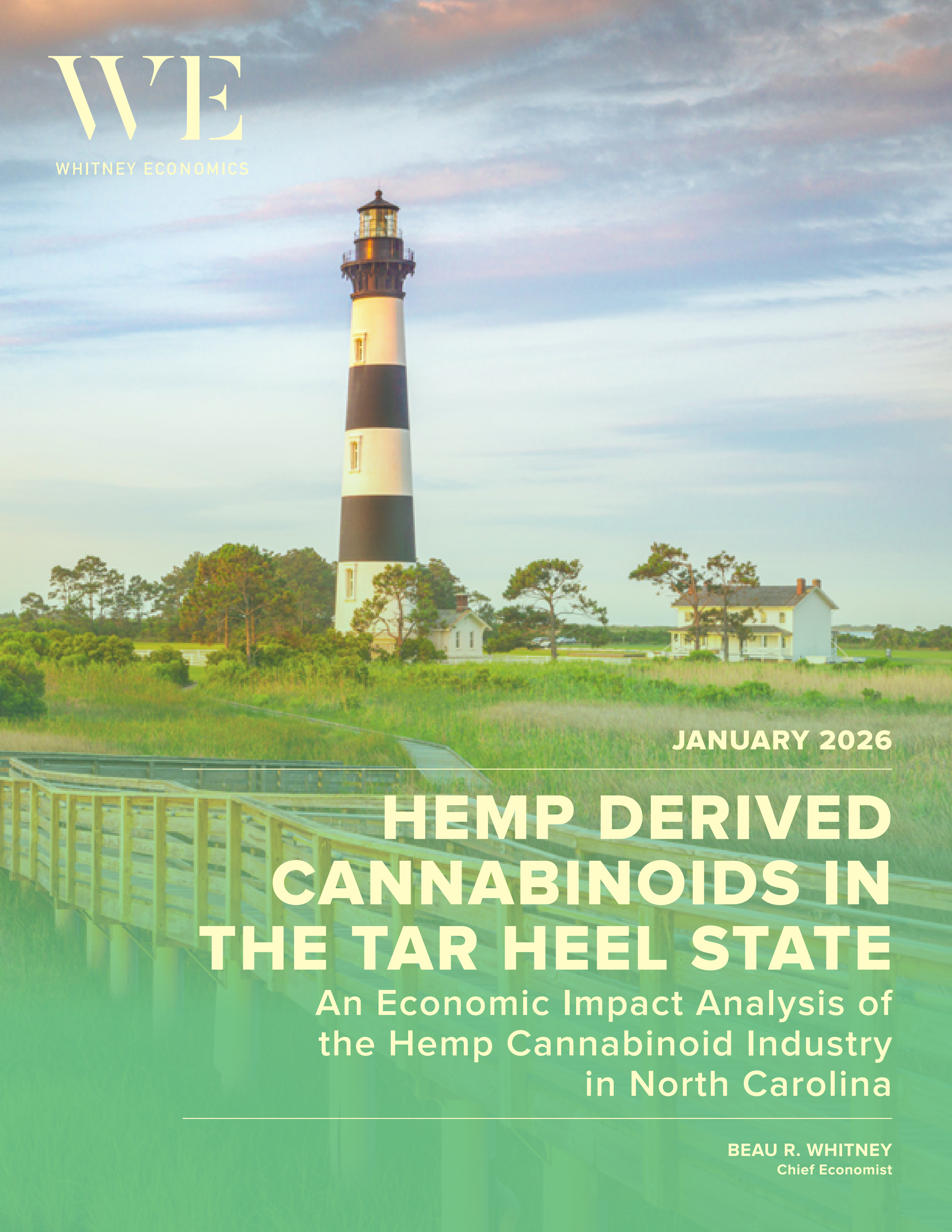

WHITNEY ECONOMICS

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HEMP DERIVED CANNABINOIDS IN THE TAR HEEL STATE

An Economic Impact Analysis of the Hemp Cannabinoid Industry in North Carolina

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CONTENTS

DISCLAIMER

Whitney Economics does not take a position on the legalization of cannabis nor does it take positions on proposed legislation; however, it does derive revenue from cannabis and hemp related companies and stakeholders. The views, opinions, and positions expressed in this paper are those of its author Beau Whitney, and do not necessarily reflect the views, opinions, or official positions of any of our affiliated organizations, groups or clients.

EXECUTIVE SUMMARY

This report is one in a series of economic reports that Whitney Economics (W.E.) has been commissioned to produce on the hemp, CBD and converted cannabinoid markets in the United States. W.E. has looked at the economic impact that this industry is having on individual states throughout the U.S. from agricultural, manufacturing, distribution and retail sales perspectives.

Whitney Economics has been tracking the North Carolina hemp industry from a cultivation, manufacturing, distribution and retail perspective since 2022. It has conducted periodic surveys of the industry and published reports on the economic impact that the industry is having on North Carolina. This report is a follow up to our 2023 report and examines the state of the industry, its revenues, employment, wages and economic potential of the market. It examines the supply chain, product segmentations and business sentiment. An additional focus was made on the potential impact proposed legislation that would restrict or prohibit sales of hemp cannabinoid products would have on the industry. If restrictions are imposed on the industry, there will be an immediate and negative effect on the industry and the North Carolina economy.

A lot has changed nationally since the 2023 survey. Multiple states have implemented restrictions on the cannabinoid markets in their states. As a result, there has been a consolidation of businesses in certain geographic areas. Manufacturers and wholesalers have moved to states with more favorable hemp policies. North Carolina has been the beneficiary of that consolidation. The market has grown significantly in the past two years, in all sectors, but it is most pronounced in the retail sector.

In examining the results of the business conditions survey deployed in Q3 and Q4'2025, the data showed again in 2025 that the hemp cannabinoid industry is a major force in the North Carolina economy. In fact, it has expanded significantly since 2023. It employs a large number of individuals, paying reasonable, living wages, contributes to the tax revenues of the state and is producing thriving, profitable businesses. The supply chain extends throughout the country, but also provides opportunities for North Carolina farmers, manufacturers, distributors and retailers. The industry is very concerned about the potential impacts that state and federal legislation will have on their business and employees. Despite this concern, their outlook is cautiously optimistic for the future.

The objective of this report is to ascertain the total economic impact the hemp-derived cannabinoid industry is having on the North Carolina economy and to understand the implications that restrictions to consumer access via bans on sales would have on the state and the industry.

Key Findings contained in this report:

The hemp cannabinoid industry is a major contributor to the North Carolina economy

- The total estimated revenue derived from businesses involved in the hemp derived cannabinoid industry in North Carolina is approximately $3.2 billion.
- The $3.2 billion is calculated based on the total estimated number of manufacturers, wholesalers and retailers and does not include unauthorized sales from gas stations.
- The retail sector alone generates $1.8 billion, with an overall economic impact of $4.4 billion in economic activity. This is an increase from a range of $759 million to $1.1 billion in 2023.
- The retail sector has more than doubled the number of retail operations since 2023 (2,197 stores vs 951)
- The average retailer services between 52 and 68 customers per day. Each customer spends $46.49 per transaction.
- Sales tax revenues from the retail sector alone generate an estimated $87.8 million in revenue for the state.

The hemp industry is a significant employer that pays reasonable, living wages to its workers

- The industry, based on the survey employs in excess of 16,000 workers, receiving $702.5 million in wages

The hemp industry is healthy, profitable and has a nationwide supply chain

- 90.6% of businesses in this sector are either profitable or breaking even. 72.3% of the businesses are profitable, which is higher than the 66% of small businesses nationally that are profitable based on data from the U.S. Chamber of commerce.
- Overall, the industry grew in the past year, however growth in 2026 will depend upon the impacts of state and federal legislation.
- Hemp operators have suppliers from all 50 states, but local sourcing is the most common.
- Most operators source supply from between 3 and 4 states.

The economic impact of highly restrictive policies would have a significant and negative impact on the industry

- The impact of anti-hemp or restrictive laws is significant, with roughly 1,511 business failures, 499 businesses leaving the state, displacing 12,099 workers generating $513.7 million in wage losses
- The economic impact of these policies would reduce the economic activity by over $3.7 billion in the state

Recommendation:

Based upon the level of business creation, employment and economic activity, legislation and policies that restrict consumer access and sales is not recommended. A more supportive and collaborative approach that develops and implements practical policies related to public safety would support industry growth while maintaining public policy objectives.

INTRODUCTION

A YEAR IN REVIEW

The hemp industry experienced a great deal of tumult over the course of 2025.

Entering into the year, hemp cultivation was on the upswing. Farmers were developing an interest in planting more acreage, biomass prices (used in the cannabinoid extraction process) had stabilized and were rising, cannabinoid sales were strong supporting a $28.4 billion - $35.0 billion retail market along with its 328,000 jobs. States were generating good tax revenues from the sales taxes associated with the retail sales of hemp-derived products, and a mostly hemp beverage market was accelerating its ramp while amassing between $1.0 billion and $1.3 billion in U.S. sales. There was a great deal of optimism in every hemp sector. The lack of federal regulatory guidance and state interventions did generate uncertainty, but for the most part, the industry outlook was quite positive throughout the year. However, the sentiment of the industry took a turn almost overnight as the year ended with the passage of a federal appropriations bill that fundamentally changed the way hemp is defined and productized. This change has the potential to dismantle the entire cannabinoid industry, eliminate 328,000 jobs and increases the level of uncertainty across all sectors of the hemp industry, including fiber and grain.

2025 HEMP POLICY

Despite Growth and Opportunity, Industry Requesting Reforms

Despite the growth and successes experienced from 2019 – 2024, hemp advocates fully understood that several reforms were necessary. For instance, a common critique about the hemp-derived industry, was the perception related to poor quality. Hemp trade associations highlighted this concern as well, requesting states to adopt standards for testing and labeling as a means to address potential public safety issues. "Good actors" were requesting these reforms at both the state and federal levels to address the potential impact that "bad actors" could have on the hemp consumers and also to address the impacts that "bad actors" were having on the industry's image.

