult-use in Canada will grow to ~C$250 million. Add ~C$100 million of medicinal and ~$C225 million of international and total future revenue approximates C$575 million. Longer term, assuming Aurora sells 100% of its 570,000 kgs of planned capacity, 31% at the C$4.50 per gram price that the Canadian provinces are reportedly paying and the rest into the wholesale market at C$2.25, C$1.7 billion of revenue could be generated. Applying a potential steady-state 10% free cash flow margin, Aurora could generate free cash flow (excluding growth capex) ~C$170 million. Potentially, that's worth 20x or C$3.4 billion, equal to C$3.11 per share (down 65%).

Aphria (APHA.TO / APHA) – on December 3, 2019, a dedicated short-seller gave a presentation that accuses Aphria management and certain shareholders of a scheme to defraud shareholders by over-valuing acquisitions and not disclosing common ownership. As I wrote in *The Cannabis Bubble*, what caught my attention about Aphria was its acquisition of Nuverra, a newly-formed company with no experience in the cannabis industry[5]. In January 2018, Nuuvera went public via a reverse merger into a shell corporation listed on the TSX Venture Exchange. Less than 3 weeks later, Aphria announced an offer of C$826 million in cash and stock. The deal closed in March 2018 at a re-negotiated C$425 million (comprised of C$50 million in cash and $375 million in Aphria shares). Nuuvera remains a subsidiary of Aphria now renamed Aphria International[6]. According to the company, the rationale for the deal was to jump start Aphria's international expansion; however, it later came out that four executives and three other

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[5] Nuuvera management were reportedly experienced in the pharmaceutical and online gaming industries.

[6] On July 17, 2018 Aphria acquired production, distribution, and sales assets spread throughout Jamaica, Argentina, Colombia, and potentially Brazil, for C$194 million, equal to 18x current annualized revenue. This follows Canopy's acquisition of a Colombian licensed producer for C$127 million.

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directors at Aphria owned shares in Nuuvera at the time of the deal but did not disclose that information to shareholders. This is a shady operation.

Nevertheless, if Aphria were able to sell 100% of its 255,000 kilos of planned capacity, 31% at the C$4.50 per gram price that the Canadian provinces are reportedly paying and the rest into the wholesale market at C$2.25, C$750 million of revenue could be generated. Applying a potential steady-state 10% free cash flow margin, Aphria could generate free cash flow (excluding growth capex) ~C$75 million. Potentially, that's worth 20x or C$1.5 billion, equal to C$6.48 per share (down 30%).

The Green Organic Dutchman (TGOD.TO) – went public on May 2, 2018 @ C$3.65 with 2 facilities under construction with planned capacity of 195,000 kilos per year. Because TGOD is not market-ready and effectively a start-up, it signed a wholesale agreement (B2B sales) with Aurora for 20% of annual production. In addition to the supply agreement, Aurora acquired 17% of TGOD with warrants to increase its stake to 51%.

On October 1, 2018 TGOD surprised the market with a C$75 million unit offering – 10.950 million shares at $6.85 (plus one warrant for each share with x=9). What made it surprising was that TGOD had emphasized that it was "fully funded", and if so then why were they diluting shareholders now? On October 12, 2018, the answer was revealed – Aurora announced that it would not exercise its TGOD warrants letting them expire worthless. Since then. TGOD has fallen from C$5.90 to a recent C$3.72.

To estimate fair value for TGOD, we utilize our projections for supply (~3.3 million kilos) versus demand (~1 million kilos) and apply a pro rate market share (31%) to TGOD's planned capacity. Since TGOD is a B2B (wholesale) provider, we use a wholesale price of C$2.25 to estimate future revenue of ~$134 million (EV / future revenue = 5.8x), then assume a potential steady-state 10% free cash flow margin to estimate future value ~C$269 million, equal to C$1.35 per share (down 64%).

If TGOD were able to sell 100% of its 195,000 kilos of planned capacity, rather than its 31% pro rata share, then revenues would be C$439 million and, holding all other assumptions constant, TGOD's valuation would rise to C$878 million, equal to C$3.08 per share.

