



COAL MINING AND TOURISM

Engines of Economic Development

for

Campbell County and Claiborne County, Tennessee

Report Prepared for the

Tennessee Department of Environment and Conservation

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COAL MINING AND TOURISM

Engines of Economic Development for Campbell and Claiborne Counties

EXECUTIVE SUMMARY

The coal industry has been an important source of employment, income, and tax revenue generation for Campbell County and Claiborne County. At the same time, the natural environment and cultural heritage in these counties is also serving as the foundation of an emerging tourism industry with activities that may conflict with coal mining. Recent trends show declining coal production in the two counties which suggests a challenging outlook for the future of the state's coal industry. Fracking has led to low natural gas prices that make coal less attractive as a source of power generation. Adding to this downward pressure on the demand for coal are domestic and global environmental concerns. Travel-related spending, on the other hand, has been growing statewide and in Campbell and Claiborne Counties as well. This likely means greater potential benefits from tourism-based economic development in these counties in the years to come.

In 2013, there were 46 coal industry workers in Campbell County and 267 coal workers in Claiborne County, yielding total employment of 313. In the same year, employment tied directly to tourism spending stood at 420 in Campbell County and 120 in Claiborne County, for total employment of 540 across the two counties. While tourism accounts for a larger number of jobs, workers who directly support tourist spending in sectors like retail trade and leisure and hospitality services are relatively poorly paid compared to their coal industry counterparts. For example, statewide average annual pay for a coal worker was \$64,207 in 2013 compared to \$27,851 in retail trade and \$19,120 in leisure and hospitality services.

Coal extraction and tourism spending each have economic impacts that extend beyond employment and income creation for workers in these sectors. Each sector relies on suppliers and vendors who also create jobs and incomes. Workers in the coal and tourism sectors, along with workers in supplier and vendor firms spend a portion of their incomes in Campbell County and Claiborne County that support additional job creation through the ripple effects of the *multiplier*. Finally, in addition to jobs and income, both the coal industry and tourism support expansions in state and county output (gross domestic product) and state and local government tax collections.

An evaluation of the ***total economic impacts of the coal industry and tourism*** indicates the following:

- Total employment related to coal production was 645 for the two counties combined in 2013, with Campbell County accounting for 100 jobs and Claiborne County accounting for the remaining 545 jobs. Total tourism-related employment was 945 in 2013, with 709 jobs in Campbell County and 236 jobs in Claiborne County.
- The coal industry in the two counties boosted total output (gross domestic product) by \$124.9 million in 2013, with nearly \$107 million in output being accounted for by Claiborne County. Total tourism-related output was \$109.2 million, with nearly \$82 million of output coming from the Campbell County economy.
- The coal industry created more personal income for residents of the two counties in 2013 (\$30.5 million) than the tourism sector (\$22.7 million).

This study does not provide forecasts of the future of the coal and tourism sectors in Campbell County and Claiborne County. However, an asset valuation of the coal industry in the

two counties was undertaken. Using an asset valuation technique that considers historic trends and price and production volatility, the value of coal assets in Campbell County is shown to be much larger than the value of coal assets in Claiborne County. The value of coal assets was relatively stable in Campbell County between 2001 and 2012, but has declined in Claiborne County during the same period. **Recent developments in the coal industry suggest a devaluation of the coal assets in both counties in turn signaling a greater difficulty in retaining and attracting coal industry jobs, income and government revenues.**

While the coal industry faces growing hurdles, the tourism industry has shown growth in the past decade. **Travel-related spending in Claiborne County and Campbell County has grown substantially over time.** Between 2002 and 2013, travel-related spending in Campbell County grew 35.8 percent while spending in Claiborne County was up 42.2 percent. Projections of tourism-related spending for the state through 2017 are positive suggesting further gains for both of these counties in future years.

Each county has important tourism assets already in place to support economic development gains. But additional assets and/or marketing will be needed if the counties choose to build on this foundation. Possible strategies are considered for each county based on their unique characteristics and the economic development success of other Tennessee Counties. It appears that Campbell County is well poised to become a more vibrant outdoor recreation destination. Claiborne County, on the other hand, is better suited to a tourism strategy built around historical and cultural attractions.

