

10/19/2023

3Q US MJ Trends

Cannabis Sector Equity Research



Key Highlights:

- More states saw sales grow seq than decline, but MSO regional exposure will mark the difference.
- MD should be a key driver of growth in 3Q. For some this may be mitigated by weakness in AZ.
- Prices and spreads are down yoy, although in some cases they are starting to stabilize, and are up in FL.
- We provide MSO read into 3Q here.

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Dear reader: On Tue 7/18, we launched our cannabis equity research service (see [Sector Launch report](#)). We will publish thematic/macro reports during the first few months, and then follow with equity stock coverage. A full list of our recent reports is shown at the end of this report.

Key Points

\$ Sales Trends by Market

Of 17 states reviewed here, sales fell in seven states seq (but MSOs have less exposure in these), while the other ten states posted seq growth in 3Q23.

- MD, RI, ME, MI, and CT, posted the most notable performances (based on official state data for all five). MD total sales were up 2.2x vs. 2Q due to the start of rec on 7/1/23. RI and ME (granted, both smaller states, each with ~\$60Mn 3Q23 sales vs. \$270Mn for MD) were up in the ~20% range. MI (\$830Mn in 2Q23) was up 10% seq on the back of rampant store openings and price stabilization. CT (\$74Mn) was up 8% seq, but growth could have been better if not for slow rec store openings (slow approval process).
- We note MA and FL were up mid-single digits seq, as per Headset scanner data. IL, NM, and WA were up low single digits seq (official state data).
- Sales were down seq low single digits in MO, OH, and OR, and were down mid-single digits in CA, CO, and NV.
- AZ was down seq in the low teens, but this is partly seasonal.
- Since Dec, five states have begun rec sales: RI Dec'22 (NY also began that month, but with only one store at first); CT Jan'23; MO Feb'23; MD Jul'23.
- *Note: the only large MJ states for which we do not have data for 3Q23 are NJ and PA (we estimate NJ is at an \$800Mn run rate and PA at \$1.1Bn).*

Market Economics

Retail prices, costs, and retailer spreads, as per Headset

- Retail flower prices were down 37% yoy in MA, -24% in IL, -22% in AZ, -19% in MI, -14% in CA, -11% in WA, and -6% in CO (were mostly stable in NV/OR). We realize the deflation may vary by operator (some claims prices in MA have been mostly stable this year). MD was the exception, with prices up seq. Also, 3Q is starting to show gains qoq in some cases (CO, MI, NV, OR) or the declines easing (CA, IL, MA, WA). Importantly, in absolute terms, the highest prices were in (order of magnitude) in MD and IL, followed in a second echelon in NV and MA. *Note: We do not have price comp data for FL and MD.*



- Costs, as per Headset, have also come down in yoy terms, but the size of the drop and resulting effect on spreads varies by state - in fact, retailer spreads remain stable in several states. Importantly, in qoq terms, costs were stable in most states, with IL being the exception (down) and MD (up). *Note: The analysis here is based on Headset data for retail prices and costs. Data from Cannabis Benchmarks is also consistent with the notion of costs starting to stabilize seq, for the most part.*
- Retailer spreads (as per Headset) were stable qoq in CA, CO, IL, NV, and WA. They were slightly up in MI and OR. They fell in MA and AZ. They were meaningfully up in MD. But in yoy terms, \$ spreads per gram were down in most states: down double-digits in AZ, CA, IL, MA, MI, and WA, and down single digits in CO and NV (they were stable yoy in OR). All this said, the highest spreads (in order of magnitude) were in MD, IL, and MA/NV (similar for these last two). *Note: we do not have spread data for FL.*

Revenue per store is also a driver of economics. In this report we will not delve into store counts (see our [2Q23 review](#) report for an in-depth discussion of store density), but declines in revenue per store averages hurts operator's margins. But the continued growth in the number of stores in MA is an issue (given the low cap of 3 per operator), and this will also become an issue as social equity stores open in IL (some incumbents near the state border have also suffered from MO going rec); more than 50 have been granted a license with another 135 to follow. Flo has 591 stores now compared with 509 at the end of 2022.

FL Volume trends by operators

Volume growth decelerated in FL, but we think that is an indication of price gains.

- \$ sales are up 4% qoq (Headset) while blended volumes are up only 1% (flower -1%). If correct, that would mean seq price/mix gains of +3%. On the other hand, in 2Q23, \$ sales were up 8% seq (Headset), while volumes increased 11% seq (OMMU), implying -3% in price/mix seq.
- FL yoy comps are partly distorted as 3Q22 sales were hurt owing to confusion among patients and prescribers resulting from reg changes back then. Headset points to 18% \$ sales growth (+6% in 2Q23 yoy), with OMMU volumes +29% (+31% in 2Q23).
- Regarding operators, flower volumes as per OMMU (-2% for the market seq) were down 9% seq for Trulieve (38% vol share in 3Q23); -5% for Verano (10%); AYR -3% (8%); Curaleaf +6% (11%); Surterra +18% (6%); Consortium +10% (4%); Cresco -4% (3%); VidaCann +8% (2%); iAnthus +1% (4%); Cannabis +18% (2%).



Read for MSOs into 3Q23 Earnings Season

We start by cautioning we have not launched coverage on these specific stocks, and hence have not published estimates. That said, the prior analysis would provide this read,

- A challenging for qtr for Trulieve given the 9% vol drop in FL and double digit \$ market decline in AZ. These are the company's two main states. The 3rd state is PA, and this state is at best flat, and deflation is an issue. Better pricing in FL is good news though.
- Those with MD exposure should benefit, but the actual effect relates to the weight of MD on their total sales. Among MSOs, Ascend, Curaleaf, Green Thumb, TerrAscend, and Verano, have four stores (the MD cap); Columbia Care, iAnthus, and Trulieve, each have three (Goodness Growth has 2, and MariMed 1). Most of these also wholesale (Cresco does not have stores, but wholesales). Most companies do not split % of sales by state, but we think MD should more than move the needle for Ascend, TerrAscend, iAnthus, and MariMed; the other mentioned MSOs are more diversified state wise (although of course MD will still be a positive driver).
- IL and PA are key states for the likes of Cresco, Green Thumb, and Verano, and these states were at best stable qoq (we do not have precise data for PA). The MD effect (as well as growth in NJ) may be offset for Verano owing to FL and AZ. For Green Thumb, we believe RI (one of the few retailers there) and CT, combined with MD, should help 3Q.
- Curaleaf is tougher to call given its diversification, but we assume growth in NJ and MD, may help offset pressure in AZ. Besides, it gained flower vol share in FL, based on the OMMU data).
- Schwazze is the only MSO with meaningful CO/NM exposure.
- GlassHouse, Gold Flora, and StateHouse derive all or the bulk of revenues from CA.