Reform, but do not Recriminalize

Industry leaders have long asked for reasonable legislation while many state legislatures took steps to recriminalize hemp products. Reasonable reform meant to address public safety and educational concerns, such as standardization of labeling, truth in labeling, robust testing and age gating were frequently recommended by the industry as in intermediary step, however, few states actually took the necessary steps to pass such reform. While some states did make incremental reform, most did not. **Given the positive trajectory, hemp operators would gladly exchange reasonable reform for the opportunity to remain in the market**.

State Legislatures Choose Between Two Divergent Paths: Do Nothing vs. Ban Everything

For some reason, most state legislatures took two approaches; either to recriminalize hemp and regulate hemp cannabinoids like a schedule 1 drug (like marijuana), or to do nothing at all and wait for federal direction. The lack of legislative action resulted in the perpetuation of providing access to potentially unsafe products and enabling access to psychoactive cannabinoids by consumers under the age of 21. The recriminalization simply pushed consumers into online or adjacent state markets. This is evidenced by the lack of growth of marijuana sales once hemp bans were implemented. **The struggle by many policy makers was how to balance public safety with the support and growth of such a nascent industry**.

The Year Ended with the Passage of Bill in the U.S. Congress That Turned Hemp Upside Down

In November, the U.S. was mired in a government lockdown. An appropriations bill was passed to end the shutdown. While most of the discussion related to the shutdown was centered around extending medical subsidies, language was also inserted into the bill that would fundamentally impact the entire U.S. hemp industry. The provisions in the bill made three major federal policy changes related to hemp:

1) The bill changed the legal definition of hemp to 0.3% ***Total*** THC. In the previous definition, THC content was only measured relating to THC Delta-9 by dry weight. The change in definition is much tighter than the previous definition and put many farmers at risk of not being able to bring crops to market.

2) The bill also placed limits on the amount of Total THC in consumer goods. The limit was set at 0.4mg of THC per container. At this limit it effectively makes illegal an estimated 95% of all cannabinoid products derived from hemp.

3) The bill also set limits on the percentage of hemp that goes into intermediary products. This impacts the ability to convert hemp-derived cannabinoids such as CBD into THC. Without having based materials to work with, the ability to bring even non-psychoactive products to market is in question.

The enactment of the bill was set for one year after being signed into law, however the impacts on the entire hemp industry are already being felt.

What are the Impacts of this New Legislation?

The impacts of this new law are still being determined. Hemp advocates are attempting to educate legislators on the industry in order to help them understand the size of the industry, how extensive the industry reach already is and how profoundly this changes the business environment throughout the entire value chain. While the perception is that there is an entire year to figure this all out, states are already enacting laws to align with the federal laws. Farmers are reluctant to plant hemp or to put it in their rotation due to the uncertainty about if the crop will remain legal by the time it is harvested. Without farmers planting, the availability of raw material feedstock is in question for processors and manufacturers. Investors are pulling back on providing financing to farmers, processors and even ancillary businesses due to the increased uncertainty and risk. While this was assumed to be focused on cannabinoid hemp, the impacts are also being felt in traditional fiber and grain markets. Investment into desperately needed infrastructural development is now on pause. Even banks are reevaluating their hemp accounts.

> *What was all once considered a bright future for hemp at the beginning of the year is now in question as we head into 2026.*

HEMP 101:
ABOUT HEMP & HEMP CANNABINOIDS

Before we provide data on the economics associated with hemp in North Carolina, it is beneficial to understand the evolution of the hemp industry, particularly in the period after the U.S. Farm Bill was passed in 2018. Understanding how the industry has evolved will help one understand the influence that policy will have on its future.

Cannabinoid Compounds are an Extract of Hemp Biomass

CBD and converted cannabinoid products are derived from extracts of the hemp plant. The plant's flower and leaves are first extracted to produce an oil. The oil is then refined in order to separate the cannabinoids from the plant matter, lipids and water that make up the extracted oil. Technicians have the ability to further refine the oils in order to isolate certain compounds. CBD can then be productized into vaporizers, edibles (ex. gummies), balms, tinctures and other wellness products. CBD also serves as a base for further refinement and conversions into other THC and cannabinoid products.

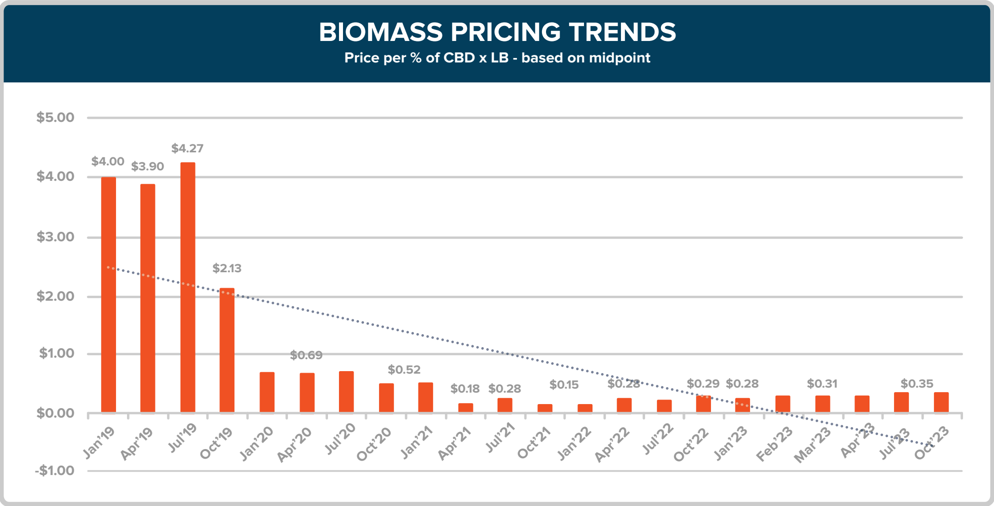
A lot has happened in the CBD space since 2018. Little known by consumers even 10 years ago, CBD has increased in popularity in recent years, particularly after the passage of the 2018 Farm Bill which legalized hemp and hemp derived products. As the volume and popularity of converted cannabinoid products evolved, consumer demand for these began to surge beginning in 2019 - 2020.

U.S. Hemp Production Capacity and Acres Licensed Increased Dramatically in 2019

The U.S. hemp industry has evolved in the short period after the 2018 Farm Bill. Hemp cultivation and production for cannabinoids, while a niche market prior to 2018, burst onto the scene in a big way after 2018. Previously, hemp for fiber and grain encompassed a majority of the acres licensed under the 2014 Farm Bill, however, by 2019, acre allocations in favor of cannabinoid cultivation surged to nearly 82% of the nation's acres licensed[1].

Excess Cannabinoid Inventories Led to Collapsing Prices from 2019 through 2021

With the surge in supply, the infrastructure required to process the volume output of the farms became a limiting factor in the ability to bring the cultivated output to market. As a result, there was more supply of cultivated output than the processors could handle. With ballooning inventories and supply greater than demand, prices for cannabinoid materials collapsed, as did prices further down the value chain, including that for cannabinoid crude, distillate and isolate.



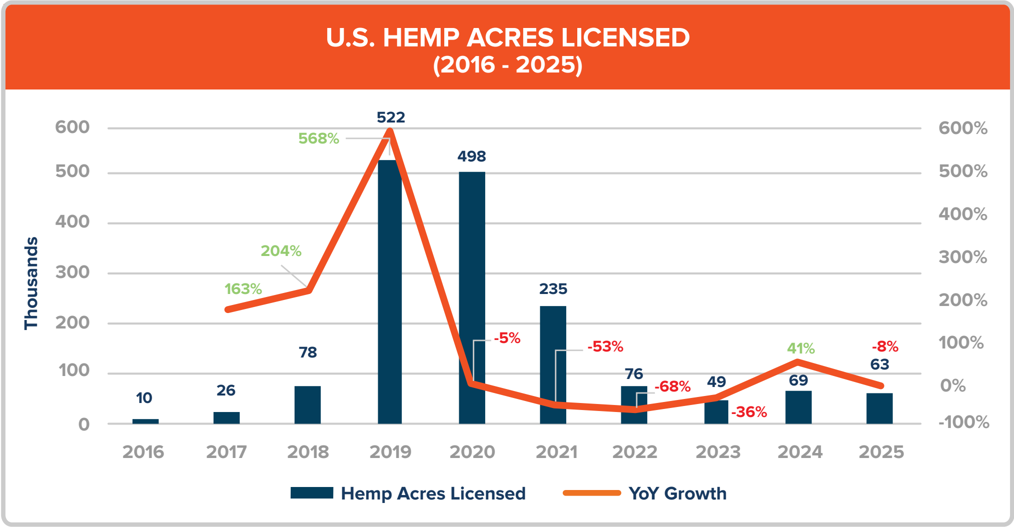
Source: PanXchange

Since 2018, Federal Regulatory Murkiness Has Created Uncertainty and Impacted Growth

Uncertainty at the federal level has also influenced the opportunities for cultivators and operators in the cannabinoid space. With the deployment of Epidiolex, a marijuana-based CBD seizure medication, in the U.S. market, the FDA determined that CBD is a drug. This guidance meant that marijuana-derived CBD could not be used as an ingredient for food or as a supplement, and created enough ambiguity that product manufacturers and investors pulled back. They were not interested in investing into and deploying products into a potentially illegal market. As a result, market growth has been inhibited despite significant demand for hemp-based cannabinoid products. Regulatory ambiguity at the federal level has generated so much perceived risk that investors and manufacturers can no longer justify investments into the industry. This has inhibited the growth of the market.

