



An Economic Impact Analysis of the Proposed Arkansas Adult Use Cannabis Amendment

Prepared by the Arkansas Economic Development Institute*
for
Responsible Growth Arkansas

September 2022

*Principal investigators for this study were Michael Pakko and Carlos Silva.

An Economic Impact Analysis of the Proposed Arkansas Adult Use Cannabis Amendment

Executive Summary

In late 2021, the organization known as Responsible Growth Arkansas launched an initiative to amend the Arkansas Constitution to permit adult use of cannabis. Supporters of the Arkansas Adult Use Cannabis Amendment (AAUCA) have successfully collected petition signatures for the measure to appear on the ballot in November 2022. Researchers at the Arkansas Economic Development Institute (AEDI) were commissioned to conduct an economic analysis of the AAUCA proposal. This report summarizes the findings of that research, which covers a five-year forecast period from 2023 to 2027.

Among key findings of the report:

- Based on the experience of other states that have authorized adult-use cannabis sales, we expect combined sales of medical and adult-use marijuana to more than double in the first year after implementation of AAUCA, with total sales subsequently increasing from approximately \$665.6 million in 2023 to \$984 million by 2027.
- The measurable economic impact of introducing an adult-use marijuana market, including economic activity diverted from illicit markets, is estimated to include:
 - An increase in state GDP of \$2.36 billion over the five-year study period
 - Increases in employment ranging from 4,900 jobs in 2023 to 6,400 jobs in 2027
- Recognizing that economic activity diverted from illicit markets does not represent actual economic impact and adjusting accordingly, the *true* economic impact of the proposed changes remains substantial, with predictions of:
 - An increase in effective GDP of \$1.89 billion over the five-year study period.
 - Increases in employment ranging from 3,700 jobs in 2023 to 5,200 in 2027.
- Fiscal impacts of the AAUCA depend on the measurable, rather than actual impacts. Over the five-year study period, these impacts are estimated to include:
 - State sales tax receipts of \$163.1 million plus an additional \$303.6 million from the proposed 10% supplemental sales tax on adult-use cannabis, representing an increase of \$286.5 million in state sales tax revenue relative to the medical-only baseline scenario
 - Personal income tax collections increasing by \$30.8 million relative to the baseline.
 - County and municipal tax collections totaling \$92.6 million, representing an increase of \$50.3 million over the baseline.
- Of the \$303.6 million in state revenue generated by the supplemental sales tax, earmarked transfers over the five-year period include:
 - The provision of \$45.5 million for annual stipends to law enforcement officers
 - Funding for UAMS totaling \$30.4 million
 - Support for drug courts of \$15.2 million
- Much of the potential economic impact derives from purchases by out-of-state consumers, particularly new tourists who are attracted to vacation in Arkansas specifically because of the availability of adult-use cannabis. Discounting this source of demand to zero defines a low-impact scenario that provides a lower bound on our economic impact estimates. Even with this adjustment, economic and fiscal impacts remain significant, including a five-year increase in GDP of \$1.66 billion and sales tax receipts that are \$240 million above the baseline simulation.

Introduction

In late 2021, the organization Responsible Growth Arkansas launched an initiative to amend the Arkansas Constitution to permit adult use of cannabis. Supporters of the Arkansas Adult Use Cannabis Amendment (AAUCA) have successfully collected petition signatures for the measure to appear on the ballot in November 2022. Researchers at the Arkansas Economic Development Institute (AEDI) were commissioned to conduct an economic analysis of the AAUCA proposal. This report summarizes the findings of that research.

Our analysis begins with a description of the status quo—a regime of regulated production and sales of medical-use marijuana. The objective is to evaluate the net economic impact of the AAUCA relative to this existing baseline.

A description of the proposed AAUCA follows, providing some important details of the proposed amendment that are relevant to the analysis.

The next section describes our methodology for addressing the question: the application of a customized, dynamic simulation model, designed to investigate the direct, secondary, and dynamic effects of the proposed policy change.

Continuing with methodological issues, we next describe our framework for evaluating specific sources of demand, including sales to those who presently purchase marijuana illegally, new in-state consumers, and demand from out-of-state tourists.

A fundamental input to the model is a projection of total cannabis sales. Consequently, the next step in our analysis is to apply cross-sectional regression analysis to data from other states that have legalized adult-use cannabis, in order to project an expected total industry demand for Arkansas.

Having derived estimates of total demand, we turn next to the calibration of the model, projecting the relative contributions to total demand from the various sources of demand identified in our model.

The next stage of analysis involves running the model to estimate the direct and secondary effects of introducing adult-use cannabis, as well as distinguishing between measurable and actual economic impacts.

A subsequent section on the fiscal impact of the proposed policy change evaluates the implications for state and local tax revenues.

Background: Medical Marijuana in Arkansas

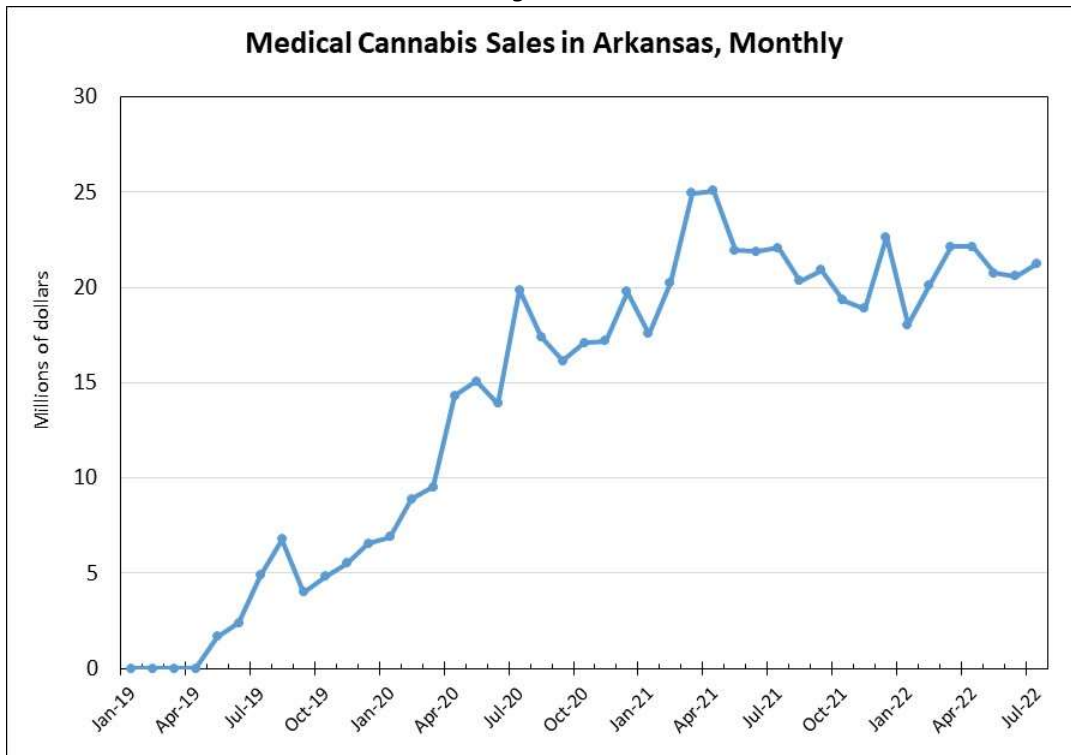
The Arkansas Medical Marijuana Amendment (AMMA) became the 98th Amendment to the Arkansas State Constitution when voters approved the measure on November 8, 2016. After more than two years of working out the implementation details and the process of licensing cultivation facilities and dispensaries, the first dispensary opened for business in May 2019.

The newly emerging cannabis industry has shown remarkable growth since then, far exceeding initial expectations. In a 2016 report estimating the industry's potential growth, The Department of Finance and Administration (DF&A) projected total annual sales of \$38.3 million, but speculated that it might take 18 to 24 months to reach that level.¹ During FY 2020, the first full fiscal year of implementation,

¹ Arkansas Department of Finance and Administration, "Arkansas Medical Marijuana Amendment (AMMA) Administrative Implementation," 2016.

total industry sales exceeded \$89 million. By calendar year 2021, the annual total had grown to over \$250 million. As of February 2022, 37 dispensaries in operation around the state had sold a cumulative total of approximately 80,000 pounds of cannabis product since the first dispensary opened in May 2019. In the first eight months of 2022 “patients spent \$181 million to obtain 32,027 pounds.”²

Figure 1:



Source: Derived from DF&A Sales Tax Receipts, as reported monthly in “Statement of Gross Tax Collections”

The Arkansas Department of Health, DFA-Alcohol Beverage Control Administration, DFA-Alcohol Beverage Control-Enforcement, and the newly created Medical Marijuana Commission administer the AMMA. Detailed rules and regulations, enforced through bi-annual inspections, govern the manufacturing, processing, packaging, dispensing, disposing, advertising, and marketing of medical marijuana by cultivation facilities and dispensaries. Current law allows for eight cultivation facilities and up to forty dispensaries distributed in eight pre-designated zones throughout the state. Arkansas counties are limited to three dispensaries each.

Under the AMMA, sales of medical marijuana are subject to state and local taxes. The dispensaries and cultivation facilities are cash-based businesses and must pay all taxes, including sales and withholding, directly in cash to the state Central Revenue Office. The state sales tax is assessed on all final sales from dispensaries to patients. Sales from cultivators to the dispensaries are treated as “sales for resale” and are therefore exempt from the sales tax.³ The state also levies a “Usable Marijuana Privilege Tax” of 4%

² Scott Hardin, Spokesperson for the Department of Finance and Administration, August 9, 2022.

³Lauren Ballard, “Gross Receipts Tax – Taxability of Medical Marijuana Sales, Opinion No. 20170525,” Department of Finance and Administration, Revenue Legal Counsel.

on the value of all sales of marijuana, whether the sale is to the final consumer or to another marijuana business entity on the wholesale level.⁴

Many of the details of AMMA are important for our analysis because the new proposal, the Arkansas Adult Use Cannabis Amendment (AAUCA), builds directly on the industry structure already established for medical marijuana. Our approach to modeling the impact of AAUCA is to incorporate the existing medical marijuana industry into our simulation model, then use the results to estimate the impact of an expansion of the industry to accommodate increased demand for adult-use cannabis in Arkansas.