On the Data

Sales Trends (state data and Headset)

The analysis below is based on official data released by the various states that have released full 3Q sales as well as on Headset scanner surveys. In order of size,

- CA (\$1.3Bn for the quarter) down 6% qoq (flat in 2Q) and -11% yoy; the yoy drop is slightly worse than in 1H (all based on Headset data). *MSO involvement: Among 22 MSOs that we track, Glass House, Gold Flora, and StateHouse, generate the bulk of revenues from CA.*



- MI (\$830Mn) up 10% qoq, and +32% yoy (all based on state data). *MSO involvement: Mostly TerrAscend (mainly via the Gage deal), and Cresco on the wholesale side.*
- IL (\$498Mn) up 2% qoq and +5% yoy (all based on state data). *MSO involvement: We understand Cresco and Green Thumb are the largest wholesalers (but not the only ones). MSOs with the maximum 10 stores include Curaleaf, Cresco, Green Thumb, Verano (Ascend has 9).*
- FL (\$490Mn) As per Headset, FL \$ sales were up 4% qoq (+8% in 2Q) and up 18% yoy (in part due to comps as reg changes in 3Q caused confusion among prescribers and patients). We already mentioned OMMU volume data. *MSO involvement: Most MSOs have exposure in the state.*
- MA (\$470Mn) up 6% qoq (+6% in 2Q) and +4% yoy (5.5% in 1H). Here we have crossed state data (available through 9/24) and Headset. *MSO involvement: Most MSOs have exposure in the state (ex Trulieve, which exited the state), but there is a cap of three rec stores and 100K sq ft of cultivation.*
- CO (\$390Mn) up 4% qoq (-1% in 2Q) and -10% yoy; in 1H23 sales fell 12% yoy (all based on Headset data). *MSO involvement: Mostly Schwazze.*
- MO (\$357Mn) down 2% qoq, but up 253% yoy (all based on state data). *MSO involvement: MariMed is building processing there, while Cannabist recently sold processing assets there.*
- WA (\$325Mn) is less relevant to the MSO group, but sales were up low single digits qoq, and -2% yoy. *MSO involvement: Limited.*
- AZ (\$292Mn in total sales in 3Q23) down 14% seq and -10% yoy (all based on state data). *MSO involvement: Several MSOs own stores in the state, with Trulieve and Curaleaf having the most stores (followed by Verano).*
- MD (\$270Mn), up 119% qoq, and +116% yoy. *MSO involvement: Among MSOs, Ascend, Curaleaf, Green Thumb, TerrAscend, and Verano, each have the maximum of four stores; Columbia Care, iAnthus, and Trulieve, each have three.*
- OR (\$244Mn), down 3% qoq, and -2% yoy. *MSO involvement: Limited.*
- NV (\$215Mn) down 6% qoq (+1% in 2Q) and down 8% yoy (after +1.5% in 1H); all based on Headset. *MSO involvement: Key state for Planet13, but most MSOs have exposure in the state.*
- NM (\$143) up 3% qoq and +19% yoy. *MSO involvement: Schwazze has exposure there (besides its home state of CO).*



- OH (\$118Mn) down 1% qoq, and +2% yoy. *MSO involvement: Several MSOs have retail vertical operations there (5 store max plus cultivation), including Vext, which recently bought stores in the state.*
- CT (\$74Mn), up 8% qoq, and up 97% yoy. *MSO involvement: Curaleaf, Green Thumb, and Verano have vertical operations there (stores and cultivation). Other MSOs with stores (only) include Acreage and Trulieve.*
- ME (\$66Mn), up 19% qoq and +26% yoy. *MSO involvement: Acreage and Curaleaf.*
- RI (\$58Mn), up 22% qoq and +267% yoy. *MSO involvement: Only Green Thumb.*

Brief Further Comments on a Few States

Maryland: As per official state data, 3Q23 total rec/med sales reached \$91Mn in Sep, and \$270Mn for all 3Q23, 2.2x the 2Q23 level (when only med sales were allowed). Market economics are quite attractive, and we calculate that both wholesale prices and retailer spreads are up since the start of rec. Average annual revenue per store is now at a run rate of north of \$10Mn. Our [Maryland report](#) provides more market color.

Illinois: As per the official state data, total sales reached \$467Mn in 3Q23 (88% rec, 12% med), up 2% yoy and 4% seq. With YTD growth of +2% vs. +7% in 2022, it would seem the market is approaching maturity despite the continued rise in the store count. That said, with close to \$270 total spend per capita, MA is 2nd only to MI (\$330) and now in line with CO (despite effectively starting rec sales five years later).

Ohio: Ohio (population of almost 12mn) remains a medical market with an annual run rate of \$470Mn (sales were stable seq in 3Q23). With almost 400,000 patients, about 3.3% of the population is in the medical program. Voters will decide this Nov if they want to legalize rec sales. If we assumed sales would grow 2.5x with rec, this could quickly become a \$1.2Bn market. At present there are 102 stores licensed (the cap is 5).

Missouri: As per official state data, 3Q23 total rec/med sales reached \$357Mn (81% rec, 19% med), and are up 3.5x yoy (rec began on 2/3/23). With annualized sales of \$1.43Bn, MO has one of the highest per capita spends (\$230), and highest among states that turned rec in the last two years. There are 103 stores open, and more are on the way.



Z&A Upcoming Proprietary Webinars:

Thu 10/26: Cannabis Lending Outlook [register here](#)

Thu 11/2: German Cannabis Reform [register here](#)

Table 1: Stocks mentioned in this report.

Name	Ticker	Rating
4Front Ventures	FFNTF	Not rated
Acreage Holdings	ACRDF	Not rated
Ascend Wellness	AAWH	Not rated
AYR Wellness	AYRWF	Not rated
Columbia Care	CCHWF	Not rated
Cresco Labs	CRLBF	Not rated
Curaleaf Holdings	CURLF	Not rated
GlassHouse Brands	GLASF	Not rated
Gold Flora	GRAM	Not rated
Greenlane Holdings	GNLN	Not rated
Green Thumb Industries	GTBIF	Not rated
Ispire Technology	ISPR	Not rated
Jushi Holdings	JUSHF	Not rated
MariMed Inc	MRMD	Not rated
Planet 13 Holdings	PLNHF	Not rated
Schwazze	SHWZ	Not rated
Smooore International	SMORF	Not rated
StateHouse Holdings Inc	STHZF	Not rated
TerrAscend Corp.	TSNDF	Not rated
TILT Holdings, Inc.	TLLTF	Not rated
Trulieve Cannabis	TCNNF	Not rated
Verano Holdings	VRNOF	Not rated
Vext Science, Inc.	VEXTF	Not rated

Note: others mentioned are either brands or private companies

Source: FactSet; Z&A



Links to our recent publications:

- Roadmap to Dec 2024 (July 18)
- 2Q23 US MSO Trends (July 21)
- Canadian LP Dynamics (Jul 25)
- On the Rescheduling Question (July 28)
- Canada Pre-Rolls: Deep Dive (Aug 7)
- Med Sales Impact from Rec Start (Aug 16)
- Canada Flower Prices and Share Trends (Aug 28)
- HHS Rescheduling Recommendation (Aug 31)
- Canada's Leading Exporters (9/5)
- Maryland Wholesale Share Trends (9/13)
- VidaCann Deal and FL Update (9/15)
- A Detailed SAFE Roadmap (9/19)
- MSO Debt Leverage and Potential Equity Raises (9/21)
- California Retailer Trends (10/3)
- 3Q23 Canada LP and Market Update (10/6)
- Vaping Trends and Hardware Vendors (10/10)
- Capex/Sales as a Sign of Growth Potential (10/17)

Links to Recent Zoom Panels (that Z&A joined):

- Benzinga Panel on Cannabis Rescheduling (9/14)
- Benzinga Chicago Panel on Institutional Flows (9/27)



