

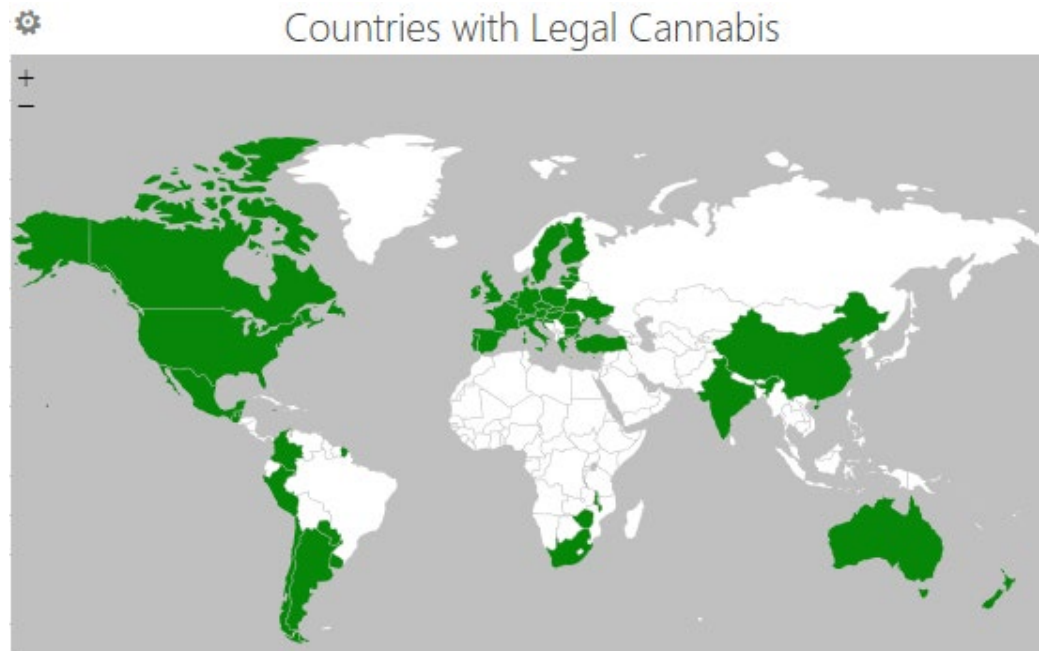
Oregon Cannabis and Hemp Update

A Briefing for Oregon Legislators

Beau R. Whitney, Chief Economist
Whitney Economics
February 14, 2023

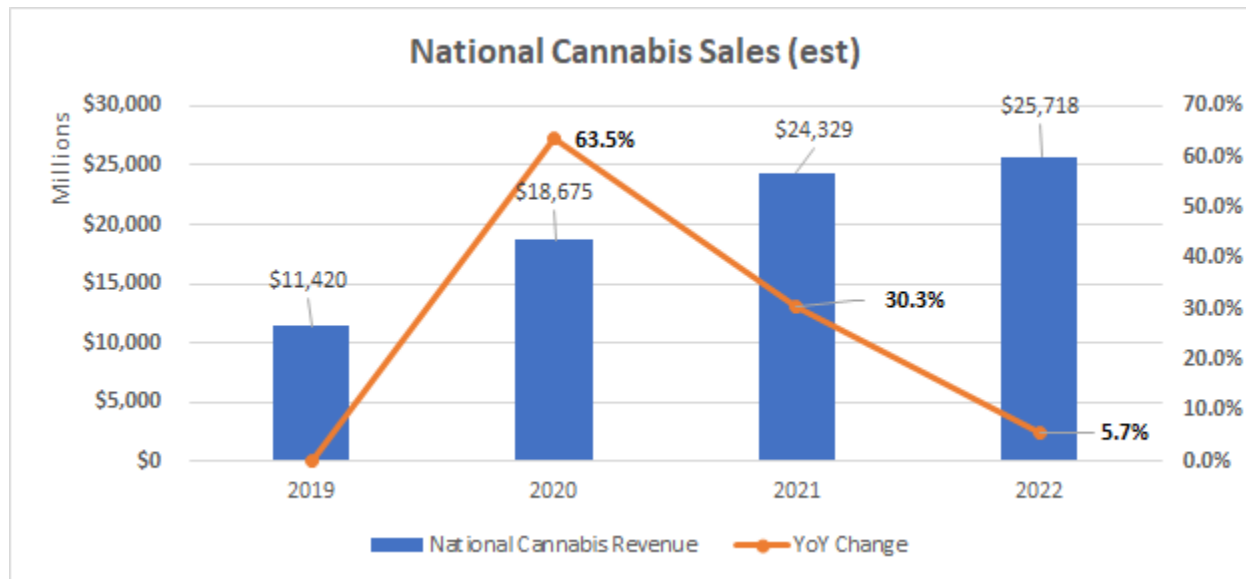
Global Cannabis Reform is Increasing

- Cannabis is a global industry. The pace of reform is accelerating, driving increased international opportunities.
- Cannabis for industrial purposes is legal in over 65 countries as more governments see the value of cannabis from an economic development perspective.
- Current U.S. regulatory policies are a threat to U.S. global competitiveness.



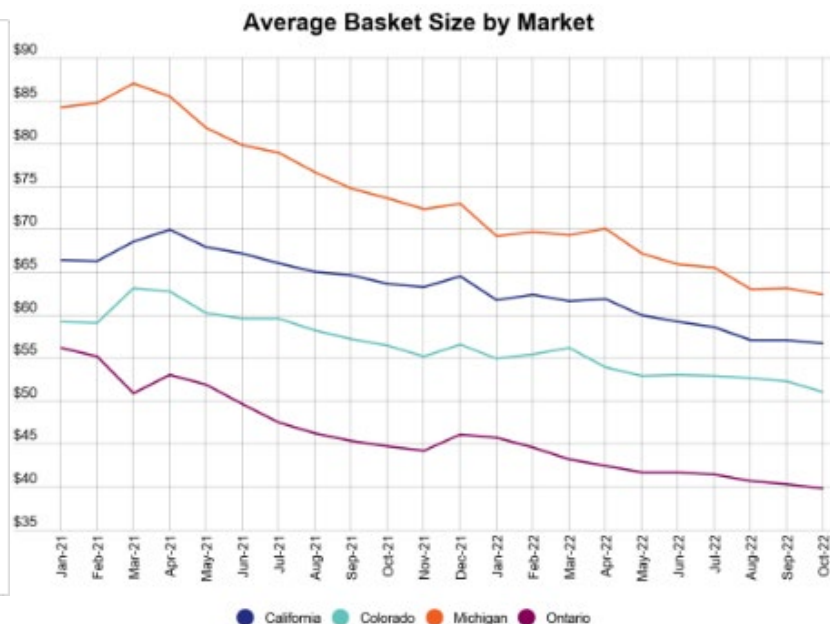
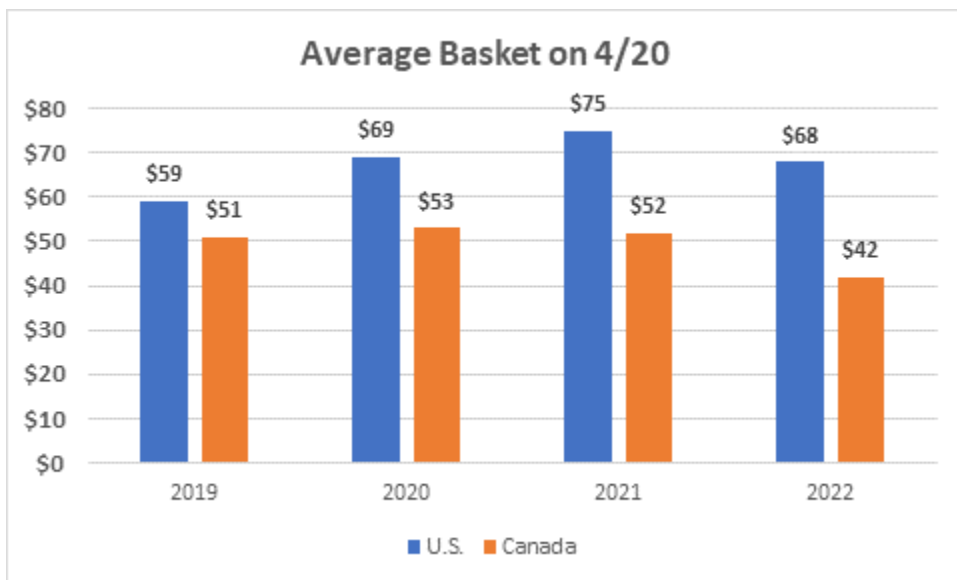
U.S. Update