The Arkansas Adult-Use Cannabis Amendment

The constitutional amendment proposed by Responsible Growth Arkansas, the AAUCA, builds directly on the industry structure established under the Arkansas Medical Marijuana Amendment.

The AAUCA specifies that existing cultivators of medical marijuana will be designated as “Tier One” cultivation facilities for adult-use cannabis, with each of the eight existing facilities required to maintain two licenses: one for medical and one for adult-use. The number of Tier One facilities would be capped at eight.

In addition, the amendment authorizes the licensing of 12 new “Tier-Two” adult-use cultivation facilities, each of which would be limited to producing no more than 250 mature cannabis plants. To further increase industry capacity, the current limitation that a dispensary may grow no more than 50 mature plants would be amended to allow for 100 mature plants (plus seedlings).⁵

On the retail side, the AAUCA calls for each existing medical marijuana dispensary to be issued two additional licenses: The first would allow for sales of marijuana for adult-use to be sold from the existing dispensary locations, while the second would permit each dispensary to open a second location that would be licensed only for adult-use sales. The amendment calls for 40 additional adult-use licenses to be issued, bringing the total number of dispensaries to 120 (where it would be capped).

Implementation would begin with the first legal sales of adult-use cannabis by March 7, 2023, with the additional dispensary and cultivator licenses to be issued by July 5 and November 8, respectively.

The AAUCA include provisions to change the taxation of the industry as well. It would repeal the Marijuana Privilege Tax and make all medical marijuana sales tax exempt. Adult-use sales would be subject all applicable sales taxes, plus a 10% supplemental sales tax.

The proposed Amendment also contains other provisions regarding standards, packaging, ownership restrictions, etc. Still, the primary regulators for the cannabis industry would continue to be the Arkansas Beverage Control Board, the Department of Health, and the Medical Marijuana Commission (or its successor). The major parameters of the industry structure would remain unchanged from the

⁴ A.C.A. §26-57-1504, Arkansas Medical Marijuana Special Privilege Tax Act of 2017 (Act no. 1098 of 2017).

⁵ This analysis makes no effort to evaluate the adequacy or efficiency of this market structure for accommodating the demand for adult-use cannabis. We work from the assumption that increases in total cannabis demand would be met without significant supply disruption or price effects.

present arrangements. Hence our approach to modeling the new adult-use industry is to treat it as a straightforward expansion of the current medical marijuana market.

Methodology

In order to measure the potential economic impact of the adult-use cannabis proposal, we utilize some standard tools of regional economic impact analysis, first estimating the present contribution of the medical marijuana industry to the state's economy then projecting the impact of extending the market to include adult recreational use.

Specifically, we apply a customized dynamic model of the Arkansas economy, constructed by Regional Economic Modelling Inc. (REMI). The model measures economic activity by tracing spending flows and financial linkages between industries, households, and institutions. Because the cannabis industry is a relatively new participant in the state's economy, the REMI model was adjusted using revenue, cost, employment, and ownership data from dispensaries and growers in the present medical marijuana industry.⁶

The model allows us to derive direct, indirect, and induced economic effects associated with the introduction of adult-use cannabis sales. Direct effects are the initial dollars spent by consumers; indirect effects are business-to-business transactions that can generate additional rounds of spending as the businesses involved purchase more goods and hire new workers to fulfill the new orders; and induced effects are the household expenditures tied to salaries and wages paid to those employed directly or indirectly in the industry.

Application of the REMI model to the cannabis industry presents a challenge: Because it is a new industry, it is not included in the model's existing equations (which are calculated using past data). Consequently, AEDI researchers introduced a new sector to the model, using values derived from accounting records for a sample cultivator and dispensary provided by Responsible Growth Arkansas. Adding the new industry required estimates of the cost structure of the industry, accounting for links between the firms, their workers, contractors and suppliers. No effort was made to distinguish individual firms. Rather, AEDI researchers used the sample data to derive average industry values to model two "representative firms" – one for cultivators and one for dispensaries. The two custom sectors were then combined to create a single integrated industry, with its output entering the economy as contributions to "other retail sales." Model simulations then deliver estimates of total, indirect, and induced economic impacts.

Focus areas include sales growth, state GDP, employment, income, and the fiscal impact of taxes generated.

Evaluating Economic Impact

In order to accurately describe the economic impact of any industry, it is important to clearly define the term "economic impact." In a regional development context, economic impact is most often defined as the additional (net) economic activity that is brought to a region's economy by a new development, project, or market. It is typically expressed in terms of higher GDP or increased employment. A looser

⁶ The REMI model has been previously used in evaluating a variety of policies including cannabis. See, for example, V. Diaby, V. Sanogo, H. Xiao, X. Zhong,, J. Dykes, and C. Judson (2018). "Economic impact of the passage of the medical marijuana law in the state of Florida." *Available at SSRN 3265254*; and F. Carstensen (2020), "Projecting Economic Impacts of Legalizing Marijuana in Connecticut." Connecticut Center for Economic Analysis. <https://ccea.uconn.edu/2020/10/23/1602/>

definition, which might be termed “economic contribution” analysis, considers the gross contribution of an industry to the aggregate economy, without netting out the substitution effects on other industries that occur when consumer spending is diverted to the new market or product. In a broader economic context, economists often consider consumer welfare and market efficiency as the criteria for evaluating economic effects.

The particular market under consideration—adult-use cannabis—presents some unique complications due to the fact that while a market already exists, it is an illegal, underground black-market. In addition, there is already a legal, organized market for medical marijuana that must be considered when evaluating the net impact of the proposed adult-use market.

Consider the following four sources of demand (D):

$$D = D_M + D_N + D_I + D_T, \text{ where}$$

D_M = Medical marijuana spending

D_N = New consumer spending

D_I = Illicit market diversion

D_T = Tourist spending

Current patients who are presently buying medical marijuana (D_M) will continue to provide a component of total demand for cannabis. Some may shift to adult-use market and some may continue to participate in the medical market, preferring the tax-free status proposed in the AAUCA. In either case, they will comprise a share of total demand that is unlikely to result in any significant new diversion of spending.

New users (D_N) are those who do not currently purchase or use cannabis but would choose to do so if it were legal and available. In this case, consumer spending will be diverted: Any increased spending on marijuana will be offset by decreased spending in other markets. A statewide “economic impact” (strictly speaking) will arise only if the in-state spending on cannabis is substituted for spending on other goods or services from outside the state.

Illicit market diversion (D_I) is the most challenging component to measure and evaluate. As a first approximation, demand from this source might reasonably be assumed to substitute directly away from the black market toward the legal market (holding prices and quantities constant). In the context of a pure economic impact evaluation, this would result in no net effect on *actual* economic activity (the black market is part of the economy too) but it directly affects *measured* economic activity. This source of demand also matters when it comes to fiscal impact: a legal adult-use market would move marijuana sales from the unmeasured shadow-economy into the realm of legitimate economic activity, and will be reflected in official measures of total production, sales, and tax revenues. Accordingly, we adjust the raw output of the model simulation for this component to account for actual economic impact versus measurable impact

On the supply side, the new market in adult-use cannabis might be expected to displace the illegal market’s existing production/distribution/sales structure. This shift has implications for interpreting both the direct and secondary effects of the proposed change. “Indirect” effects (those deriving from the purchase of inputs by producers) already exist in a black market and may be already reflected in measured economic activity. “Induced” effects (spending by those who derive their income from an activity or market) are also likely to already exist in the legitimate measured economy. Hence, these secondary effects already exist in the present market structure, so the introduction of a legal market might make little or no difference when it comes to total, indirect, or induced spending. In our model

simulations, we will assume that one-half of the secondary effects from sales of adult-use cannabis are already reflected in current economic activity, with the remaining half constituting new (or newly measurable) effects.

The fourth channel of demand, cannabis tourism (D_T), is a potentially rich source of actual economic impact for the state. Branded as *The Natural State*, Arkansas has a vibrant tourism industry that focuses on the state’s natural beauty. As the only state in the South with legal adult-use cannabis, we might expect a boost to the tourism industry, adding value via money spent on cannabis, in addition to typical tourist spending. Spending from out of state customers has been documented in the case of Illinois, and “Marijuana Tourism” has become a phenomenon in other states that have adult-use markets.⁷

Projecting Total Industry Demand

The first step in evaluating the potential impact of the Adult-use cannabis market is to forecast total industry demand and sales. For this exercise, we turn to data from other states that have moved from medical to adult use. Presently, 37 states permit medical marijuana, and 19 that have adopted laws allowing for adult-use.⁸ Among those that have moved to adopt adult-use, several are just getting started or are still in the very early stages of implementation.

Our research focused on those states with at least one full year of data for sales in 2021 (although we also include Arizona, where sales began in mid-January of 2021).⁹ Table 1 summarizes some of the characteristics of the states in our sample.

Table 1:

Cannabis Sales, Population, and Income by State - 2021 (Millions)					
States	Adult-Use Sales	Medical Sales	Total Sales	Estimated Population 21+(^a)	Personal Income(^b)
Arizona	600.0	764.6	1,364.6	5.250	395,110.7
California(^c)	5,269.9	771.2	6,041.2	29.102	2,997,205.6
Colorado	1,824.6	404.4	2,229.0	4.290	401,122.9
Illinois	1,379.1	397.3	1,776.3	9.468	850,196.6
Michigan	1,312.0	481.2	1,793.2	7.513	558,329.6
Nevada(^d)	1,042.1	NA	1,042.1	2.305	183,083.4
Oregon	1,084.4	99.7	1,184.1	3.217	257,641.2
Washington	1,450.2	16.5	1,466.7	5.752	556,326.7
Arkansas	NA	253.0	253.0	2.194	154,768.6

⁷ Will Yakowicz and Suzanne Rowan Kelleher, “Cannabis Tourism Is Now A \$17 Billion Industry—And It’s Just Taking Off,” *Forbes*, May 29, 2022.

⁸ National Conference of State Legislators, “State Medical Cannabis Laws,” 7/18/2022 <https://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx>

⁹ Our analysis for excludes Maine, which has had adult-use availability since September 2020. However, we were unable to locate data on medical cannabis sales, which would appear to constitute a significant share of the market.

Table 1 (Cont.)