Tennessee's coal-producing communities face an uncertain future. In the past decade they have seen coal extraction and employment decline significantly. Short-term declines are typical for the industry. But our quantitative analysis of historic trends coupled with recent

developments suggests that **further contraction of the coal industry in these two counties is more likely than an expansion.** While the relative merits of coal mining as an economic development strategy have been extensively debated in these communities, discussions moving forward will likely revolve around strategies to replace coal mining. **As these communities consider their future path of economic development, tourism is one strategy that might be used to help fill the void created by expected future reductions in mining and manufacturing activity.**

1. INTRODUCTION

1.1 PURPOSE OF THE REPORT

A small number of rural counties in Tennessee are characterized by a reliance on resource extraction as a driver of economic development. While this activity has been an important source of job creation, the lack of economic diversity within some smaller economies often subjects these counties to the boom and bust cycles common in many mineral and energy resource markets. For counties in the northeastern part of the state with a historic reliance on coal mining, there are indications that coal markets may be fundamentally changing there and throughout Appalachia. Recent trends indicate rising extraction costs in Appalachia that make the region's coal less attractive to consumers.¹ Likewise, recent international trade policies of foreign nations may limit the ability for Appalachian coal producers to export their coal abroad.² However, there are also signs that coal may be rebounding due to natural gas prices rising from recent unprecedented lows.³

Like no other time in recent history, Tennessee's rural coal producing counties face an uncertain future. This uncertainty complicates efforts to evaluate alternative economic development strategies in these counties. For instance, many counties with coal assets also possess natural and cultural assets that may drive burgeoning tourism industries with their own sources of uncertainty. Other communities around the state have found that tourism represents an important source of job creation and tax base expansion, ranging from metropolitan Memphis

¹ EIA Annual Coal Report 2012, Table 21. Coal Productivity by State and Mine Type, 2012 and 2011; EIA Annual Energy Review 2011, Table 7.7 Coal Mining Productivity, Selected Years, 1949-2011.

² <http://www.cnbc.com/id/102002818#>. Accessed November 19, 2014.

<http://www.reuters.com/article/2014/10/09.china-coal-idUSL3N0S41QP20141009>: Accessed November 19, 2014.

³ EIA Short-Term Energy Outlook December 2014: http://www.eia.gov/forecasts/steo/pdf/steo_full.pdf. Accessed December 22, 2014.

to Sevier County. The face of tourism development can take many forms depending on natural resources and man-made amenities that meet consumers' tastes.

This report provides a current snapshot and considers the future outlook for coal production and tourism development in Campbell and Claiborne counties. The report begins with a brief overview of some of the key characteristics of the study counties. The subsequent discussion includes two lengthy sections, the first focused on the coal industry and the second targeted to the tourism sector. In each of these major sections, we (i) identify strengths and weaknesses of each sector from an economic development perspective and (ii) present economic and fiscal impact estimates. The impact analysis of the coal industry was developed for this study, while we relied on existing state-sponsored studies of tourism to address that sector. The report closes with a brief conclusion.

1.2 OVERVIEW OF CAMPBELL AND CLAIBORNE COUNTIES

Both Campbell and Claiborne Counties are rural with small economies and populations; only Campbell County abuts a Metropolitan Statistical Area (MSA), the Knoxville MSA. Selected socio-demographic variables for both counties are presented in Table 1. Primary economic sectors in the study counties, based on which sector residents work in, are compared to the statewide economy in Table 2.⁴

⁴ The employment data drawn from the American Community Survey reflect the sector that county-residents are employed in, regardless of the place of employment. For example, a county resident could be employed in the manufacturing sector in the place of residence or in another county.