Emerald Health Therapeutics (EMH.TO) – in January 2018, Emerald announced itself at the rare intersection of two financial bubbles when this Canadian licensed provider unveiled the development of a blockchain-based supply chain management system and e-commerce

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marketplace. Since then, revenue has stalled ~C$300,000 per quarter, and with cash dwindling, on December 7, 2018, EMH sold 4 million shares to a single investor for C$2.70, raising C$10.8 million gross proceeds (plus an option to buy 1.555 million additional shares at C$2.70).

Applying the same assumptions to EMH as we did to TGOD, namely utilizing a C$4.50/C$2.25 retail/wholesale pricing split, and ranging the % retail/wholesale from 0% to 31%, we arrive at a target price range of C$1.18 to C$1.45 (down 49%).

Tilray (TLRY) – unlike the 6 Canadian cannabis companies described above, 3-Sigma Value had not (until December 2018) been short TLRY. With an enterprise value of C$10.9 billion and only C$40 million of annualized revenue, TLRY trades at an absurd premium to the absurd. The problem has been a small float of only 10 million shares (out of 93 million basic shares outstanding) and a cost of borrow usually above 100%. On January 15, 2019, however, Tilray's lock-up expired. At the same time, Privateer Holdings, the owner of 75 million TLRY shares announced, "*We do not have plans to register, sell or distribute the shares Privateer holds in Tilray during the first half of 2019.*"

Less than two weeks later, on January 25, 2019, Tilray filed a form 4 with the SEC showing Tilray CEO Brendan Kennedy sold 149,916 shares for $11 million, representing 38% of his personal stock ownership. Kennedy is also a founder of Privateer. Eventually (sooner rather than later), Privateer's shares will flood the market, and in anticipation of this event, 3-Sigma Value is finally short TLRY.

Assuming Tilray sells 100% of its 215,000 kilos of annual planned capacity, 31% of which it sells to the Canadian provinces at C$4.50 and the rest into the wholesale market at C$2.25, TLRY is worth C$12.51 (down 83%).

The U.S. versus Canada

A key part of the short thesis on the Canadian growers is that they are prohibited from selling into a U.S. market that is illegal at the Federal level and forced to fight over a Canadian market that is smaller than California's market. The entire (legal) Canada market will grow to maybe 1 million kilograms of cannabis. If we assume consumers pay 2x the price that the provinces are paying to the growers (C$4.50) then the consumer market in Canada is worth ~C$9 billion per year.

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California alone has a bigger population than Canada (39.5 million vs. 36.7 million) and a potential market that is likely to grow from US$4 billion exiting 2018 to US$6 billion in 2020 and US$10+ billion as more dispensaries are licensed (no limit to the number of dispensaries allowed). The idea that California alone is a bigger opportunity than Canada led me to study the licensed providers in California, many of which are multi-state operators. From there, I became convinced that a U.S. state-specific cannabis retail strategy (vertically-integrated from seed to sale) will be a durable business model, protected in certain states by limits on licensing. Most importantly, while farming cannabis is a commodity business, selling cannabis at retail represents an opportunity to differentiate and create value. At the high end, consumers will always be willing to pay $10 per gram for an experience.