Notes to Table 1:

- (a) 2020 Census totals, multiplied by proportions for ages 21+ from the 2019 Census Population Estimates. Source: U.S. Census Bureau.
- (b) Source: U.S. Bureau of Economic Analysis
- (c) Detailed information on California medical cannabis sales is unavailable. Medical sales are estimated using forecast values from the California Agricultural Issues Lab, <https://cail.ucdavis.edu/2018/01/04/legal-weed-hurts-prognosis-for-california-medical-pot-market/>
- (d) Nevada reports only the sum of adult-use and medical sales.

Sources:

- *Arizona*: Arizona Department of Revenue, <https://azdor.gov/reports-statistics-and-legal-research/marijuana-tax-collection>
- *California*: California Department of Tax and Fee Administration, <https://www.cdtfa.ca.gov/dataportal/dataset.htm?url=CannabisTaxRevenues>
- *Colorado*: Colorado Department of Revenue, <https://cdor.colorado.gov/data-and-reports/marijuana-data/marijuana-sales-reports>
- *Illinois*: Illinois Department of Financial and Professional Regulation, <https://idfpr.illinois.gov/>
- *Michigan*: Michigan Marijuana Regulatory Agency, Monthly Reports, 2018 - April 2022 <https://www.michigan.gov/mra/resources/cannabis-regulatory-agency-licensing-reports/marijuana-regulatory-agency-statistical-report>
- *Nevada*: State of Nevada Department of Taxation, https://tax.nv.gov/Publications/Cannabis_Statistics_and_Reports/
- *Oregon*: Oregon Department of Revenue, <https://www.oregon.gov/dor/programs/gov-research/pages/research-marijuana.aspx>
- *Washington*: Department of Revenue, <https://dor.wa.gov/about/statistics-reports/recreational-and-medical-marijuana-taxes>

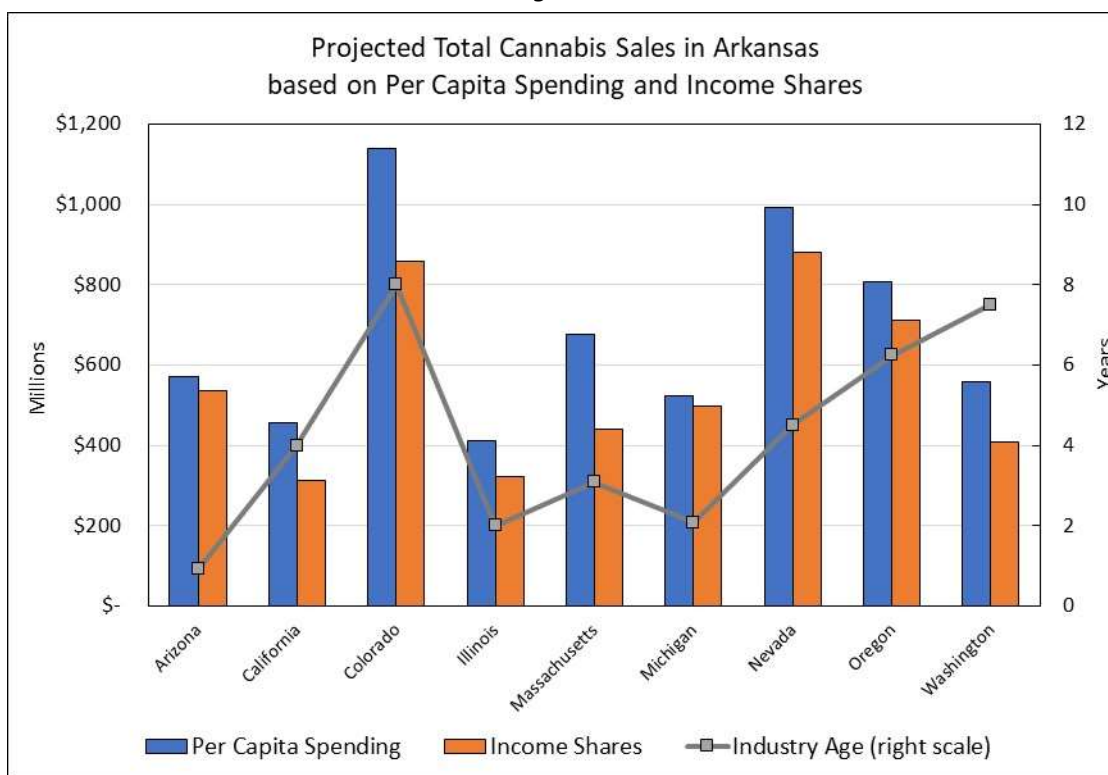
The first issue in forecasting potential demand for Arkansas is to note that the states in our sample are of widely varying sizes. We consider population and total personal income as potential scale variables in order to adjust for the size of the Arkansas economy relative to the states in our sample. We use the data in Columns 4 and 5 of Table 1 to calculate total cannabis sales per capita and as a share of total personal income, respectively. If we multiply those per-capita and income-share statistics by the population or total income in Arkansas, we generate a range of possible levels of total cannabis demand.

As shown in Figure 2, however, these calculations yield a wide range of possible outcomes. Using per-capita spending, sales projections for Arkansas range from \$412 million (based on data from Illinois) to over \$1 billion (based on data from Colorado). Using cannabis spending as a share of income, the estimates are somewhat lower but still wide-ranging. On average, the per capita calculation suggests total industry demand of \$681.7 million, while the income share calculation yields an average value of \$552.1 million.

Figure 2 displays an additional variable that is highly correlated with the variability of these simple estimates: The number of years that an adult-use cannabis industry has existed in each state. We take this correlation to be indicative of a growth phase that is frequently observed as new industries mature. The first state to establish an adult-use market was Colorado, where the first retail outlets opened on January 1, 2014. Washington began shortly thereafter, on July 8, 2014. The adult-use market is likely to

have fully matured well before 7 to 8 years had passed, and the size of the markets in those early-adopter states is likely to be biased by initial conditions (the first states to legalize adult use are likely to be those with greater potential demand to begin with).

Figure 2:



Sources: See Notes to Table 1

In order to identify an age-maturity profile over time, we use a truncated measure of industry age at five years: For each state, the variable AGE_i represents the number of years the adult-use industry has existed as of the end of 2021, with a maximum value of five. Using the industry AGE variable, we can determine more than just an estimate of market size. We can also project a growth path over time, more fully exploiting the dynamic nature of the REMI model.

We estimate the following cross-sectional model (after transforming variables into natural logarithms):

$$\ln(\text{Sales}_i) = c + \beta_1 \ln(\text{Income}_i) + \beta_2 \ln(\text{POP}_i) + \gamma \ln(\text{AGE}_i)$$

Where Sales_i , Income_i , and POP_i represent total cannabis sales in 2021, total personal income in 2021, and total population aged 21 and over, respectively. AGE_i is the industry-maturity index (industry age truncated at five years). Estimating these equations using ordinary least-squares regression gives us a cross-sectional estimate of projected sales that depends on the size of the state (as represented by POP and Income) and the relative age of the industry in each state. Altogether, the model explains 87% of the cross-state variation in sales.

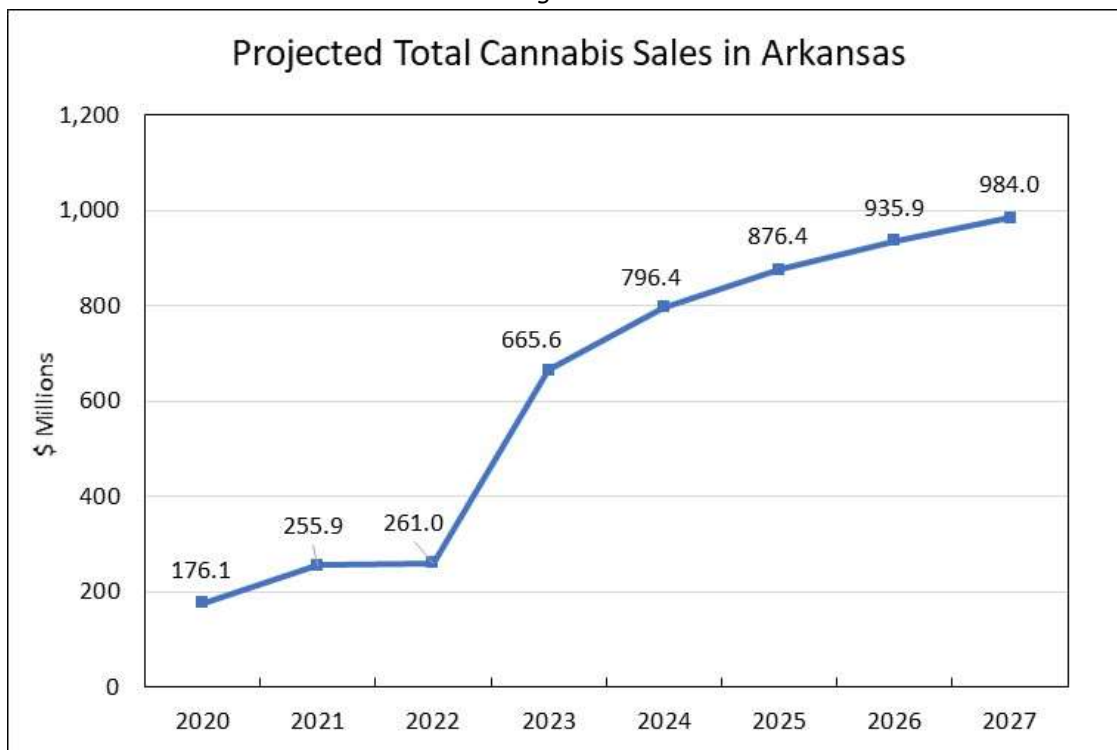
Regression results are displayed in Table 2, and the implied forecast path for total cannabis sales in Arkansas is shown in Figure 3. The model projections in Figure 3 start from actual medical-marijuana sales in 2020 and 2021 and assume modest growth of 2% in 2022. After the authorization of adult-use

sales in March, we project that sales in 2023 will more than double relative to 2022. As the industry matures over time, we expect total sales to reach nearly \$1.0 billion by 2027.¹⁰

Table 2:
Regression Results

Dependent Variable: LOG(SALES)				
Method: Least Squares				
Included observations: 9				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.2477	3.7278	3.0173	0.0295
LOG(POP)	0.5367	0.8787	0.6108	0.5680
LOG(INCOME)	0.1082	0.7927	0.1364	0.8968
LOG(AGE)	0.2118	0.1707	1.2403	0.2699
R-squared	0.8721	Mean dependent var		21.2934
Adjusted R-squared	0.7954	S.D. dependent var		0.5051
S.E. of regression	0.2285	Akaike info criterion		0.1862
Sum squared resid	0.2610	Schwarz criterion		0.2739
Log likelihood	3.1621	Hannan-Quinn criter.		-0.0030
F-statistic	11.3684			
Prob(F-statistic)	0.0114			

Figure 3:



¹⁰ The industry age variable was applied to forecasts for Arkansas by noting that the end of 2023 would represent approximately the first 0.75 years of an adult-use market in Arkansas (with initial adult-use sales scheduled for March 9, 2023). 2024 would conclude 1.75 years since the initiation of adult-use markets, etc.

