

Methods Documentation: West Virginia

Appendix of Working Paper 24-01 by **Daniel Raimi, Elena Davert, Haley Neuenfeldt, Amy Van Zanen, and Zach Whitlock**

1. Table of Contents

This document details our methods for collecting and estimating amounts from those taxes, royalties, fees and payments that are distributed to the local level in West Virginia.

State Collections

Oil and Gas Severance Tax – Final values can be found in the ‘Oil_Gas_Severance_Final’ tab in the Estimation_WV.xlsx

Coal Severance Tax – Final values can be found in the ‘Coal_Severance_Final’ tab in the Estimation_WV.xlsx

Local Collections

Property Taxes – Final values can be found in the “Post-UM research” folder. DR produced new estimates for 2021 only because UM estimates were implausible and incomplete. Note that we were unable to produce plausible estimates for oil and gas properties, so these are excluded from the analysis (estimates were far too high—they exceeded total countywide property taxes collections in 2021).

Note: DR uses different methodologies for estimating fossil and wind property tax revenues because of data availability issues. For coal, I use taxable values of properties multiplied by local tax rates. For wind, taxable or assessed values were not available at a statewide level, so we use property tax records from county assessor’s or Sherriff’s offices.

2. Oil and Gas Severance Tax

2.1. Policy

In West Virginia, severance taxes are collected by the West Virginia State Tax Department. The severance tax is a tax on the extraction of natural resources such as coal, oil, and gas. The tax is levied on the value of the resources extracted at a rate of 5%, and the revenue generated from the tax is used to fund various state programs and services, including education, infrastructure, and environmental protection.

The distribution of severance tax revenue to counties is managed by the State Auditor’s Office. The auditor’s office is responsible for calculating the amount of severance tax revenue that each county is entitled to receive based on a formula established by state law (11-13A-3a, WVC). The formula used to distribute severance tax revenue to counties

takes into account several factors, including the value of the natural resources extracted within each county, the number of miles of public roads in each county, and the population of each county. The formula is designed to ensure that counties that are most impacted by natural resource extraction receive a larger share of the revenue.

Not all severance tax revenue is distributed to counties. A portion of the revenue is used to fund various state programs and services, including education, infrastructure, and environmental protection. The exact amount of revenue that is distributed to counties can vary from year to year based on a variety of factors, including the overall value of natural resource extraction in the state and changes in the severance tax rate.

2.2. Data Inputs

Unique ID	Source	Data Name, Shorthand	Description
WV_1	West Virginia Office of the State Treasurer	State Oil and Gas Severance Tax Distributions	Allocation of the state oil and gas severance tax to all counties from 2007-2021. We only use data from 2011-2021 in this dataset.
WV_9	United States Census Bureau	County-Sub-jurisdiction Match-up	List that indicates which sub jurisdictions are locate within which county.

2.3. Calculations and Assumptions

1) Download Distribution Reports

We downloaded the West Virginia’s State Treasurer’s Office distribution reports that include the allocation of the state’s oil and gas severance tax to each county.

Note: These revenues are reported on the “Oil_Gas_Severance_Raw” tab.

2) Match Municipalities with Counties

We used a list of municipalities and counties in West Virginia to match each Municipality with the county it resides in.

3) Sum Distribution Amounts by Year and County

We used a pivot table to aggregate the distribution amounts by year and county.

Note: The final values are reported on the “Oil_Gas_Severance_Final” tab.

2.4. Ouput

Allocation of state oil and gas severance tax to counties by year from 2011 to 2021.

3. Coal Severance Tax

3.1. Policy

In West Virginia, severance taxes are collected by the West Virginia State Tax Department. The severance tax is a tax on the extraction of natural resources such as coal, oil, and gas. The tax is levied on the value of the resources extracted, and the revenue generated from the tax is used to fund various state programs and services, including education, infrastructure, and environmental protection.

The distribution of severance tax revenue to counties is managed by the State Auditor’s Office. The auditor’s office is responsible for calculating the amount of severance tax revenue that each county is entitled to receive based on a formula established by state law (11-13A-3, WVC). The formula used to distribute severance tax revenue to counties takes into account several factors, including the value of the natural resources extracted within each county, the number of miles of public roads in each county, and the population of each county. The formula is designed to ensure that counties that are most impacted by natural resource extraction receive a larger share of the revenue.