Uncertainty Has Driven Out Operators and Constricted the Market Since 2020

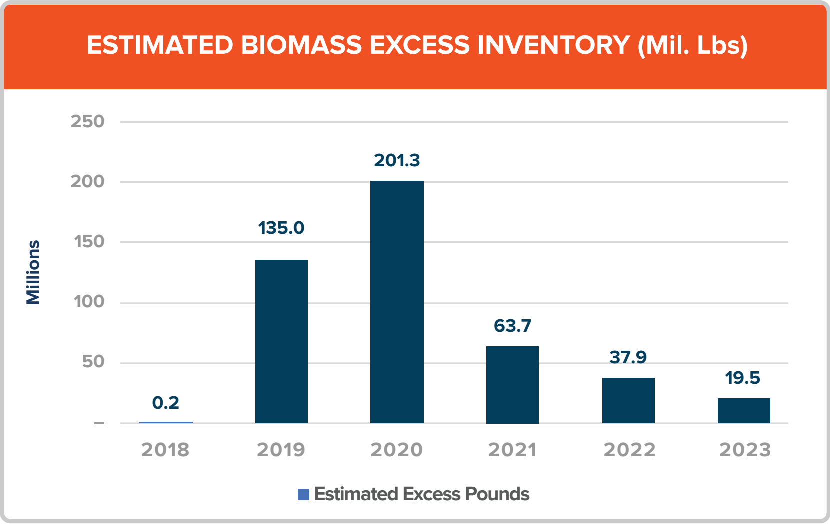
Uncertainties have consistently dogged hemp operators across the country. The combination of collapsing prices, a lack of regulatory certainty, a lack of legal certainty, a shortage of product development and not enough access to markets was too much to bear for many hemp operators. There has been a major pullback in the number of acres licensed as well as the number of processors in the U.S[2].



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

Fewer Suppliers and Reduced Hemp Biomass and CBD Inventories Since Peaking in 2020

With a lack of consistent orders from product manufacturers, regulatory murkiness at the federal level, and dramatically falling prices, U.S. hemp cultivators and cannabinoid processors saw their inventories increase significantly in 2019 and again in 2020. At its peak there were approximately 201 million pounds of excess hemp biomass in the U.S. marketplace and in excess of 1.6 million kilos of processed cannabinoids[3].



Source: Whitney Economics Hemp Cultivation Surveys (2019, 2020, 2021, 2022)

Economic Stress Drives Innovation and Opens New Market Opportunities in 2020

With little economic value left in the inventories of excess biomass and processed cannabinoids, farmers and processors were forced to look for innovative ways to monetize their inventory. Many sold their inventory below their costs of production, which resulted in continued downward pressure on prices. This unabated decline in pricing has put many operators out of business. Others found ways to monetize their inventory through process innovations. This led to a significant increase in processed materials that were further refined or converted into products, beyond the original CBD content. These products included gummies, vapes and other derivative products containing minor cannabinoids such as CBG and CBN, as well as products containing other forms of THC beyond the traditional THC delta-9 such as delta-8, delta-9, delta-10 and further refined products, such as HHC.

Converted Products Were Creating Consistent Demand for Hemp by 2021

The deployment of products beyond traditional THC delta-9 and CBD have been a lifeline for farmers and processors in the hemp-based cannabinoid industry. **Given that all products derived from hemp are considered hemp, converted hemp-based cannabinoid products found new market opportunities that had not been available to medical or adult-use cannabis operators**. Hemp-based operators were also able to conduct interstate commerce, rather than being restricted only to the markets where the products were grown and processed (which is required of adult-use and medical cannabis products).

Consumers Are Seeing the Benefits of CBD and other Cannabinoid-based Products

Consumer demand has been steadily increasing as the potential benefits of hemp and hemp derived products became more widely known. Consumers began substituting hemp, hemp-based oil and oil derivative products for opioid and pharmaceutical medicines, particularly for pain management, anti-inflammatory, anxiety and diet issues. Seeing an opportunity to expand revenues in small businesses, hemp operators started offering more products. In many states, hemp is the only source of cannabinoids allowed, so the consumer demand has steadily increased, while regulatory oversight was limited to hemp at the farm gate. **From the period from 2019 through 2022, sales of hemp-based cannabinoids exploded and is estimated to be between $28.4 billion - $35.0 billion annually in the U.S. alone**[4]. Unlike adult-use and medical cannabis, hemp-based products can be sold in all traditional distribution channels and retail outlets. This has given the U.S. consumer unprecedented access to cannabinoid products.

> *Unlike adult-use and medical cannabis, hemp-based products can be sold in all traditional distribution channels and retail outlets.*

Consumer Demand Settling Around THCA Flower and Products Containing THC delta-9 and Non-Psychoactive Cannabinoids

Demand for cannabinoids is beginning to settle around THC delta-9, and non-psychoactive cannabinoid products containing CBD, CBG, or CBN. The popularity of products containing chemical compounds such as delta-8, delta-10 or HHC appears to have peaked in 2023.

In 2024/2025, a Nimble Industry Continues to Outpace Product Safety Regulations

Similar to the early days of adult-use and medical cannabis, the pace of expansion in the hemp market has surpassed the ability or federal willingness to regulate it. As a result, **some products that have been tested have shown discrepancies in labeling, cannabinoid content, the levels of THC, CBD and other ingredients and have shown indications of other "unknown substances"**. These issues will require further regulations, as the current environment is self-regulated, and federal regulation stops at the farmgate. **Regulatory ambiguity could be solved with greater clarity at the FDA and other federal agency levels**. That reform has so far been elusive to date.

A note about changes in 2026: ***As a result of the legislation passed in November, Congress has required the FDA to become more involved in the hemp industry. The passage of the law gave the FDA to develop a list of all psychoactive cannabinoid compounds that have a similar effect to THC. The THC per container limits will also force greater regulatory oversight beyond the farmgate.***

Adult-use and Medical Operators Have Pushed Back Against Hemp-Based Cannabinoids

As the sales of hemp-based cannabinoids have increased from 2019 – 2025, adult-use and medical cannabis operators have cried foul. Many companies highlighted the lack of regulations have led to a "public safety crisis", while others have cited the competition hemp cannabinoids represents and threatens their revenues derived from psychoactive cannabis. Most claims regarding a public safety crisis have gone unsubstantiated, in terms of what specific data they are citing, and what specific risks they are concerned about. Most public safety issues discussed were associated with youth access and usage by consumers who lack any knowledge of what they are ingesting. Many of these concerns can be addressed through basic regulations, yet it seems that adult-use and medical operators are calling for a complete and total ban on sales of hemp products, or for hemp to be regulated in a similar manner as a Schedule One narcotic. The trade-off between working to address gaps in the regulatory process, versus an outright ban, is too large to be economically justifiable. ***While it is appropriate to regulate cannabinoids at the product level, it seems unnecessary to force a dramatic change from 'unregulated' to 'schedule one narcotic.'*** The negative economic impact appears to exceed the justification.

FDA Issued a 2022 Update on Hemp-Derived Delta-8 Products

The FDA has issued an update specifically about Delta-8 which provided consumers with a good overview for consumer awareness. The FDA has stated that these products have not been evaluated or approved by the FDA for safe use in any context." Extending this further, the FDA issued a statement in early 2023, that said the existing regulatory frameworks for foods and supplements are not appropriate for Cannabidiol and that they will work with Congress on a new way forward. Precisely the same thing can be said for almost all adult-use and medical cannabis products. One might ask, if hemp derived cannabinoid products are a risk to public safety, how are adult-use and medical products not a similar risk? The difference, adult-use operators would say, is that cannabis for adult-use and medical purposes is tightly regulated while hemp is not. Further, **regulation for hemp products stops at the farmgate and does not extend to the product levels. A lack of product regulation of hemp-derived products creates a competitive advantage for the hemp industry, and it may allow for the opportunities to sell potentially harmful products to unsuspecting consumers.** This point of view further demonstrates the importance of reasonable policies with regard to regulating market access and sales of hemp-based products.

> *While it is appropriate to regulate cannabinoids, it seems unnecessary to force a dramatic change from 'unregulated' to 'schedule one narcotic.'"*

A 2026 update: ***The FDA is beginning to examine the chemical compounds derived from hemp to determine, at the very least if they are psychoactive or have similar effect to THC. While this is a positive development from a public safety perspective, further research on the long-termed effects of cannabinoid compounds is necessary and must be supported.***

Since 2018, State Legislatures Have Stepped in to Fill the Regulatory Void

With continued regulatory murkiness around hemp at the federal level, pressure has mounted on state legislators to take action. State legislatures have been compelled to address issues surrounding hemp cultivation and product manufacturing on their own. The result is an inconsistent patchwork of regulations, from state to state. So far, 33 states allow for the sales of hemp-based cannabinoids and converted cannabinoids in either a regulated or loosely regulated manner. Other approaches being used by states include[5]:

- Prohibiting the sales of products that compete with cannabis products until a tax program has been developed and implemented
- Implementing moratoria on the cultivation of hemp
- Proposing the ban on sales of hemp-based cannabinoids within the state but allow for manufacturing and processing for out-of-state export
- Allowing sales of cannabinoid products, but with restrictions of cannabinoid content

Since 2020, State Legislative Actions Have Impacted the Hemp Industry at the National Level

With the regulatory uncertainty already high due to federal inaction, additional uncertainty around state regulations has negatively impacted the national hemp industry. Within this dynamic and changing environment, many operators cannot formulate meaningful long-term plans, or even short-term operational strategies, as they are not sure what the rules will be in three months, six months or a year. The market is understandably seizing up, with investments planned for hemp projects now being allocated elsewhere. At a time when, in order to accelerate the growth of the market, supportive policies are necessary, more restrictive measures are being put into place that are doing just the opposite. Data show that these policies are suppressing the growth and expansion of the industry.