Model Calibration

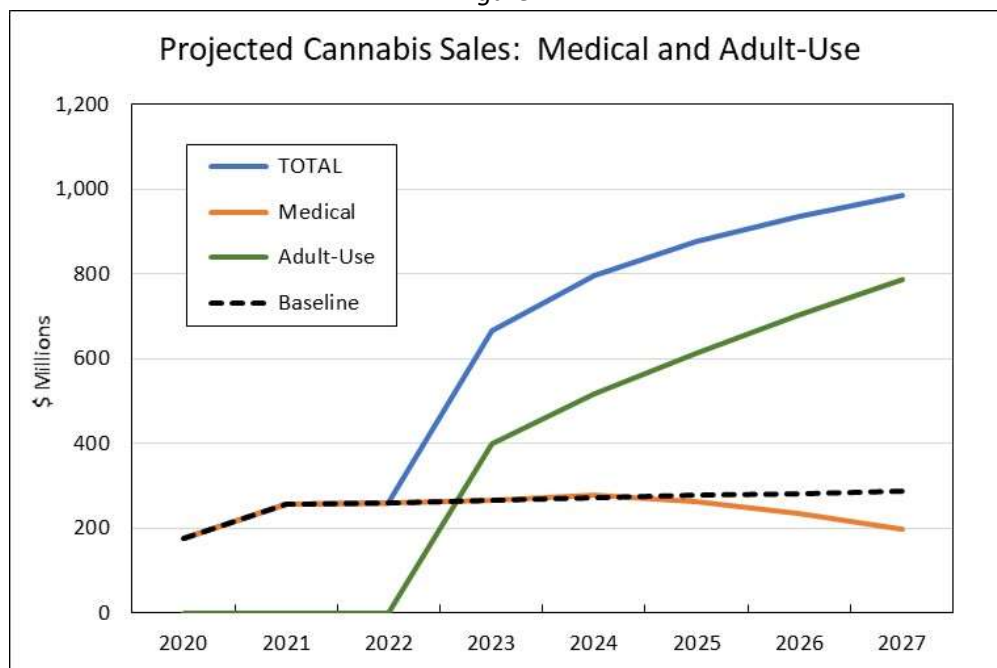
In order to carefully delineate the economic contribution of the expansion of the cannabis market, we need to make a number of judgments and forecasts for growth in the various sources of demand over time. As we did for our projection of total demand, we turn to the experience of other states to inform our calibration.

The experience of Colorado and Michigan are helpful for predicting the future of medical marijuana sales after adult-use sales are permitted. Both states had medical-marijuana sales before legalizing adult-use, and both experienced declines in medical sales after the change. In Michigan, medical sales declined from over 50% of total sales in 2020 to 28% in 2021. Data for 2022 show the share declining to nearly 10%. Colorado, which had a long-established medical marijuana program, also saw declines after the introduction of adult-use sales. Although the process was more gradual, medical-marijuana's share of total sales declined over time, reaching 18% on average in 2021 and declining to less than 15% in the early months of 2022.

Under the AAUCA medical marijuana will be tax-free, so a market will continue to exist. However, we assume that it will decline as a share of the total sales over time. In our model simulations, we calibrate medical sales to decline from an initial level of 40% of total sales in 2023 to 20% in 2027.

Figure 4 summarizes the breakdown of total sales into medical and adult-use components, with reference to our baseline for comparison. The baseline specification models a continuation of the status quo in which adult-use is not permitted. It represents ongoing modest growth as the medical marijuana sector expands at the same pace as the overall economy—about 2%.

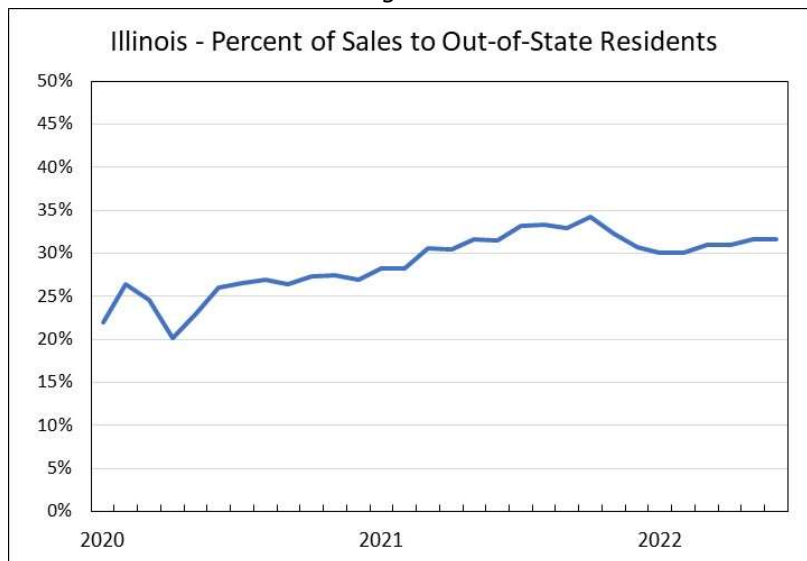
Figure 4:



An important factor for any evaluation of economic impact is the magnitude of sales to out-of-state residents. Sales to residents of Arkansas necessarily imply a diversion of spending from somewhere else (either the illegal marijuana market or broadly from other consumer spending). On the other hand, sales to out-of-state tourists represent a direct economic inflow to the state.

Data from Illinois provide some information on the magnitude of out-of-state sales that we might expect. Regulators in Illinois publish total adult-use cannabis sales, broken down by sales to In-state and out-of-state residents. As shown in Figure 5, the proportion of sales to out-of-state residents rose from around 25% in early 2020 to over 30% in 2021 and 2022.

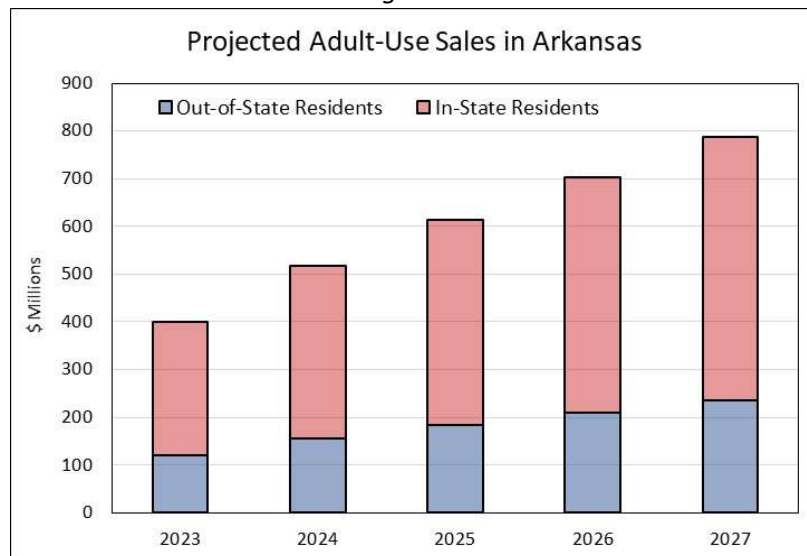
Figure 5:



Source: Illinois Department of Financial and Professional Regulation

Based on the Illinois experience, we calibrate our model using an out-of-state sales proportion of 30%. As described below, we divide this spending into three components of tourist spending: Existing Tourism, New Visitors, and New Tourism.

Figure 6:



The final distinction regarding sources of demand is the breakdown between those who would have purchased marijuana in illegal markets and those who are new consumers. The distinction matters because sales diverted from illegal markets will contribute to consumer spending and GDP (as well as tax revenues), while sales to new customers represent spending diverted from other sectors of the economy. For the sales diverted from illegal markets, the direct volume of sales is subtracted from GDP in the derivation of actual economic impact because those sales are already taking place, just not measured or taxed.

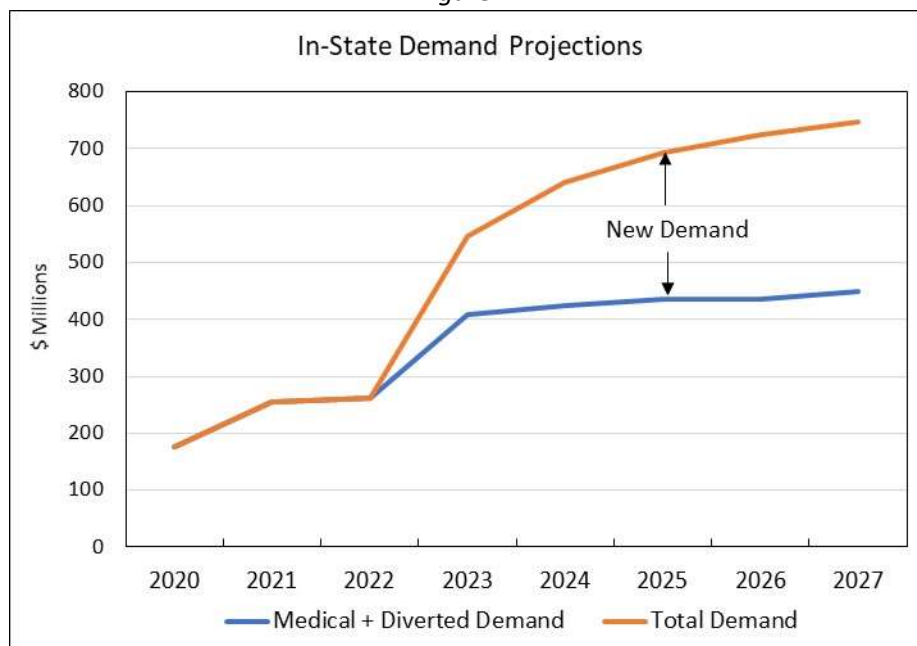
For New Consumers, our modelling approach is to enter total sales, along with a corresponding offset to consumer spending in the rest of the economy (maintaining relative proportions). The reduction in other consumer spending only applies to new customers.