Table 1. Select Socio-Demographic Variables

	Campbell County	Claiborne County
Population(Census 2010)	40,716	32,213
Population Change(Compared with Census 2000)	2.2%	7.9%
Median Household Income(2008-2012 ACS)	\$31,312	\$33,568
Persons below the Poverty level(2008-2012 ACS)	23.7%	23.0%
Unemployment rate(2013 BLS)	10.8%	11.6%

Sources: U.S. Census Bureau <http://quickfacts.census.gov/qfd/states/47/47013.html>, American Community Survey <http://www.census.gov/acs/www/>, and Bureau of Labor Statistics <http://data.bls.gov/map/MapToolServlet?survey=la&map=state&seasonal=s>

Table 2. Primary Economic Sectors

	Campbell County	Claiborne County	Tennessee
Educational services, and health care and social assistance	20.4%	23.6%	22.5%
Manufacturing	20.0%	20.2%	12.9%
Retail trade	11.0%	12.9%	12.1%
Construction	9.8%	7.4%	6.7%
Arts, entertainment, and recreation, and accommodation and food services	7.6%	5.7%	9.1%
Other	31.2%	30.2%	36.7%

Source: American Community Survey:

<http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t#none>

Note: Included in the *Other* category: Transportation and warehousing, and utilities, finance and insurance, and real estate and rental and leasing, professional, scientific, and management, and administrative and waste management services, public administration, other services, except public administration, agriculture, forestry, fishing and hunting, and mining, wholesale trade and Information.

Campbell County is located in northeast Tennessee along the Kentucky border. The county seat is Jacksboro, and the largest city in the county is LaFollette with a 2010 Census population of 7,460. According to the 2010 U.S. Census,⁵ there are 40,716 people in the county of which the vast majority (97.7 percent) are white. The population is estimated to have declined by 1.2 percent between 2010 and 2013. The county's population is older than the state as a whole. This is consistent with many Appalachian communities where younger residents move elsewhere in search of jobs. The percent of the population older than 24 with a high school

⁵ U.S. Census Bureau: <http://quickfacts.census.gov/qfd/states/47/47013.html>. Accessed November 25, 2014.
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diploma is 70.1 percent which is nearly 17 percent lower than the state average. The percent of the population older than 24 with a bachelor's degree is only 9.2 percent which is over 60 percent lower than the state average. Low levels of educational attainment and a small labor force constrains economic development opportunities.

In terms of economic characteristics, the 2013 unemployment rate in the county stood at 10.8 percent, considerably higher than the statewide unemployment rate of 8.2 percent.⁶ Between 2008 and 2012, the largest employment sectors for county residents were educational services, health care and social assistance (20.4 percent), manufacturing (20.0 percent) and retail trade (11.0 percent).⁷ Campbell County's relative reliance on manufacturing is significantly above the state average but similar to many other rural counties across the state. Manufacturing saw some modest employment growth in 2012 and 2013, but employment levels were well below those that prevailed in 2007 on the eve of the Great Recession.⁸

The percentage of persons below the poverty level during the same five year period was 23.7 percent. Median household income between 2008 and 2012 was \$31,312 compared to \$44,140 for the state as a whole. Average annual pay for private business establishments in the county was \$31,539 in 2013. Average annual pay in the natural resources and mining sector stood at \$54,451 in 2013 compared to \$21,230 in the retail trade sector and \$14,737 in the leisure and hospitality sectors.⁹

⁶ Bureau of Labor Statistics: <http://data.bls.gov/map/MapToolServlet?survey=la&map=state&seasonal=s>. Accessed November 25, 2014.

⁷ American Community Survey: http://factfinder2.census.gov/bkmk/table/1.0/en/ACS/12_5YR/DP03/0400000US47/0500000US47013. Accessed November 12, 2014.

⁸ Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) Program, www.bls.gov/cew/. Accessed January 6, 2015.

⁹ Data on annual average pay are based upon compensation paid by employers in the county—the recipients of this income may live in Campbell County or another place of residence. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) Program, State and County Wages, www.bls.gov/cew/. Accessed January 6, 2015.