- The total 2022 legal cannabis demand for the U.S. is from \$25.7 billion - \$26.1 billion with \$81.6 billion by 2030.
- Growth in the U.S. will be based on new market deployments (NY, NJ, etc).
- Covid surge is over, demand growth has returned to 2019 pattern. (No “New Normal”)
- Inflation starting to impact ramps in new markets due to higher start up costs.



Inflation Taking a Bite out of Demand

- Initial demand decline in Q1/Q2 was due to back to work policy changes.
 - Basket amounts consistent with other years
- In Q4, basket prices are starting to weaken, as sign that consumers are trading down, not adding to.

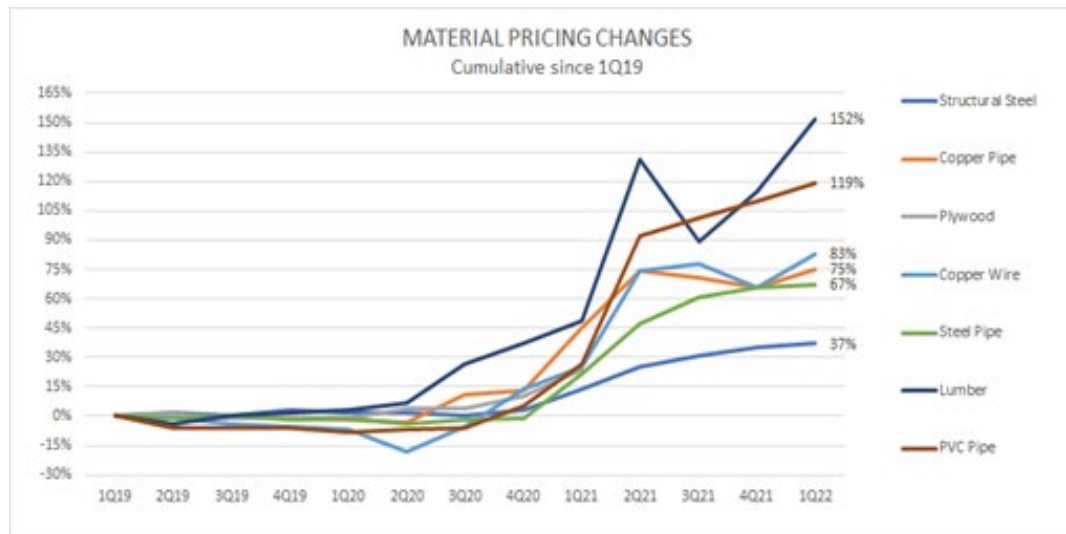


Source: https://www.covasoftware.com/blog/420_sales_and_profit_infographic_2022

Source: Headset

Inflation Impacting Start-Ups

- With higher costs for construction and building materials, inflation is impacting the pace of new entrants into the market.
- Average inflation 25% - 40% for build outs
- Increases in interest rates also impacting emerging markets.
- On a \$2M loan, every 1% increase in interest rates results in \$20k per year in interest payments. Current 4.5% rise equates to \$90k more in interest.



Source: Mortenson Cost Index, Portland

Demand Declines Seen in Mature States

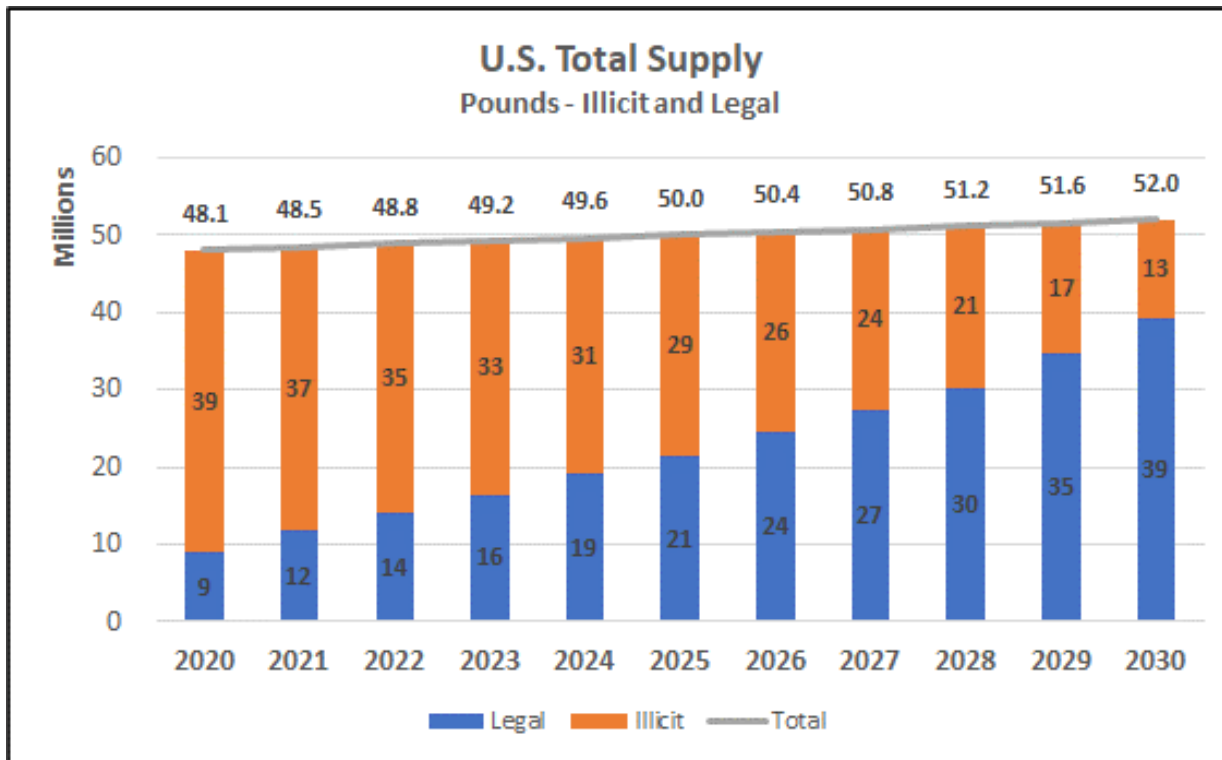
- Multiple states are experiencing negative growth for the first time in 2022.
 - Colorado, California, Oregon, Washington
- Demand growth from newly emerging markets.
 - Illinois, Massachusetts, Michigan

State	2019	2020	2021 Total	2022 Projections - Mid	2022 Projections - High
California	\$2,718,097,121	\$4,102,680,990	\$5,026,311,046	\$4,750,000,000	\$4,875,000,000
Colorado	\$1,770,000,000	\$2,280,814,000	\$2,228,994,554	\$1,775,000,000	\$1,810,000,000
Oregon	\$803,500,000	\$1,109,959,000	\$1,183,328,939	\$990,000,000	\$1,000,000,000
Washington	\$1,211,547,000	\$1,417,649,000	\$1,463,135,998	\$1,250,000,000	\$1,300,000,000