Calibrating the distinction between new sales and sales diverted from illicit markets is problematic since activity in illegal markets is, by the nature, difficult to measure. According to the latest marijuana use survey from the National Survey on Drug Use and Health (2019-20), the percentage of Arkansans aged 18 and over who report having used marijuana in the past year was estimated to be 15.1%.¹¹ Applying that proportion to the estimate of population 21 years and older (from Table 1) indicates that over 330,000 Arkansans consumed marijuana over the relevant time period. The number of medical marijuana cards (89,461 as of August 13, 2022) can therefore only account for a fraction of total demand.¹²

Moreover, a cursory analysis of variations in the marijuana-use statistics across states suggests higher proportions in states where adult-use cannabis is available. For the nine states in our sample in Table 1, the proportion of 18+ reporting marijuana consumption in the past year averages 24.2%, compared to 15.9% for states in which cannabis sales are totally illegal. Selection bias undoubtedly accounts for some of the cross-state variation, but it is also reasonable to presume that the repeal of adult-use prohibition will generate new demand.

Using a simple estimated relationship between the marijuana-use percentages and the length of time since adult-use sales were initiated (as we did in our estimate of total sales), then applying some back-of-the-envelope calculations, we conjecture that approximately 75% of sales in 2023 will represent diversion from illegal markets (or, equivalently, are already accounted for in medical marijuana sales). That proportion will decline over time to account for about 50% of sales by 2027. The breakdown of diverted sales and new sales is illustrated in Figure 7.

Figure 7:



¹¹ Substance Abuse and Mental Health Services Administration, U.S. Department of Health and Human Services, “National Survey on Drug Use and Health: Model-Based Prevalence Estimates,” 2020. <https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health>

¹² Arkansas Department of Health, <https://www.healthy.arkansas.gov/programs-services/topics/medical-marijuana>.

Model Simulations

With projected sales and a breakdown of the sources of demand as inputs to the model, we use our customized REMI model to tally-up the components of total cannabis sales, along with the secondary effects (indirect and induced) that they entail.

Diversion from Illicit Markets

The largest individual segment of market demand comprises the existing demand for medical marijuana plus demand diverted from illicit markets. The key property of this segment of demand is that it is already being met, so the value of the direct expenditures on marijuana are already reflected in current economic activity (although not necessarily in *measured* economic activity). Both the inputs and outputs of our simulations are expressed as deviations from the baseline simulation (medical-only), so we automatically net-out the impact of medical marijuana, requiring no further adjustment. For the additional demand that is assumed to be diverted from illegal markets, we explicitly subtract the direct effects from the model's predictions as a step in calculating "actual" economic impacts.

The proper treatment of secondary effects—indirect effects and induced effects—is also subject to some ambiguity. The money currently spent on illegal marijuana has its own ripple effects on the economy, so one extreme assumption might be that none of the secondary effects of moving to a legal adult-use market should be included in estimates of true economic impact. On the other hand, indirect and induced spending in the illicit market seems likely to include significant leakage out-of-state, as well as flowing through unreported channels in-state. The AAUCA requires that all marijuana sold legally in the state be produced in Arkansas—a factor that suggests that larger secondary effects in the proposed adult-use market than in illegal markets. In our estimates of "actual" impact, we split the difference and assume that one-half of the secondary effects predicted by the model reflect a true impact effect.

The results of this module of our full simulation are reported in Table 3, along with the adjustments to distinguish "Simulation Impacts" from "Measurable Impacts" and "Actual Economic Impacts."

The simulation results in the top panel of Table 3 show significant apparent impacts: Employment increases by approximately 2,000; and both GDP and taxable sales increase by amounts greater than direct spending on cannabis.¹³ These apparent effects are the direct outputs of the model simulation, however, which overstate the likely impact on *measured* economic variables. Following our assumption that one-half of the secondary effects from this market segment are already measured (and taxed), the middle panel of Table 3 shows the effects of excluding that portion from the raw model output.¹⁴ What remains are the measurable impacts that we would expect to show up in official statistics like GDP, payroll employment, personal income, etc.

¹³ Taxable Sales is calculated as the sum of gross output in the sectors of Retail Trade, Accommodations, and Food Service and Drinking Places.

¹⁴ The adjustments are derived from detailed tables extracted from the simulation output. For employment, the model provides an explicit breakdown of direct and secondary effects. For GDP and Personal Income, the adjustment was made by first calculating a multiplier corresponding to one-half of the secondary effects on Gross Output, then applying that multiplier to the model effects. Retail Sales and Taxable Sales are calculated relative to the direct effect given in the top row of Table 3.

Table 3:

Economic Impact - Illicit Market Diversion

Category	Units	Year					Five Year Total
		2023	2024	2025	2026	2027	
Cannabis Sales	Millions of 2021 Dollars	143.1	148.5	159.2	152.7	160.5	764.1
Simulation Impacts							
Total Employment	Individuals (Jobs)	1,906	2,012	2,150	2,034	2,072	N/A
Gross Domestic Product	Millions of 2021 Dollars	154.2	166.2	181.6	175.8	183.5	861.3
Personal Income	Millions of 2021 Dollars	80.7	94.5	108.7	111.4	119.9	515.3
Retail Trade	Millions of 2021 Dollars	152.4	158.3	170.2	163.4	171.8	816.1
Taxable Sales	Millions of 2021 Dollars	156.3	162.8	175.4	168.7	177.6	840.8
Measurable Impacts							
Total Employment	Individuals (Jobs)	1,546	1,603	1,698	1,597	1,630	N/A
Gross Domestic Product	Millions of 2021 Dollars	120.9	128.6	139.9	135.2	141.8	666.4
Personal Income	Millions of 2021 Dollars	63.3	73.2	83.7	85.7	92.7	398.6
Retail trade	Millions of 2021 Dollars	147.8	153.4	164.7	158.0	166.2	790.1
Taxable Sales	Millions of 2021 Dollars	149.7	155.6	167.3	160.7	169.1	802.4
Actual Economic Impacts							
Total Employment	Individuals (Jobs)	360	409	452	436	443	N/A
Gross Domestic Product	Millions of 2021 Dollars	33.3	37.5	41.7	40.6	41.7	194.9
Personal Income	Millions of 2021 Dollars	17.4	21.4	25.0	25.7	27.3	116.7
Retail trade	Millions of 2021 Dollars	4.6	4.9	5.5	5.3	5.6	26.0
Taxable Sales	Millions of 2021 Dollars	6.6	7.2	8.1	8.0	8.5	38.3

The lower portion of Table 3 shows estimates of *actual* economic impact, after subtracting one-half of the secondary effects *and* the direct effects. The remaining impacts are positive, but far smaller than the raw output of the simulation. The difference between the model output and actual economic impact reflects the sales, employment and income that are presently taking place through illicit markets—largely unmeasured and untaxed—that would be displaced by a legal adult-use industry.

Sales to New In-State Customers

The remaining component of in-state demand is comprised of those who are new consumers to the marijuana market. Included in this grouping are those who generally do not purchase or consume cannabis illegally or for medical purposes, but would participate as a customer in a legal adult-use market. As described in the model calibration section, above, there is a great deal of ambiguity involved in identifying the potential size of this market segment. Nevertheless, the results of the simulation are revealing of the nature and magnitude of economic effects that are generated through this channel of demand.

The key characteristic of this group of consumers is that they divert spending from other goods and services in order to purchase cannabis. To model this constraint, we increase total sales of adult-use cannabis while simultaneously and proportionally reducing total spending across other consumer spending categories.

The results of this simulation are shown in Table 4. No adjustments for apparent versus actual economic impact are necessary in this case because the diversion of spending was modeled directly in the simulation.

Table 4:
Economic Impact - New In-State Consumers

Category	Units	Year					Five Year Total
		2023	2024	2025	2026	2027	
Cannabis Sales	Millions of 2021 Dollars	136.5	216.4	256.2	290.1	299.1	1,198.3
Economic Impacts							
Total Employment	Individuals (Jobs)	124	184	205	215	204	N/A
Gross Domestic Product	Millions of 2021 Dollars	13.1	20.7	24.5	27.6	28.1	114.0
Personal Income	Millions of 2021 Dollars	2.5	4.3	5.4	6.2	6.6	25.0
Retail trade	Millions of 2021 Dollars	30.5	48.6	57.6	65.2	67.0	269.0
Taxable Sales	Millions of 2021 Dollars	23.8	37.7	44.6	50.5	51.8	208.5

Despite being fairly small, the net impacts from this segment of the market are positive. The impacts for employment, output and sales can be added to those from Table 3 to give the total impacts (measurable and actual) that are attributable to in-state demand.

Note, however, that the increases in total retail trade and taxable sales in Table 4 are far smaller than the direct value of cannabis sales. This reflects the fact that new cannabis sales are offset by reductions in other spending categories. Nevertheless, the net effects are positive.

Tourist Sales

Sales to out-of-state residents represent a direct inflow of spending to the state, providing a particularly important channel for generating economic impact. To model this component, we examine three types of tourist spending on marijuana.

First, there are “Existing Tourists”—visitors to the state who would have come to Arkansas whether or not adult-use cannabis was available, but who divert some of their spending toward the newly available product. For this group, we modify the baseline tourist spending profile to account for a shift of spending to cannabis from all other standard spending categories.

The second group, “New Visitors,” is comprised of those who visit Arkansas briefly (primarily from nearby states) in order to buy adult-use cannabis without engaging in other significant additional spending while in the state. Reports from Illinois suggest that this is a significant source of out-of-state demand, particularly at dispensaries near state borders.¹⁵

Finally, “New Tourists” are those who choose to vacation in Arkansas specifically because adult-use cannabis is available—or for whom the availability of cannabis was a significant deciding factor. This group is the most potent source of economic impact effects, since all of the visitors’ tourist-related spending can be counted as net economic impact.

The results of simulations for these three types of tourist spending are detailed in Tables 5 – 7.