In order to provide a comparable metric of economic development, the Appalachian Regional Commission (ARC) classifies Appalachian counties in one of five categories (Distressed, At-risk, Transitional, Competitive and Attainment), based on a composite index comprised of the three-year average unemployment rate, per capita market income and poverty rate.¹⁰ In 2013, Campbell County was classified as “distressed,” a category which includes the most distressed 10 percent of the nation’s counties (see Figure 1).

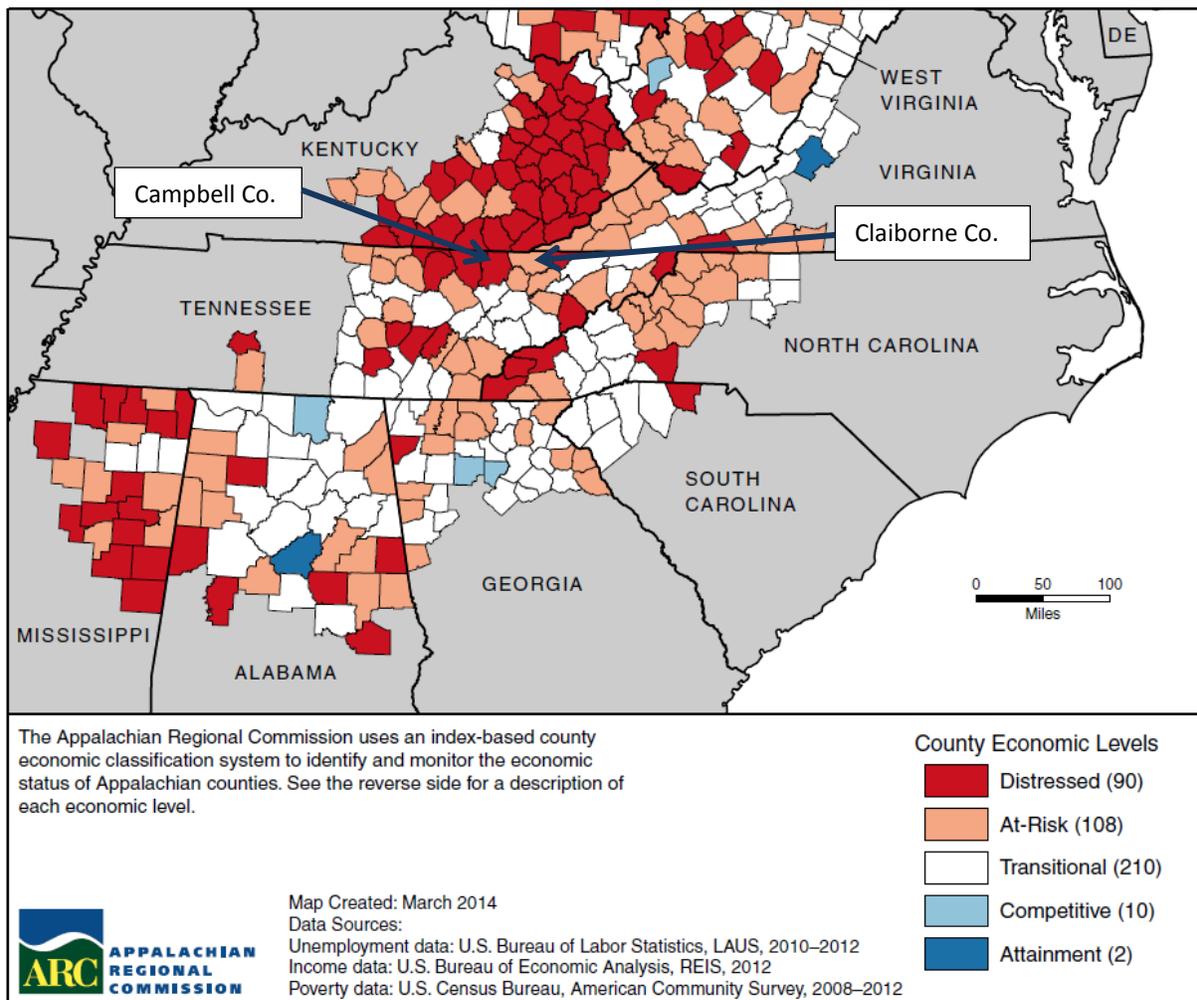


Figure 1. County Economic Status in Central and Southern Appalachia

¹⁰ The ARC County Economic Status Map for FY 2015 is available at http://www.arc.gov/research/MapsofAppalachia.asp?MAP_ID=90. Accessed November 9, 2014. For a detailed definition of each category, see <http://www.arc.gov/research/SourceandMethodologyCountyEconomicStatusFY2007FY2015.asp>.

Claiborne County is east of Campbell County and is also along the Kentucky border, one county removed from the Tri-Cities MSA. The county seat is Tazewell, and the largest city in the county is Harrogate with a 2012 Census population of 4,389. (Middlesboro, Kentucky has a population of 10,334 and is less than 5 miles away.) According to the 2010 U.S. Census, there are 32,213 people in the county of which the vast majority (96.8 percent) are white. The population is estimated to have declined by 2 percent between 2010 and 2013. Like Campbell County, the county is older than the state as a whole. The percent of the population older than 24 with a high school diploma is 72.6 percent and with a bachelor's degree is 13.2 percent.

Claiborne County residents work in many of the same sectors as residents of Campbell County - educational services; health care and social assistance (23.6 percent), manufacturing (20.2 percent) and retail trade (12.9 percent).¹¹ Claiborne County experienced small growth in manufacturing employment in 2012 and 2013, but as with Campbell County, employment levels were below the levels from 2007.¹² The 2013 unemployment rate in Claiborne County (11.6 percent) is also higher than the statewide average. In 2013, Claiborne County was classified as “at risk” by the ARC, which is in the lowest 10-25 percent of U.S. counties (see Figure 1).¹³