Appendix I: Market Projections & Data



Exhibit 1: US Legal Cannabis Sales at Retail – Our Projections

US\$ Mn	CY20	CY21	CY22	1Q23	2Q23	3Q23	4Q23e	CY23e	1Q24e	2Q24e	3Q24e	4Q24e	CY24e	CY25e	CY26e	CY27e	rec began
Total	17,888	24,341	25,376	6,655	7,056	7,318	7,465	28,494	7,596	7,835	7,956	8,121	31,507	36,251	39,571	42,659	
rec	11,478	15,995	16,544	4,225	4,477	4,737	4,817	18,256	4,810	4,965	5,025	5,121	19,920	22,322	25,015	27,372	
med	6,410	8,347	8,831	2,430	2,578	2,581	2,649	10,238	2,786	2,870	2,931	3,000	11,587	13,929	14,556	15,287	
Total (med/rec)	17,888	24,341	25,376	6,655	7,056	7,318	7,465	28,494	7,596	7,835	7,956	8,121	31,507	36,251	39,571	42,659	
AZ	1,034	1,359	1,390	351	339	292	297	1,279	300	297	296	301	1,193	1,209	1,227	1,247	Jan'21
CA	4,480	5,779	5,389	1,279	1,317	1,284	1,333	5,213	1,309	1,346	1,314	1,363	5,332	5,450	5,569	5,687	Oct'16
CO	2,191	2,229	1,769	394	389	393	389	1,565	387	397	406	401	1,591	1,640	1,691	1,744	Jan'14
CT	117	150	150	57	68	74	78	277	81	86	92	98	357	487	489	491	Jan'23
FLA	842	1,456	1,740	437	471	488	525	1,922	525	534	543	552	2,154	2,313	2,482	2,650	med
GA	0	1	16	9	12	16	23	60	34	45	54	65	198	312	313	314	med
IL	1,035	1,776	1,907	467	484	498	509	1,958	499	512	521	531	2,063	2,158	2,258	2,363	Jan'20
MA	921	1,644	1,755	428	450	472	478	1,828	466	471	475	484	1,896	1,929	1,963	1,997	Nov'18
MD	453	551	509	118	123	270	273	784	273	277	281	286	1,117	1,242	1,450	1,704	Jul'23
ME	41	96	171	48	55	66	56	226	58	66	79	67	269	321	382	456	Oct'20
MI	985	1,793	2,294	642	754	830	821	3,047	825	828	833	837	3,324	3,395	3,469	3,545	Apr'22
MN	20	25	55	25	28	34	41	128	44	55	59	61	219	550	797	1,135	Jan'25
MO	21	210	390	266	363	357	356	1,343	362	374	387	394	1,517	1,643	1,760	1,886	Feb'23
NH	35	44	50	13	14	14	14	54	13	14	14	14	55	60	60	60	med
NJ	196	217	555	179	193	198	208	779	217	227	231	238	913	1,070	1,078	1,085	Apr'22
NM	119	119	358	130	140	143	147	560	147	149	153	154	603	627	657	690	Apr'22
NV	780	1,042	882	213	213	215	211	853	215	224	220	217	876	910	936	962	Jul'17
NY	200	250	260	84	94	99	114	392	133	157	182	206	679	1,165	1,574	1,640	Dec'22
OH	223	379	467	120	119	118	123	481	127	131	134	138	530	1,163	1,648	2,326	Jan'25
OK	428	502	588	169	173	173	176	690	198	202	202	207	810	950	950	950	med
OR	1,111	1,184	994	231	242	244	239	957	236	247	249	244	976	996	1,015	1,036	Oct'15
PA	765	1,394	1,483	374	364	354	344	1,436	345	345	345	345	1,379	1,777	1,778	1,780	med
RI	50	58	66	42	48	58	70	218	78	86	95	104	363	532	532	532	Dec'22
VA	10	27	101	44	51	58	65	218	79	90	98	106	372	500	1,621	2,488	Jan'26
VT	37	52	73	23	24	24	24	94	26	27	27	28	108	117	117	117	May'22
WA	1,380	1,464	1,294	304	313	325	318	1,259	305	314	327	319	1,265	1,272	1,278	1,284	Jul'14
WV	0	15	20	10	12	14	16	52	17	18	19	19	73	85	98	111	med
Other states	414	526	648	197	205	206	214	822	295	315	322	342	1,275	2,378	2,378	2,378	

Source: Official state data, Headset, company reports and Z&A estimates. Note: Of current medical markets, we only assume OH and VA will begin rec sales (we do not assume rec for PA or FL).



Exhibit 2: YoY Sales Growth Projections by State

US\$ Mn	CY20	CY21	CY22	1Q23	2Q23	3Q23	4Q23e	CY23e	1Q24e	2Q24e	3Q24e	4Q24e	CY24e	CY25e	CY26e	CY27e
GRAND TOTAL	51%	36%	4%	2%	6%	4%	2%	12%	2%	3%	2%	2%	11%	15%	9%	8%
"MSO states"	52%	36%	4%	2%	6%	4%	2%	12%	1%	3%	2%	2%	9%	12%	10%	8%
AZ	43%	31%	2%	2%	-3%	-14%	2%	-8%	1%	-1%	0%	2%	-7%	1%	2%	2%
CA	51%	29%	-7%	-5%	3%	-2%	4%	-3%	-2%	3%	-2%	4%	2%	2%	2%	2%
CO	25%	2%	-21%	-4%	-1%	1%	-1%	-12%	-1%	3%	2%	-1%	2%	3%	3%	3%
CT	39%	28%	0%	52%	20%	8%	5%	85%	5%	6%	7%	6%	29%	36%	0%	0%
FLA	66%	73%	20%	-3%	8%	4%	8%	10%	0%	2%	2%	2%	12%	7%	7%	7%
GA										33%	19%	20%		58%	0%	0%
IL	312%	72%	7%	-6%	4%	3%	2%	3%	-2%	2%	2%	2%	5%	5%	5%	5%
MA	36%	78%	7%	-4%	5%	5%	1%	4%	-3%	1%	1%	2%	4%	2%	2%	2%
MD	79%	22%	-7%	-1%	5%	119%	1%	54%	0%	1%	2%	2%	42%	11%	17%	18%
ME	-12%	133%	78%	2%	14%	19%	-15%	32%	2%	14%	20%	-15%	19%	19%	19%	19%
MI	241%	82%	28%	1%	17%	10%	-1%	33%	0%	0%	1%	1%	9%	2%	2%	2%
MN	0%	25%	117%	39%	12%	18%	21%	132%	8%	25%	8%	4%	71%	151%	45%	42%
MO	3%	903%	86%	139%	36%	-2%	0%	244%	2%	3%	3%	2%	13%	8%	7%	7%
NH	30%	26%	14%	4%	2%	0%	2%	8%	-2%	2%	0%	2%	2%	9%	0%	0%
NJ	107%	10%	156%	-2%	8%	2%	5%	40%	4%	4%	2%	3%	17%	17%	1%	1%
NM	0%	0%	201%	7%	8%	3%	3%	56%	0%	1%	2%	1%	8%	4%	5%	5%
NV	11%	34%	-15%	1%	0%	1%	-2%	-3%	2%	4%	-2%	-1%	3%	4%	3%	3%
NY	100%	25%	4%	30%	12%	5%	14%	51%	17%	18%	15%	13%	73%	72%	35%	4%
OH	298%	70%	23%	1%	0%	-1%	4%	3%	3%	3%	3%	3%	10%	119%	42%	41%
OK	17%	17%	17%	13%	2%	0%	2%	17%	13%	2%	0%	2%	17%	17%	0%	0%
OR	32%	7%	-16%	-1%	5%	1%	-2%	-4%	-1%	5%	1%	-2%	2%	2%	2%	2%
PA	164%	82%	6%	0%	-3%	-3%	-3%	-3%	0%	0%	0%	0%	-4%	29%	0%	0%
RI	25%	14%	14%	122%	13%	22%	20%	231%	12%	11%	10%	10%	66%	47%	0%	0%
VA	nm	171%	273%	20%	17%	14%	12%	116%	21%	14%	9%	8%	71%	34%	224%	54%
VT	68%	41%	40%	24%	2%	0%	2%	29%	10%	2%	0%	2%	15%	8%	0%	0%
WA	8%	6%	-12%	-4%	3%	4%	-2%	-3%	-4%	3%	4%	-2%	0%	0%	0%	0%
WV			39%	45%	13%	19%	16%	157%	5%	5%	5%	4%	40%	18%	15%	13%
Other states	18%	27%	23%	18%	4%	1%	4%	27%	38%	7%	2%	6%	55%	87%	0%	0%