A 2026 Update: ***The legislation passed by congress redefining hemp in November 2025, has only served to increase uncertainty in the market. States are already aligning their state laws to this federal legislation, however additional changes at the federal level may occur after the states have implemented their owns laws. This may create a ripple effect that will take several years or more to unwind and be too late for hemp operators to avoid unscathed.***

What are the Impacts of this Environment of Uncertainty?

- A lack of investment and deployment of the hemp infrastructure **reduced the economic potential of the U.S. hemp industry by $20 - $25 billion in 2024 for fiber and grain alone**. The value of this shortfall is nearly the same size as the entire legal U.S. sales of the adult-use and medical cannabis retail industry.
- Uncertainty at the state level has reduced acreage and business licenses, limiting cultivation capacity.
- The impact on the fiber and grain industries has been further exacerbated by the reduction of investments in infrastructure and the ability to obtain banking services.

Hemp and Hemp Derived Products are Deemed Legal in U.S. 9th Circuit Court Ruling

Until November 2026, hemp derived products are hemp by definition and are therefore legal to sell and productize, according to the U.S. 9th Circuit. As such, they do not require as much regulation as does the federally illegal adult-use and medical cannabis. While the adult-use and medical industry is crying foul and attempting to paint hemp derived products in a negative light, **the fact remains that until policy changes are enacted in November 2026 at a federal level, hemp derived products will remain legal**.

Legality of hemp cannabinoid products still being debated

Whether or not it was intended, the decoupling of hemp from marijuana has resulted in multiple lawsuits, both in favor of hemp cannabinoids and against them. The legality of the products is still being debated. While the debate related to cannabinoids continues, there will be a level of uncertainty that will exist in the industry for all parties involved.

A 2026 note: ***Despite the passage of the federal legislation redefining hemp that will take effect in November 2026, the debate about hemp policy will not be settled for quite some time. The industry is expecting a number of law suits to be filed against the federal government challenging these federal changes. Industry advocates have suggested that rather than go through the legal processes that nobody really wants, implementing sensible regulations related to psychoactive products would achieve the same result; greater public safety, limiting youth access and safer, tested products.***

A Note about Data: In 2025, A Lack of Data has Led to Even Greater Uncertainty

Due to the federal illegality of cannabis at the federal level, most federal agencies are not allowed to collect data on the economics of cannabis. There are a handful of NAICS codes (North American Industrial Classification System) that are used to track the flow of goods and services throughout an economy, but there is currently only a very limited ability to track such things as revenues, employment, economic impact, taxes and the flow of goods and services throughout the economy. As a result, most of the data gathering has been in the form of meticulous manual data collection: compiling data from state regulators, parsing together point of sale data, and conducting business and consumer surveys. With the lack of centralized data in the marketplace, it is understandably tough to be able to ascertain risks felt by operators, investors and stakeholders participating in the hemp industry. This lack of basic economic measurements has led to even greater uncertainty.

Access to Data is Limited; Some States Report Better than Others

In adult-use and medical cannabis, there has been very little data collected at the federal level. This is beginning to change and some data is being published by state regulatory agencies. Because hemp is a federally legal agricultural crop, the ability to analyze the market is limited to the data that is collected by the USDA. This data is recent and not comprehensive, as it only goes back to 2021, the whole industry has very few NAICS codes and, unfortunately, despite its legality, hemp has been caught up in the debate and politics around cannabis data collection. A few teams of analysts, like the one at Whitney Economics, have been manually collecting data at the state level since 2019. Published data is largely limited, however, to the higher aggregated levels, and it does not include sales data at the product manufacturing or retail levels. This manual collection of regulatory and economic data is further supplemented by regular surveys of cannabis operators and stakeholders. This ongoing research is inspired by the lack of available, accessible data. The lack of data has hindered the ability to analyze the hemp market, and has limited the ability to provide useful, timely insights to regulators and policy makers on key issues, including the impacts of policy changes on the industry.

Lack Of Data Is Leading to Poor Policy Decisions and Misunderstandings

The data suggest that these proposed restrictions, redefinitions and state and federal changes have the potential to do far more economic harm than good, while still not meaningfully addressing the public safety and the regulatory concerns that drove the initial legislation. We should point out that much of the narrative associated with this conversation has been qualitative in nature, but not supported by data. Depending upon their source, qualitative inputs can lead to the development of uninformed policies that do not support larger public safety goals or regulatory objectives.

The Intention of this Report is to Fill the Void with Data

This project attempts to address the lack of data on the hemp-based cannabinoid market in North Carolina. Most estimates have vastly underestimated the amount of revenue being derived from North Carolina's hemp retail industry. This report intends to build off of a 2023 Whitney Economics report that examines the impact hemp derived cannabinoid industry is having on the North Carolina economy. Whitney Economics has combined its expertise and extensive data set for the cannabis and hemp industries, with a survey of retailers, wholesalers and manufacturers of hemp-based cannabinoids in North Carolina.

OBJECTIVE OF THE REPORT

The objective of this report is to ascertain the total economic impact the hemp-derived cannabinoid retail industry is having on the North Carolina economy and to understand the implications that restrictions on sales would have on the state and the industry. In addition, the objective was also to assess the amount of employment, wages, and revenue derived from these products, to identify key issues facing the Hemp, CBD and converted cannabinoid industry and to then summarize and articulate the quantitative and qualitative results for educational purposes.

Limitations in Scope

The quantitative economic impact research from our fact finding was limited to the following items:

- Types of business
- Monthly revenues
- Average sales per transaction
- Percentage of revenues generated from hemp derived cannabinoid based products
- Types of product form factors
- Total labor demand
- Total wages paid
- Profitabilty
- Sales trends
- Sources of supply (states)
- Sources of risk to the business operators
- Possible reaction to legislation if bans or THC content restrictions are passed and signed into law

In addition to the above mentioned specific quantitative data points, some qualitative data were gathered from interviews. These data include:

- Key regulatory and strategic issues facing operators,
- General comments about the industry or regulations

Qualitative data has revealed some useful insights into the mindset of North Carolina hemp-derived cannabinoid operators.

SURVEY COVERAGE

There were over 87 survey responses representing over 286 individual locations. Within roughly 2,197 licenses, plus manufacturing and wholesale, the findings have a confidence level of 95%, with +/- 5.4% error. This is a very high confidence mark, representing over 7.5% of all licensees.

Sector	Number of Respondents	Average # of Outlets	Total Outlets Covered
Retail	30	3.8	114
Wholesale	20	2.7	54
Manufacturing	15	1.2	18
Cultivation	13	1	13

A note about North Carolina hemp registrations:

Based on data from the state of North Carolina, there were 1,789 hemp registrants in their system. The state's registration system does not differentiate the type of business that is registered. As a result, it is not possible to determine how many of the 1,789 registrants are processors, wholesalers, cultivators or retailers or whether or not that they are actually operating. Had it been broken down by sector, it would have been possible to provide more granular estimates related to the economic impacts that manufacturers, processors and other hemp operators would have on the state.

Multiple individuals that were listed as being a hemp registrant contacted us stating that they were either no longer in business, no longer growing hemp or no longer associated with the hemp industry. This called into question how many of the registrants were real. As a result, the strategy of using hemp registrants to determine market sizing had to be reexamined. **Moving forward it is strong recommended that the state differentiate the registrations by sector**.

NORTH CAROLINA BY THE NUMBERS

A lot has changed nationally since the 2023 survey. Multiple states have implemented restrictions on the cannabinoid markets in their states. ***As a result, there has been a consolidation of businesses in certain geographic areas. Manufacturers and wholesalers have moved to states with more favorable hemp policies. North Carolina has been the beneficiary of that consolidation***. The market has grown significantly in the past two years, in all sectors, but it is most pronounced in the retail sector.

Overall, North Carolina is viewed favorably by the hemp industry. With the levels of uncertainty increasing in other states, North Carolina has been considered a more stable and attractive market for investors and operators. As markets become more restrictive across the country, operators have been relocating to North Caolina due to its more business friendly environment. Manufacturers and wholesalers have been relocating to North Carolina from Florida and even as far away as Oregon. The establishment of a hemp commission appears to have given a voice to the industry, but the commission is still in its infancy. North Carolina hemp operators have also positioned themselves as a regional leader supporting adjacent states. Given its regional influence, operators have had the opportunity to operate businesses that have short run profitability and long termed success. It remains to be seen how the federal changes will impact the North Carolina market. The survey period straddled the line both prior to and after the hemp changes were signed into law so there are some early insights on this topic.

The data showed again in 2025 that the hemp cannabinoid industry is a major force in the North Carolina economy. It employs a large number of individuals, paying reasonable, living wages, contributes to the tax revenues of the state and is producing thriving, profitable businesses. The supply chain extends throughout the country, but also provides opportunities for North Carolina farmers, manufacturers, distributors and retailers. The industry is very concerned about the potential impacts that both state and federal legislation will have on their business and employees. Despite this concern, their outlook is cautiously optimistic about the future.

HEMP-BASED REVENUES

Overall, there are nearly 2,500 businesses associated with the North Carolina hemp-cannabinoid market. **The total market generates roughly $3.2 billion in revenue, not including cultivation**. Whitney Economic feels this is conservative, because gas station demand is not represented in the survey findings. Even with this conservatism, the number of businesses identified in this analysis is greater than those that have registered with the state and the USDA. The total revenue of the industry has increased significantly since our analysis from 2023. The main source of this increase comes from the retail sector. Retail revenues have increased since our previous survey by 243% ($1.8 billion in 2025 versus $759k in 2023). Both manufacturing and wholesale revenues appear to have also increased.

Total Estimated Revenue Statewide		
Retail	2,197	$1,848,812,117
Wholesale	200	$906,800,000
Manufacturing	100	$512,600,000
Total Estimated Revenue		**$3,268,212,117**

To determine the total retail revenues, we based our projections on the reported average spends per visit and multiplied that times to the number of daily visits. From there we projected three ranges for retail revenues, a lower bound, midpoint and upper bound.