Claiborne County's median household income was \$33,568 and the percentage of persons below the poverty level was 23.0 percent, both of which are worse than the statewide average. Average annual pay across all sectors of the county economy was \$33,512 in 2013,

¹¹ Data for 2008-12 from the American Community Survey: http://factfinder2.census.gov/bkmk/table/1.0/en/ACS/12_5YR/DP03/0400000US47/0500000US47013. Accessed November 17, 2014.

¹² Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) Program, www.bls.gov/cew/. Accessed January 6, 2015.

¹³ The ARC County Economic Status Map for FY 2015 is available at http://www.arc.gov/research/MapsofAppalachia.asp?MAP_ID=90. Accessed November 9, 2014. For a detailed definition of each category, see <http://www.arc.gov/research/SourceandMethodologyCountyEconomicStatusFY2007FY2015.asp>.

well below the statewide average of \$44,285. Average annual pay for the natural resource and mining sector was \$56,986 compared to \$21,665 for retail trade and \$13,654 for leisure and hospitality services.¹⁴

2. COAL

Rural communities often rely on manufacturing as the primary basis for economic growth, even though manufacturing has been in decline as a source of job creation (Henderson, 2012).¹⁵ However, a small number of counties in Tennessee have coal reserves that have played an important role in the local economic base, including employment creation. Unfortunately, like other industrial sectors, coal production in Tennessee has been in decline. And it is unclear whether demand for coal will increase given potential business decisions of utilities to reduce pollution, concerns over climate change and continued air regulation in Tennessee and regionally, and trade restrictions recently imposed by one of the largest export markets for Appalachian Basin coal (China).¹⁶ On the other hand, Tennessee coal production could possibly increase. Natural gas prices are expected to rise in response to 1) increasing liquid natural gas (LNG) exports and 2) increasing demand for natural gas as electricity generators shift from coal to natural gas in response to air regulations. The increase in natural gas prices will make Appalachian coal more cost competitive. Also emerging markets, such as India, may represent an outlet for Appalachian coal.

¹⁴ Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) Program, State and County Wages: www.bls.gov/cew/. Accessed January 6, 2015.