Source: Official state data, Headset, company reports and Z&A estimates



Appendix II: Company Reported Data



Exhibit 3: MSO Sales

	CY20	1Q21	2Q21	3Q21	4Q21	CY21	1Q22	2Q22	3Q22	4Q22	CY22	1Q23	2Q23
SALES (\$Mn)													
Acreage	114.5	38.4	44.2	48.2	58.1	188.9	56.9	61.4	61.4	57.5	237.1	56.0	58.1
Ascend	143.7	66.1	83.4	94.4	88.5	332.4	85.1	97.5	111.2	112.1	405.9	114.2	123.0
AYR	155.1	58.4	91.3	96.2	111.8	357.6	99.5	110.1	119.6	136.3	465.6	117.7	116.7
Columbia Care	179.5	86.1	102.4	132.3	139.3	460.1	123.1	129.6	132.7	126.2	511.6	124.5	129.2
Cresco	476.3	178.4	210.0	215.5	217.8	821.7	214.4	218.2	210.5	199.6	842.7	194.2	197.9
Curaleaf	626.6	260.3	312.2	317.1	306.3	1,196.0	296.1	337.6	339.7	363.0	1,336.3	336.5	338.6
4Front	57.6	23.0	27.1	25.9	28.5	104.6	26.0	28.4	32.5	31.6	118.6	30.4	30.7
Goodness Growth	49.2	13.2	14.2	13.4	13.7	54.4	15.6	21.1	18.9	19.0	74.6	19.1	20.2
Green Thumb	556.6	194.4	221.9	233.7	243.6	893.6	242.6	254.3	261.2	259.3	1,017.4	248.5	252.4
iAnthus	151.7	51.8	54.2	49.3	47.7	203.0	42.8	43.5	39.4	37.6	163.2	36.8	38.7
Jushi	80.8	41.7	47.7	54.0	65.9	209.3	61.9	72.8	72.8	76.8	284.3	69.9	66.4
Marimed	50.9	24.6	32.6	33.2	31.0	121.5	31.3	33.0	33.9	35.8	134.0	34.4	36.5
Planet13	70.5	23.8	32.8	33.0	29.9	119.5	25.7	28.4	25.6	24.8	104.6	24.9	25.8
Schwazze	24.0	19.3	30.7	31.8	26.5	108.4	31.8	44.3	43.2	40.1	159.4	40.0	42.4
StateHouse	60.0	12.4	15.4	17.4	15.1	60.3	17.3	34.6	30.8	25.5	108.2	24.7	25.3
TerrAscend	148.0	53.4	58.7	49.1	33.0	194.2	48.6	64.8	67.0	67.4	247.8	69.4	72.1
Tilt	158.4	46.8	48.5	53.4	54.1	202.7	42.4	47.1	40.5	44.3	174.2	42.3	41.6
Trulieve	521.5	193.8	215.6	224.1	304.9	938.4	317.7	313.8	300.8	307.4	1,239.8	289.1	281.8
Verano	228.5	120.9	198.7	206.8	211.4	737.9	202.2	223.7	227.6	225.9	879.4	227.1	234.1
Vext	25.2	9.2	9.4	9.4	9.3	37.2	10.8	8.8	7.7	8.2	35.4	9.1	9.2

Source: Company reports, and Z&A estimates



Exhibit 4: MSO EBITDA Margins

	CY20	1Q21	2Q21	3Q21	4Q21	CY21	1Q22	2Q22	3Q22	4Q22	CY22	1Q23	2Q23
EBITDA MARGIN													
Acreage	-26%	4%	18%	13%	15%	13%	15%	17%	14%	12%	15%	19%	12%
Ascend	21%	24%	24%	25%	22%	24%	19%	21%	25%	25%	23%	20%	17%
AYR	32%	32%	30%	27%	23%	27%	16%	18%	18%	22%	19%	22%	25%
Columbia Care	-11%	4%	11%	23%	-47%	13%	14%	9%	16%	14%	13%	13%	16%
Cresco	13%	20%	22%	26%	26%	24%	24%	23%	20%	15%	20%	15%	20%
Curaleaf	23%	24%	21%	23%	21%	22%	28%	26%	26%	21%	23%	22%	21%
4Front	28%	19%	28%	29%	38%	32%	28%	32%	29%	21%	23%	12%	6%
Goodness Growth	-11%	-14%	-7%	-14%	-32%	-17%	-17%	11%	10%	13%	6%	8%	14%
Green Thumb	32%	37%	36%	35%	31%	34%	28%	31%	32%	31%	31%	31%	36%
iAnthus	85%	10%	15%	6%	-22%	3%	23%	-816%	-13%	-98%	-237%	2%	-1%
Jushi	5%	11%	17%	11%	-7%	7%	-1%	1%	1%	9%	2%	11%	19%
Marimed	32%	33%	43%	38%	6%	35%	33%	27%	25%	17%	24%	21%	17%
Planet13	12%	25%	19%	8%	6%	14%	10%	5%	2%	-3%	3%	3%	-2%
Schwazze	-32%	30%	33%	28%	28%	30%	25%	34%	37%	33%	33%	36%	33%
StateHouse	12%	8%	23%	16%	-43%	1%	-21%	-14%	-18%	-19%	-17%	-10%	3%
TerrAscend	32%	40%	40%	19%	47%	36%	10%	9%	17%	25%	16%	18%	18%
Tilt	-5%	12%	15%	9%	8%	11%	4%	2%	1%	-1%	2%	0%	4%
Trulieve	50%	47%	44%	44%	33%	41%	33%	33%	33%	35%	32%	27%	28%
Verano	77%	50%	41%	54%	39%	44%	43%	32%	36%	35%	37%	31%	31%
Vext	27%	33%	37%	38%	36%	36%	35%	55%	43%	39%	43%	32%	11%

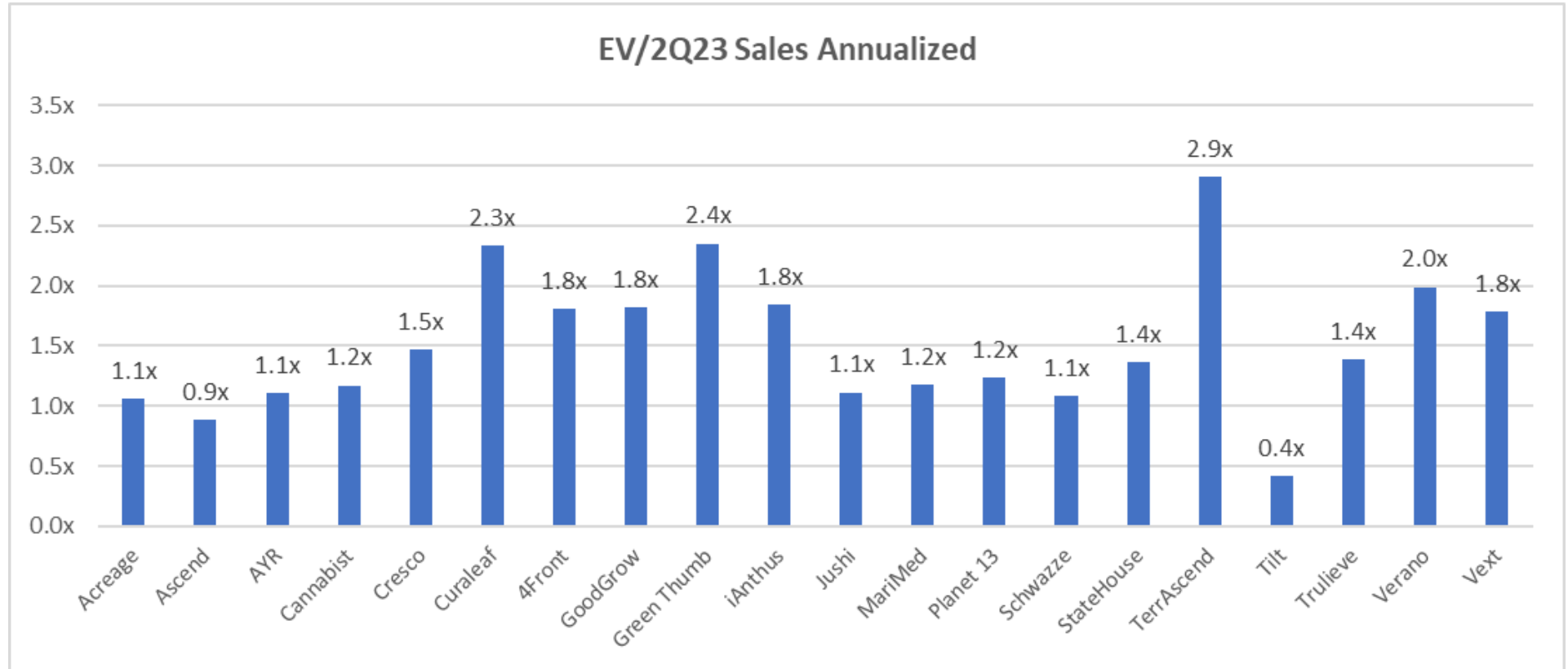
Source: Company reports, and Z&A estimates