¹⁵ See, for example, Greg Bishop, “Cannabis sales in Illinois to out-of-state residents nearly doubles,” The Center Square, September 23, 2020. https://www.thecentersquare.com/illinois/cannabis-sales-in-illinois-to-out-of-state-residents-nearly-doubles/article_7853f34c-fde1-11ea-a286-87e5594261de.html; and Margaret Jackson, “Marijuana retailers near Illinois borders benefit from out-of-state customers, offer warnings on crossing boundaries with MJ,” MJBizDaily, December 17, 2021. <https://mjbizdaily.com/marijuana-retailers-near-illinois-borders-benefit-from-out-of-state-customers-offer-warnings-on-crossing-boundaries-with-mj/>

The Existing Tourist simulation is calibrated to cover 40 percent of total non-resident spending on marijuana. To implement the simulation, we begin with a standard tourist configuration in the REMI model, then adjust the spending profile to offset the new spending for cannabis with reductions in other tourism-related spending. This is similar to the procedure used to model in-state new consumers, with one difference: Tourism spending statistics reported by a spokesperson for the Colorado Department of Tourism indicate that tourists who buy cannabis while on vacation spend slightly more than those who do not. The specific figures cited suggest a spending boost of about 3.7%. Consequently, we assume that every dollar in spending on cannabis is offset by a 96.4% (1/1.037) reduction in other tourist spending.¹⁶

The results for this simulation are given in Table 5. Similar to the results for new in-state consumers, the additional sales of cannabis have a positive economic impact, but the net effect includes offsetting reductions in spending on other categories of taxable goods and services.

Table 5:
Economic Impact - Existing Tourism Spending

Category	Units	Year					Five Year Total
		2023	2024	2025	2026	2027	
Cannabis Sales	Millions of 2021 Dollars	47.9	64.0	73.6	84.2	94.5	364.3
Economic Impacts							
Total Employment	Individuals (Jobs)	237	316	358	398	431	N/A
Gross Domestic Product	Millions of 2021 Dollars	27.1	36.7	42.5	48.7	54.4	209.4
Personal Income	Millions of 2021 Dollars	14.2	20.2	24.3	28.6	32.8	120.1
Retail trade	Millions of 2021 Dollars	46.5	62.0	71.3	81.5	91.3	352.5
Taxable Sales	Millions of 2021 Dollars	31.8	42.4	48.8	55.8	62.6	241.4

Table 6 reports the impact from New Visitor spending, which is modeled using a visitor spending profile in the REMI model that is intended to capture multiplier effects associated with the incidental spending pattern for a typical short-term visitor. We assume that 50% of out-of-state spending on cannabis is generated through this channel of demand. The additional incidental spending shows up in positive multipliers larger than one for retail trade, taxable sales and GDP.

Table 6:
Economic Impact - New Visitor Spending

Category	Units	Year					Five Year Total
		2023	2024	2025	2026	2027	
Cannabis Sales	Millions of 2021 Dollars	59.9	80.0	92.0	105.3	118.1	455.3
Economic Impacts							
Total Employment	Individuals (Jobs)	798	1,075	1,231	1,382	1,513	N/A
Gross Domestic Product	Millions of 2021 Dollars	64.5	88.8	104.1	119.6	134.1	511.2
Personal Income	Millions of 2021 Dollars	33.8	49.6	61.1	72.7	84.0	301.2
Retail trade	Millions of 2021 Dollars	63.8	85.3	98.3	112.5	126.2	486.0
Taxable Sales	Millions of 2021 Dollars	65.4	87.7	101.2	116.0	130.2	500.4

The final component of out-of-state demand is New Tourism, driven specifically by the availability of adult-use cannabis. The information about visitor spending in Colorado, cited above, suggests that tourists who cited cannabis as an explicit reason for their travel decision spent approximately 8.7% more

¹⁶ The statistics we use are reported in: Nora Caley, "Marijuana Tourism Attracts Millions of Visitors and Dollars," *ColoradoBiz* Magazine, October 8, 2019. <https://www.cobizmag.com/marijuana-tourism-attracts-millions-of-visitors-and-dollars/>

than a typical tourist. We take that premium to represent spending on cannabis, so our simulation involves increasing total tourism spending by approximately \$12.50 for every \$1 spent on cannabis (i.e. \$11.50 of non-cannabis spending [1/0.087]). We assume that this is the smallest component of out-of-state demand, amounting to only 10% of the total out-of-state spending. Nevertheless, the economic impact effects shown in Table 7 are huge.

Table 7:

Economic Impact - New Tourism Spending

Category		Units		Year					Five Year Total
				2023	2024	2025	2026	2027	
Cannabis Sales	Millions of 2021 Dollars	12.0	16.0	18.4	21.1	23.6	91.1		
Economic Impacts									
Total Employment	Individuals (Jobs)	1,354	1,836	2,115	2,386	2,625	N/A		
Gross Domestic Product	Millions of 2021 Dollars	86.1	120.3	142.2	164.2	184.4	697.2		
Personal Income	Millions of 2021 Dollars	44.9	68.0	85.4	102.8	119.5	420.6		
Retail trade	Millions of 2021 Dollars	26.4	35.7	41.6	47.9	53.9	205.4		
Taxable Sales	Millions of 2021 Dollars	74.4	100.2	116.0	133.3	150.0	574.0		

Comparing the results from New Tourism Spending to the total impact of out-of-state cannabis sales in Table 8, it is striking that while new tourism comprises only 10% of total out-of-state cannabis sales, it generates nearly one-half of the total economic impact derived from tourism spending.

Table 8:

Economic Impact - Total Out-of-State Sales

Category		Units		Year					Five Year Total
				2023	2024	2025	2026	2027	
Cannabis Sales	Millions of 2021 Dollars	119.8	160.1	184.1	210.6	236.2	910.7		
Economic Impacts									
Total Employment	Individuals (Jobs)	2,389	3,226	3,705	4,166	4,569	N/A		
Gross Domestic Product	Millions of 2021 Dollars	177.7	245.8	288.8	332.5	372.9	1,417.7		
Personal Income	Millions of 2021 Dollars	92.9	137.8	170.8	204.1	236.3	841.9		
Retail trade	Millions of 2021 Dollars	136.6	183.0	211.1	241.8	271.4	1,043.9		
Taxable Sales	Millions of 2021 Dollars	171.6	230.3	266.0	305.1	342.8	1,315.8		

Construction Spending

Construction spending is one final component of total economic impact that is usually transitory but often important. In this case, a significant investment in will be required to expand existing cultivation operations, establish new “Tier 2” cultivating facilities, and expand the retail-level distribution system.

Based on rough estimates from industry sources, we project the scale of this investment to be approximately as follows:

- New Retail Outlets: 80 @ \$400,000 each \$ 32 million
- Tier 2 Cultivators: 12 @ \$2,500,000 each \$ 30 million
- Tier 1 Expansion: Overall \$100 million
- TOTAL \$162 million

We assume that the associated construction spending is spread over three years with 40% taking place in 2023, 35% in 2024 and 25% in 2025.

The results of the Construction Spending simulation are reported in Table 9.

Table 9:

Economic Impact - Construction Spending

		Year					Five Year Total
Category	Units	2023	2024	2025	2026	2027	
Cannabis Sales	Millions of 2021 Dollars	0.0	0.0	0.0	0.0	0.0	0.0
Construction Spending	Millions of 2021 Dollars	64.8	56.7	40.5	0.0	0.0	162.0
Economic Impacts							
Total Employment	Individuals (Jobs)	832	749	548	25	0	N/A
Gross Domestic Product	Millions of 2021 Dollars	60.8	55.2	40.6	1.8	0.0	158.4
Personal Income	Millions of 2021 Dollars	40.8	39.9	32.2	7.3	4.7	125.0
Retail trade	Millions of 2021 Dollars	5.5	4.9	3.6	0.3	0.2	14.4
Taxable Sales	Millions of 2021 Dollars	7.2	6.5	4.9	0.6	0.5	19.7

Full Economic Impact – Summary and Analysis

Aggregating all of the components of demand and their estimated impact-effects, Table 10 reports a summary of the total estimated economic impact. The panels reporting Measurable Impacts and Actual Economic Impacts panels are adjusted to account for the modifications made to the simulation outputs from the Illicit Diversion demand module (Table 3).

Table 10:

