



FTI Consulting

Estimating the Economic Impacts of an Adult Use Cannabis Market in Pennsylvania



FTI Consulting at a Glance

FTI Consulting is the **#1 global expert firm for organizations facing crisis and transformation.**

Within FTI’s Economic Consulting Segment is its Economic Impacts Group (“EIG”). EIG is a functional group that answers “what if” questions on economic impacts and public policy. Its clients include government agencies, corporations, numerous trade associations and business groups, and private foundations.

FTI is one of the first major U.S.-based business advisory firms to establish a cannabis-specific practice. Our multi-disciplinary team understands the unique challenges of the cannabis industry from local, national, and global perspectives. We offer a broad range of solutions to the cannabis industry to bolster profitability, enhance reputation, maintain brand integrity, and ensure regulatory compliance. The services offered by FTI’s Cannabis Practice include business valuation, dispute advisory services, strategic communication & public relations, forensic accounting & advisory services, transaction advisory services, turnaround & restructuring, among others.



8,000+
Employees
worldwide



\$7.7B
Market cap¹



33
Countries and
territories



Advisor to **64** of
the top **100 Private
Equity International
("PEI 300")** firms



Advisor to **98** of
the top **100** law
firms as ranked by
American Lawyer
Global 100



Advisor to **38** of
the world’s top
50 bank holding
companies



83
of Fortune **100**
corporations are
clients



800+
Senior Managing
Directors

(1) Number of total shares outstanding as of April 18, 2024, by the closing price per share on April 25, 2024.

Executive Summary

An adult use cannabis market in Pennsylvania has the potential for significant economic impacts and tax revenues for the state.

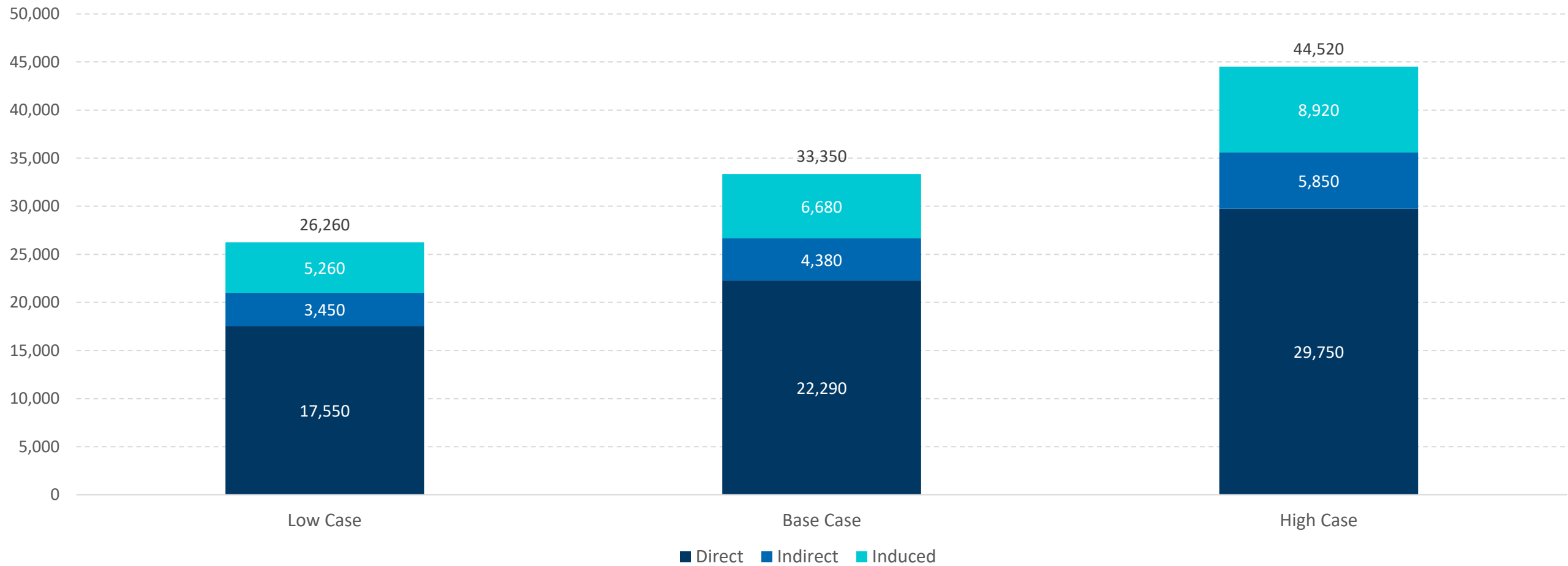
- Responsible PA engaged FTI Consulting (“FTI”) to conduct an economic impact analysis of the potential adult use cannabis market in Pennsylvania.
- FTI projected adult use sales under three scenarios based on historical relationships between retail medical and adult use sales in other states. This resulted in a base case (\$2.1 billion adult use market), low case (\$1.7 billion), and high case (\$2.8 billion).
- FTI used the IMPLAN model, an economic input-output (“IO”) model of nearly 550 sectors for the state of Pennsylvania, to project the economic impacts in Pennsylvania under each scenario. The IMPLAN model accounts for the total supply chain impacts of cannabis legalization.
- FTI’s analysis shows that the adult use cannabis market in Pennsylvania would support **between 26,250 and 44,500 jobs within the first full year of a legal adult use market**, with the base case adult use market supporting an estimated **33,350 jobs** in the state.¹
- In the base case, legalization of cannabis for adult use would lead to an additional **\$4.2 billion in economic output** and **\$2.6 billion in state GDP** in Pennsylvania.
- Further, the under the base case, legalization of cannabis for adult use would generate **\$126 million in new state sales taxes** and **\$212 million in state wholesale cannabis excise taxes**.