Source: Whitney Economics

U.S. Supply

- California is the largest producer of cannabis, Oregon is second.
- Out of the 48.8 million pounds produced in the U.S. each year, only 32,029 pounds were intercepted in transit by law enforcement (source: ABC News)



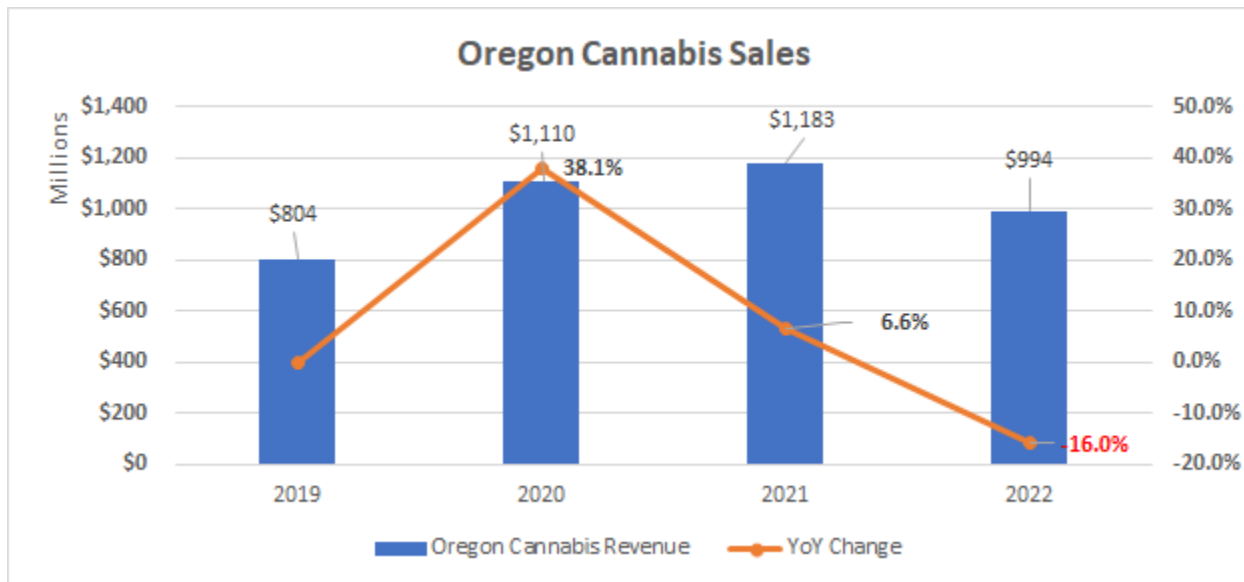
U.S. Supply

- The west coast are the producer states, whereas the east coast are the consumer states.
- Oregon ranks 2nd in production, but nearly 3.4 million pounds is exported to other states.

Rank (2021)	State	Pounds of Total Supply	Rank (2025)	State	Pounds of Total Supply
1	California	22,153,453	1	California	19,105,580
2	Oregon	3,916,979	2	Oregon	3,296,903
3	Colorado	3,269,824	3	Florida	2,972,956
4	Washington	2,649,520	4	Colorado	2,828,272
5	Michigan	2,536,607	5	Michigan	2,671,937
6	Oklahoma	2,127,995	6	Washington	2,392,524
7	Florida	1,749,050	7	Oklahoma	1,784,824
8	Kentucky	1,674,923	8	New York	1,565,740
9	Tennessee	1,674,923	9	Illinois	1,430,107
10	Hawaii	1,022,125	10	Kentucky	1,358,575

Oregon Update

- The total 2022 legal cannabis demand for the Oregon was \$994 million, a decline of **16%** from 2021.
- Oregon is one of the most saturated markets in terms of supply capacity, cultivator and retail operators.
- Approximately 24% of cannabis operators are profitable, leading to economic distortions in the market and increased illicit activities.
- Legal sales represent only 74.8% of the total market, down from 90% in 2021



Illicit to Legal Consumer Conversions

- Oregon Illicit market estimated at \$300 million - \$400 million
- Converting consumers away from the illicit market is a function of both price and access.
- Consumers prefer to purchase products legally and even pay a premium, as long as that premium is not too great.
- If the difference in price of products between illicit market and legal market is too great, consumers will reengage with the illicit market
- In states with high taxes, there is lower participation in the legal market
 - Oregon: 75% - 80% legal participation
 - Washington: 70% - 75% legal participation
 - California: 40%- 45% legal participation

Average Retail Revenue Per Store Indicates Economic Stress

- Declining sales, lower basket amounts and expansion of retail licenses is creating stress at the retail level.
- Most stores require \$2.0 million - \$2.5 million per year to remain viable.
- Oregon ranks among the lowest nationally in terms of average revenue per retailer.
- Expect increased business failure rates and consolidation in Oregon.

State	Qty Retail Licenses	2022 Sales est	Average sales per retailer
Oklahoma	2,759	\$1,405,993,041	\$509,602
Montana	430	\$303,563,880	\$705,963
Maine	205	\$158,713,829	\$774,214
Vermont	18	\$18,877,116	\$1,048,729
Iowa	10	\$10,659,578	\$1,065,958
Oregon	827	\$994,263,018	\$1,202,253
Alaska	157	\$209,201,099	\$1,332,491
Delaware	30	\$41,723,826	\$1,390,794
New Mexico	305	\$441,163,198	\$1,446,437
Colorado	1,066	\$1,768,688,837	\$1,659,183

Source: Whitney Economics

U.S. Market – Supply

- The combination of significant capacity and high cultivator to retailer ratios are impacting the Oregon industry.
- Over supply leads to lower prices, lower margins and economic stress on both retailers and cultivators.
- Wholesale prices at or below production costs.
- Most state regulators do not consider supply in their licensing strategies.
- W.E. can demonstrate with data what level of licensure is appropriate.

State	2022 forecast	Cultivator Licenses	Cultivator per capita
Oklahoma	2,859,782	7,066	405
Montana	809,215	367	2,205
Alaska	597,333	250	2,389
Oregon	3,471,527	1,411	2,460
New Mexico	1,619,866	427	3,794
Colorado	4,625,482	1,215	3,807
California	31,113,152	7,651	4,067
Vermont	568,893	113	5,034
Michigan	8,408,719	1,647	5,105

State	Retail Licenses	Cultivation	Cultivator to Retail Ratio	Rank
Rhode Island	6	66	11.00	1
Vermont	18	113	6.28	2
New York	40	244	6.10	3
California	1,830	7,651	4.18	4
Oklahoma	2,759	7,066	2.56	5
Washington	500	1,091	2.18	6
Delaware	30	60	2.00	7
United States	11,591	22,861	1.97	
Oregon	827	1,411	1.71	8
Michigan	1,000	1,647	1.65	9
Nevada	283	456	1.61	10

Source: Whitney Economics

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Supply Saturation Leading to Race to the Bottom

- Oregon, Colorado, California, Michigan are all experiencing over supply and falling prices.
 - California seeing an influx of legacy supply
- Licensees are calling for caps or moratorium on licensure.
- With excess supply, prices are lower and lower margins. This is driving consolidation and exits.
- Retailers are the price makers in saturated states.