Throughout this analysis, for conservatism, we modeled all projections off of the lower revenue model. We also took a conservative approach to projecting sales tax revenues.

Retail Revenue Comparisons	Lower Bound	Midpoint	Upper Bound
Hemp Retail Revenues (2025)	$1,848,812,117	$2,110,425,994	$2,447,140,656
Hemp Retail Revenues (2023)	$759,435,320	$941,743,718	$1,133,650,226

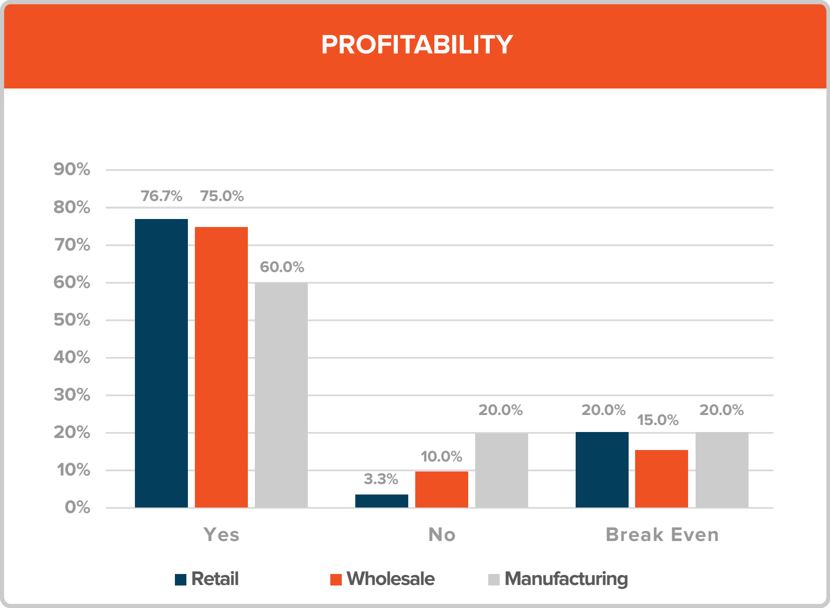
HEMP-BASED TAX REVENUES

The total amount of sales tax derived from the retail sales of hemp-derived cannabinoids is estimated to be $87.8 million per year. This assumes a sales tax rate of 4.75%. Additional taxes are derived from business taxes, payroll taxes and local taxes, but are not included in this analysis.

Total Sales Tax Estimate Statewide	Amount
Retail Sales Tax @ 4.75%	$87,818,576

PROFITABILITY

The hemp derived cannabinoid businesses are economically healthy. 77% of the retail respondents indicated that they were profitable, with an additional 20% responding that they were breaking even. Only 3.3% are not making a profit. Hemp wholesalers responded with similar results. This shows how viable the businesses are. By comparison, according to the U.S. Chamber of Commerce, approximately 66% of small businesses are profitable.



Profitability is consistent from sector to sector. This implies the entire supply chain is healthy and thriving.

Profitable	Yes	No	Break Even
Retail	76.7%	3.3%	20%
Wholesale	75%	10%	15%
Manufacturing	60%	20%	20%

SECTOR COVERAGE

Overall, responses represented 5.2% of the retail sector, 27.0% of the wholesale sector and 18.0% of the manufacturing sector. Enough to enable an extrapolation of the results to the broader North Carolina market.

Sector	Number of Respondents	Average # of Outlets	Total Outlets Covered	Total Number of Operators	% of Total Market
Retail	30	3.8	114	2,197	5.2%
Wholesale	20	2.7	54	200	27%
Manufacturing	15	1.2	18	100	18%
Cultivation	13	1	13	499	2.6%
Totals --->	**78**		**199**	**2,996**	

EMPLOYMENT

Overall, the hemp derived cannabinoid market employes over 16,000 workers paying over $700 million in wages. Employment increased in the retail sector (8,789 in 2023) and increased in the wholesale sector. The overall market is expanding in terms of the number of businesses. The existing business are getting more efficient, while keeping wages stable. This shows that the overall supply chain is expanding in a controlled manner.

Statewide Jobs and Wages	Jobs	Wages
Retailers	10,326	$394,904,159
Wholesalers	4,400	$246,422,200
Manufacturers (Processors / Extractors)	1,423	$61,211,200
Total Estimated Jobs and Wages	**16,149**	**$702,537,559**

OVERALL ECONOMIC IMPACT BASED ON RETAIL SALES

In economics, there is a concept called the multiplier effect. It tries to measure the amount of economic value in an economy derived off of each dollar of activity. The concept is that when a dollar is spent in an economy, it creates a ripple effect and additional spending occurs.

Different activities have different levels of multiples. For hemp, the multiplier is 2.4x. Based on $1.8 billion in retail spending on hemp-derived cannabinoids, there is a total economic impact of $4.4 billion on the state.

The Multiplier Effect - 2.4x (Retail only)	
Total Estimated Sales	$1,848,812,117
Total Economic Impact	$4,437,149,080

Source: Whitney Economics

PRODUCT TYPES AND PRODUCT SEGMENTATION

While a few cannabinoids have been making most of the headlines, there are multiple cannabinoids derived from hemp that have been commercially viable. CBD is the most common as it is in many products and is non-psychoactive. Other cannabinoids such as Delta-8 have been maligned in the press, despite the fact that the FDA has said publicly, that there is no public safety crisis associated with psychoactive cannabinoids in general.

Most political discussions related to how to regulate hemp-derived cannabinoid products, center on how to differentiate policies between non-psychoactive cannabinoids such as CBD, CBN and CBG and psychoactive cannabinoids such as THC delta-9, THCA and other THC compounds. This is a very complex and nuanced policy discussion as many non-psychoactive products contain THC compounds.

Delta-9 derived from hemp is an psychoactive ingredient that has been productized in the form of beverages and is gaining wide spread popularity. Based on a report publish in September 2025 on THC beverages, the total addressable market is valued between $9.9 billion and $14.9 billion[6]. Sales of THC beverage reached $1.0 billion - $1.3 billion in 2024. Cannabinoid beverages have helped to restore the health of business in other industries that have experienced revenue declines over the past 5 years. These industries include craft beer producers, alcohol distributors and distilled spirits manufacturers.

THCA is a chemical that when heated can change into psychoactive Delta-9. THCA has gained in popularity throughout the U.S. and is being productized in flower form (buds) or in pre-rolled cigarettes. We have captured the level of market share for each of these major cannabinoid categories.

Sector	Retail	Wholesale	Manufacturing
THCA Flower	22.2%	25.0%	19.3%
Concentrates	14.4%	17.6%	21.1%
Edibles	19.0%	23.5%	32.5%
Vapes	16.3%	16.2%	13.2%
Beverages	16.3%	8.8%	0.0%
Topicals	11.8%	8.8%	14.0%
None of the above	0.7%	0.0%	0.0%

Businesses have starting to derive a significant amount of revenue from THCA over the past 2 – 3 years. All sectors within the hemp-derived cannabinoid sector list similar percentages of revenue, thereby increasing the confidence in our results and survey findings.

Revenues derived from these various product segments have been listed below. While CBD has the greatest amount of retail sales, other product types are gaining traction as well. Having an even distribution of sales by product reduces risks to businesses. This demonstrates the health and breadth of the cannabinoid industry in North Carolina. **It also indicates that the ban or restriction of sales in one category may have a significant impact across the entire industry**.

Total Sales Statewide	Retail	Wholesale	Manufacturing
THCA	$263,261,272	$149,783,929	$79,126,174
Delta-9 THC	$227,362,008	$109,301,786	$68,805,369
Delta-8 THC	$221,378,797	$101,205,357	$65,365,101
Delta-10 THC	$77,781,740	$32,385,714	$20,641,611
CBD	$269,244,483	$137,639,286	$86,006,711
CBG	$221,378,797	$109,301,786	$58,484,564
CBN	$209,412,376	$97,157,143	$48,163,758
HHC	$131,630,636	$64,771,429	$27,522,148
Hybrids – a combination of two or more of the above	$203,429,165	$93,108,929	$48,163,758
None of the above	$5,983,211	$0	$0
Other (please specify)	$17,949,632	$12,144,643	$10,320,805

In sum, the hemp-derived cannabinoid industry is continuing to expand in terms of business creation, but also in terms of the types of products being sold.

A restriction imposed on the industry would have a significant economic impact across multiple sectors in the economy.

SUPPLY CHAIN ANALYSIS

North Carolina hemp operators utilize an extensive supply chain. Operators source their hemp materials from all 50 states. Most operators, however, utilize suppliers from a handful of states, with sourcing from North Carolina being the most common. Changes to laws would impact businesses throughout the entire value chain and would impact North Carolina suppliers the most.

Number of States Traded with	Retail	Wholesale	Manufacturing
Average States Sourced From --->	5.15	3.63	3.47
Top State Source of Supply	North Carolina	California	North Carolina
#2	Oregon	North Carolina	Florida
#3	California	Oregon	California
#4	Colorado	Florida	Oregon
#5	Texas	Colorado	Texas
#6	Florida	Arizona	Colorado

SECTOR BY SECTOR ANALYSIS

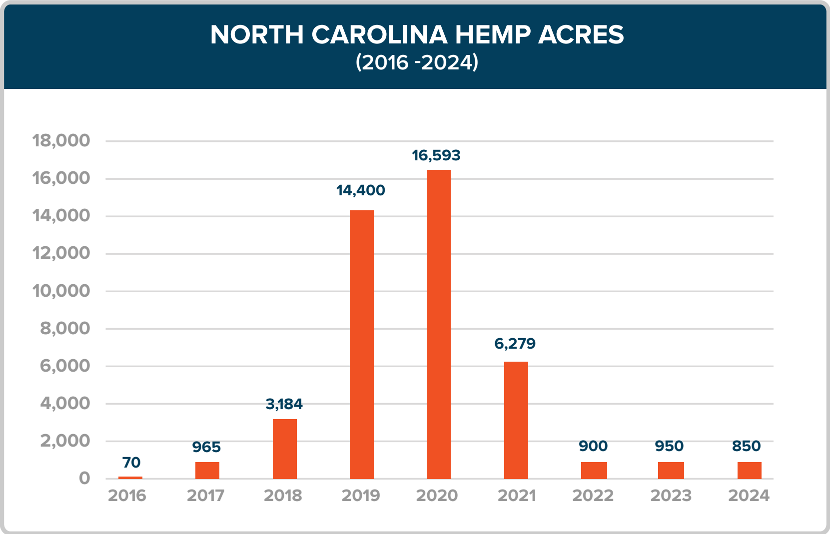
This section will give a breakdown of the North Carolina hemp market by section starting with cultivation, then manufacturing/processing, wholesale and retail.