U.S. State-Specific & Multi-State Licensed Cannabis Operators

in USD unless otherwise noted	Price 1/25/2019	FD Shares Out	Market Cap	Net Debt	Enterprise Value	# of Stores YE 2018	# of Stores Planned	Revenue LQA	Revenue Planned	Revenue Per Store	EBITDA Planned	EBITDA Margin
1 **Curaleaf (CURA.CSE) - Backed by Russian oligarchs**	C$8.10	509	3,089	-320	2,769	42	70	86	546	7.8	184	33.8%
						65.9x	39.6x	32.3x	5.1x		15.0x	
2 **Cresco Labs (CL.CSE)**	C$8.53	295	1,885	-144	1,741	10	21	49	480	22.9	170	35.4%
						174.1x	82.9x	35.7x	3.6x		10.2x	
3 **MedMen Enterprises (MMEN.CSE) - higher risk growth plan**	C$4.53	607	2,062	13	2,075	17	82	86	870	10.6	125	14.4%
						122.1x	25.3x	24.2x	2.4x		16.6x	
4 **Acreage Holdings (ACRG.CSE) - Hollywood Board of Directors**	C$21.94	121	1,996	-253	1,743	23	83	77	553	6.7	115	20.9%
						75.8x	21.0x	22.6x	3.2x		15.1x	
5 **Green Thumb Industries (GTII.CSE)**	C$15.15	183	2,084	-183	1,901	20	85	69	730	8.6	301	41.2%
						95.1x	22.4x	27.6x	2.6x		6.3x	
6 **Harvest Health & Recreation (HARV.CSE)**	C$8.57	297	1,909	-222	1,688	15	98	45	881	9.0	205	23.3%
						112.5x	17.2x	37.8x	1.9x		8.2x	
7 **iAnthus Capital Holdings (IAN.CSE) - M&A strategy**	C$6.40	223	1,071	-37	1,034	19	78	62	648	8.3	213	32.9%
						54.4x	13.3x	16.6x	1.6x		4.9x	
8 **Trulieve (TRUL.CSE) - Florida-focused**	C$12.85	110	1,063	-42	1,022	24	35	93	350	10.0	183	52.4%
						42.6x	29.2x	11.0x	2.9x		5.6x	
9 **Cannabis Strategies Acquisition Corp. (CSA.A) - Nevada-focused**	C$15.50	43	495	15	510	8	16	75	375	NM	174	46.4%
						63.8x	31.9x	6.8x	1.4x		2.9x	
10 **Origin House (OH.CSE) - Cali-focused**	C$9.02	83	564	-25	539	NM	NM	36	222	NM	50	22.3%
						NM	NM	15.1x	2.4x		10.9x	
11 **DionyMed Brands (DYME.CSE) - Cali-focused**	C$3.30	77	190	2	192	NM	NM	49	260	NM	69	26.7%
						NM	NM	3.9x	0.7x		2.8x	
						Average		**21.2x**	**2.5x**		**9.0x**	

Others
12 **Planet 13 Holdings (PLTH.CSE)** - Nevada-focused
13 **Flower One (FONE.CSE)** - Nevada-focused
14 **1933 Industries (TGIF.CSE)** - Nevada-focused
15 **Liberty Health Sciences (LHS.CSE)** - Aphria affiliate
16 **SOL Global Investments (SOL.CE)** f.k.a. Scythian Biosciences (SOL.CSE) - Aphria affiliate
17 **TerrAscend (TER.CSE)** - pivoting from Canada to U.S - Canopy affiliate / conduit to invest in the US
18 **Terra Tech (TRTC)** - acquired Golden Leaf - POTENTIAL SCAM
19 **MariMed (MRMD)** - no licenses, just management and advisory services
20 **MJardin (MJAR.CSE)** - manages cannabis assets for others (75%) and owns cannabis assets (25%)
21 **Australis Capital (AUSA.CSE)** - spin-off from Aurora (ACB); investments in NV, OH, MI
22 **Tilt Holdings (TILT.CSE)** - 12/18 started trading via RTO; based in MA

It is important to recognize that this comp sheet represents a moment in time and therefore is subject to massive change daily as the news flow is fluid and impactful. That being said, the U.S.-based state-specific and multi-state licensed operators trade around 2-3x planned revenue

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and 8-9x planned EBITDA. EBITDA multiples range from a low ~3x (CSAC, DYME) to a high of 15x+ (MMEN, ACRG, CURA).

On October 11, 2018, **MedMen (MMEN)** announced the acquisition of PharmaCann for US$682 million. PharmaCann operates 10 stores in 4 states: NY (4 shops, 1 of only 10 licenses in NY), IL (4 shops), MD (1 shop), MA (1 shop), with plans to open 6 dispensaries and 4 cultivation facilities in MI, OH, PA, and VA based on licenses it already has. 2018E revenue of $36 million means MMEN paid 19x revenues. With a total of 16 shops operating and planned, the purchase price equates to $42.6 million per shop.

A few weeks after the PharmaCann announcement, I was sitting in a meeting with the CEO of MedMen when my colleague asked him to differentiate between the winners and losers in cannabis. His answer was "infrastructure". The companies that build the biggest (scale) and the best (quality) will win.