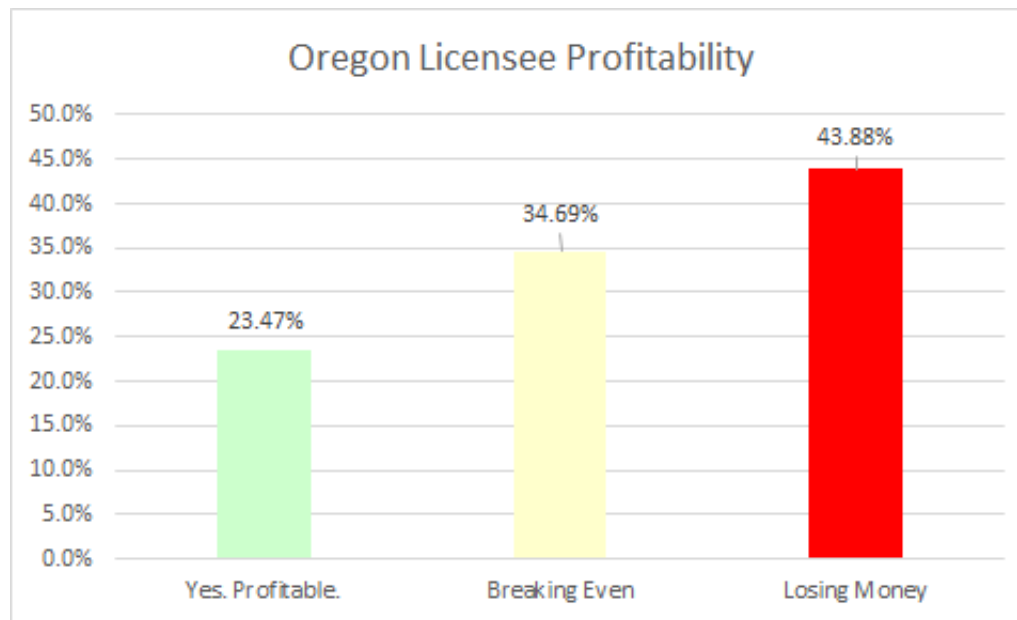
State	Licensed Capacity vs TAM	Utilized Capacity vs TAM
Colorado	1846%	369%
Michigan	270%	108%
Oklahoma	1756%	351%
Oregon	832%	166%
Washington	537%	269%

Source: Whitney Economics

Note: CO, OK, OR based on 20% utilization

Oregon Profitability

- Q4'22 survey indicated that only 23.5% of licensed cannabis responders indicated that they were profitable.
- Policies that impact profitability need to be carefully considered.



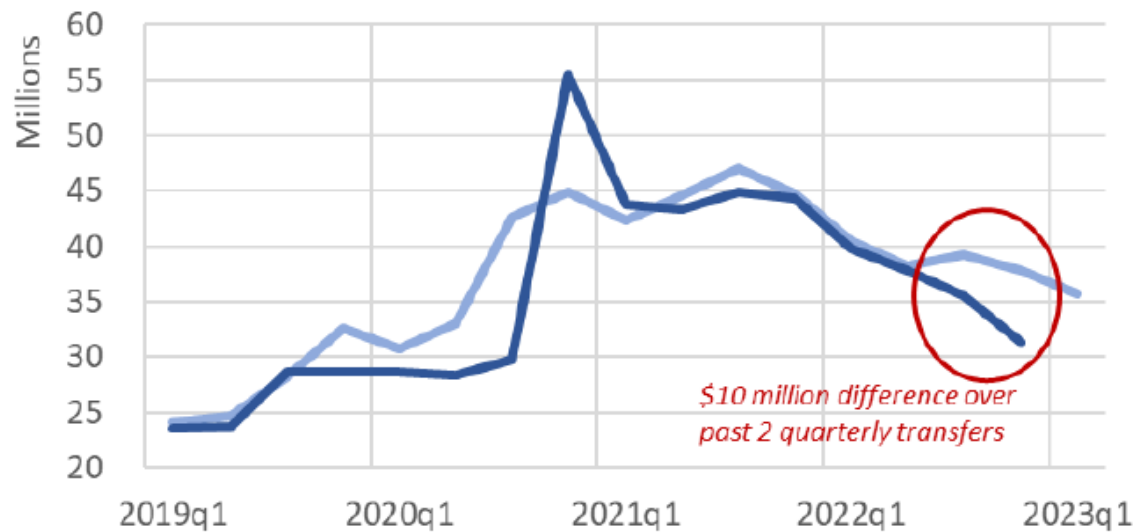
Source: Whitney Economics

Oregon Cannabis Operators in Distress

- With declining revenues, lower margins and high federal taxes, Oregon cannabis operators are in distress.
- The average retailer is \$12k behind on their state sales tax payments.

Oregon Marijuana Tax Collections

Estimated taxes based on OLCC sales *and* actual DOR transfers



Source: Oregon Office of Economic Analysis, Oregon Dept of Revenue

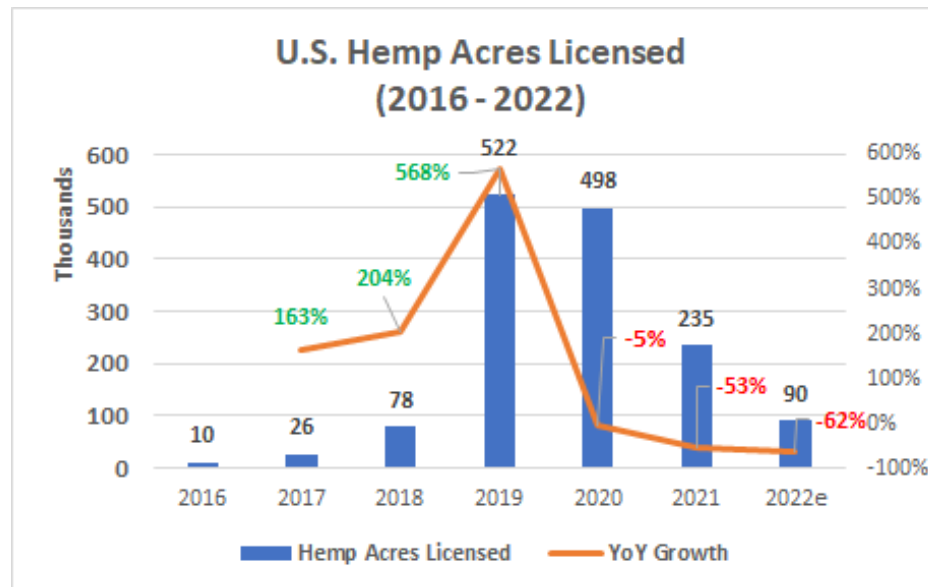
Key Policy Recommendations

- Supply and demand imbalances are negatively impacting the entire market.
- Oregon can either limit the capacity for cultivators in the state or aggressively promote interstate commerce.
- Tax and licensing policies are running contrary to social equity, economic development and agricultural objectives.
- It is critical that tax policy decision also incorporate national, state and local impacts to reduce harm and potential demand destruction, particularly for minority or women owned businesses and small operators.
- Given the lack of profitability, further policy changes that will add additional economic stress require greater scrutiny.
- Cannabis industry is a major source of pollutants. Hemp or plant based alternative plastics are an alternative.
- The demand is fairly stable and predictable. The operators need help.

Hemp

Participation Declining

- Forecasted acres licensed is trending to be at same level as prior to 2018 Farm Bill
- U.S. hemp cultivation capacity increased nearly 575% from 2018 to 2019.
- Hemp acreage licensed declined again in 2022 down another 62%.
- Seeing a shift in percentage of fiber and grain versus CBD/Cannabinoids.