Economic Impact - Full Model

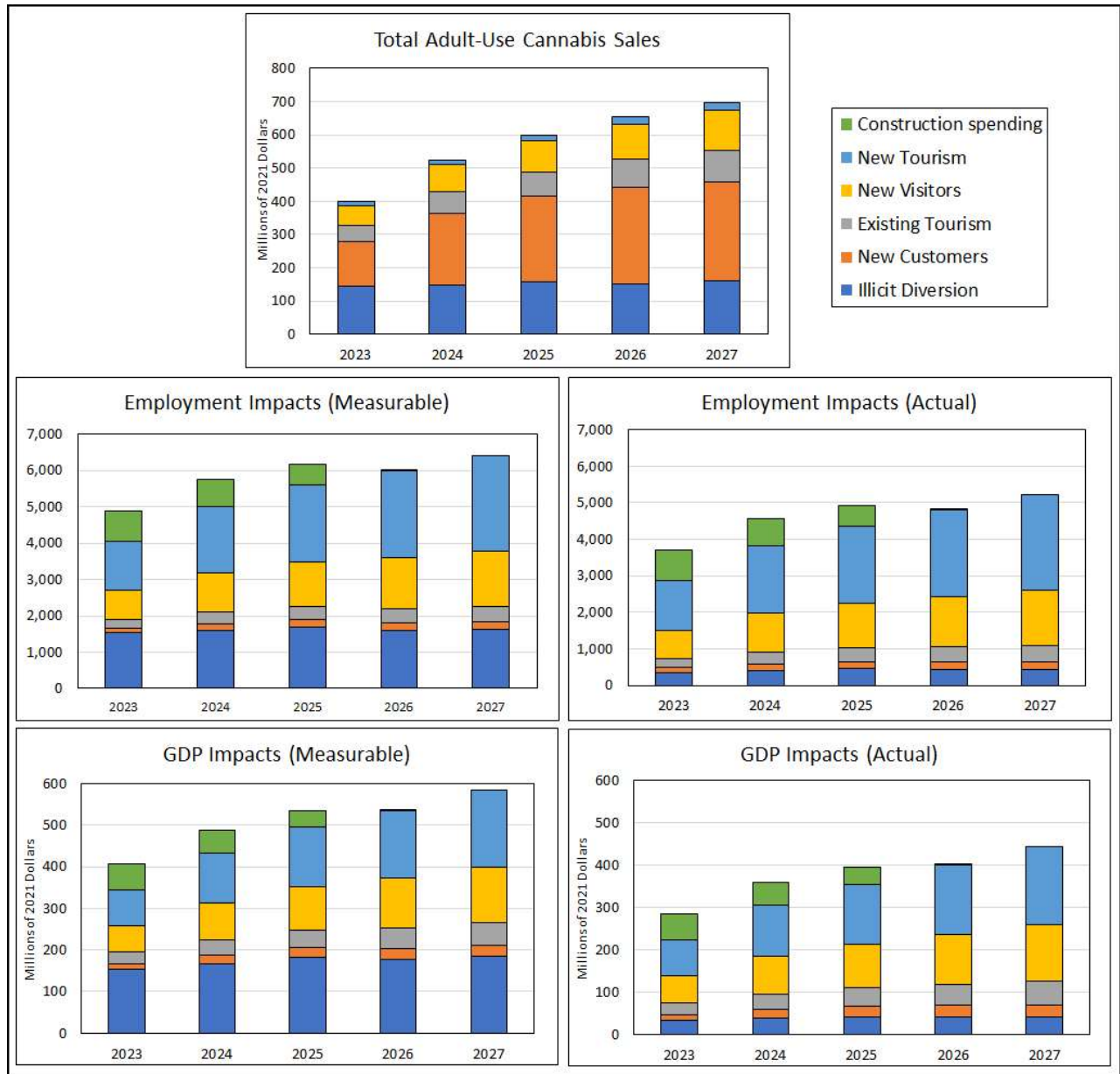
		Year					Five Year Total
Category	Units	2023	2024	2025	2026	2027	
Cannabis Sales	Millions of 2021 Dollars	399.4	524.9	599.5	653.4	695.8	2,873.0
Construction Spending	Millions of 2021 Dollars	64.8	56.7	40.5	0.0	0.0	162.0
Measurable Impacts							
Total Employment	Individuals (Jobs)	4,891	5,762	6,155	6,003	6,403	N/A
Gross Domestic Product	Millions of 2021 Dollars	372.5	450.3	493.9	497.1	542.9	2,356.6
Personal Income	Millions of 2021 Dollars	199.5	255.2	292.3	303.4	340.3	1,390.6
Retail trade	Millions of 2021 Dollars	320.3	389.9	437.0	465.4	504.7	2,117.3
Taxable Sales	Millions of 2021 Dollars	352.3	430.0	482.9	517.0	564.2	2,346.3
Actual Economic Impacts							
Total Employment	Individuals (Jobs)	3,705	4,568	4,909	4,842	5,216	N/A
Gross Domestic Product	Millions of 2021 Dollars	284.9	359.2	395.7	402.5	442.8	1,885.0
Personal Income	Millions of 2021 Dollars	153.6	203.4	233.5	243.4	274.9	1,108.8
Retail trade	Millions of 2021 Dollars	177.2	241.4	277.8	312.7	344.2	1,353.3
Taxable Sales	Millions of 2021 Dollars	209.1	281.6	323.6	364.3	403.7	1,582.3

The impacts implied by the full model are substantial. Looking at the measurable impacts, we see that total employment is predicted to increase by nearly 5,000 jobs in 2023, reaching as high as 6,400 by 2027. The contribution to GDP is estimated to rise from \$370 million to nearly \$543 million over the five-year period, with a cumulative total impact of nearly \$2.4 billion.

After adjusting for displacement of supply from illicit markets to the legal adult-use market, the actual economic impacts are only about 75% to 80% of the measurable impact, but are still significant.

Figure 8 breaks down the economic impacts attributable to each of our specified segments of demand. The first panel shows the direct cannabis sales to each group, while the remaining four panels show economic impact with regard to Employment and GDP (both measurable and actual).

Figure 8:
Cannabis Sales and Economic Impacts by Demand Segment



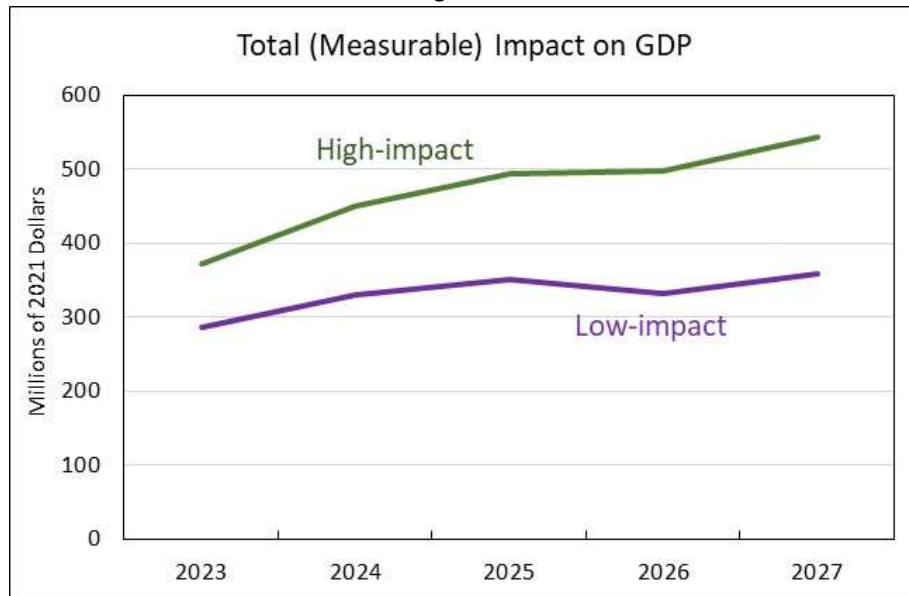
At least two features of the comparisons are significant. First, the proportion of actual economic impact from illicit diversion is much smaller than the measurable impact. The second notable feature is the predominance of out-of-state spending in the impact effects, particularly in the category of New Tourist spending. Although New Tourist spending constitutes only 3% of total cannabis sales, that market segment contributes more than any other to both the measurable and actual economic impact.

The outsized role of new tourist spending in the model results suggests a way of considering a range of likely economic impacts. We might consider the results in Table 10 and Figure 8 to represent an optimistic outcome—call it the high-impact scenario. On the other hand, if we were to suppose that

total cannabis sales end up being 3% below our projections (well within any reasonable margin of error), and there is zero effect on decisions to vacation in Arkansas (no New Tourism effect), then we might consider total impacts minus impacts from the New Tourism segment to be a more conservative, low-impact scenario.

Figure 9 illustrates how this range of forecasts can be represented for the case of the total (measurable) impact on GDP, with and without new tourism spending. The cumulative contribution to GDP over the five-year period is \$1.66 billion in the high-impact scenario and \$1.19 billion in the adjusted low-impact alternative.

Figure 9:



Fiscal Impact

The simulation results reported in the previous section can be used to generate implications for the increase in tax collections that we should expect as a result of the AAUCA. The most important tax to consider is the tax on the sale of tangible personal property; i.e. state sales taxes.

Sales Taxes

The state sales tax of 6.5% is presently collected on all medical marijuana sales, and would continue to be collected on adult-use sales after adoption of the amendment. The AAUCA also imposes a 10% supplemental sales tax on adult-use sales. However, the amendment also eliminates all sales taxes on medical marijuana and abolishes the Marijuana Privilege tax.

Table 11 summarizes the sales tax implications of the AAUCA. In this context, sales taxes include the 6.5% state gross receipts tax (sales tax), the medical marijuana privilege tax presently in place, and the supplemental cannabis sales tax included in the AAUCA.

In the first panel, the total taxable sales are calculated using figures in Table 10 with an adjustment for the net change of medical-marijuana consumers to adult-use customers, relative to the baseline (see Figure 4). Other taxable sales—the difference between total taxable sales and cannabis sales—is

negative, reflecting the diversion of spending from other taxable goods and services to purchases of marijuana (particularly for new in-state consumers and existing tourists).

The second panel of Table 11 shows the calculations for total sales tax collections. The overall impact on sales tax collections is positive, amounting to over \$160 million over the five-year study period. The 10% supplemental sales tax on adult-use cannabis proposed under AAUCA would bring in an additional \$300 million over the same period, for a total of over \$460 million.

Table 11:
Impact on State Sales Tax Collections*

All units in Millions of 2021 Dollars	Year					Five Year Total
	2023	2024	2025	2026	2027	
Category						
Adult-Use Sales	399.4	524.9	599.5	653.4	695.8	2,873.0
Adjustment for Medical	0.0	8.7	14.0	48.5	91.4	162.6
Taxable Cannabis Sales	399.4	533.6	613.5	702.0	787.2	3,035.6
Other Taxable Sales	-47.1	-94.8	-116.6	-136.5	-131.6	-526.7
Sales Tax Calculations						
Sales Tax on Cannabis	26.0	34.7	39.9	45.6	51.2	197.3
Sales Tax on Other	-3.1	-6.2	-7.6	-8.9	-8.6	-34.2
Net Sales Tax	22.9	28.5	32.3	36.8	42.6	163.1
Supplemental Tax	39.9	53.4	61.4	70.2	78.7	303.6
Total Tax	62.8	81.9	93.6	107.0	121.3	466.6
Baseline for Comparison						
Baseline Cannabis Sales (Medical)	266.2	271.5	277.0	282.5	288.2	1,385.4
Sales Tax	17.3	17.7	18.0	18.4	18.7	90.1
Privilege Tax	17.3	17.7	18.0	18.4	18.7	90.1
Total Tax	34.6	35.3	36.0	36.7	37.5	180.1
Sales Tax Impact						
Net Sales Tax Impact	28.2	46.6	57.6	70.2	83.9	286.5

*Sales Taxes include the 6.5% state gross receipts tax, the medical marijuana privilege tax, and the supplemental cannabis sales tax proposed under the AAUCA.