HEMP CULTIVATION IN NORTH CAROLINA

Hemp cultivation in North Carolina is an attractive sector, particularly as the demand for tobacco is declining in the U.S. In the period after the 2018 Farm Bill, hemp flower used to serve as a tobacco session product was produced and exported to Europe by the container load. The demand has increased for hemp flower containing THCA, which when heated can provide a more psychoactive effect. This broadened the market and gave farmers a greater economic opportunity as THCA flower has a higher price in the market.

Acres Licensed are Below Pre-Farm Bill Levels, But have Recently Rebounded

Farmers needed to expand their market reach after prices for hemp flower intended for cannabinoid purposes had collapsed during the period from 2019 – 2024. As a result of this price collapse, and increased uncertainty about potential hemp bans, farmers pulled back from growing hemp in favor or more stable crops. Now that prices have rebounded and stabilized, the number of acres reported by the USDA have begun to increase.



Source: Whitney Economics North Carolina Department of Ag, USDA (2022-2024)

Farmer Participation is Stable, but...

Hemp participation increased post Farm Bill, but as lower prices proliferated in the market, fewer and fewer farmers in North Carolina received licenses. In the most recent data (as of 1/05/26) from the USDA , there were 499 active or active with CAP licenses issued. At roughly 850 acres per farm in 2024, this equates to and average of 1.7 acres per hemp license. This is down from 11.1 acres per license in 2022. USDA[7] data integrity issues could be contributing to these low numbers. When surveyed for this report, many farmers responded back that they were no longer growing hemp despite the fact that they have a license. This implies that farmers are keeping their license active in order to keep their options open if the hemp market opportunities continue to open up.

Year	2019	2020	2021	2022	2025**
Hemp Cultivation Licenses	1212	1502	812	507	499

Source: Whitney Economics, NC Department of Ag, USDA (2025)

North Carolina Cultivation Value

The total value of the NC hemp crop is $31.6 million based on 2,000 pounds[8] per acre and an average price per pound of $18.56[9]. State and USDA analysts tend to undervalue the hemp crops, particularly for floral. It is not uncommon to received $330 per pound for floral hemp indicating a total potential crop value of $561 million if fully utilized. If sold only as biomass or if the farmers do not have a buyer for their crop, hemp cultivation can be a lower margin crop. This is why the hemp flower market is so attractive for farmers. Hemp yields have varied considerably over the years ranging from 70% yields in 2022 to 23% yields in 2023. Given that 63.4% of retail hemp sales are related to THCA Flower, it is likely that a majority of the North Carolina crops are being sold as flower ($330/lb – wholesale) rather than for extraction ($3/lb).

Hemp Cultivation is the Foundation of the Industry

Regardless of the numbers, North Carolina is often viewed as a U.S. leader in hemp cultivation. Our assumption is that there are significantly fewer farmers in North Carolina, but the average acres per farm is much higher, however, we were unable to triangulate the data to support this assumption at the time of this report's publication. What cannot be overstated is that hemp cultivation is the life's blood of the industry. It all starts with the plant, so having a healthy farming sector is critical to the hemp industry, regardless of if it is hemp grown for cannabinoids, fiber or grain.

NORTH CAROLINA HEMP MANUFACTURING UPDATE

The North Carolina hemp manufacturing sector has experienced significant growth over the past two to three years. Companies that were originally located in other states are relocating to North Carolina due to the state's favorable business environment. Companies as far away as Oregon and in nearby Florida have relocated to the Tarheel state.

Why is manufacturing Important?

The manufacturing sector is important because it provides a market to the farmers for non-flower products and can help transmogrify raw materials into valuable consumer products. Manufacturing companies in North Carolina are not issued specific licenses, but instead are registered as processors with the state. These registration numbers are combined with those of retailers, wholesalers, other manufacturers and even some cultivators, so the exact numbers of manufacturers is an estimate based on historic trends and averages from other states. (See appendix on methodology). The one thing that cannot be questioned is how valuable manufacturers are to the entire hemp value chain.

Manufacturing Operations can Vary Widely

The services provided under a state registered processing business can vary widely. In the traditional sense, a processor would be involved in the drying, curing and extraction of the essential oils from the plant matter sold to them by farmers. Manufacturers may also use the extracted oils to satisfy non-flower demand such as for vapes, edibles, beverages and topicals. The North Carolina manufacturing sector not only drives economic activities within the state, but also across the country. The average manufacture receives inputs from 3.5 states. While manufacturers source materials from within the state, the top states that they trade with are Florida, California, Oregon and Texas. Given that manufacturers productize hemp cultivated output and utilize other ingredients in their products, they are an extremely important part of the industry.

Hemp Manufacturing Summary

The manufacturing sector generates roughly $512.6 million in revenue in North Carolina. This sector alone employs nearly 1,500 workers paying over $61.2 million in wages.

Sector	Number of Businesses	Total Revenue	Total Jobs	Average Hourly Wage	Total Wages
Manufacturing	100	$512,600,000	1,423	$20.68	$61,211,200

NORTH CAROLINA HEMP WHOLESALE SECTOR UPDATE

The North Carolina wholesale hemp sector serves as an intermediary between manufacturers and cultivators and services both retailers and the end consumer. While it helps distribute product within the state, it also services adjacent states. The average wholesaler received inputs from 3.6 states and from across the country. North Carolina serves as a regional hub for some major wholesalers and they, in turn support demand in adjacent states. For example, both wholesalers and manufacturers benefitted when the state of Virginia imposed restrictions on hemp businesses and products. Those businesses simply left Virgina for the more favorable business friendly state of North Carolina.

Wholesale distribution is an emerging trend in hemp as it is getting tougher nationally to run brick and mortar stores. Based on the survey responses, nearly 40% of the total revenue from wholesalers is estimated to come either from out of state sales on sales online. Wholesale based online sales can also expand the market that a business can service which in turn, drives profitability. On the average, based on the survey results 90% of wholesalers are either profitable or breaking even.

Wholesale Hemp Summary

Given the need to service multiple brick and mortar stores along with online and out of state sales, the hemp wholesale sector employs nearly 4,400 workers and pays approximately $250 million in wages. In North Carolina, the wholesale sector is one of the larger part of the supply chain in terms of job creation in the hemp industry.

Sector	Number of Businesses	Total Revenue	Total Jobs	Average Hourly Wage	Total Wages
Wholesale	200	$906,800,000	4,400	$26.93	$246,422,200

NORTH CAROLINA HEMP RETAIL UPDATE

The retail hemp sector consists of many small business operators combined with some groups with multiple locations. Retailers are mainly in the form of wellness centers, smoke shops and vape stores. The retail sector has grown steadily since our last analysis published in 2023. In this analysis we assumed that there are 2,197 retail locations across the state an increase from 931 in 2023. Hemp-based retailers are difficult to quantify since many are not registered with the state. To determine the number of retail businesses we conducted a geo-fenced online analysis.

Lack of Access to Regulated Cannabis has Enabled the Hemp Industry to Flourish

North Carolinian hemp retailers enjoy higher revenues than in many other states due in part to the illegality of adult-use and medical cannabis in the state combined with the demand from customers from areas in close proximity to the state. North Carolina is one of 11 states that prohibit access to regulated cannabis. This has enabled the hemp-derived cannabinoid industry to flourish.

Consumer Preferences are Diverse

The hemp-derived cannabinoid consumer base is diverse supporting multiple product categories from hemp flower to edibles, vapes, beverages and topics all of which can either be psychoactive or non-psychoactive. Key consumer blocks such as veterans and baby boomers have voiced concerns about the impacts that a potential ban would have in terms of accessing cannabinoid products.

Retail Revenues are Above National Average

There are 40 states and D.C. that allow for some access to regulated medical cannabis, 24 states of which also allow for adult-use access. In states where there is no access to regulated cannabis, sales of hemp-derived cannabinoids command a higher price in the market. As a result, average revenues in those states tend to be higher than in state that allow both regulated cannabis and hemp-derived cannabinoids. North Carolina hemp retailers are in that group.

Over the course of 2025, Whitney Economics has analyzed several U.S. hemp markets and conducted business conditions surveys. The number of retail outlets have more than doubled in North Carolina since 2023. By offering greater consumer access, retailers are benefitting from the extra revenue potential. Survey results also indicated that this is leading to greater profitability. 97% of the retail survey respondents indicated that they are either profitable or breaking even.

Average Sales by State	Retail	Retail
Texas (2025)	$567,226	7,550
Tennessee (2025)	$705,367	2,405
Illinois (2025)	$858,342	1,014
North Carolina (2025)	$841,517	2,197

Retail Sales of Hemp-Derived Cannabinoid Products are a Source of Significant Tax Revenue for the State

Whitney Economics estimates that even when taxed at the state sales tax minimum of 4.75%, hemp-derived products generate approximately $87.8 million in sales tax revenues each year.