Source: Vote Hemp (2016 – 2018), Whitney Economics (2019 – 2022), Randall Lusson (2021)

U.S. Hemp Update

- Industry participation at the lowest since 2018.
- Inventories are lower leading to stable prices. May actually be too low to sustain growth or existing demand.
- Policy makers view hemp as a drug not realizing there are three major sectors within the hemp industry.
 - Fiber, Grain and Cannabinoids
- Federal regulatory murkiness remains.
- States are trying to fill the void where the federal gaps exist.
- State legislators are deploying a patchwork of laws making it difficult to conduct commerce.
- The upcoming Farm Bill will address much of these issues.

Regulatory Murkiness Remains

- Regulatory uncertainty is currently the greatest risk to the hemp industry.
 - Regulatory uncertainty is impacting the growth of the industry.
 - Still treating hemp like it is illegal. 0.3% line of demarcation.
 - Some changes have traction in upcoming Farm Bill
- Regulators are unable to cope with diversity of uses.
 - Current regulations based on farm gate.
 - Thought leaders suggest regulating the product intention, not the THC content.
 - Some common policy seems appropriate (testing, checking IDs).
- Confusion about CBD policy is impacting Fiber and Grain
 - FDA to allow research from other countries in applications.
- Uncertainty and lack of clarity is creating externalities.
 - Impact of murkiness has lowered potential of fiber and grain by \$20 billion to \$25 billion (in 2021).

The Collapsing Oregon Market

- Regulatory murkiness at the federal level combined with over supply and anti-hemp policy has significantly impact the Oregon Hemp market.
- This trend is accelerating in 2022 and 2023.

Hemp license and acreage data

Year	No. Growers	No. Grow Sites	No. Handlers	No. Outdoor Acres	No. Indoor Acres	Total No. of Acres
2015	13	n/a	13	105	*	105
2016	83	n/a	66	1,200	*	1,200
2017	246	n/a	189	3,000	*	3,000
2018	584	n/a	212	11,514	38	11,552
2019	1,961	6,040	598	63,883	259	64,142
2020	1,811	2,119	595	28,492	250	28,742
2021	875	895	441	8,046	230	8,276
2022 (as of 8/25/22)	289	286	321	3,205	41	3,246

* - Acres were not counted separately for indoors and outdoors in these years.

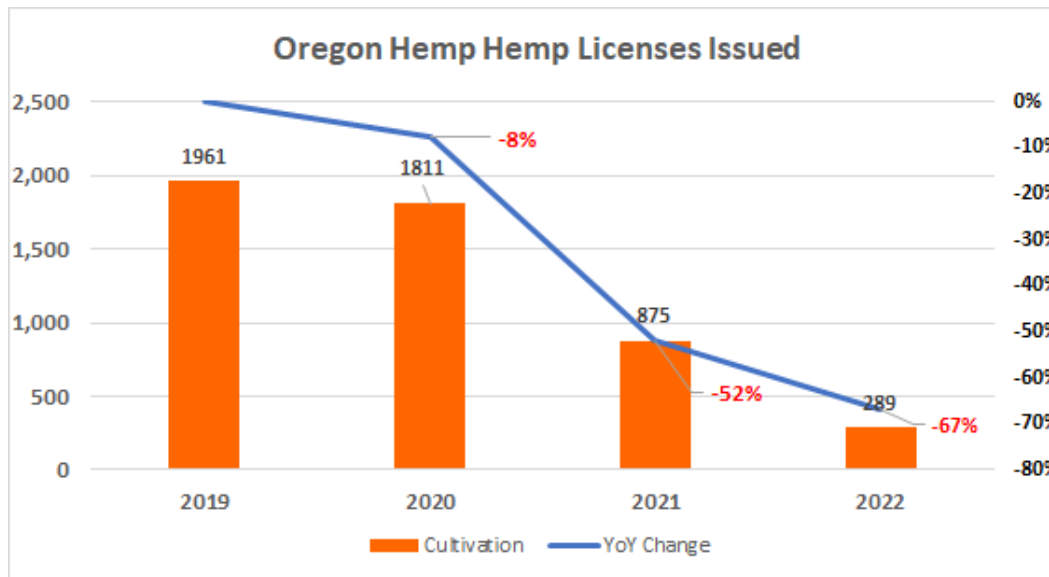
n/a - Licenses did not have grow sites in these years.

Source: Oregon Department of Agriculture, Whitney Economics

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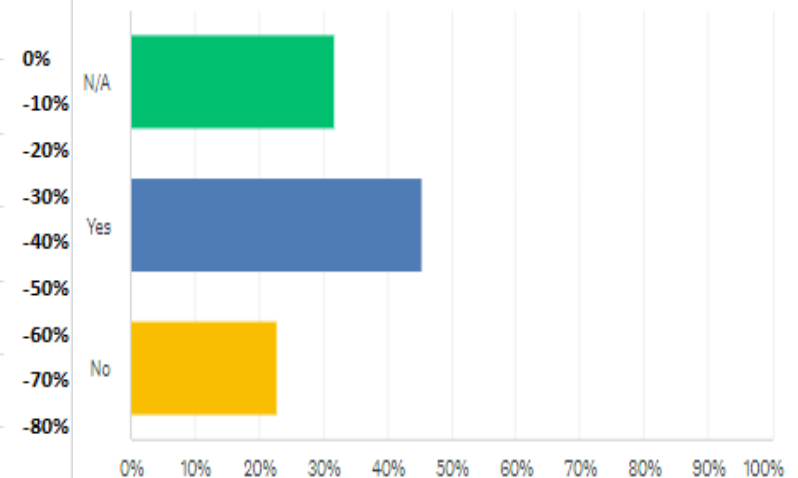
The Collapsing Oregon Market

- Despite opportunities for fiber and grain in some portions of the state, farmers are not participating in the industry.
- Many businesses are moving out of state or closing down.
- One third of cultivators surveyed are not planting.



Source: Oregon Department of Agriculture, Whitney Economics

Oregon Farmers NOT Planting



Source: Whitney Economics, OIHFA Survey

Oregon Hemp Exports

- Oregon Companies export between \$50 million and \$75 million in CBD and CBD Isolates to other states
- Hemp operators and processors found new markets as a result of declining wholesale prices.
- License restrictions in impacting ability to continue this supply
- “Big Cannabis” is a major consumer of Oregon exported materials.
- Policies to support hemp expansion is appropriate.
- Is OLCC the appropriate regulator of hemp based animal feed and hempcrete licensure?

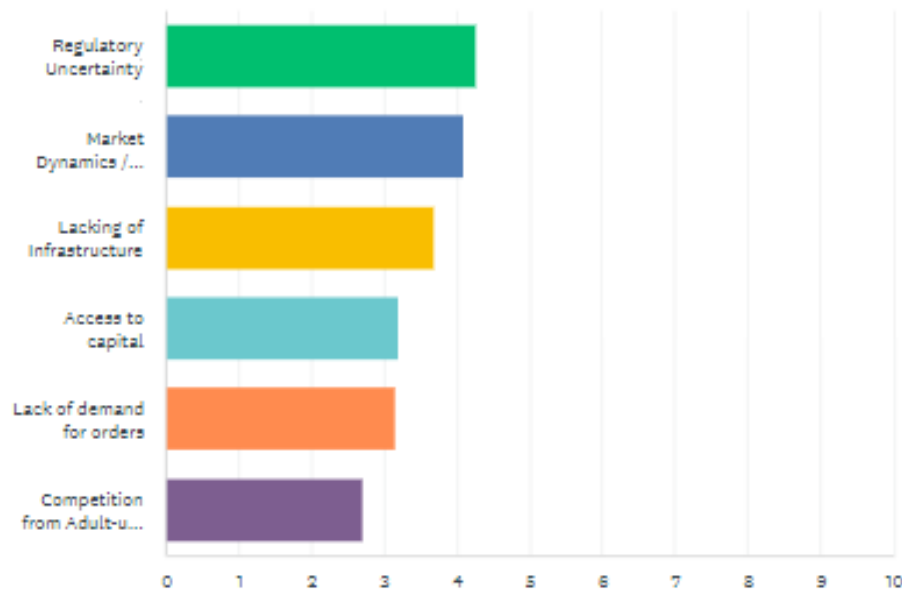
Hemp Moratoriums Will Not Achieve Objectives

- A hemp moratorium will not stem the illicit, cartel driven activities nor will it limit the access to hemp derived cannabinoids.
- Law enforcement and regulatory inspectors already have the tools to ascertain which parcel is legal (Registered with regulatory) versus illegal (Cartel).
- Farmers will not be able to participate in the significant growth associated with fiber and grain demand.
- Hemp offers carbon offset credit opportunities. A moratorium will impact revenue streams for farmers.
- A moratorium will hurt agricultural development and expansion of sustainable industries for U.S. farmers.