Shortly thereafter, I was listening to **iAnthus' (IAN)** third quarter 2018 results call when the CEO Hadley Ford said, "*It may seem a little odd for the CEO to ignore all the great growth indicators in the third quarter and focus on one expense number, but let's remember, cash is king. Cash generation is what ultimately drives the value of our stock and you can't have cash without paying attention to expenses. Growth means nothing if it's not disciplined.*"

Which leads to our first long idea – **Buy iAnthus (IAN).** In October 2018, iAnthus acquired MPX Bioceutical (MPX.Canada) for C$835 million of stock (14.4x LQA revenue), a strategic combination of iAnthus's east coast footprint (NY, NJ, FL, MA, VT) with MPX's west coast assets (CA, NV, AZ, and MD). CEO Hadley Ford says the plan is to be in every state that legalizes cannabis, however, for the purpose of this analysis we assume operations in only states where iAnthus already has licenses. Pro forma 78 stores in 11 states, iAnthus should generate $213 million of EBITDA (4.9x), equal to a 33% margin, on $648 million of revenue (1.6x). Revenue per store is highly dependent on geography (and so are operating expenses). Gross margin generally ranges between 50% and 70%, with vertically-integrated operators at the high end and dispensaries that sell third party products at the low end. In comparison to iAnthus, investors are paying up for MMEN at 16x future EBITDA based on management's guidance of 69 licensed dispensaries, plus an additional 5 in Florida assuming they max out, plus other pending deals totaling 82 stores in 12 states. MMEN targets 60% gross margin with a roughly 50/50 split between in-house and third-party products. Despite elevated expenditures, we assume the current level of higher operating expenses moderates in line with high-end peer unit levels ~$5 million per store (hardly a clear assumption). In the meantime, with the CEO focused

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on building infrastructure (not on building revenue) rather than building profits, MMEN will likely continue to burn cash and depend on the mood of the capital markets.

California is probably the best cannabis market on the planet and therefore the best operators there will be hugely profitable endeavors. **Origin House (OH)** is a pure-play California producer and distributor. Its motto is "Win California, Win the World". Although Origin House does not operate its own retail stores, it produces a portfolio of branded cannabis products and operates a 3rd party distribution platform connecting independent cannabis producers to 486 licensed Cali dispensaries as of 9/30/18, representing ~70% of the retail market. With no limit to the number of dispensaries in California and a fragmented marketplace, Origin House's incumbent distribution platform is a valuable asset.

In addition to California, Origin House made a retail investment in Canada, paying C$25 million for 26 vaping stores called 180 Smoke (C$14.3 million of annualized sales / 1.7x run-rate) that are being repurposed for cannabis. While cannabis farming (upstream) is a commodity business, a branded retail (downstream) business that creates an experience will be able to sustain a premium price (~C$10 per gram).

With enterprise value of US$530 million versus revenue and EBITDA of ~$220 million / $50 million in 2021, Origin House is reasonably priced at 2.4x revenue and 10.9x EBITDA. Origin House is a smart take-out target for someone wanting to be a major player in the California market. **Conclusion – Buy Origin House (OH).**

Competing against Origin House in California is **DionyMed Brands (DYME)**, which executed a RTO (reverse takeover) and started trading November 29, 2018 at C$4.25 per share. DYME has 2 businesses: wholesale distribution and direct-to-consumer delivery. The wholesale business competes directly against Origin House in a highly fragmented market with regulations that require all product to pass through a licensed distributor mandated as a checkpoint for compliance and tax collection. Although strict supply chain regulations make it difficult for small operators, it creates a huge opportunity for DYME and Origin House to rapidly scale with the market.

In addition to DYME's wholesale operation in California, it operates a similar system in Oregon and is planning to open in Nevada and Massachusetts in 2019. DYME's other business is direct-to-consumer delivery services, at this time executing fulfillment for Eaze, a leading third-party ordering platform (Grubhub for weed). In September 2018, DYME rolled-out its own internally-developed ordering platform across California (it's called Chill) while maintaining its fulfillment

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relationship with Eaze. When I asked DYME CEO Ed Fields about the potential for Eaze to move its DYME fulfillment in-house, he declined to surmise what Eaze management is thinking, thus leaving me to believe that Eaze will eventually terminate DYME's service. Eaze is the brand name so a separation shouldn't impact demand for Eaze' service. DYME's revenue via Eaze, on the other hand, is at risk.