> *North Carolina hemp retailers, by the fact that they are profitable, generate higher revenues than in most states and contribute significant tax revenues. This indicates that they are a viable long termed contributor to the state's economy.*

THE ECONOMIC IMPACTS OF POLICIES THAT BAN OR RESTRICT SALES OF HEMP-DERIVED CANNABINOIDS

This section will also discuss the impacts restrictions on the market will have on the North Carolina economy from business revenue, tax revenue, labor, wage and economic impact perspective.

TOP CONCERNS OF BUSINESS OPERATORS

Changes to state laws viewed as top risk to the hemp-derived cannabinoid industry

To assess the potential impact, the survey examined which issue represented the greatest risk to the hemp industry. In previous surveys, operators across the country were generally more concerned about legislative changes made at the state level. This has since shifted towards more federal ambiguity and federal changes made to the future farm bill. These concerns also reflect the fact that by promoting a business-friendly environment, North Carolina had mostly assuaged the fear of hemp operators in the state. Concerns about federal changes in hindsight were justified based on the legislation passed in congress in November.

Top Risks - % of Repondents	Top Issue #1	Top Issue #2	Top Issue #3
Retail	Potential changes in the upcoming farm bill (90.0%)	Current Federal regulatory ambiguity (86.7%)	Proposed state regulation (63.3%)
Wholesale	Current Federal regulatory ambiguity (100%)	Potential changes in the upcoming farm bill (90.0%)	Proposed state regulation (75.0%)
Manufacturing	Current Federal regulatory ambiguity (86.7%)	Proposed state regulation (73.3%)	Potential changes in the upcoming farm bill (73.3%)

The impacts of anti-hemp legislation or legislation to limit access to hemp-derived cannabinoids

Survey results indicate that hemp-derived operators are extremely concerned about potential legislation that will impair their ability to support the consumers. These fears, if realized would lead to severe actions taken by the operators. In fact, if laws are passed that will limit or prohibit sales of hemp-derived cannabinoid products, a majority of the businesses would either be forced out of businesses or would move their operations to another state, if possible. These are not results that should be dismissed. In surveys on this same topic conducted in other states that were conducted prior to and post legislation, job losses occurred and businesses either folded or moved. This indicated that the predictive models were highly accurate on how businesses would react to bans or restrictions.

If laws are passed prohibiting sales of CBD or cannabinoid products, what will you do?

Reaction	We will go out of business.	We will remain in business, just with less revenue.	We will remain in business, but will layoff employees.	We will move our business to another state.	Other (please specify)
Retail	63.3%	3.3%	20.0%	10.0%	3.3%
Wholesale	40.0%	15.0%	20.0%	25.0%	0.0%
Manufacturing	40.0%	26.7%	20.0%	13.3%	0.0%
Cultivation	50.0%	30.0%	0.0%	20.0%	0.0%

The fact that between 53.3% and 73.3% of responses indicate that changes in laws that restrict sales or production of hemp-derived cannabinoid products would result in business failures or relocation show how important state policies are when it comes to the viability of the industry. This also shows how important it will be to have some form of policy reform at the federal level. Otherwise, there will be a significant impact to the North Carolina economy.

Impacts of potential legislation that restricts access to hemp derived cannabinoids in North Carolina

Based on the average sales per sector of each cannabinoid, legislation that would prohibit or severely restrict sales of cannabinoids would impact multiple product types and sectors.

Total Lost Sales Statewide Based on Bans	Retail	Wholesale	Manufacturing
THCA	($219,384,394)	($89,870,357)	($47,475,705)
Delta-9 THC	($189,468,340)	($65,581,071)	($41,283,221)
Delta-8 THC	($184,482,331)	($60,723,214)	($39,219,060)
Delta-10 THC	($64,818,116)	($19,431,429)	($12,384,966)
CBD	($224,370,403)	($82,583,571)	($51,604,027)
CBG	($184,482,331)	($65,581,071)	($35,090,738)
CBN	($174,510,313)	($58,294,286)	($28,898,255)
HHC	($109,692,197)	($38,862,857)	($16,513,289)
Hybrids – a combination of two or more of the above	($169,524,304)	($55,865,357)	($28,898,255)
None of the above	($4,986,009)	$0	$0
Other (please specify)	($14,958,027)	($7,286,786)	($6,192,483)
Total Impact Based on Bans	**($1,540,676,764)**	**($544,080,000)**	**($307,560,000)**

Legislatively Imposed bans would Reduce State Tax Revenues

Due to the reduction in business activities than bans represent, there would be a corresponding reduction in sales tax revenues. The impact is not limited to sale tax revenues, revenues would also be reduced due to lower payroll taxes, business taxes and other related taxes.

Total Lost Sales Tax Statewide Based on Bans	Retail	Wholesale	Manufacturing
THCA	($10,420,759)	($4,268,842)	($2,255,096)
Delta-9 THC	($8,999,746)	($3,115,101)	($1,960,953)
Delta-8 THC	($8,762,911)	($2,884,353)	($1,862,905)
Delta-10 THC	($3,078,861)	($922,993)	($588,286)
CBD	($10,657,594)	($3,922,720)	($2,451,191)
CBG	($8,762,911)	($3,115,101)	($1,666,810)
CBN	($8,289,240)	($2,768,979)	($1,372,667)
HHC	($5,210,379)	($1,845,986)	($784,381)
Hybrids – a combination of two or more of the above	($8,052,404)	($2,653,604)	($1,372,667)
None of the above	($236,835)	$0	$0
Other (please specify)	($710,506)	($346,122)	($294,143)
Total Lost Tax Revenues Based on Bans	**($73,182,146)**	**($25,843,800)**	**($14,609,100)**

State Expenditures would Increase as Tax Revenue Declines

While outside of the scope of this survey and report, it is notable that unemployment would increase as a result of any potential cannabinoid ban. This would increase expenditures in the form of unemployment compensation as well as increased health care expenditures.

Economic Impact of Prohibiting or Restricting Access to Cannabinoid Products.

Overall, based only on the decline in retail sales, there would be a $3.7 billion negative economic impact to the state.

The Multiplier Effect - 2.4x (Retail only)	
Total Estimated Lost Sales	($1,540,676,764)
Total Economic Impact	($3,697,624,233)

Source: Whitney Economics

> *In terms of the potential impact of legislation that prohibits or severely restricts access to hemp-derived cannabinoids, revenues would decline, tax revenue would decline, unemployment would increase and wages would decline.*

Impact of Restrictions or Bans	Retail	Wholesale	Manufacturing	Total
Revenue Impact	($1,540,676,764)	($544,080,000)	($307,560,000)	($2,392,316,764)
Lost Sales Tax Potential	($96,292,298)			($96,292,298)
Employment	(8,605)	(2,640)	(854)	(12,099)
Wages	($329,086,799)	($147,853,320)	($36,726,720)	($513,666,839)
Business Failures / Relocations	(1,831)	(120)	(60)	(2,011)

Should state or federal legislation be passed, the retail sector would be hit the hardest, with 8,605 lost jobs, a decline in wages paid by $329.1 million and a decline in taxable revenue by $1.5 billion. In total, the employment would decline by 12,099 paying $513.6 million in wages and an overall reduction in sales by $2.4 billion.

CONCLUSION

Cannabinoid Retail Is Viable in North Carolina

Despite the federal regulatory uncertainty and the dynamic market conditions, falling prices and uncertainty from regulators and policy makers, the North Carolina hemp-derived cannabinoid retail sector has quickly evolved into an economically viable and sustainable industry. With a national supply chain, this sector has had a positive economic contribution to the state.

The Overall Industry is Growing

The hemp industry is growing. Overall, revenues, employment, hourly wages have all increases since our last survey. The survey respondents indicated that revenues have grown over the past year and are forecasted to increase again in 2026.

Economic Impact of Hemp Cannabinoid Retail, Wholesale and Manufacturing on North Carolina

In addition to employing over 16,000 workers, generating $702.5 million in wages in North Carolina, the influence of this industry is felt beyond state borders. The $4.0 – $4.4 billion economic impact of hemp to the North Carolina economy is significant enough to justify more favorable policies, not less favorable ones.

Near-Unanimous Concerns from North Carolina Hemp Cannabinoid Retailers

When asked, 90.7% of respondents said that a restriction on cannabinoid retail sales would result in them either going out of business or completely exiting the state, taking with it the jobs, taxes and economic contributions with them. Public safety remains a concern for every company contributing to this report.

Whitney Economics does not recommend enacting restrictions on cannabinoid sales for several reasons:

- **The economic damage in terms of business failures, job losses and adjacent economic activity to North Carolina would be too great.**
- **There would be a shift of $3.5 - $3.7 billion in economic activity away from the state, without addressing some of the stated underlying public safety concerns regarding hemp-derived products.**
- **Restrictions on sales would displace tens of thousands of workers during a time of national economic uncertainty**
- **North Carolina cannabinoid restrictions would disrupt the hemp supply chain throughout the United States at a time when opportunities for hemp farmers are being lost at a rapid pace.**

Based upon the level of business creation, employment and economic activity, legislation and policies that restrict consumer access and sales is not recommended. A more supportive and collaborative approach that develops and implements practical policies related to public safety would support industry growth while maintaining public policy objectives. A trade-off between working to address gaps in the regulatory process, versus what would result in an outright ban, is too large to justify these restrictions on hemp-based cannabinoids. We feel that moving away from self-regulation, and toward being regulated at the product level, is a middle ground solution that makes sense, especially when compared to a complete ban of the industry.

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APPENDICES

APPENDIX

About the Author / Statement of Conflicts

Beau Whitney, Cannabis Economics, 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. Whitney Economics is based in Portland, Oregon.

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 has been recognized by governments, and throughout the economic, investment, and business communities. In 2022, Beau presented data and insights about cannabis and hemp economics at the United Nations.

His white papers analyzing the adult-use, medical and industrial cannabis markets have been referenced in the Wall Street Journal, Washington Post, New York Times, USA Today, the Associated Press, as well as in leading cannabis industry publications.