National Survey Results

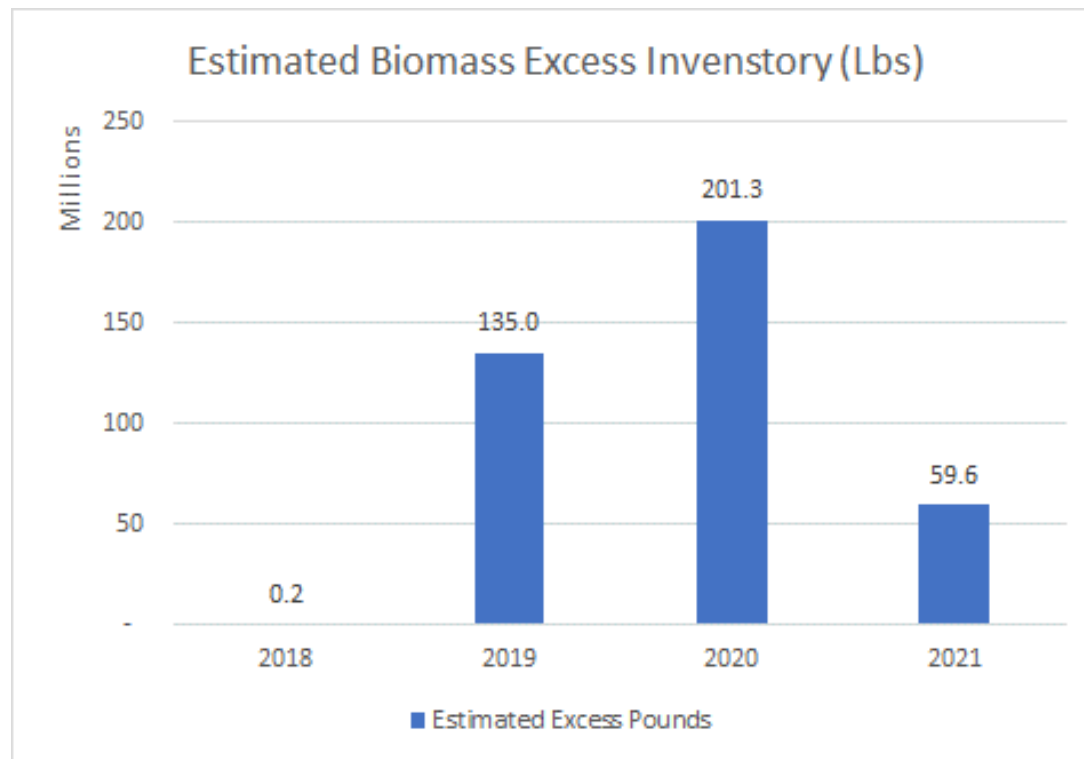
- Regulatory uncertainty is top ranked concern nationwide.
- Regulatory murkiness is suppressing investment into fiber and grain sectors and limiting infrastructure development.

Rank in order your biggest concerns for your business in 2022?



Declining Excesses in the Market is a Good Thing

- Much of the excess inventory has been absorbed. Reduced by 70%
- Most of the excess is carried by large commercial operators.
- Look for prices to stabilize in 2022 and beyond, but also tight supply.

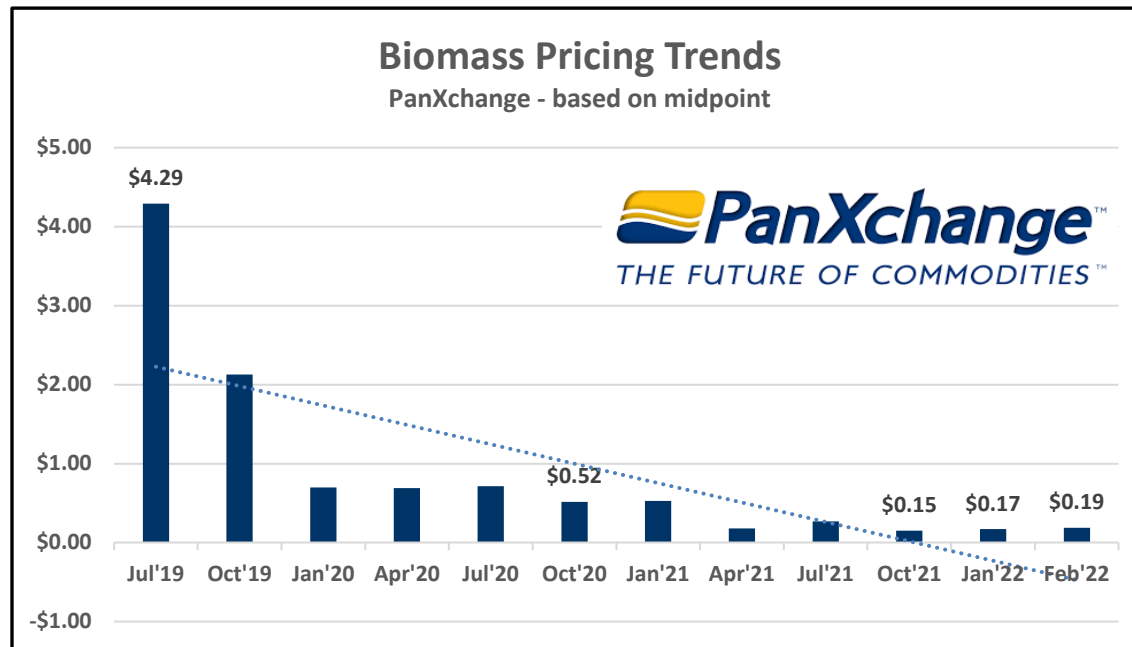


Source: Whitney Economics, National Business Conditions Survey (2022)

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Price Declines Bring Reality to the Market

- Supply excesses resulted in an over supply in the market.
- Prices declined throughout 2019, 2020 and 2021 as a result.
- 2022 prices appear to stabilize.



Source: PanXchange

The Hemp Value Chain

“The future success of the hemp cultivation industry is dependent on how quickly product manufacturing can scale up. New consumer markets must be enabled to that farmers will have a home for their crops.”



Source: Whitney Economics

National Survey Results – Q3 Sentiment

- The industry outlook remains consistent.