¹⁵ Tennessee saw some job growth in manufacturing in 2011 through 2013. But between 1996 and 2010, the state lost manufacturing jobs. In 2017, the short-term resurgence in manufacturing is expected to reverse itself and additional job losses are projected. See *An Economic Report to the Governor of the State of Tennessee*, Center for Business and Economic Research, the University of Tennessee, January, 2014.

<http://cber.bus.utk.edu/erg/erg2014.pdf>. Accessed November 17, 2014. As discussed below, both Claiborne and Campbell Counties saw small gains in manufacturing employment in 2012 and 2013.

¹⁶ Each of these potential coal market drivers will be discussed in detail in section 2.2.

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Policymakers and residents must evaluate possible economic development strategies for rural communities, with coal mining being a key industry of interest if significant reserves are present. Part of the evaluation methods includes weighing the range of strengths and weaknesses associated with promoting various sectors of the economy. Two Tennessee counties are of particular concern for coal mining's future in Tennessee: Campbell and Claiborne Counties.

In what follows, we first look at results of the relevant academic literature that concerns the role of resource-extractive industries in rural economic development. A few of these studies have focused on rural Appalachian counties and provide insight on the coal industry in Campbell and Claiborne Counties. We then turn our attention to the broader regional, national, and internal market forces that shape coal mining in Campbell and Claiborne counties.

Our county-level analysis proceeds in three steps. First, we provide a descriptive profile of coal mining in the two counties. This profile reveals some emerging trends in coal production in the two counties that are consistent with broader regional trends. The second step estimates general economic impacts for the coal industry in the two counties, inclusive of the ripple effects of the multiplier.¹⁷ This phase of the analysis provides a snapshot of the current role that the coal industry plays in economic development in Campbell and Claiborne counties. However, ***current impacts do not provide sufficient details to evaluate the attractiveness of continued coal mining in these counties.*** The third step of the analysis utilizes an asset valuation model to investigate how future trends and various sources of market uncertainty influence the value of coal assets in these counties and thus the economic incentives for coal companies to continue mining operations in the area. This **third phase is critical to fully assess the positive and**

¹⁷ As discussed more fully below, coal sales (as well as tourism activity) directly create jobs in the coal (tourism) industry. Additional beneficial impacts arise through suppliers (e.g. the coal industry's purchase of inputs) and through the spending and re-spending of these new dollars (the multiplier effect) in the local community. For example, a worker in the coal industry may purchase groceries which helps support jobs in a local grocery store; grocery store workers spend some of their paychecks in the community supporting other jobs; and so on.

negative facets of economic development decisions that will have long-lasting impacts, especially given the current volatility of coal markets in the Appalachian Basin and the most recent outlook for coal sales given the movement toward natural gas.

2.1 RESOURCE CURSE PHENOMENON

Basic intuition and economic theory together suggest that an abundance of natural resources promotes economic growth. However, studies consistently find that **regions or nations with more natural resources exhibit lower economic growth** even when accounting for differences in geography, demographics, political structure, and economic systems. This “resource curse” has been identified at the national (Sachs and Warner 2001), state (Papyrakis and Gerlagh 2007), and county level (James and Aadland 2011). Potential explanations for this counterintuitive result include weak private property laws, corruption, poor governance, a less educated workforce, and/or low investments in growth-promoting activities. The damaging influence on economic growth can be especially prevalent for fuel resources like coal. The boom-bust cycle of revenues from natural resource extraction also has consequences for the management of revenue streams for local governments and the funding of public services from police protection to schooling. The prevailing wisdom among many observers in resource-abundant areas is that the value of the resource will rise in the future, though this is certainly not always the case.

The studies noted above focus on large geographic areas, which requires a very broad definition of natural resource abundance. However, a few studies have looked specifically at coal production in Appalachia. The studies that do exist are inconclusive but are suggestive of negative longer-term impacts. These negative impacts may arise from several influences but broadly reflect a community’s overreliance on a single sector which is more volatile than the

overall economy over time. For example, community leaders may be less aggressive in recruiting traditional manufacturing firms and developing industrial parks that support manufacturing because of the presence of the coal industry, while young people may seek jobs in the coal industry rather than deepening their human capital skills through advanced schooling. Together, choices like this may limit a regional economy's to grow and diversify.