Beau Whitney is a member of the American Economic Association, the Oregon chapter president of the National Association for Business Economics, is a member of multiple regulatory advisory committees throughout the U.S. and participates on the Oregon Governor's Council of Economic Advisors.

Beau has provided policy recommendations at the state, national and international levels and is considered an authority on cannabis economics and the supply chain. Whitney Economics does not take a position on the issue of cannabis legalization or on pending legislation.

Beau Whitney
WHITNEY ECONOMICS

Statement Of Conflicts

Whitney Economics does not take a position on this issue of cannabis legalization, however there are potential conflicts while presenting economic and market analysis.

- **Whitney Economics receives compensation for business and economic analysis of the cannabis industry.**
- **Mr. Whitney has previously held positions and licenses within the legal regulated cannabis industry.**
- **Mr. Whitney currently has investments in a cannabis investment fund, Mantis Growth Investments, and he is a member of the fund's Board of Directors.**
- **Mr. Whitney is a director for the Cannabis Advisory Group (CAG) in New Jersey, a non-profit policy think tank.**
- **Whitney Economics is a member of the European Industrial Hemp Association (EIHA).**
- **Beau Whitney is serving a volunteer role as the Chief Economist for the Federation of Industrial Hemp Organizations (FIHO).**
- **Mr. Whitney is a founder of Every Day Hemp Company, an Oregon-based manufacturer of hemp based plastic products.**

APPENDIX
Methodology

Whitney Economics was selected to provide a report on the economic impact of the Hemp-based cannabinoid industry in the state of North Carolina. With a demonstrated track record of creating unbiased economic reports in the cannabis and hemp for industry groups and officials at every level of government, Whitney Economics is uniquely positioned to assess the market from an operational and policy perspective. Whitney Economics has dedicated resources for the ongoing collection and analysis of the cannabis and hemp industries, both in the U.S. and internationally. As such, we have an extensive database upon which to draw.

NOTES ON DATASET

- As part of this report, the data was gathered with a targeted survey of Hemp operators as well as smoke shops, vape shops, and CBD stores. Manufacturers and distributors were also included in the survey. Emails were sent directly to the operators and reminders were sent to drive more participation.
- Whitney Economics conducted a 28-question survey of leading hemp-based cannabinoid companies in North Carolina. This survey was conducted in Q3 and Q4, 2025.
- The survey was sent to over 1,500 (approximately 37.5%) of the estimated 4,000 Hemp, CBD and Cannabinoid retailers, manufacturers, cultivators and distributors in North Carolina.
- The data does not include assessments of the revenues derived by CBD and cannabinoid products sold at grocery stores or gas stations. ***As a result, Whitney Economics feels that the total revenues and economic impact is understated***.
- There was a response rate of 5.8% which is high. The 87 responses represented 286 businesses. Originally, the data modelling attempted to tie back the responses to the 1,789 registrants and 499 cultivators. (2,288 total licensees), however there were additional businesses identified that were not registrants. In total there is an estimated 4,000 businesses operating in the North Carolina hemp industry. Despite this decoupling the response rate to the survey was statistically viable. This enables statistical extrapolation to the extent the results and projections have a 95% confidence level with a margin of error of +/- 5.4%
- The response rates represented 18.0% of the estimated number of manufacturers, 27.0% of wholesalers and 5.2% of retailers.
- Separate research was conducted to ascertain the number of smoke shops, vape shops, hemp operators, CBD stores, gas stations, distributors and manufacturers there were in the state.
- Whitney Economics also supplemented the data with observations and data from other markets both on the adult-use and medical industries as well as with the industrial hemp industry, much of which came directly from state and federal regulators.

NOTES ON DATA FROM SURVEYS

- All data from surveys was self-reported: some data was independently verified, while some was unable to be verified.
- The data was self-reported and was not validated for accuracy, although data in the responses was triangulated for accuracy based on other survey responses and inputs from other sources.
- Data was then aggregated and then included in economic models to determine impacts
- Once the data was reviewed and tabulated, there were certain averages that stood out in the report and those averages were then extrapolated to the rest of the industry and hemp permit holders.
- Whitney Economics compiled confidential information from these surveys and the information is tightly restricted in its use and confidentiality.
- No specific company or data is mentioned in this report as a condition of the survey.

NOTES ON CALCULATION OF ECONOMIC IMPACT

- Economic impact relates in part to employment, revenues of operators, the amounts of suppliers into the market. It also examines the direct and indirect effects from the industry, such as ancillary services.
- Whitney Economics also applied a multiplier effect to the revenues derived from the hemp cannabinoid retail sector.
- Whitney Economics has previously calculated the multiplier effect for cannabis. This established cannabis multiplier (2.4x) was applied to the hemp revenues to ascertain the direct and indirect effects of the proposed legislation.
    - For comparison's sake, the multiplier effect of the construction industry is 1x and the multiplier effect of a national park relative to the local economy is 6x.

ESTIMATING THE NUMBER OF RETAILERS:

In the survey and analysis conducted in 2023, the number of retailers (931) was based on a listing of cannabis retailers along with their business names, locations and contact information. This report changed the methodology based on new strategies and web search data. In this report, a web-based geo-fencing search strategy was implemented. Simply put, a web search was conducted with certain criteria including a specific geographic area to search, associations to hemp-based retailing and other key words. From this strategy, 2,197 businesses were identified. Another, more broader search netted a total of 2,987 retailers, however, the data modelling strategy took the more conservative approach by using the lower number of retailers.

A NOTE ABOUT NORTH CAROLINA HEMP REGISTRATIONS:

Based on data from the state of North Carolina, there were 1,789 hemp registrants in their system. The state's registration system does not differentiate the type of business is registered. As a result, it is not possible to determine how many of the 1,789 registrants are processors, wholesalers, cultivators or retailers. Had it been broken down by sector, it would have been possible to provide more granular estimates related to the economic impacts that manufacturers, processors and other hemp operators would have on the state. Multiple individuals that were listed as being a hemp registrant contacted us stating that they were no longer in business, no longer growing hemp or no longer associated with the hemp industry. This called into question how many of the registrants were real. As a result, the strategy of using hemp registrants to determine market sizing had to be reexamined. Moving forward it is strong recommended that the state differentiate the registrations by sector.

ESTIMATING THE NUMBER OF WHOLESALERS:

Given that the state does not differentiate the hemp registrants by sector, estimates had to be made about the total number of North Carolina wholesaler businesses as well as the revenue derived from them. Based on previous survey data and more importantly, licensing data on the number of processors and wholesalers in other states, Whitney Economics used the ratios of wholesalers to retailers from other states and applied that to North Carolina. Whitney Economics felt confident in the estimates for the number of retailers in the state to be used as the denominator is this calculation. Whitney Economics also felt comfortable in the average revenues of wholesalers based on the survey responses. Whitney Economics was able to triangulate the revenue assumptions via other sources, so, once the ratios were applied the number of businesses and total state revenue was a simple mathematical calculation. Estimated wholesalers (200) x average survey revenue ($4.53 million) = Total state wholesale revenue ($906.8 million)

ESTIMATING THE NUMBER OF MANUFACTURERS:

The same strategy using ratios from other states was applied to the manufacturing estimates. There is a common ratio of manufacturers to retailers, and manufacturers to wholesalers. This ratio was applied to the number of retailers to determine the number of manufacturers (100). The average revenue was taken from the survey responses. The number of manufacturers (100) was multiplied by the average revenues from the survey ($5.12 million) to estimate the total hemp manufacturing revenues in the state ($512.6 million).

It was noted in the body of the report that these average revenue estimates are in line with other states of similar size and population.

APPENDIX
Survey Questions

This is a sample list of questions for the survey of Hemp and Cannabinoid operators. These questions helped form the basis for the data and impacts presented in the report.

GENERAL:
- Do you sell hemp-derived cannabinoid products?
- How would you describe your business?
- How many locations do you have in operation?
- Please enter the five digit zip code for your main office.

SALES:
- What is the average revenue per location each month?
- Are you profitable?
- What are the average sales per transaction at your company?
- Over the past six months have your sales... Increased, Decreased or Stayed the Same
- Over the next six months do you expect your sales to... Increase, Decrease or Stay the Same
- In terms of the overall market for hemp-derived cannabinoids in your state, what percentage do you estimate are sold online?
- How many average customer visits do you have each day (per location)?

EMPLOYMENT:
- How many employees do you have at each of your locations?
- What is the average hourly wage per employee?

PRODUCT TYPES AND SEGMENTATION:
- Which cannabinoid products do you sell? (List all that apply)
  - Example THCA, Delta-9, Delta-8, CBD, CBG, HHC, Hybrids
- What percentage of revenue come from the following hemp-derived cannabinoid products?
  - Example: D-9, D-8, CBD, CBG, CBN, HHC, Hybrid (combo of many)
- What percentage of cannabinoid products are sold in the following formfactors?
  - THCA Flower, Edibles, Vapes, Beverages,
- What percentage of your revenue comes from hemp-derived cannabinoid products that contain THCA?

SUPPLY CHAIN:
- How many states do you receive your products / raw materials from?
- What are the top three states you get product from?
- What percentage of RAW materials (flower, biomass, oil, etc) do you source directly from North Carolina?

OTHER:
- Do you have access to banking and financing?
- How has funding been in the past quarter?
- What are the greatest risks to your business? (Check all that apply)
  - Proposed state regulation, Competition from “marijuana”, Current Federal regulatory ambiguity, Lack of Infrastructure, Lack of investment money, Potential changes in the upcoming farm bill
- If laws are passed in your state prohibiting sales of CBD, THCA or cannabinoid products, what will you do?
  - Go out of business, move to another state, operate with less revenue,
- What help do you need as a business operator?
- What is your confidence level for your business in the next 12 months?
- Any comments you would like to add about this industry or regulatory environment?

APPENDIX
Sources / Footnotes

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Footnotes

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