Appendix II: Valuation Comps

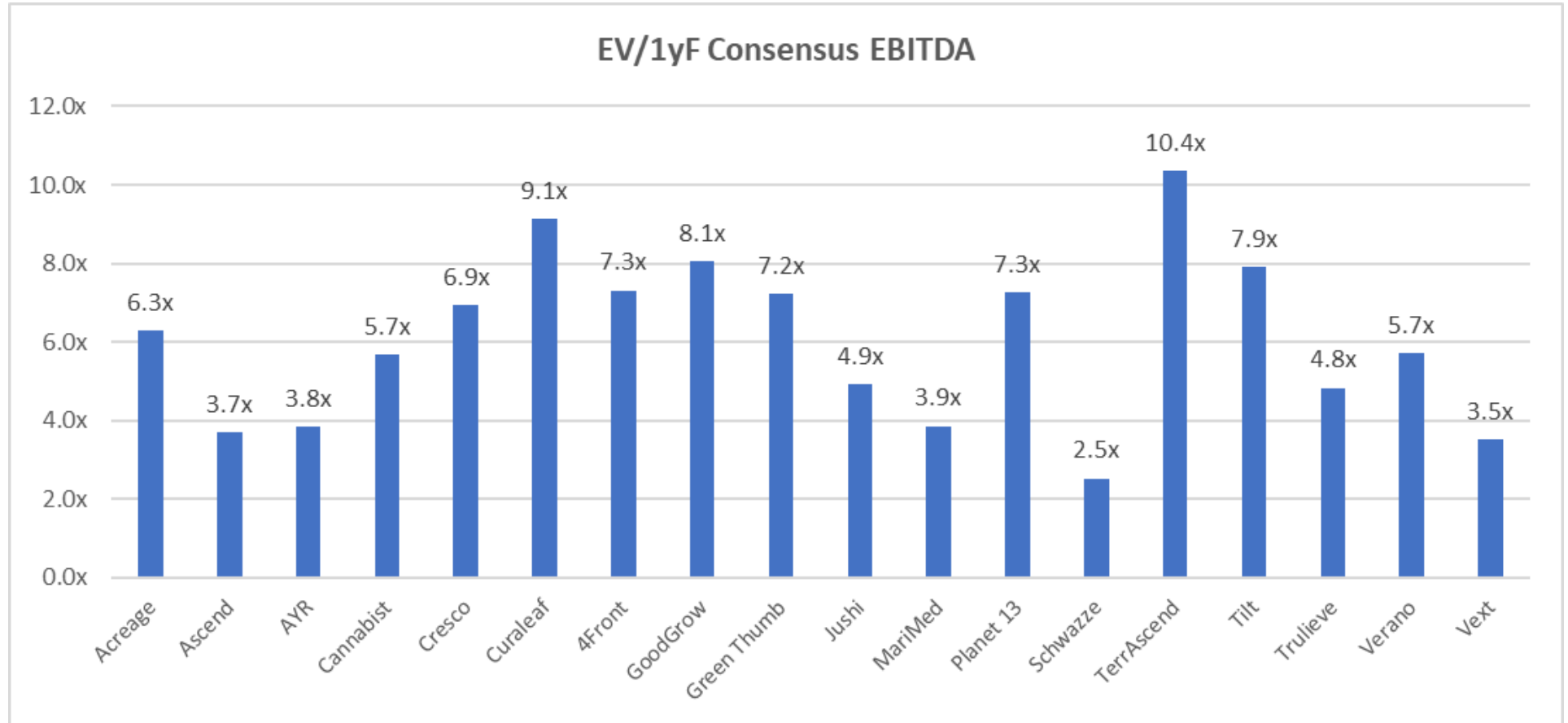


Exhibit 5: MSO EV/Sales Val Comps



Source: FactSet, company reports, and Z&A estimates

Exhibit 6: MSO EV/EBITDA Val Comps



Source: FactSet, company reports, and Z&A estimates

Exhibit 7: Valuation Comps – Part I

US\$Mn		10/19/2023		Mkt				Consensus				Cons		Net debt		
Company name		Ticker	Listing	Price	Cap	(mn)	Net	Ent	Last Qtr Annualized		1yr Forward Consensus		1yF Estimates (US\$Mn)		EBITDA	to Cons
				US\$	US\$MN	Shares	(Debt)	Value	EV/Sales	EV/EBITDA	EV/Sales	EV/EBITDA	Sales	EBITDA	mgn %	1yF EBITDA
US MSOs									1.4x		1.3x		5.8x			
4Front Ventures Corp.	FFNTF	US OTC	0.22	143	648.6	-79	222	1.8x	27.9x	1.7x	7.3x	133	30	23%	-2.6x	
Acreage Holdings, Inc. Class D	ACRDF	US OTC	0.24	33	138.1	-214	247	1.1x	9.0x	1.1x	6.3x	235	39	17%	-5.4x	
Ascend Wellness Holdings LLC Cl.	AAWH	US OTC	0.92	196	212.9	-242	437	0.9x	5.1x	0.8x	3.7x	551	118	21%	-2.0x	
Ayr Wellness, Inc.	AYRWF	US OTC	1.77	136	77.2	-379	515	1.1x	4.4x	1.0x	3.8x	527	134	26%	-2.8x	
C21 Investments Inc	CXXIF	US OTC	0.27	33	120.0	0	33	na	na	na	na	na	na	na	na	
Cannabist Company Holdings Inc	CCHWF	US OTC	0.75	314	419.3	-290	605	1.2x	7.4x	1.1x	5.7x	561	107	19%	-2.7x	
Cresco Labs, Inc.	CRLBF	US OTC	1.72	749	436.5	-415	1,164	1.5x	7.2x	1.5x	6.9x	771	168	22%	-2.5x	
Curaleaf Holdings, Inc.	CURLF	US OTC	3.72	2,673	718.7	-489	3,162	2.3x	11.3x	2.2x	9.1x	1,420	347	24%	-1.4x	
Glass House Brands Inc	GLASF	US OTC	4.15	-4	-1.0	-44	40	na	na	0.2x	1.4x	168	29	17%	-1.5x	
Gold Flora Corporation	GRAMF	US OTC	0.11	32	288.4	14	18	0.1x	na	na	na	na	na	na	na	
Goodness Growth Holdings, Inc.	GDNSF	US OTC	0.16	23	143.1	-124	147	1.8x	12.9x	1.5x	8.1x	97	18	19%	-6.8x	
Green Thumb Industries Inc.	GTBIF	US OTC	9.35	2,232	238.8	-141	2,373	2.4x	6.6x	2.2x	7.2x	1,085	329	30%	-0.4x	
iAnthus	ITHUF	US OTC	0.02	140	6,459.8	-146	286	1.8x	-166.2x	na	na	na	na	na	na	
Jushi Holdings Inc Class B	JUSHF	US OTC	0.79	155	196.6	-141	296	1.1x	5.9x	1.0x	4.9x	300	60	20%	-2.3x	
Lowell Farms Inc	LOWLF	US OTC	0.26	3	12.2	-55	58	na	na	na	na	na	na	na	na	
MariMed Inc	MRMD	US OTC	0.36	134	371.6	-38	172	1.2x	6.8x	1.0x	3.9x	170	45	26%	-0.9x	
Planet 13 Holdings Inc	PLNHF	US OTC	0.75	168	222.2	40	128	1.2x	-54.7x	0.9x	7.3x	149	18	12%	2.2x	
Red White & Bloom Brands, Inc.	RWBIF	US OTC	0.04	20	469.5	-142	162	na	na	na	na	na	na	na	na	
Schwazze	SHWZ	US OTC	0.68	48	70.6	-136	184	1.1x	3.3x	0.9x	2.5x	215	73	34%	-1.9x	
StateHouse Holdings Inc	STHZF	US OTC	0.05	13	256.3	-126	138	1.4x	54.4x	na	na	na	na	na	na	
TerrAscend Corp.	TSNDF	US OTC	1.86	652	350.5	-186	838	2.9x	16.3x	2.3x	10.4x	359	81	23%	-2.3x	
The Greenrose Holding Company	GNRS	US OTC	0.00	0	16.1	-98	98	na	na	na	na	na	na	na	na	
TILT Holdings, Inc.	TLTTF	US OTC	0.04	17	378.5	-53	69	0.4x	11.3x	0.4x	7.9x	183	9	5%	-6.0x	
Trulieve Cannabis Corp.	TCNNF	US OTC	4.99	928	186.0	-631	1,559	1.4x	5.0x	1.4x	4.8x	1,137	323	28%	-2.0x	
Verano Holdings Corp. Class A	VRNOF	US OTC	4.50	1,545	343.4	-318	1,863	2.0x	6.5x	1.8x	5.7x	1,019	326	32%	-1.0x	
Vext Science, Inc.	VEXTF	US OTC	0.20	31	151.1	-35	65	1.8x	15.6x	1.1x	3.5x	62	19	30%	-1.9x	

