METHODOLOGY FOR MONTHLY ESTIMATES OF STATE TAX REVENUE 2025-2026

State tax revenues, as defined in this report, are derived from taxes imposed on individuals and businesses, both private and corporate, through statutes enacted by the Tennessee General Assembly. These revenues are collected and apportioned monthly by the Department of Revenue to various funds as prescribed by law for the financing and operation of state government.

To prepare monthly distributions of fiscal year tax estimates, which serve as the basis for the annual budget adopted by the Tennessee General Assembly, the Department of Finance and Administration (F&A) utilizes estimates prepared by the University of Tennessee's Boyd Center for Business and Economic Research (Boyd CBER) as well as the Research Section of the Department of Revenue.

Boyd CBER employs three distinct methodologies to allocate annual revenue estimates across the twelve months of the fiscal year (generally defined as August through July to approximate accrual-based collections). The Department of Revenue applies a single methodology, comparable to Boyd CBER's Seasonal Factors Model, but based on a shorter horizon—four years of tax collection data versus Boyd CBER's twenty-year time frame.

The Department of Finance and Administration has chosen the four-year methodology employed by the Department of Revenue for allocating monthly estimates of all taxes with the exception of the sales and use tax. F&A considers this approach more effective at capturing the effects of recent statutory changes that influence the timing and magnitude of collections, thereby producing more accurate monthly estimates.

Given that sales and use tax collections represent approximately 67 percent of total state tax revenues, and that no single model consistently forecasts monthly collections with a high degree of accuracy, F&A is utilizing an average of the three Boyd CBER models. This blended approach moderates the peaks and troughs present in individual models and provides a more reliable framework for establishing monthly sales and use tax estimates.

In addition, two new taxes have been incorporated into the monthly distributions for this fiscal year. The vapor products tax and the hemp tax estimates were derived using tobacco sales as a benchmark. The vapor products tax takes effect July 1, while the hemp tax becomes effective January 1, 2026.

The outcome of this process is a benchmark against which actual monthly collections are compared to official budgeted estimates. This benchmark serves as an essential tool for the Governor and the Commissioner of Finance in ensuring that the state's budget remains in balance throughout the fiscal year.

UNIVERSITY OF TENNESSEE'S BOYD CBER MODEL METHODOLOGY

Seasonal Factors Methodology

The tax estimates distributed by seasonal factors were prepared by finding the seasonal patterns, or the seasonal adjustment factors, for the prior fiscal year actual tax revenues by month. The seasonal adjustment factor for each month is calculated using at least 20 years of historical monthly tax revenue data and the U.S. Census Bureau X12 adjustment model contained in the econometric software EViews 11. (Because EViews cannot seasonally adjust a time series with negative numbers, those months with negative revenues were replaced with $0.00000001, still allowing the seasonal effects to be picked up in the adjustments.) The estimate for each month was found by dividing the official estimate for the fiscal year 2026 by 12 and multiplying by the corresponding month's seasonal adjustment factor from 2025. For example, to find the August 2025 estimate for sales tax revenue, the official fiscal year 2026 annual estimate for sales tax was divided by 12 and multiplied by the seasonal factor from August 2024.

Constant Growth Methodology

The monthly constant growth estimates were prepared by utilizing the fiscal year 2025 constant growth variable calculations necessary to reach the official 2026 estimates for each tax. Fiscal year 2026 monthly revenues for each tax were multiplied by the corresponding required average annual growth rates that were applied to 2025. For example, to calculate the August 2025 sales tax estimate, the August 2024 actual revenue was multiplied by the required average annual growth rate for sales tax from fiscal year 2025 to fiscal year 2026.

Statistical Model

The statistical model is used only for sales and franchise and excise taxes and is based on combined time series and economic models. Specifically for the sales tax, an economic model based on Tennessee and U.S. economic data is implemented on the seasonally differenced monthly revenue data, and the residual is diagnosed as an ARIMA (6,0,0) process. Then an integrated model which incorporates the economic and time series models is used to perform the one-step-ahead estimate and is re-estimated to perform the next one-step-ahead estimate, and so forth. For franchise and excise taxes, a time series model is developed on the seasonally differenced monthly revenue data. The ARIMA model chosen for this revenue estimate is based on a diagnosis test of the data characteristics and the criterion that the model produces the least out-of-sample forecast error among all candidate models.