Not all severance tax revenue is distributed to counties. A portion of the revenue is used to fund various state programs and services, including education, infrastructure, and environmental protection. The exact amount of revenue that is distributed to counties can vary from year to year based on a variety of factors, including the overall value of natural resource extraction in the state and changes in the severance tax rate.

3.2. Data Inputs

Unique ID	Source	Data Name, Shorthand	Description
WV_3	West Virginia Office of the State Treasurer	State Coal Severance Tax Distributions	Allocation of the state coal severance tax to all counties from 2007-2021. We only use data from 2011-2021 in this dataset.
WV_9	United States Census Bureau	County-Sub-jurisdiction Match-up	List that indicates which sub jurisdictions are locate within which county.

3.3. Calculations and Assumptions

1) Download Distribution Reports

We downloaded the West Virginia's State Treasurer's Office distribution reports that include the allocation of the state's coal severance tax to each county.

Note: These revenues are reported on the "Coal_Severance_Raw" tab.

2) Match Municipalities with Counties

We used a list of municipalities and counties in West Virginia to match each Municipality with the county it resides in.

3) Sum Distribution Amounts by Year and County

We used a pivot table to aggregate the distribution amounts by year and county.

Note: The final values are reported on the "Coal_Severance_Final" tab.

3.4. Output

Allocation of state coal severance tax to counties by year from 2011 to 2021.

4. Property Tax

4.1. Policy

In West Virginia, centrally assessed property includes property that is used in the production, transmission, or distribution of electricity, and natural gas. This includes property such as power plants, transmission lines, and pipelines. The value of this property is assessed by the West Virginia State Tax Department, rather than by local assessors. The assessment is based on the property's fair market value and is used to determine the property's share of state and county taxes.

There are both state and local taxes levied on these centrally assessed property. The state taxes on centrally assessed property are collected by the West Virginia State Tax Department and are used to fund state government operations and services. The county taxes on centrally assessed property are collected by the county sheriff's office and are used to fund local government operations and services, such as schools, roads, and public safety.

For power plant, pipeline, and transmission line estimates, we gathered and analyzed data from the West Virginia Auditor's Office, using reported taxable property values, state assessment rates, and local tax rates to estimate taxes paid.

For oil, gas, and coal production-related property taxes, detailed county-level data were unavailable for recent years. However, we did have state-wide tax revenue data for coal from years 2013 and 2014. We used these historical data to attempt to make estimates for the year 2021 using the following method:

For oil and gas, we estimated the value of oil and gas production in each county in 2013 and 2021 using production volume data from the WV DEP and energy price data from the US EIA (Henry Hub price for natural gas and WTI for oil and NGLs—NGLs were a small fraction of total liquids production). We then calculated the ratio of local tax

revenue per unit of production value at the county level using tax revenue data from 2013. To estimate 2021 revenues, we adjust the ratio of local tax revenues per unit of production value based on local tax rates in 2013 compared with 2021. For example, if we know County A collected \$100 in 2013 based on \$100,000 of production value in that same year, and we know that County A's tax rates have changed from 1% in 2013 to 0.99% in 2021, we assume that in 2021, County A would have collected \$99 in taxes per \$100,000 of production value. We apply this method for each of our counties of interest. We only make estimates for county and school district revenues because we have no information on the extent of oil and gas production within municipalities. "Other" local government services (e.g., fire districts) are included under the "county" grouping because these entities are part of the county tax authority in WV (i.e., they are not their own taxing entities, but instead funded by county tax revenues). Note that this method produced implausibly high results (oil and gas property tax revenues in 2021 exceeded total countywide property tax collections in that year) so we exclude them from the analysis.

For coal property taxes, we did not have county-level valuation or tax revenue estimates. We did, however, have statewide coal property taxes for years 2013 and 2014. To develop county-level estimates, we first estimated the statewide property tax revenue from coal in 2021. To do this, we began by calculating the value of coal production in West Virginia in 2014 and 2021 by multiplying production volumes by prices (all production and prices were for bituminous coal—data from EIA). These estimates allowed us to calculate the ratio of statewide coal property tax revenues to statewide coal production value in 2014. To estimate tax revenues for 2021, we adjusted this ratio to reflect changes in property tax rates at the county and school district levels (like with the oil and gas estimate, we do not attempt to estimate municipal revenues). We then applied this ratio to statewide coal production value in 2021 to estimate statewide coal property tax revenues. For example, if we know counties collected \$100 in 2014 based on \$100,000 of production value in that same year, and we know that the average county tax rate had changed from 1% in 2014 to 0.99% in 2021, we assume that in 2021, counties would have collected \$99 in taxes per \$100,000 of production value. To estimate county-level revenue, we assume that each county receives revenue in equal proportion to the value of coal production occurring in that county in 2021. We then allocate those revenues to counties and school districts based on the relative tax rates of county governments and school districts within each county.