1. Includes only adult use market-related jobs. Medical cannabis job impacts were not modeled.

Executive Summary

Nearly two-thirds of the jobs supported by the adult use market would be direct cannabis jobs, with the remaining third supported indirectly or through induced spending.

Pennsylvania Adult Use Cannabis Market Job Impacts by Scenario



Methodology and Approach

- FTI collected retail medical and adult use sales data from Arizona, Illinois, Massachusetts, and New Jersey from public data sources and calculated the medical-to-adult use multiplier in each state's first full year of adult use sales.
 - Arizona (1.7X) and Illinois (1.8X) had significantly lower multipliers than Massachusetts (3.6X) and New Jersey (5.4X)
 - Similarities between the Arizona, Illinois, and Pennsylvania's regulatory environments led to the base case (1.8X average multiplier).
 - FTI also evaluated a "low" case using a 1.4X multiplier and a high case using a 2.4X multiplier (the average of all four states).

- Given Pennsylvania 2023 retail medical sales of \$1.2 billion, the base case adult use market was projected at \$2.1 billion. Assuming a 33% retail margin, this represents nearly \$700 million in retail marginal revenue and \$1.4 billion in wholesale sales.

- FTI distributed wholesale output across administration (14%), manufacturing (24%), management (14%), cultivation (44%), and distribution (3%). These percentages were derived using the distribution of cannabis jobs in the 2024 Vangst Jobs Report as a proxy for output.¹

- FTI mapped allocated wholesale output to appropriate sectors in the IMPLAN model, while total retail sales and a 33% margin were mapped to a retail sector. The IMPLAN model was then used to estimate the direct, indirect, and induced economic impacts of the base case adult use market.

- FTI repeated this methodology for the low and high cases to form a range of potential impacts.

- FTI supplemented IMPLAN's tax revenue impact estimates with a 6% sales tax on retail sales and a 15% cannabis excise tax on wholesale sales.²

1. Available at <https://www.vangst.com/2024-jobs-report>. FTI removed retail and wholesale jobs from the distribution of cannabis jobs provided in the report and rescaled the remaining percentages to equal 100%.

2. 15% wholesale tax assumed based on rates in other markets such as California and Colorado.

The IMPLAN Model

IMPLAN is a widely used IO model of nearly 550 sectors in the state of Pennsylvania.

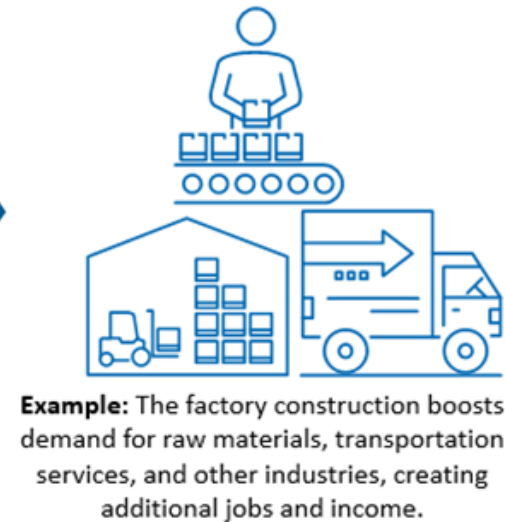
■ IMPLAN produces six main metrics, which are defined as the following:

- **Employment** equals the number of jobs supported.
- **Output** is a measure of total economic activity. It is calculated as the sum of sales to final users plus the sales of intermediate inputs.
- **GDP** is a measure of value added, it is defined as the total market value of all final goods and services, less the value of intermediate goods.
- **Labor Income** is the wages and benefits supported by employment.
- **State and Local (“S&L”) Tax Revenues** are incremental tax revenues for S&L governments due to increased economic activity, such as higher sales tax payments.
- **Federal Tax Revenues** are incremental tax revenues for the federal government, such as higher income tax payments.

Direct Effects
Immediate impact of a specific economic activity.



Indirect Effects
Secondary impacts resulting from the initial economic activity.



Induced Effects
Tertiary impacts caused by increased household income generated by direct and indirect effects.





Pennsylvania Adult Use Market

Base Case

Base Case General Assumptions

The base case is driven by a 1.8X medical market multiplier, leading to a \$2.1 billion adult use market.