Santopietro (2002) compares Appalachian to non-Appalachian counties in Virginia, West Virginia, and Kentucky between 1969 and 1997. This study concludes that despite increases in productivity in coal mining during this time, natural resources failed to help income levels in the region catch up to surrounding areas. While workers in the coal industry may have been better off, the benefits did not spill over broadly to the regional economy in a significant way. Deaton and Niman (2012) examine poverty rates in 399 Appalachian counties from 1960 to 1990. Their findings suggest that an increase in the share of the population employed in the mining sector decreases the poverty rate in the short term but increases the poverty rate in the long term. Deaton and Niman attribute this to potentially reduced levels of human capital investment that limit a community's ability to adapt to changing economic circumstances. Using data encompassing the entire U.S., Partridge et al. (2013) found that the negative association between coal mining and poverty was stronger in Appalachia than the rest of the nation, potentially because of the smaller role played by mining over time.

Other studies have focused on the boom and bust aspects of the coal industry in the region. Black et al. (2005a) look at employment impacts of the coal market boom and bust during the late 1970s and early 1980s in Appalachia. They find that the increases in employment in the coal industry do spillover to the local traded goods sector (i.e. the sector that exports goods and services outside the region). However, these spillover effects are more damaging to

employment during market busts. Specifically, they find that for every 10 jobs added in the coal sector during the boom, fewer than two jobs were added to the local traded goods sector. But during the bust, 10 jobs lost in the coal sector correspond to 3.5 jobs lost in the local goods sector. These boom-bust cycles can also have long-term impacts on the skills of the local workforce. Black et al. (2005b) show that the coal boom of the late 1970s increased the earnings of high school dropouts relative to those of graduates, but the bust decreased earnings of dropouts relative to graduates. As a result of the initial earnings premium, high school enrollment rates declined considerably in the 1970s. While high school enrollment rates rebounded during the coal market bust of the mid to late 1980s, this boom-bust cycle left many local residents without the education needed to seek alternative employment.

Two studies have looked at longer-term impacts of the coal industry in Appalachia and potential drivers of economic under-performance. In an unpublished dissertation, Harkness (2010) finds that coal counties have experienced slower growth, higher poverty, and lower overall economic development. But this economic resource curse is attributed to the boom and bust cycle of development and not the many political and governmental drivers such as low levels of local government spending on public amenities, lack of investment in public education, and corruption that may be observed in other regions. In fact, the study finds that Kentucky counties with a coal industry presence spend more per student on education than other counties.

While local governments may not be the primary driver of poor economic performance, there remains a strong relationship between lack of economic development and coal abundance. Walker (2013) examines the impact of coal abundance (measured as the geological presence of coal) on income growth in 409 counties in New York, Pennsylvania, Ohio, West Virginia, Virginia, Kentucky, Tennessee, North Carolina, Georgia, Alabama, and Mississippi from 1970

through 2010. This study finds that coal abundance significantly reduces growth of per capita income. Much like the results of Black et al. (2005a), the difference in the growth of per capita income shrinks during a boom in the coal sector but grows when the market busts (see Figure 2). This suggests that the rate of growth in personal income during a boom is larger in coal counties but smaller during a bust (see Figure 3). A significant portion of this impact on per capita income growth is attributed to a reduction in high school and college completion in these counties. In contrast to the study from Harkness, Walker finds no evidence that coal-abundant counties spend more on education or under-provide public services to their populations.