DYME has an enterprise value of US$225 million versus $72 million of December 2018 run rate revenue – equal to only 3.1x – growing to $130-140 million organic in 2019, and $225 million in 2020 (1x) per management's guidance. A 15% EBITDA margin target for California in 2019 expands to 25-30% at scale (~20% in 2020), equal to $45 million of 2020 EBITDA (5.0x). Based on management commentary, total company-wide revenue should reach $300 million in 2021, with EBITDA ~$84 million (2.7x). Compared to Origin House's 13.7x multiple on future EBITDA, DYME is dirt cheap. Even if DYME were to lose the ~$40 million of revenue attributable to Eaze, the stock is still cheap at less than 1x revenue and only 2.8x EBITDA. **Conclusion – Buy DionyMed Brands (DYME)**,

Adjacent to California, Nevada is a prime market for recreational cannabis with Las Vegas the epicenter. According to Med Men's CEO, Adam Bierman, Nevada stores are likely to generate more revenue than California's, however for the purpose of our projections we expect annual revenue per dispensary (size adjusted) to be roughly equivalent between the two states, with geographic exceptions (i.e. the Strip in Las Vegas). There are no less than 4 publicly traded licensed cannabis companies focused on Nevada – **Flower One (FONE)**, **Planet 13 Holdings (PLTH)**, **1933 Industries (TGIF),** and **Cannabis Strategies Acquisition Corp. (CSAC)**. The one that jumps off the screen is CSAC, which is a SPAC that announced the acquisition of 5 cannabis companies in Nevada and Massachusetts (closing 1Q19)[7]. CSAC is buying C$100 million of 2018 revenue growing to ~C$250 million in 2019E; while EBITDA of C$30 million in 2018E is expected to grow to C$135 million in 2019E (~US$101 million). Based on a recent price of C$15, enterprise value is US$494 million, equal to 4.9x 2019 EBITDA guidance.

According to CEO Jonathan Sandelman, revenue should grow to C$500+ million in 2020, which implies the # of dispensaries will double, from 8 at the end of 2018 to 16 at the end of 2020. He laid out an east coast / west coast expansion plan similar to iAnthus in which Nevada is a gateway to California, and Massachusetts is a gateway to New York / New Jersey. For the purpose of this analysis, we assume no expansion beyond Nevada and Massachusetts, gross

[7] In Nevada, CSAC is buying 5 dispensaries (3 in Reno, 1 in Clark County, 1 in Henderson), 1 cultivation/production facility and licenses for both medical and adult-use – total revenues ~C$140-160 million in 2019. In Massachusetts, CSAC is buying 3 medical dispensaries and 1 cultivation/production facility, with a provisional license for adult-use purpose – total revenues ~C$100-$120 million in 2019.

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margin split between vertically-integrated operations (70% GM) and third-party product sales (50% GM), and we assume annual opex per dispensary of C$5.0 million per. The result is CSAC should generate C$232 million of EBITDA, equal to 2.8x EBITDA. **Conclusion – Buy Cannabis Strategies Acquisition Corp (CSAC).**

On November 13, 2018, **Green Thumb (GTII)** announced a big move into Las Vegas with the acquisition of Integral Associates, the operator of three Essence branded dispensaries along with cultivation/processing assets. The deal was valued at US$290 million (consideration included US$52 million of cash, and 20.8 million shares), equal to 11x LTM EBITDA. Green Thumb has licenses in 11 states with plans to open 85 dispensaries. Longer-term, we expect GTII to enter any state that legalizes.

In terms of gross margin, we assume it holds steady in 2019 at 50%, Green Thumb's current run-rate level but also the low end of the typical 50% to 70% range determined by the mix of owned- to third party product sold. Longer-term we do expect Green thumb's gross margin to rise toward 60%.