- FTI derived a 1.8X medical market multiplier using the average multiplier between retail medical and adult use sales in Arizona and Illinois in their first full years of adult use sales.
- Pennsylvania's 2023 retail medical sales were roughly \$1.2 billion, leading to a first-year projection of \$2.1 billion in adult use retail sales.
- FTI assumed a retail margin of 33% based on information provided by ATACH members, leading to marginal dispensary revenue of roughly \$700 million.
- FTI assumed a general 6% retail sales tax and a 15% wholesale cannabis excise tax.
- FTI employed the IMPLAN model to estimate the economic impacts of a \$2.1 billion adult use market in Pennsylvania.
- Retail sales/margins were mapped to the retail sector, while the wholesale portion of the market (retail minus margins) were split across cultivation, administrative and management positions, manufacturing (edibles, extracts, etc.), and distribution using the cannabis job distribution from the 2024 Vangst Jobs Report as a proxy for output.¹

1. Available at <https://www.vangst.com/2024-jobs-report>. Note, distribution was rescaled to 100% after excluding retail and wholesale jobs.

Economic Impact Results – Base Case

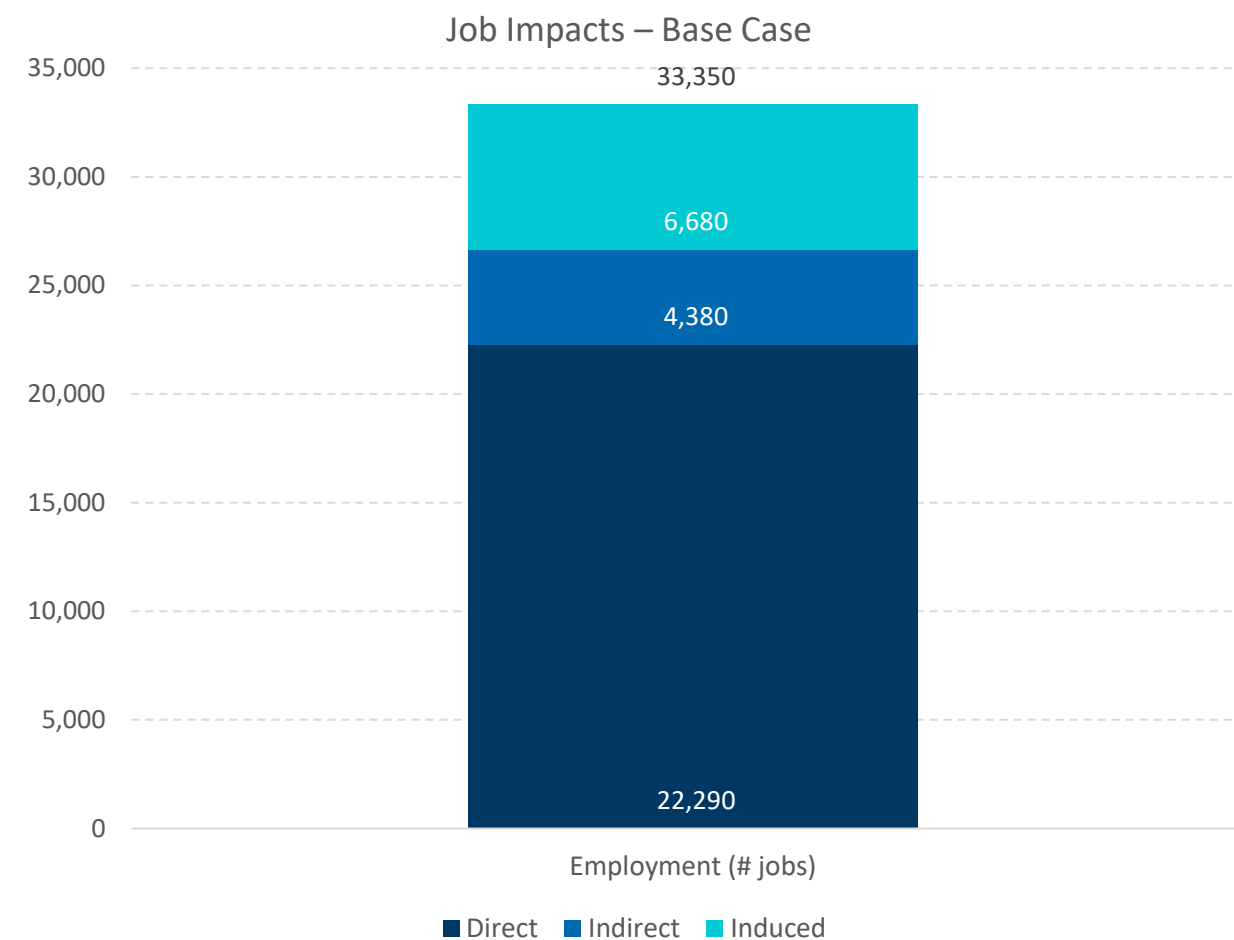
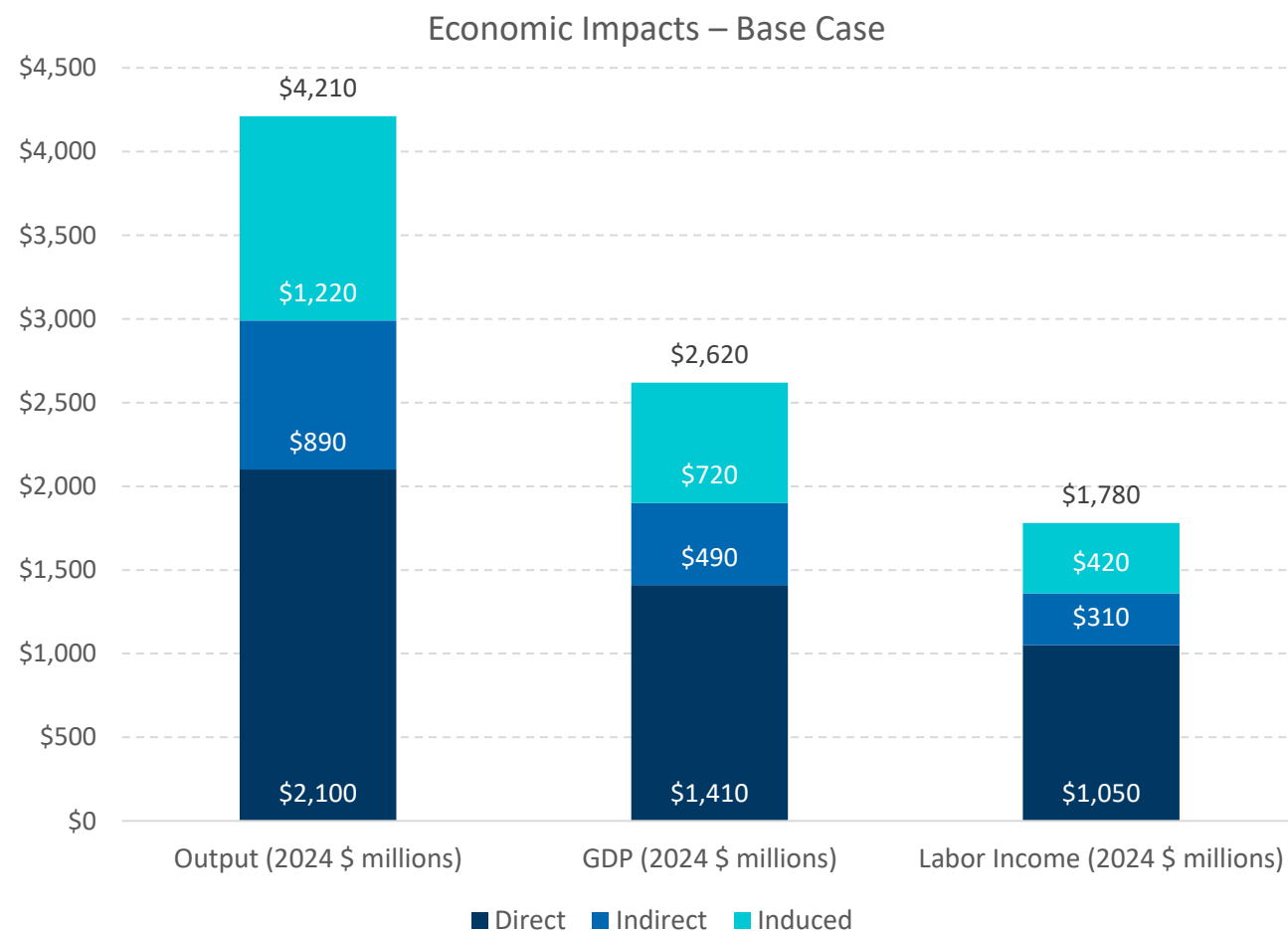
In the base case, a \$2.1 billion legal adult use cannabis market would support 33,350 jobs, over \$4.2 billion in output, \$2.6 billion in GDP, and \$530 million in state and local taxes.