Source: FactSet, company reports, and Z&A estimates



Exhibit 8: Valuation Comps – Part II

US\$Mn Company name	Ticker	Listing	10/19/2023	Mkt			Ent	Last Qtr Annualized		1yr Forward Consensus		Consensus		Cons	Net debt
			Price US\$	Cap US\$MN	(mn) Shares	Net (Debt)		Value	EV/Sales	EV/EBITDA	EV/Sales	EV/EBITDA	1yF Estimates (US\$Mn)		EBITDA mgn %
Canada															
Aleafia Health, Inc.	ALEAF	US OTC	0.02	6	403.2	-33	39	0.3x	57x	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Aurora Cannabis Inc.	ACB	NASDAQ	0.47	187	394.7	36	151	0.7x	24x	0.7x	8.9x	208	17	8%	2.1x
Auxly Cannabis Group Inc.	CBWTF	US OTC	0.01	15	1,265.9	-134	149	2.0x	52x	1.4x	-106.4x	107	-1	-1%	95.7x
Avant Brands Inc	AVTBF	US OTC	0.13	33	260.8	-6	39	1.6x	7.8x	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
BZAM Ltd	BZAMF	US OTC	0.10	18	181.0	-25	44	0.8x	-2.4x	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Canopy Growth Corporation	CGC	NASDAQ	0.56	402	718.9	-352	754	2.3x	-4.4x	2.5x	-10.2x	299	-74	-25%	4.8x
Cronos Group Inc	CRON	NASDAQ	1.80	698	388.9	839	-141	-1.9x	2.2x	-1.6x	5.0x	90	-28	-31%	-29.6x
Decibel Cannabis Company Inc	DBCCF	US OTC	0.11	46	409.0	-29	75	0.8x	3.5x	0.5x	2.1x	137	36	27%	-0.8x
Entourage Health Corp	ETRGF	US OTC	0.01	4	306.7	-91	96	na	na	na	na	na	na	na	na
High Tide, Inc.	HITI	NASDAQ	1.58	121	76.9	-9	131	1.4x	41.4x	0.2x	3.6x	542	36	7%	-0.3x
Nova Cannabis Inc	NVACF	US OTC	0.45	26	57.2	-5	31	0.2x	1.9x	na	na	na	na	na	na
OrganiGram Holdings Inc	OGI	NASDAQ	1.13	92	81.7	39	53	0.5x	-6.2x	0.4x	4.7x	128	11	9%	3.4x
Rubicon Organics, Inc.	ROMJF	US OTC	0.33	21	63.1	59	-38	-1.1x	-7.2x	-0.7x	-3.7x	52	10	20%	5.8x
SNDL Inc.	SNDL	NASDAQ	1.51	376	248.8	162	214	0.3x	32.9x	0.3x	10.3x	707	21	3%	7.8x
Tilray Brands, Inc.	TLRY	NASDAQ	2.00	1,403	703.3	-131	1,534	8.3x	69.0x	1.9x	19.6x	814	78	10%	-1.7x
Village Farms International, Inc.	VFF	NASDAQ	0.74	82	110.2	-23	105	0.3x	5.9x	0.4x	10.2x	292	10	4%	-2.3x