Sources

Unique ID	Source	Data Name	Description	Access	Type	Years	Original Source link
WV_1	West Virginia State Treasurer	State Oil and Gas Severance Tax Distributions	State oil and gas severance tax distributions to counties broken down by political subdivision (subcounty) with some county breakdown	Public	Federal Resource Receipt	2003-2021	https://revenue.data.doi.gov/how-revenue-works/gomesa/ https://revenue.data.doi.gov/downloads/disbursements/
WV_10	West Virginia Property Tax Division	Property Tax	Property Tax Rates and Assessment and Distribution Policy	Public	Property Tax	na	Property Tax Rates (wv.gov)
WV_11	Putnam County Sheriff's Tax Department	Property Tax Receipts	Property tax receipts search with the ability to search by taxpayer name, taxpayer account number, ticket number, and parcel ID.	Public	Property Tax	2022	http://putnam.softwaresystems.com/index.html
WV_12	Marion County Sheriff's Tax Department	Property Tax Receipts	Property tax receipts search with the ability to search by taxpayer name, taxpayer account number, ticket number, and parcel ID.	Public	Property Tax	2022	http://marion.softwaresystems.com/index.html
WV_13	Greenbrier County Sheriff's Tax Department	Property Tax Receipts	Property tax receipts search with the ability to search by taxpayer name, taxpayer account number, ticket number, and parcel ID.	Public	Property Tax	2022	http://greenbrier.softwaresystems.com/index.html
WV_14	Marshall County Sheriff's Tax Department	Property Tax Receipts	Property tax receipts search with the ability to search by taxpayer name, taxpayer account number, ticket number, and parcel ID.	Public	Property Tax	2022	http://marshall.softwaresystems.com/index.html

WV_15	Grant County Sheriff's Tax Department	Property Tax Receipts	Property tax receipts search with the ability to search by taxpayer name, taxpayer account number, ticket number, and parcel ID.	Public	Property Tax	2022	http://grant.softwaresystems.com/index.html
WV_16	West Virginia State Auditors Office	Appraisal Reports	Parcel-level property search map with links to appraisal reports. Ability to search by E-911 Address, parcel attributes, and coordinates.	Public	Property Tax	na	https://www.mapwv.gov/parcel/
WV_2	West Virginia State Auditor's Office	County-Sub-Jurisdiction Match-Up	Includes taxes levied on subcounty jurisdictions for each county, to allow us to match the levy rates to each subcounty jurisdiction	Public	Property Tax	na	https://www.wvsao.gov/LocalGovernment/Default#RatesOfLevy
WV_3	West Virginia State Treasurer	State Coal Severance Tax Distributions	State coal severance tax distributions to counties broken down by political subdivision (subcounty) with some county breakdown	Public	Coal Severance Tax	2005 - 2021	https://wvtreasury.com/Banking-Services/Revenue-Distributions/Coal-Severance-Tax/Coal-Severance-Tax-Archive
WV_4	West Virginia State Auditor's Office	Allocation of Assessed Values of All Counties	Allocation of the state assessed public utilities to counties by year and specific utility as a query-enabled database. We retrieved data for 2011-2021.	Public	Property Tax	2011-2021	https://www.wvsao.gov/CountyCollections/PublicUtilities/AssessedValues
WV_5	West Virginia Property Tax Division	WV Assessment	Database that can be queried to search for property tax records for any county for any type of land use (i.e. pipelines or coal processing)	Public	Building and Land Assessed Values	na	https://www.mapwv.gov/assessment/Assessment

WV_6	West Virginia State Auditor's Office	Levy Reports	Assessment and Levy Reports for all counties 2012-2022, County budget reports for all counties 2012 - 2022, Municipal Budget Reports 2012 -2022, Rates of levy for all counties 2013-2022	Public	Property Tax	2012 - 2022	https://www.wvsao.gov/localgovernment/
WV_9	United States Census Bureau	County-Sub-Jurisdiction Match-Up	Municipalities in each county	Public	Property Tax	na	https://www2.census.gov/library/publications/decennial/2010/cph-2/cph-2-50.pdf