- A \$2.1 billion adult use market would support an estimated 33,350 jobs in Pennsylvania.
 - Over 22,000 would be directly supported by the cannabis sector.
 - Nearly 4,400 would be supported in the cannabis supply chain.
 - Nearly 6,700 jobs would be induced by the spending of those whose jobs are supported directly or indirectly.
- Direct S&L taxes are estimated at \$420 million, with an additional \$40 million in indirect S&L taxes and \$70 million in induced S&L taxes.
- Pennsylvania’s GDP, or gross regional product, would increase by over \$4.2 billion.

Economic Impacts of Adult Use Cannabis in PA				
	Direct	Indirect	Induced	Total
Employment (# jobs)	22,290	4,380	6,680	33,350
Output (2024 \$ millions)	\$2,100	\$890	\$1,220	\$4,210
GDP (2024 \$ millions)	\$1,410	\$490	\$720	\$2,620
Labor Income (2024 \$ millions)	\$1,050	\$310	\$420	\$1,780
Federal Taxes (2024 \$ millions)	\$230	\$70	\$100	\$400
State and Local Taxes (2024 \$ millions)	\$420	\$40	\$70	\$530

Economic Impact Results – Base Case

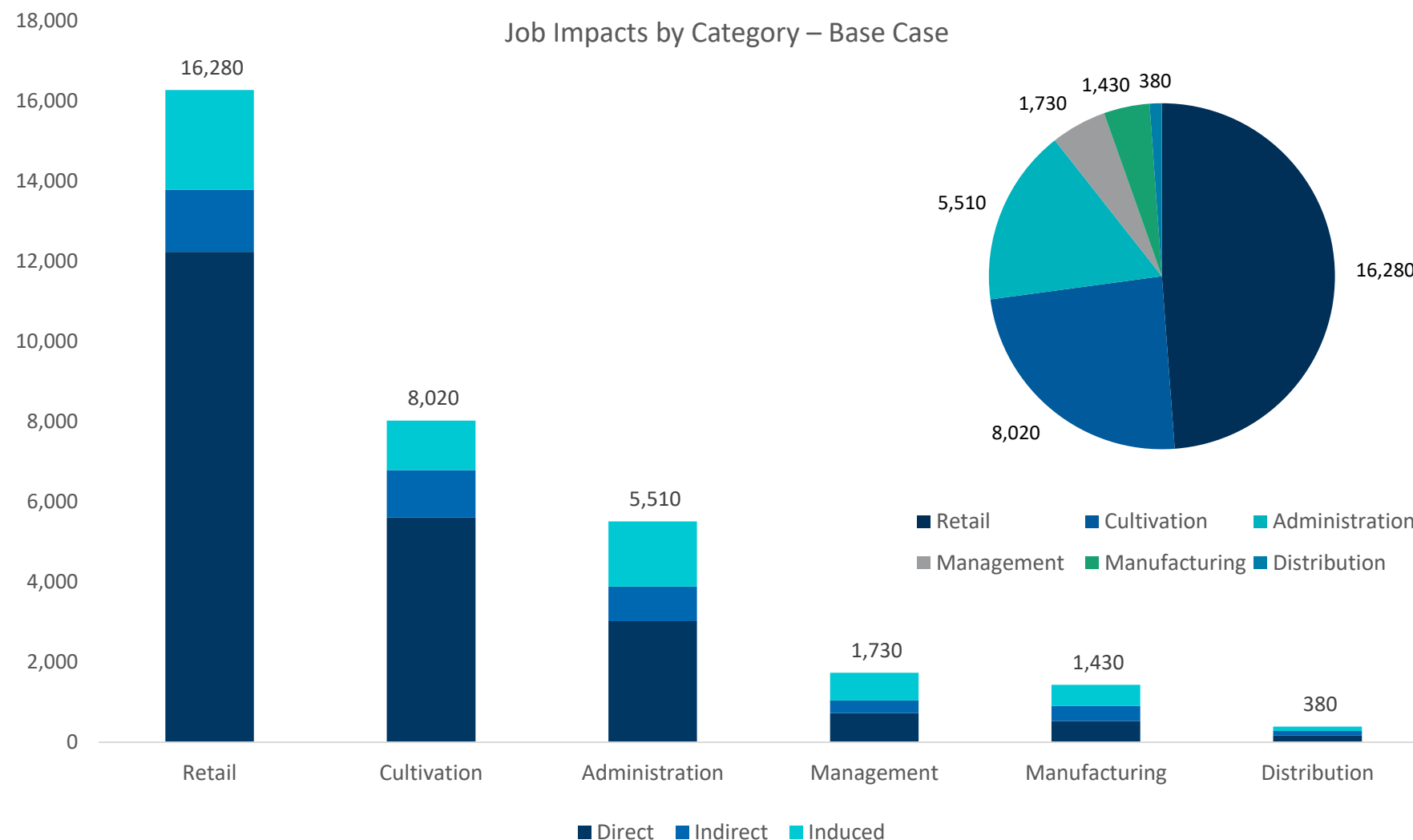
Most of the impacts would be directly supported by the cannabis sector, with meaningful contributions from the supply chain and from induced consumer spending; two-thirds of estimated jobs supported are direct cannabis jobs.



Employment – Base Case

The retail sector would support nearly 50% of the jobs.

- Of these, 12,230 would be direct retail jobs, while the remainder would be indirect jobs supporting retail or induced jobs generated via increased consumer spending.
- Over 8,000 jobs would be supported by cannabis cultivation.
- Administrative and management positions also play an important role in the market.



Tax Impacts – Base Case

A \$2.1 billion legal adult use cannabis market would generate significant S&L tax revenues through cannabis excise and sales taxes.

- Pennsylvania’s 6% sales tax would generate roughly \$126 million in new state taxes on retail sales of cannabis.
- A 15% wholesale cannabis excise tax would generate roughly \$212 million in new state taxes on wholesale sales.
- An additional \$195 million in S&L tax revenues could be collected as sales, corporate, income, property, and other taxes across direct, indirect, and induced impacts.
- The market would also generate a significant amount of federal taxes, driven primarily by payroll and income taxes paid by those whose jobs would be supported by the market.