In terms of operating expenses, we estimate on average ~$4 million per store per year, although this number varies depending on location/geography. Since, for the purpose of this analysis we assume operations in only states where Green Thumb already has licenses, we project Green Thumb will generate ~$300 million of EBITDA, equal to a 40% margin on $730 million of revenue (1.9x). This equates to 4.6x EBITDA, a bargain, especially for one of the winners in the great cannabis gold rush. **Conclusion – Buy Green Thumb (GTII).**

Including Nevada, Green Thumb has announced plans to open dispensaries and cultivation facilities in 11 markets including the huge Florida market, which ultimately could be the second largest in the country behind California. 14 licenses have been issued in Florida, each allowing up to 35 dispensaries. The first mover advantage goes to **Trulieve (TRUL)**, who, with 120,000+ unique patients, has 65% market share of all mg of medical cannabis dispensed in Florida. Trulieve is vertically-integrated with 24 open dispensaries in the state, while also servicing patients state-wide via home delivery service.

In November 2018, Trulieve announced expansion into Cali and Mass via two acquisitions, $4 million each. When asked about Trulieve's strategy in these markets, CEO Kim Rivers, who is highly capable, said, "Rinse and repeat." Nevertheless, for the purpose of this analysis, we exclude any future growth outside of Florida, and therefore the valuation is of a standalone vertically-integrated Florida operation.

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Based on 24 medical dispensaries open at the start of 2019 growing to 35, and annual revenue per dispensary flat at $6.7 million, revenue will grow to ~$200 million in 2019 and ~$235 million in 2020. When adult-use is ultimately legalized in Florida, annual sales per dispensary will rise to $10+ million per store. In terms of gross margin, Trulieve's vertically-integrated operation is efficient and a model for the rest of the industry. Gross margin is a durable 70% given Trulieve controls the product from seed to sale. For comparison purpose, MedMen targets 60% gross margin across many states with a 50/50 owned versus third party product split. Finally, we assume annual operating expenses per dispensary stays flat around US$2 million per shore.

Trulieve (TRUL) Financial Summary

is US$	Q1 2018	Q2 2018	Q3 2018	Q4 2018	2018	2019	2020	Planned
# of Dispensaries		**16**	**17**	**24**	**24**	**30**	**35**	**35**
Annual Revenue per Dispensary		5.8	6.7	6.7		6.7	6.7	10.0
Revenue	15.2	23.3	28.3	40.0	106.8	199.9	234.5	350.0
Gross Profit	10.7	17.3	20.0	28.2	76.2	140.0	164.15	245
% Margin	70.4%	74.2%	70.6%	70.6%	71.3%	70.0%	70.0%	70.0%
Gross Margin does not include net-effect of change in fair value of biological assets i.e. gain on biological assets								
Operating Expenses	4.6	6.0	8.3	11.8	30.7	58.9	68.7	68.7
Annual Opex per Dispensary		1.5	2.0	2.0		2.0	2.0	2.0
EBIT	6.1	11.3	11.6	16.4	45.5	81.1	95.5	176.3
D&A		3.0	0.9	1.0	4.9	6.1	7.1	7.1
EBITDA	11.2	14.3	12.6	17.4	50.4	87.2	102.5	183.4
% Margin	73.7%	61.4%	44.4%	43.6%		43.6%	43.7%	52.4%
Price as of 12/31/18								**C$11.00**
Shares Out								110.3
Market Cap (in US$)								910.4
Net Debt								-41.8
Enterprise Value								**868.6**
EV / Store Count						29.0	24.8	**24.8**
EV / Planned Revenue						4.3x	3.7x	**2.5x**
EV / Planned EBITDA						10.0x	8.5x	**4.7x**

Trulieve is an attractive take-out target and cheap, trading at 2.5x future revenue and 4.7x future EBITDA. **Conclusion – Buy Trulieve (TRUL).**

The other significant publicly-traded cannabis retailers in Florida are **Liberty Health (LHS)** and **Curaleaf (CURA).** Liberty, which in December announced the opening of its 8th dispensary in Florida, is affiliated with Aphria (APHA), a Canadian licensed producer with a history of conflicts of interest and potential fraud. For that reason alone, we look elsewhere. Curaleaf,

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which on 10/28/18 completed a reverse take-over (RTO) priced at C$11.45, has 42 dispensaries (pro forma) at the end of 2018, 21 of which are in Florida. With plans in 12 states, Curaleaf is one of the largest multi-state operators. Beyond Florida, Curaleaf has 4 dispensaries in New York, and is one of the first to open in New Jersey.