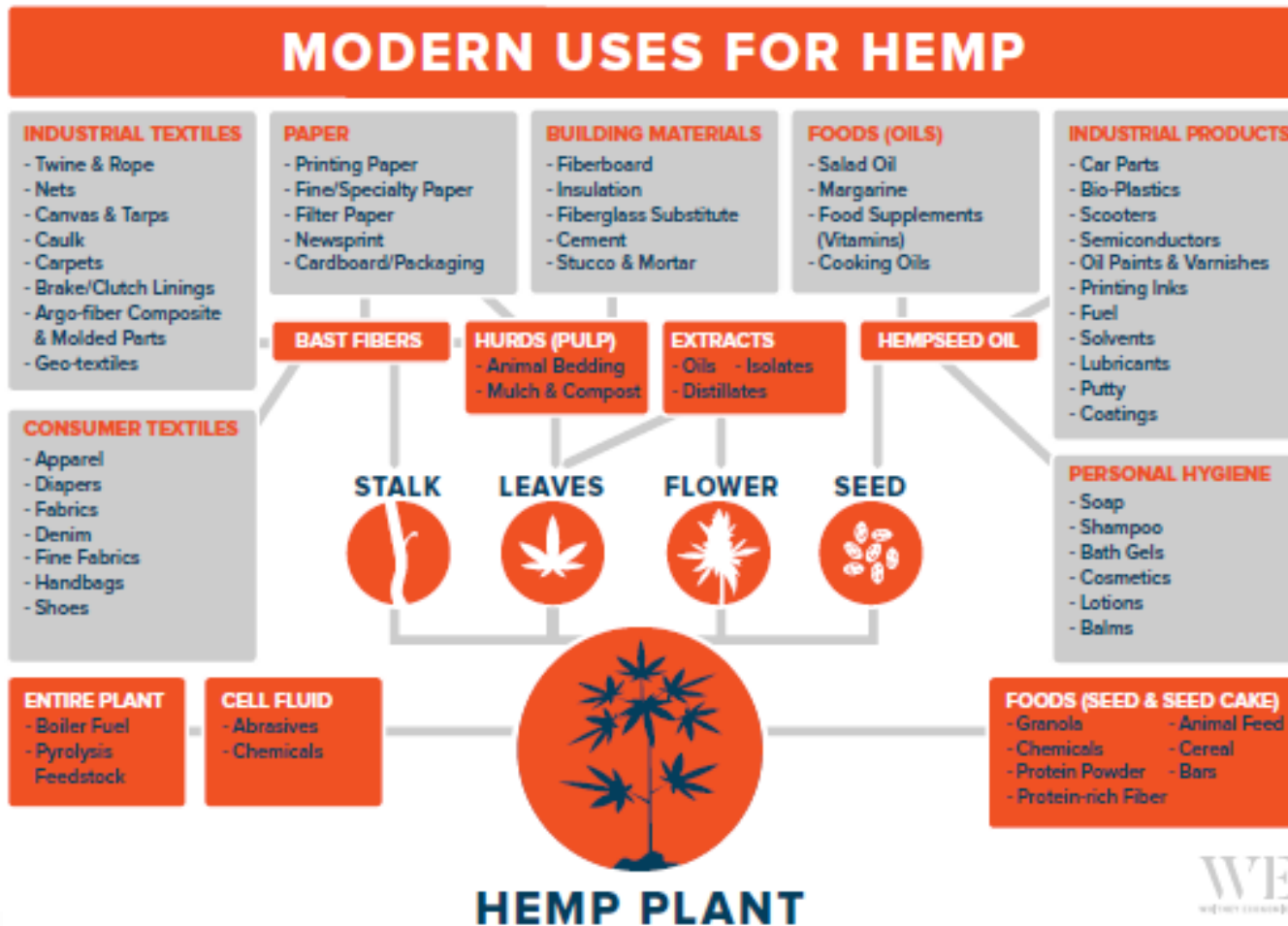
Do you feel you will be able to remain in business for the next 2 years.

No: 57%

Yes: 43%

Source: Whitney Economics

Opportunities in Hemp



Source: credit to "www.torontohemp.com / Toronto Hemp Company (THC) and Jack Herer"



The Potential of Hemp

- Hemp is by no means a “little cousin” to adult-use and medical cannabis.
- The applications of hemp are too numerous to even serve as a basis for comparison.
- With minor market share transitions (realistic) in a limited number of markets, hemp quickly exceeds the global market potential of adult-use and medical cannabis.

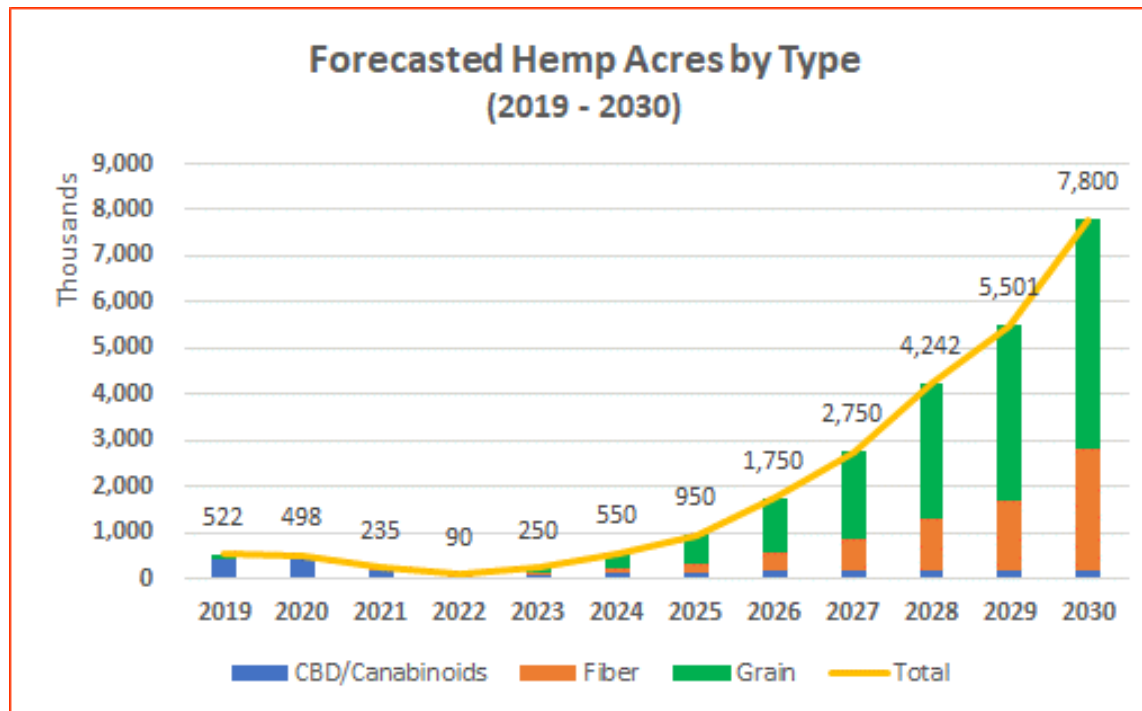
Industry	Global TAM (USD\$ Bil)	Potential Hemp Share	Hemp Value
Automobile parts	\$ 380	20%	\$ 76.0
Textiles	\$ 1,005	5%	\$ 50.3
Concrete Blocks	\$ 1,700	10%	\$ 170.0
Lithium Batteries	\$ 45	10%	\$ 4.5
Plastic Bags	\$ 20	2%	\$ 0.4
Plastic Cutlery	\$ 2	2%	\$ 0.03
CBD Supplements	\$ 25	33%	\$ 8.2
Skin Care	\$ 129	10%	\$ 12.9
Energy Drinks	\$ 53	10%	\$ 5.3
Animal Feed	\$ 448	5%	\$ 22.4
Total -->	\$ 3,807		\$ 350.0

Cannabis Total Addressable Market by Region	
Region	Total - USD Billions
North America	\$112.75
Europe	\$62.87
Asia	\$31.51
Africa	\$11.88
Central and South America	\$8.45
Oceania	\$4.71
Caribbean	\$0.64
Grand Total	\$232.81

Source: Whitney Economics

Regardless of Challenges – Future is Bright

- Short-run forecast is in flux due to state legislatures / bans.
- Hemp fiber and grain will surpass CBD acres licensed by 2023/24.
- Grain: Hemp for animal and human consumption.
- Fiber: Great opportunities in automotive, textiles and construction.