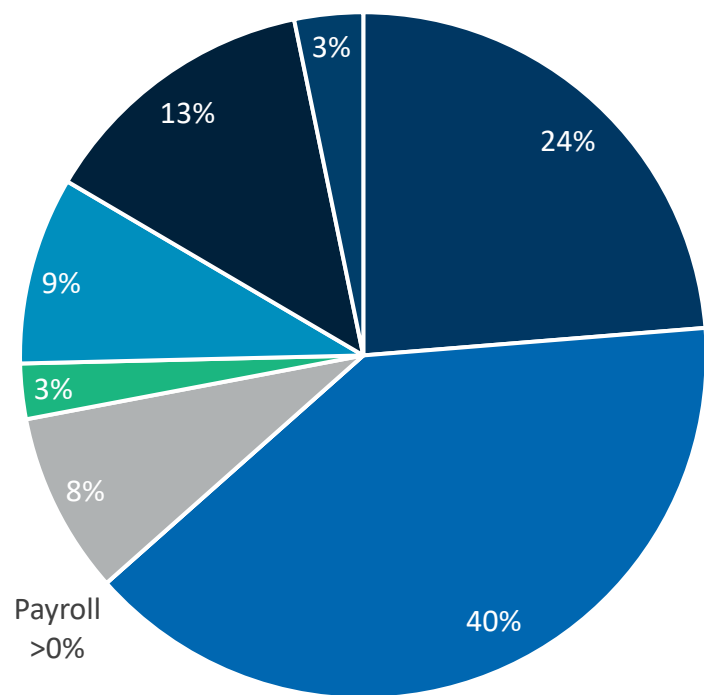
State and Local Taxes by Category (2024 \$ millions)				
	Direct	Indirect	Induced	Total
Cannabis Sales	\$126	\$0	\$0	\$126
Cannabis Excise	\$212	\$0	\$0	\$212
Payroll	>\$0	>\$0	>\$0	>\$0
Sales	\$2	\$16	\$28	\$46
Corporate	\$5	\$3	45	\$14
Income	\$28	\$8	\$11	\$47
Property	\$36	\$12	\$22	\$71
Other	\$9	\$3	\$5	\$17

Federal Taxes by Category (2024 \$ millions)				
	Direct	Indirect	Induced	Total
Payroll	\$109	\$33	\$48	\$190
Sales	\$4	\$1	\$2	\$7
Corporate	\$11	\$6	\$10	\$27
Income	\$106	\$31	\$41	\$178

Tax Impacts – Base Case

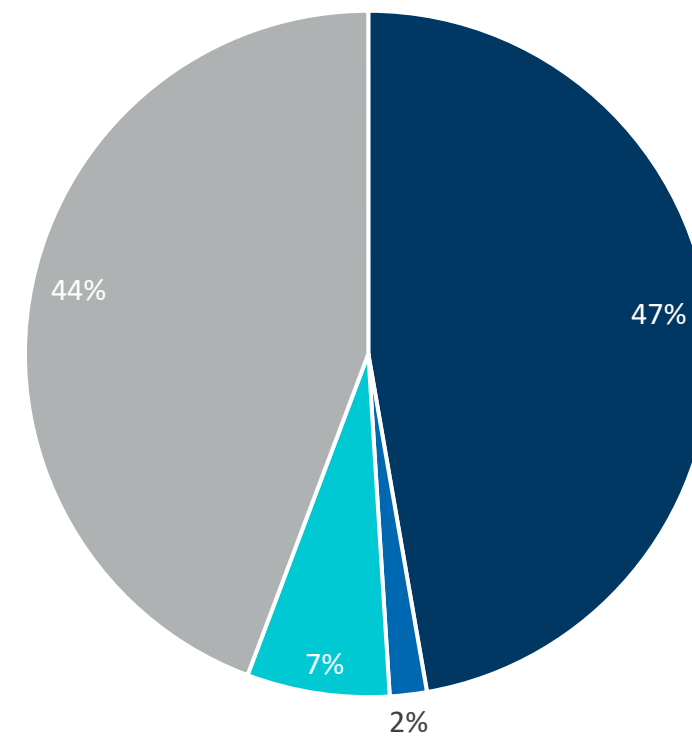
Roughly 40% of all S&L taxes generated will result from the wholesale cannabis excise tax.

State and Local Taxes by Category



■ Cannabis Sales ■ Cannabis Excise ■ Payroll ■ Sales ■ Corporate ■ Income ■ Property ■ Other

Federal Taxes by Category



■ Payroll ■ Sales ■ Corporate ■ Income

Average Dispensary Economic Impacts

The average dispensary location would support over 100 jobs across the cannabis supply chain.

- Average annual retail adult use sales per dispensary location were estimated at roughly \$6.7 million based on nearly \$1.2 billion in 2023 medical sales and 176 operating dispensaries.
- At this level of activity, each dispensary location would support nearly 110 jobs, with nearly retail 40 jobs supported directly and nearly 70 jobs supported in the value chain, indirectly, and through induced consumer spending.
- Each dispensary location would support over \$1 million in S&L taxes via retail sales and wholesale cannabis excise taxes, in addition to normal corporate, income, property, and other taxes.
- In total, nearly \$2 million in S&L taxes would be supported by each dispensary location's operations.
- Each dispensary location would contribute roughly \$8 million to state GDP and nearly \$6 million in income for local workers.

Per Dispensary Economic Impacts ¹				
	Direct	Indirect	Induced	Total
Employment (# jobs)	71	14	21	107
Output (2024 \$ millions)	\$7	\$3	\$4	\$13
GDP (2024 \$ millions)	\$5	\$2	\$2	\$8
Labor Income (2024 \$ millions)	\$3	\$1	\$1	\$6
Federal Taxes (2024 \$ millions)	\$1	>\$0	>\$0	\$1
State and Local Taxes (2024 \$ millions)	\$1	>\$0	>\$0	\$2

Per Dispensary Total Job Impacts ¹				
	Direct	Indirect	Induced	Total
Retail	39	5	8	52
Cultivation	18	4	4	26
Administration	10	3	5	18
Management	2	1	2	6
Manufacturing	2	1	2	5
Distribution	1	0	0	1