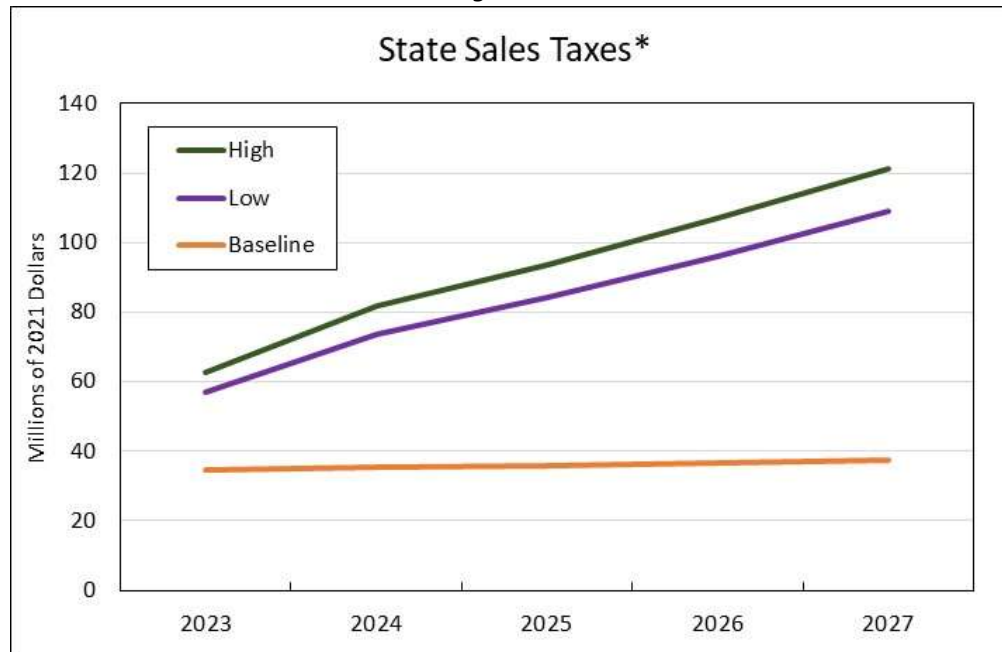
To properly measure the impact of the AAUCA on sales tax collections, it is necessary to compare these projections with the alternative baseline scenario in which medical marijuana sales continue and are subject to both the general sales tax and the marijuana privilege tax. The tax implications of this baseline scenario are shown in the third panel of Table 11. The Marijuana Privilege tax is imposed on all sales, not just retail, so there is essentially double-taxation: First when a cultivator sells to a dispensary and then when sold to the consumer. Total taxation depends on how many times the marijuana has been sold in market transactions within the industry. For that past two years, total privilege tax collections—expressed as a percent of taxable sales—have been remarkably close to 6.5%. Consequently, the projected sales taxes and privilege taxes for the baseline scenario are identical, with a total effective sales tax on medical marijuana of 13%.¹⁷

¹⁷ The distribution of tax revenues for medical marijuana is complicated by the fact that the Conservation Tax of 0.125% and the Highway Tax of 0.5% are mandated in the Arkansas Constitution, so those revenues flow directly to their designated funds. In principle, the remaining 5.875% is available for use as general revenue after deductions for costs associated with industry regulation.

The net result, the increase in sales tax revenues relative to the baseline, is shown on the bottom line of Table 11. Rising from \$28 million in 2023 to \$84 million in 2027, the adoption of the AAUCA would add over \$280 million to state tax collections over the five-year study period.

Table 11 calculates expected sales tax revenue from the full, high-impact model. Considering the more conservative low-impact scenario (with all New Tourist spending removed from the analysis) total tax revenue would be about 10% lower. Relative to the baseline case, net tax revenue over the five-year study period are calculated to be \$240 million, compared to the high-impact forecast of \$286.5 million in Table 11.¹⁸

Figure 10:



* Sales Taxes include the 6.5% state gross receipts tax, the medical marijuana privilege tax, and the supplemental cannabis sales tax proposed under the AAUCA.

Supplemental Sales Tax Distribution

The AAUCA designates three specific allocations for the supplemental sales tax on adult-use cannabis: 15% is designated to provide “an annual stipend to all full-time law enforcement officers” of the state, 10% goes to fund the operations of the University of Arkansas for Medical Sciences (UAMS), and 5% of the revenues are to be used for the operation of drug courts.

The breakdown of total revenue allocations is detailed in Table 12. Over the five-year period, we anticipate total revenue from the tax to be approximately \$303.6 million, of which \$45.5 million is earmarked for law enforcement support, \$30.4 million for UAMS, and \$15.2 million for drug courts. The remaining \$212.5 million is available for general revenue (after allocations are made to fund the personnel and operating expenses of the agencies responsible for regulating the cannabis industry).

¹⁸ The proportionate difference between the high-impact and low-impact scenarios is smaller for fiscal impacts than for economic impacts, due to the fact that in-state demand from illicit-market diversion generates tax revenues, even if it doesn’t represent true economic impact.

Table 12:

Allocations for Supplemental Sales Tax on Cannabis

All units in Millions of 2021 Dollars Category	Year					Five Year Total
	2023	2024	2025	2026	2027	
Total Supplemental Sales Tax	39.9	53.4	61.4	70.2	78.7	303.6
Law Enforcement Support	6.0	8.0	9.2	10.5	11.8	45.5
UAMS	4.0	5.3	6.1	7.0	7.9	30.4
Drug Court	2.0	2.7	3.1	3.5	3.9	15.2
General Revenue	28.0	37.4	42.9	49.1	55.1	212.5

Other Taxes and Fees

In addition to sales taxes to the state, adult-use cannabis sales are taxable at the county and municipal level. Table 13 provides aggregate estimates of the local taxes anticipated. The county sales tax in Arkansas averages 1.29% while the average municipal tax is 1.76%.¹⁹ Table 13 applies the sum of the two, 3.05% to the total sales tax figures from Table 11. Using the adjusted adult-use sales figures in Table 10, the tax rate is applied to total projected sales of adult-use cannabis. In the status-quo, counties and cities collect taxes

Table 13 provides an estimate of the impact of AAUCA on personal income tax collections as well. The expected impact on personal income tax collections, reported in the last row of Table 13, is found by applying a factor that represents the average relationship between income tax collections and personal income for FY19, FY20, and FY21 (2.2%).²⁰ This factor is applied to the measurable personal income impacts reported in Table 10. Due to recent reductions in the top marginal tax rate, these figures may overstate the impact on state income tax collections.

Table 13:

Other Taxes

All units in Millions of 2021 Dollars Category	Year					Five Year Total
	2023	2024	2025	2026	2027	
Total Adult-Use Cannabis Sold	399.4	533.6	613.5	702.0	787.2	3,035.6
County and Municipal Taxes						
Adult-Use	12.2	16.3	18.7	21.4	24.0	92.6
Baseline - Medical only	8.1	8.3	8.4	8.6	8.8	42.3
Net County and Municipal Taxes	4.1	8.0	10.3	12.8	15.2	50.3
Personal Income Taxes						
State Personal Income Tax	4.5	5.7	6.5	6.7	7.5	30.8

The adult-use cannabis industry would also generate government revenue through property taxes and business income taxes, as well as licensing fees. The latter is worth special consideration. In addition to direct sales taxes on cannabis sales, the licensing fee structure that exists in the current medical-marijuana regime—and that would likely continue under AAUCA—adds another source of revenue to the state. The intent of the licensing fees is to absorb the costs of industry regulation.

¹⁹ The average tax rates are calculated as weighted averages, where the weights are shares of total tax collections, Data Source: Local Distribution by NAICS, <https://www.ark.org/dfa/localtaxes/index.php>

²⁰ This calculation uses revenue data from the U.S. Census Bureau’s Annual Survey of State Government Tax Collections and Personal Income data from the U.S. Bureau of Economic Analysis.

Under current rules, individuals or companies applying for a license to operate a medical marijuana dispensary must pay a \$15,000 application fee. After applying for a permit, applicants must also pay a \$15,000 license fee and carry a \$500,000 performance bond. To obtain a license, cultivators must make a \$100,000 payment and secure a \$500,000 performance bond. Annual license renewals are \$100,000 for cultivators and \$22,500 for Dispensaries. The Medical Marijuana Commission also issues licenses for medical marijuana processors, requiring a \$5,000 license and annual renewal fee.²¹

Total revenues from licensing and renewal fees were \$1.122 million in FY2021 and \$3.583 million in FY2022. Fines for regulatory violations brought in an additional \$316 thousand in FY2022. In the baseline case with 8 cultivators, 40 dispensaries, and 3 processors, the total of license renewals going forward would be expected to be \$1.715 million per year. If the present licensing fee structure were kept in place, the expansion to 120 dispensaries and the addition of 12 “Tier-2” cultivation facilities would undoubtedly increase fee revenue. However, the change in total fee revenue is uncertain, as it will depend on regulations to be promulgated by the Alcoholic Beverage Control Commission.

Conclusion

This study presents our carefully calculated estimates of the economic and fiscal impacts of the proposed Arkansas Adult-Use Cannabis Amendment. However, predicting the economic impact of changes in the marijuana market is fraught with complications.

The introduction of a legal market in cannabis is expected to partly displace the existing illicit market, introducing a distinction between measured economic impact and actual economic impact. Transactions that previously went unrecorded and untaxed become measurable, but do not necessarily contribute to total economic activity.

Moreover, the introduction of adult-use cannabis sales to a market in which medical marijuana sales are already taking place, along with the introduction of a new taxation regime, are among other factors that complicate analysis of the economic and fiscal impacts.

Our analysis considers several channels through which economic impact might take place, associated with different segments of demand. Diversion of demand from illicit markets has large apparent, measurable effects but doesn't necessarily represent new economic impact. New in-state consumers are assumed to reduce spending on other goods and services, blunting the impact of sales to the overall economy. Large impact effects come primarily from tourist spending, particularly new tourists.

Our results are sensitive to some of the calculations and assumptions used to calibrate the model, but by presenting our findings component-by-component we hope to have provided enough transparency that a discerning reader will be able to independently evaluate details of our conclusions.

²¹ Arkansas Medical Marijuana Commission, “Rules Governing the Application for, Issuance, and Renewal of Licenses for Medical Marijuana Cultivation Facilities, Dispensaries, and processors in Arkansas.” https://www.dfa.arkansas.gov/images/uploads/medicalMarijuanaCommission/MMC_LicensingRulesCultivatorsDispensaryProcessors.pdf