There are a few problems with Curaleaf, however, that render it a more highly speculative investment than some of its peers. First, management is already over-promising for 2019. Revenue guidance is $400 million – derived from 40 stores at the beginning of the year and 67 by the end (average of 54 stores open during 2019. This implies revenue per store of $7.5 million, a high bar, especially given the bulk of stores are in medical-only states. Second, Curaleaf is controlled by Russian investors with ties to the Kremlin. While this may not stand in the way of maximizing value, it adds a risk to minority public shareholders that must be considered. Thirdly, the valuation is expensive at 12x planned EBITDA compared to sub-5x at Trulieve, Green Thumb, and iAnthus.

The tri-state area – New Jersey/New York/Connecticut – is another huge market, yet more conservative than the West Coast and facing tougher regulations with fewer dispensary licenses issued. As of year end 2018, Connecticut has issued only 9 medical dispensary licenses, 3 of which are owned and operated by **Acreage Holdings (ACRG)**. Acreage is a roll-up of licenses across the country with operations planned in 18 states and growing. What makes Acreage noteworthy is a Hollywood Board of Directors that include John Boehner, former Canadian Prime Minister Brian Mulroney, former Massachusetts governor Bill Weld, and other stars. While there is limited scale benefit in the U.S. until federal legalization, ACRG's strategy is to get ahead of the legalization curve so that when the time comes ACRG will be one of the biggest beneficiaries.

Similar to the stinginess in which Connecticut issues licenses, New York and New Jersey have so far issued only 40 and 12 dispensary licenses respectively; although, this is likely to dramatically change when adult-use is legalized no later than 2020 in both states.

Other multi-state licensed operators include **Cresco Labs (CL)** and **Harvest Health & Recreation (HARV)**, both of which began trading in late 2018 via RTO. Cresco is based in Chicago with 5 dispensaries and a combined 3 cultivation and processing facilities in IL state. Cresco also operates dispensaries in PA (2 growing to 6), AZ, NV, OH (1Q19), and NY (pending) with plans for 21 dispensaries in 9 states by 12/31/19. Based on a more-limited growth plan, Cresco is over-valued at 4x planned revenue compared to peers at 2x, and 11x planned EBITDA compared to 8x.

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Harvest is based in Arizona with 9 dispensaries in state and licenses in 10 other states. The plan is to go from 15 dispensaries at the end of 2018 to 50 by the end of 2019 and 98 by the end of 2020. This includes 35 in Florida (max) and 19 in California (identified). Based on management's guidance, HARV is trading ~7x planned EBITDA, an attractive valuation compared to Curaleaf, MedMen, Acreage, and Cresco, but a premium to Green Thumb, iAnthus, and Trulieve.

The U.S. Farm Bill

In December 2018, the U.S. Farm Bill passed, removing hemp from the controlled substance list and instead treating it as an agricultural commodity. This will enable the creation of a national hemp-based CBD market that is not constrained by state borders. While there are pure-play CBD producers such as Charlotte's Web (CWEB) and CV Sciences (CVSI), many of the cannabis companies we've identified in this report are prime beneficiaries. For more on the CBD supply chain, please contact Ben at ben@3sigmavalue.com.

Final Thoughts

A hedge fund by definition requires some form of hedge that limits the conditions by which you can lose money. That hedge can take many forms – shorts to hedge longs and vice versa, derivatives, foreign exchange – creating a better scenario in which beta is eliminated from the trade. A well-hedged trade offers a better risk/reward trade-off than any one-sided (long only) investment. In the case of cannabis, the trade for 2019 is to be long U.S. state-specific or multi-state licensed operators while at the same time short Canadian cannabis growers who will be selling into a severely over-capacitated marketplace by the time they reach their nameplate capacity.

As of January 25, 2019, 3-Sigma Value was long 5 U.S. state-licensed operators (TRUL, GTII, IAN, OH, CSA) and short 6 Canadian licensed operators (ACB, CRON, WEED, TLRY, TGOD, EMH).

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