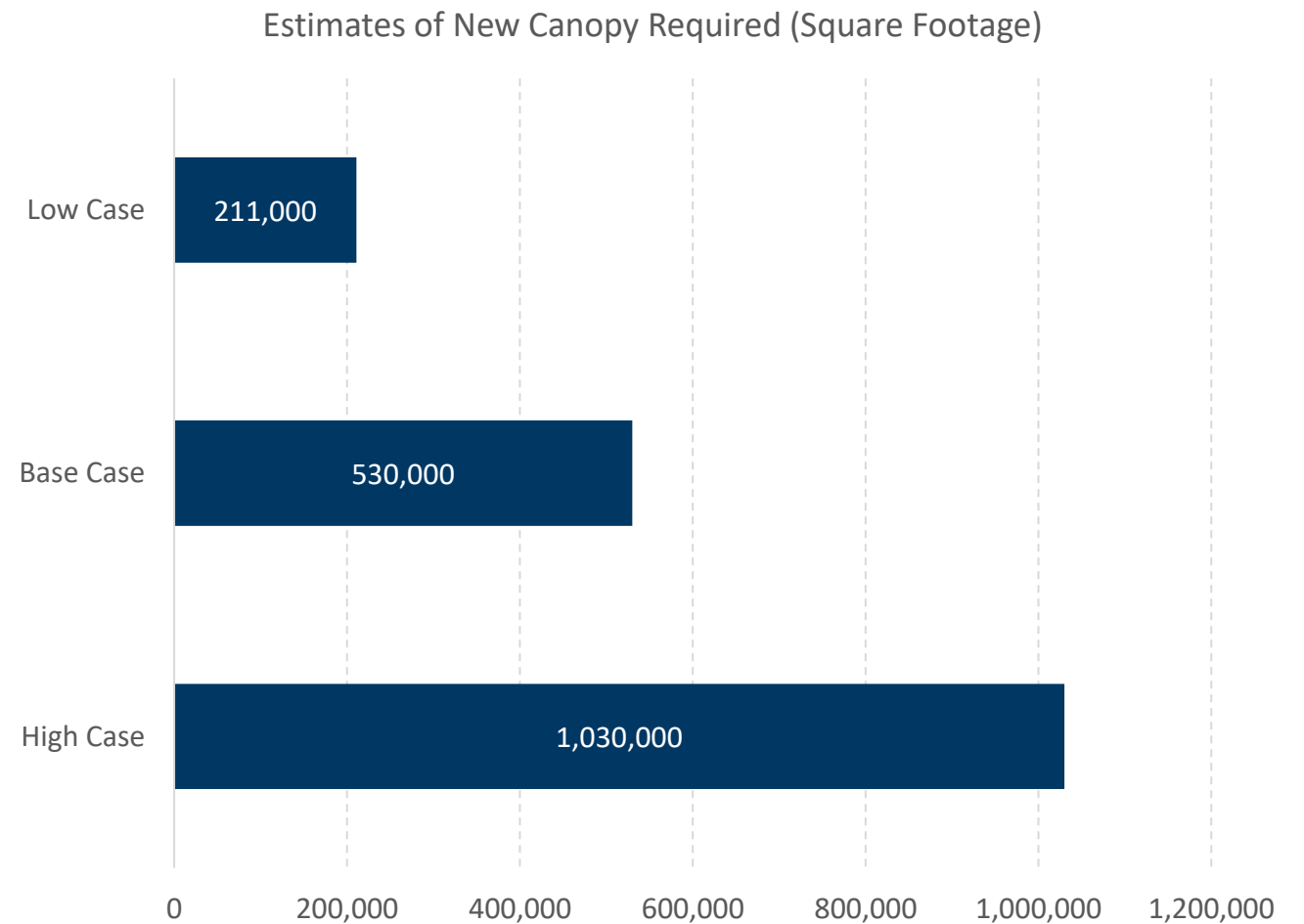


Pennsylvania Adult Use Market Grower-Processor Licenses

Grower-Processor Licenses

Depending on market size, additional cultivation will be needed in the state.

- Currently, there is an estimated 750k square feet of canopy in Pennsylvania to support the medical market (\$1.2 billion retail in 2023). It is estimated that existing licensees can expand to 1.25 million square feet of canopy.¹
- Assuming a decrease in the medical market to \$400 million, the combined sales of a \$2.1 billion retail adult use market and the medical market would be roughly \$2.5 billion in the base case. (\$2.0 billion in the low case, \$3.2 billion in the high case)
- In the base case, assuming a retail flower price of \$4,536 per pound (\$10/gram), this would translate to over 661k pounds of cannabis required to meet demand.¹ In markets where canopy space and licensing has not been properly controlled, overproduction and price instability have occurred.
- Assuming production yield of 45 grams per square foot with an average of 4.5 turns per year and a 10% failure rate, this translates to just over 1.75 million square feet of canopy required, including non-plant space.²
- This results in nearly 530k square feet of additional canopy needed in the base case. However, there are at least 75,000 square feet in the current program not yet utilized as well as many operators in the program with planned canopy expansion.
- Assuming micro-cultivation licenses capped at 10,000 square feet, roughly 46 new micro-cultivation licenses would be needed in the base case. If only new cultivation licenses were issued and capped at 75,000 square feet, only 6 cultivation licenses would be needed in the base case.