Source: FactSet, company reports, and Z&A estimates



Exhibit 9: Valuation Comps – Part III

US\$Mn	Company name	Ticker	Listing	10/19/2023	Mkt			Ent	Last Qtr Annualized	1yr Forward Consensus	Consensus		Cons	Net debt	
				Price	Cap	(mn)	Net				1yF Estimates (US\$Mn)	EBITDA	to Cons		
			US\$	US\$MN	Shares	(Debt)	Value	EV/Sales	EV/EBITDA	EV/Sales	EV/EBITDA	Sales	EBITDA	mgn %	1yF EBITDA
Service Providers															
	AFC Gamma, Inc.	AFCG	NASDAQ	11.36	231	20.4	-17	248	<i>finco</i>	3.6x	#N/A	69	#N/A	#N/A	#N/A
	Chicago Atlantic Real Estate Finance, Inc.	REFI	NASDAQ	14.57	259	17.8	-52	311	<i>finco</i>	5.1x	#N/A	61	#N/A	#N/A	#N/A
	Innovative Industrial Properties Inc	IIPR	NYSE	76.69	2,145	28.0	-14	2,159	<i>finco</i>	7.0x	8.8x	307	246	80%	-0.1x
	NewLake Capital Partners, Inc.	NLCP	US OTC	13.67	293	21.4	42	251	<i>finco</i>	5.5x	#N/A	46	#N/A	#N/A	#N/A
	RiverNorth Opportunities Fund, Inc.	RIV	NYSE	10.00	215	21.5	34	180	<i>finco</i>	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	SHF Holdings Inc Class A	SHFS	NASDAQ	0.70	17	23.7	7	9	<i>finco</i>	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	Silver Spike Investment Corp.	SSIC	NASDAQ	9.31	58	6.2	85	-27	<i>finco</i>	-1.7x	#N/A	15	#N/A	#N/A	#N/A
	Leafly Holdings, Inc.	LFly	NASDAQ	7.71	17	2.2	-4	20	<i>tech</i>	0.4x	-10.7x	46	-2	-4%	1.9x
	SpringBig Holdings, Inc.	SBIG	US OTC	0.11	3	26.7	-6	8	<i>tech</i>	0.2x	4.3x	34	2	6%	-2.8x
	WM Technology, Inc. Class A	MAPS	NASDAQ	1.24	202	163.7	25	178	<i>tech</i>	0.9x	6.6x	203	27	13%	0.9x
	Greenlane Holdings, Inc. Class A	GNLN	NASDAQ	0.59	1	1.6	-8	9	<i>parts</i>	0.1x	-36.8x	104	0	0%	32.7x
	GrowGeneration Corp.	GRWG	NASDAQ	2.33	142	61.0	23	119	<i>pix & shovel</i>	0.5x	-35.5x	230	-3	-1%	-6.9x
	Hydrofarm Holdings Group, Inc.	HYFM	NASDAQ	1.09	49	45.2	-165	214	<i>pix & shovel</i>	0.9x	21.4x	238	10	4%	-16.5x
	Scotts Miracle-Gro Company Class A	SMG	NYSE	48.88	2,713	55.5	-3,183	5,896	<i>pix & shovel</i>	1.6x	11.2x	3,580	525	15%	-6.1x
	urban-gro Inc	UGRO	NASDAQ	1.18	13	10.8	6	7	<i>pix & shovel</i>	0.1x	-13.1x	111	-1	0%	-10.1x
CBD, CPG, Pharma, International															
	Charlotte's Web Holdings, Inc.	CWBHF	US OTC	0.26	39	152.1	9	30	<i>CBD</i>	0.4x	-4.0x	80	-7	-9%	-1.2x
	Clever Leaves Holdings, Inc.	CLVR	NASDAQ	2.78	4	1.5	4	0	<i>CBD</i>	0.0x	0.0x	28	-6	-21%	-0.6x
	CV Sciences, Inc.	CVSI	US OTC	0.04	6	152.1	-1	7	<i>CBD</i>	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	Turning Point Brands Inc	TPB	NYSE	22.50	393	17.5	-314	707	<i>CPG</i>	1.7x	7.6x	421	93	22%	-3.4x
	IM Cannabis Corp	IMCC	NASDAQ	0.59	4	7.6	-7	11	<i>Intl</i>	0.3x	4.2x	45	3	6%	-2.5x
	InterCure Ltd.	INCR	NASDAQ	1.22	56	45.6	-2	58	<i>Intl</i>	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	Ispire Technology, Inc.	ISPR	NASDAQ	9.11	494	54.2	45	449	<i>Intl</i>	1.9x	14.0x	239	32	13%	1.4x
	Little Green Pharma Ltd.	LGPPF	US OTC	#N/A	#N/A	297.9	0	#N/A	<i>Intl</i>	#N/A	#N/A	41	4	10%	0.0x
	PharmaCielo Ltd.	PCLOF	US OTC	0.19	30	155.0	-9	39	<i>Intl</i>	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	Smooere International Holdings Limited	SMORF	US OTC	0.77	4,669	6,078.2	2,106	2,564	<i>Intl</i>	0.2x	1.0x	15,170	2,681	18%	0.8x
	Jazz Pharmaceuticals Public Limited Compar	JAZZ	NASDAQ	134.01	8,471	63.2	-4,936	13,407	<i>pharma</i>	3.3x	7.1x	4,009	1,902	47%	-2.6x

Source: FactSet, company reports, and Z&A estimates

Exhibit 10: Valuation Comps – Part III

10/19/2023	Stock Performance		
Ticker	Last 30d	Last 90d	Last 12mo
US MSOs			
FFNTF	-8%	50%	-43%
ACRDF	-53%	19%	-82%
AAWH	-20%	45%	-49%
AYRWF	-38%	77%	-54%
CXXIF	-26%	-13%	24%
CCHWF	-44%	74%	-51%
CRLBF	-29%	0%	-47%
CURLF	-28%	4%	-32%
GLASF	-9%	37%	28%
GRAMF	-31%	-31%	-73%
GDNSF	-15%	6%	-56%
GTBIF	-17%	31%	-14%
ITHUF	0%	0%	0%
JUSHF	-2%	67%	-46%
LOWLF	-34%	-26%	-84%
MRMD	-28%	-9%	-37%
PLNHF	-14%	34%	-39%
RWBYF	-15%	-7%	-41%
SHWZ	-29%	-29%	-51%
STHZF	-19%	61%	-77%
TSNDF	-13%	16%	22%
GNRS	-97%	-100%	-100%
TLLTF	-29%	27%	-61%
TCNNF	-31%	15%	-52%
VRNOF	-10%	53%	-9%
VEXTF	3%	3%	-1%

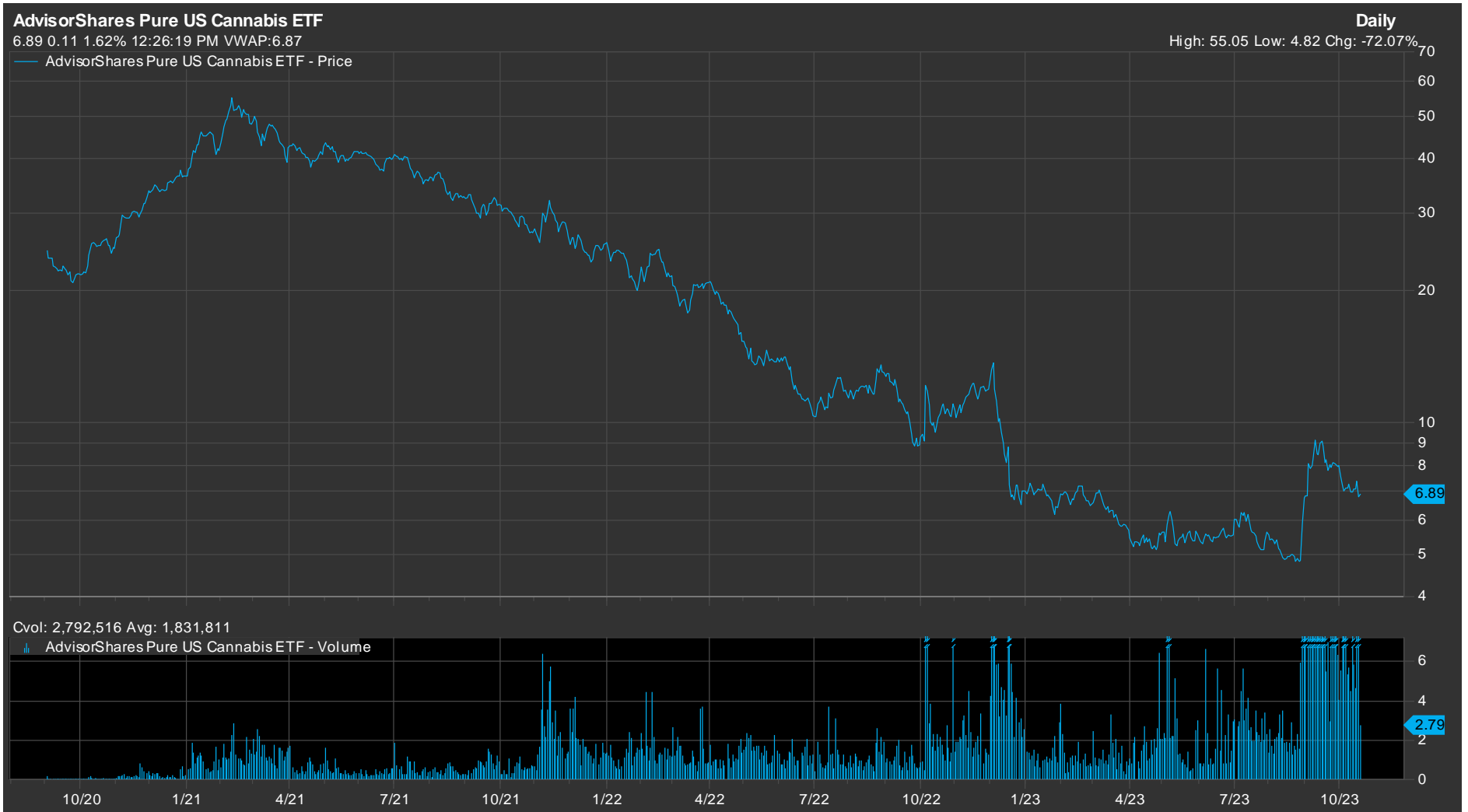
	Stock Performance		
Ticker	Last 30d	Last 90d	Last 12mo
Canada			
ALEAF	#N/A	8%	-56%
ACB	-45%	-10%	-58%
CBWTF	-2%	-20%	-67%
AVTBF	-11%	-17%	-33%
BZAMF	-20%	-27%	-80%
CGC	-51%	44%	-78%
CRON	-20%	-4%	-39%
DBCCF	-10%	28%	106%
ETRGF	-5%	-14%	-39%
HITI	-12%	27%	7%
NVACF	-22%	9%	-18%
OGI	-30%	-16%	-69%
ROMJF	-14%	-7%	-37%
SNDL	-25%	10%	-32%
TLRY	-22%	21%	-41%
VFF	-19%	25%	-63%
CBD, CPG, Pharma, International			
CWBHF	-32%	7%	-65%
CLVR	-24%	-58%	-81%
CVSI	-16%	-18%	-4%
TPB	-5%	-10%	8%
IMCC	-10%	-30%	-86%
INCR	-28%	-26%	-75%
ISPR	-6%	-6%	#N/A