Source: Whitney Economics

The Global Market is Available for U.S. Hemp Operators

- Despite the regulatory murkiness and increased competition from big cannabis, the global markets are opening up for U.S. hemp.
- Big markets in the EU for seed and fiber in addition to cannabinoids.
- Markets are tight there, so it is a good opportunity.
- EU policy is more mature than U.S. policy, key lessons can be learned from the EU.
- W.E. had data and comparative analysis on 30 countries.

Summary

- Cannabis is the tale of two markets and markets within markets.
- Despite their differences, both cannabis and hemp are experiencing economic distress.
- Regulatory and legal uncertainty are currently the greatest risks to investors and operators.
- The future is bright for hemp, while cannabis remains murky.

Contact

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About Whitney Economics

Beau Whitney, Cannabis Operations and Supply Chain Expert

Beau Whitney is the founder and Chief Economist at Whitney Economics, a global leader in cannabis and hemp business consulting, data and economic research.

Serving an international clientele, Beau is considered one of the leading cannabis economists in the U.S. and globally. His applications of economic principles to create actionable operational and policy recommendations have been recognized by governments, and throughout the economic, investment, business communities.

Beau has provided policy recommendations at the state, national and international levels and is considered an authority on cannabis economics and the supply chain.

Backup Slides

The Impact of 280E:

An Oregon Example

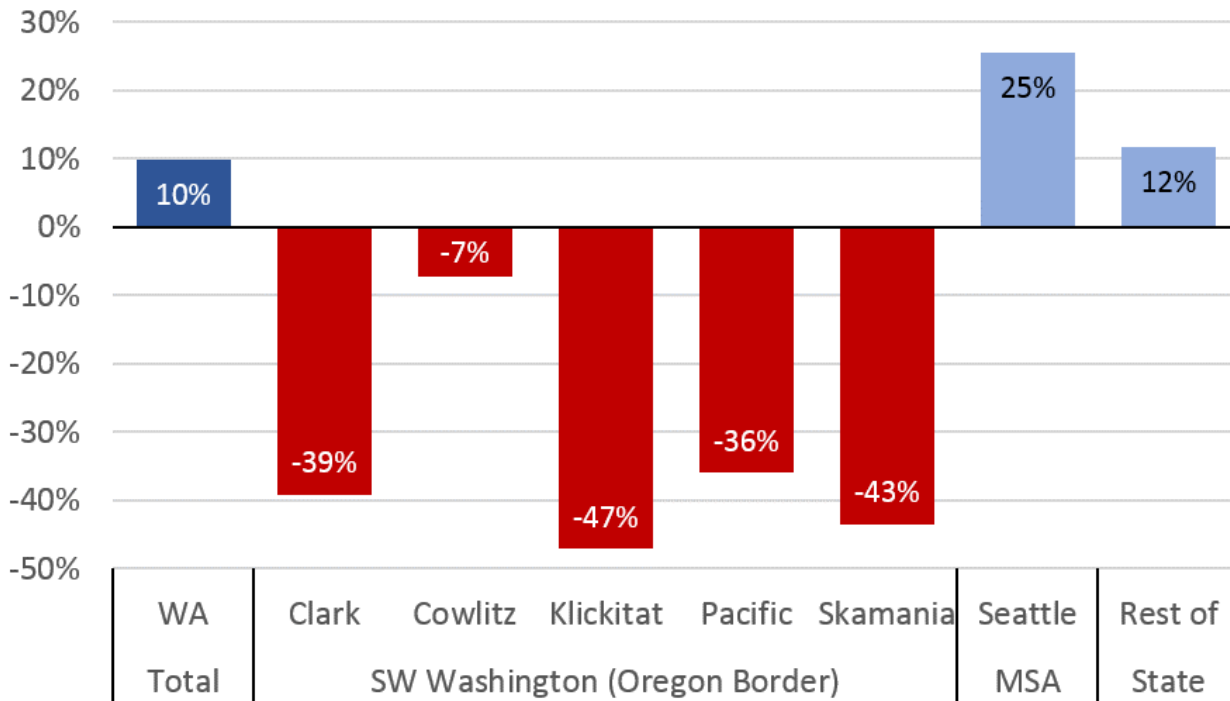
- **Even with record sales and tax revenues, Oregon retailers are struggling.**
 - Average Revenue per Oregon Retailer is \$1.2 million.
- Federal taxes, labor and inventory purchases make up the majority of costs, with little else left for health care, rent, compliance or other expenses.
- The average retailer in Oregon will pay nearly \$150,000 in federal business taxes and is roughly \$12k behind in state sale tax payments.

Oregon Cost Structure - A 280E example	Annual Numbers	Remainder	Comments
Retail Revenue	\$1,400,000		Based on Regulator report to legislature
Product Acquisition Costs	\$700,000	\$700,000	
Labor	\$461,000	\$239,000	
Federal Taxes	\$147,000	\$92,000	\$7,700 per month left after only Labor,
Remainder	\$92,000		Federal Taxes and Product costs
<i>Rent</i>	<i>\$90,000</i>	<i>\$2,000</i>	<i>Average of \$6 - \$10/sq ft</i>
<i>Payroll Taxes (FICA)</i>	<i>\$70,994</i>	<i>(\$68,994)</i>	
<i>Health Care Insurance \$6972/employee</i>	<i>\$69,720</i>	<i>(\$138,714)</i>	<i>After labor, health care is first cut</i>
<i>Property Insurance</i>	<i>\$12,000</i>	<i>(\$150,714)</i>	
<i>Security</i>	<i>\$9,000</i>	<i>(\$159,714)</i>	
<i>Bank Account</i>	<i>\$6,000</i>	<i>(\$165,714)</i>	<i>Hold cash for taxes and get robbed</i>
<i>Regulatory License</i>	<i>\$ 5,000</i>	<i>(\$170,714)</i>	<i>Unavoidable - Some in Excess of \$2.M</i>
All of these items are below the line			All of these items are below the line
<i>State Business Taxes</i>			
<i>Marketing / Advertising</i>			
<i>Compliance Costs</i>			
<i>Administrative</i>			
<i>HR</i>			
Net profit	\$0		Tax increases and 280E are putting retailers and suppliers out of busines

Source: Whitney Economics

Cross Border Effect

Recreational Marijuana Border Effect
Change in Tax Collections After Oregon Began Selling



Percent change from July 2015 to September 2015 average to October 2015 to January 2016 average
Source: www.502data.com, Oregon Office of Economic Analysis

- Consumers are price sensitive (elasticity > - 2.0)
- Tax policy plays a large role in illicit to legal consumer conversions
- When Oregon flower came on line for rec users, Washington saw a steep drop off of demand
- Current tax rates:
WA: 37% state + 9% local
OR: 17% state + 3% local

Source: Whitney Economics

Oregon Hemp Value Decline

- Value of the Oregon hemp crop (Biomass only) has declined from \$5.5 billion to \$22 million since 2019.
- There were only 780 licenses in 2021 a decline of 61% since last year
- How is this driving so much illicit supply and cartel activities? This just does not add up?

Oregon	2019	2021	Difference
Acres Licensed	64,142	7,339	-88.6%
Pounds per acre	2,000	2,000	
Capacity (Pounds)	128,284,000	14,678,000	
CBD % used in Valuation	10	10	
Price per pound @10%	\$ 42.90	\$ 1.50	
Value of biomass capacity	\$ 5,503,383,600	\$ 22,017,000	-99.6%

Source: Whitney Economics, Oregon Department of Agriculture, PanXchnage