1. Based on interviews with American Trade Association for Cannabis & Hemp members
 2. Total square footage estimate accounts for 30% non-plant space



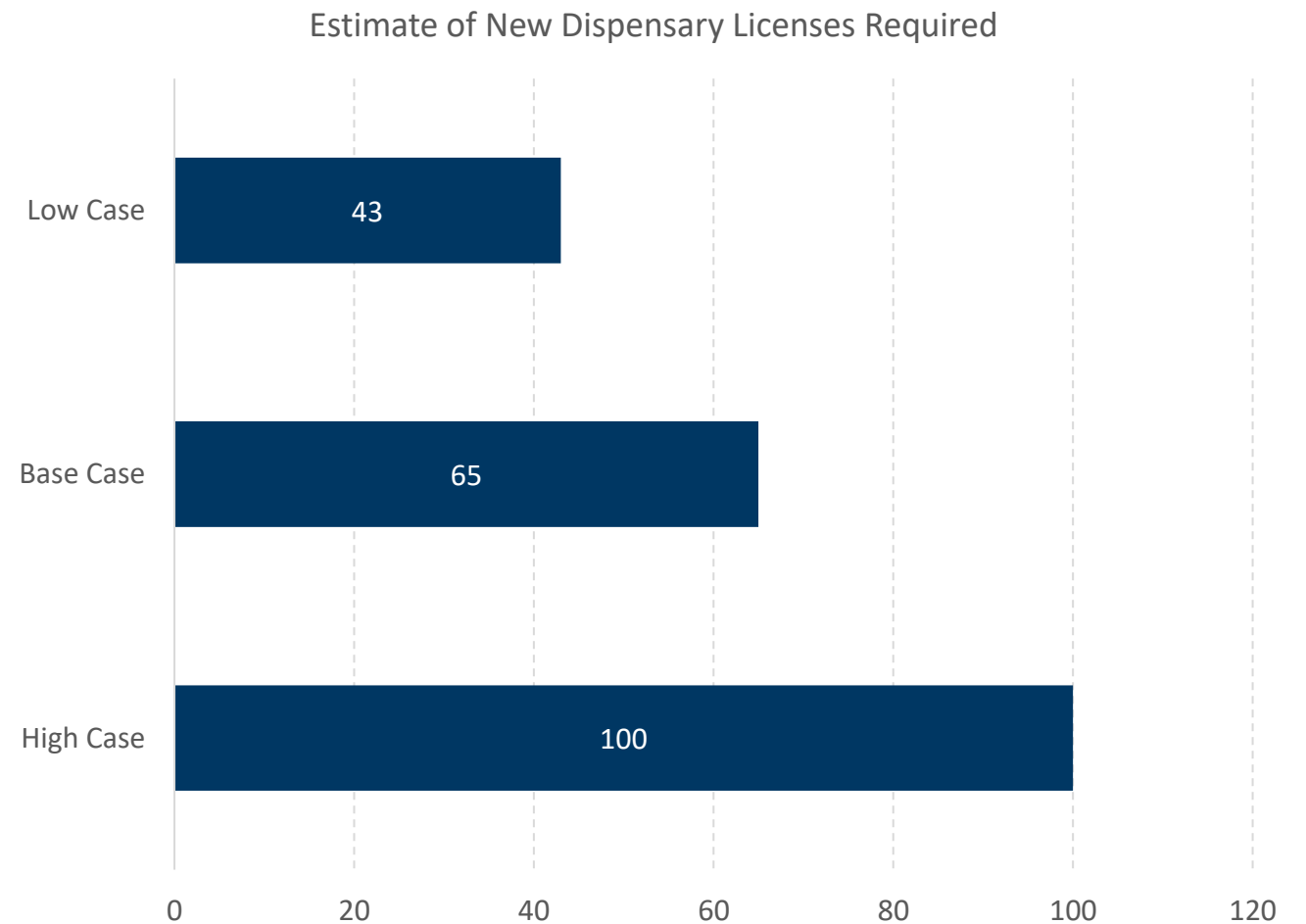
Pennsylvania Adult Use Market

Dispensary Licenses

Dispensary Licenses

Depending on market size, between 43 and 100 new dispensary licenses will be needed in the state.

- As of 10/31/2023, there were 176 operational dispensaries serving the medical market in Pennsylvania.¹
- The average medical dispensary location does roughly \$6.7 million/year in retail sales based on just under \$1.2 billion in total 2023 retail medical sales.
- Assuming a \$2.5 billion retail market (\$2.1 billion adult use and \$400 million medical), a total of 371 dispensary locations would be needed to satisfy demand in the base case, meaning that 195 new dispensary locations would have to begin operating.
- The current medical program allows for the opening of three retail locations per permit. If the adult-use program were to do the same, roughly 65 additional dispensary permits would need to be issued in the base case.



Currently Underserved Counties

The Pennsylvania Department of Health has identified 13 underserved counties based on average distance traveled per order and current population density or certification density per dispensary.

- Adams
- Beaver
- Bedford
- Bradford
- Clinton
- Fayette
- Juniata
- Northumberland
- Pike
- Schuylkill
- Tioga
- Venango
- Warren



Economic Impacts Group:
brendan.casey@fticonsulting.com

Cannabis Practice:
sammy.markland@fticonsulting.com