	Stock Performance		
Ticker	Last 30d	Last 90d	Last 12mo
Service Providers			
AFCG	-13%	-13%	-30%
AGFY	-15%	-9%	-97%
REFI	-6%	-5%	-2%
IIPR	-11%	-3%	-20%
NLCP	-4%	-6%	-10%
PW	-39%	-59%	-93%
RIV	-8%	-11%	-17%
SHFS	-10%	33%	-78%
SSIC	-1%	13%	-9%
LFLY	-33%	30%	-45%
SBIG	-21%	-69%	-90%
MAPS	-21%	24%	-31%
GNLN	-31%	-38%	-97%
GRWG	-32%	-36%	-35%
HYFM	-25%	-7%	-54%
SMG	-9%	-28%	6%
UGRO	-12%	-16%	-70%
CBD, CPG, Pharma, International			
LGPPF	#N/A	#N/A	#N/A
PCLOF	-4%	70%	-33%
SMORF	-17%	-26%	-32%
JAZZ	1%	5%	-1%

Source: FactSet, company reports, and Z&A estimates



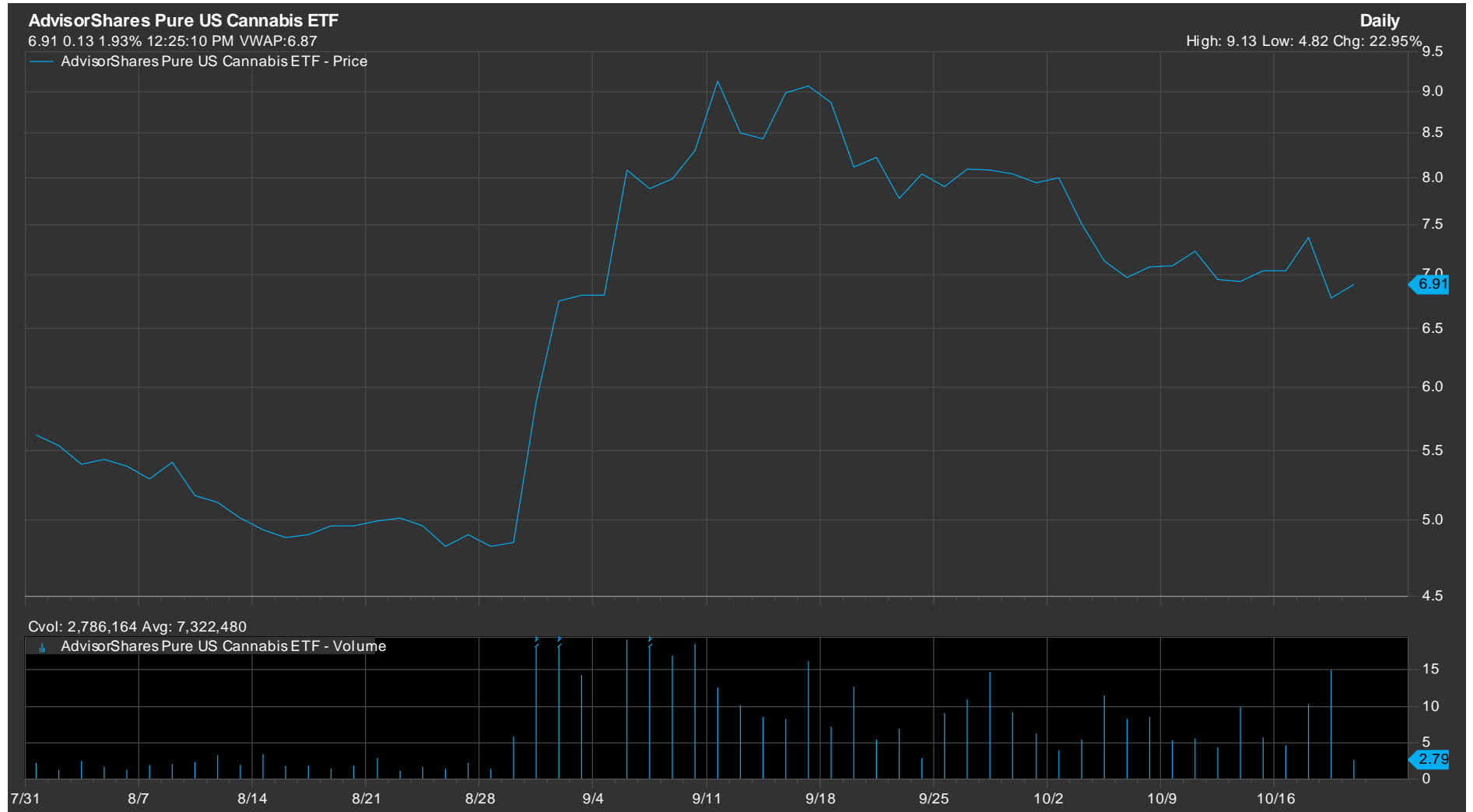
Exhibit 11: MSOS ETF since 7/31/20



Source: FactSet, company reports, and Z&A estimates



Exhibit 12: MSOS ETF since 7/31/23



Source: FactSet, company reports, and Z&A estimates



Appendix IV: Bio and Disclaimers



Analyst Bio

Pablo Zuanic is a well-known and highly rated equity analyst following the cannabis and psychedelics sector. Over the past four years he launched coverage of over 35 companies (MSOs, LPs, CBD, ancillary, psychedelics), kept close track of sectoral trends, and followed the reform process in the US and elsewhere. His firm Zuanic & Associates publishes equity research on the cannabis and psychedelics sectors, both from a macro/sectoral level in a thematic manner, as well as specific reports on listed stocks. The research service is aimed at institutional investors and corporations. The firm is also available for short term consulting and research advisory projects (www.zuanicassociates.com). At various points in his career, Pablo was II ranked and called as expert witness in industry investigations. He has a deep global background having covered stocks over the past 20 years in the US, Europe, Latin America, and Asia, across consumer sub sectors. Prior employers include JP Morgan, Barings, and Cantor Fitzgerald. An MBA graduate of Harvard Business School, he started his career as a management consultant, which brings a strategic mindset to his approach to equity research. Pablo can be contacted at pablo.zuanic@zuanicgroup.com.



Disclosures and Disclaimers

About the firm: Zuanic & Associates is a domestic limited liability company (LLC) registered in the state of New Jersey. The company's registered address is Five Greentree Centre, 525 Route 73, N Suite 104, Marlton, New Jersey 08053, USA. Pablo Zuanic is the registered agent. The firm publishes equity research on selected stocks in the cannabis and psychedelics sector, as well as thematic macro industry notes. The firm also provides consulting and advisory services. Potential conflicts of interest are duly reflected in the respective specific company reports.

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