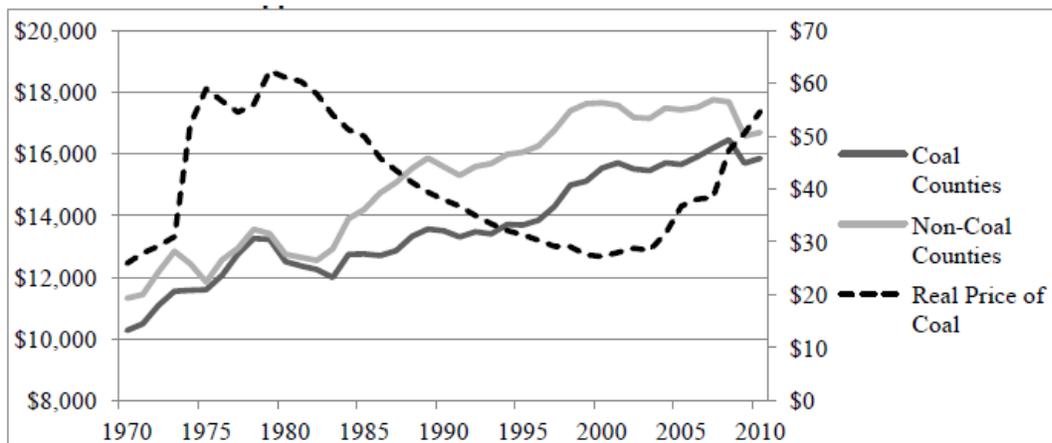


Figure 2. Real Price of Bituminous Coal and Mean Growth of Real per Capita Personal Income of Coal and Non-Coal Appalachian Counties. *Source: Walker (2013)*

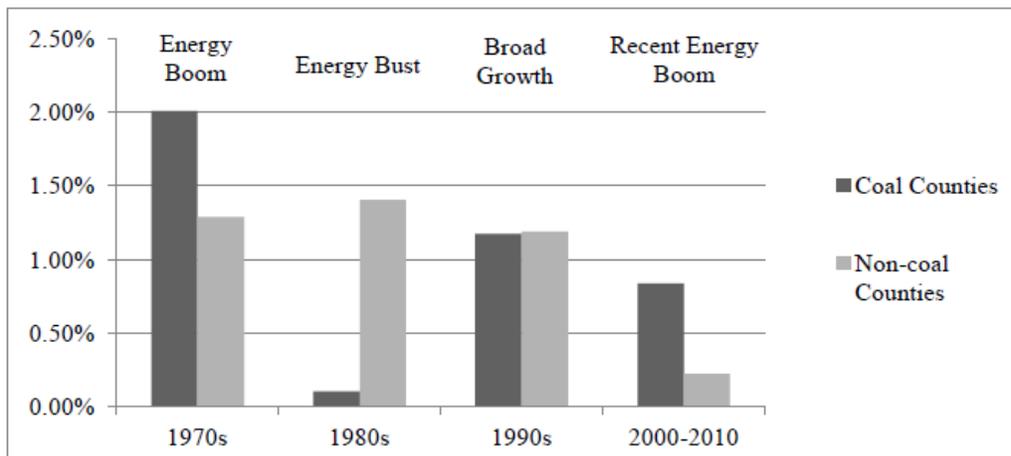


Figure 3. Mean Growth Rate of Per Capita Personal Income of Coal and Non-Coal Appalachian Counties. *Source: Walker (2013)*

If these boom-bust cycles persist, the central Appalachian region may be in for a painful period of disproportionately slow economic growth. While the decade from 2000-2010 was characterized by slow growth in personal income across Appalachia, a mild energy boom during this time allowed personal income in coal counties to grow faster than non-coal counties in the region. As detailed in the following section, market analysts point to a number of reasons for future declines in the U.S. coal market that will disproportionately impact the Central Appalachian basin. This may signal an opportune time to evaluate a possible transition from coal to other economic development drivers, including tourism.

A final potential driver of the resource curse phenomenon is that resource extraction causes long-term impacts on the local environment and human health that may hobble the local workforce and deter businesses from relocating to the area. A primary concern related to coal mining in this arena is abandoned and un-reclaimed coal mines. While coal mining may bring economic development to rural communities when the coal mines are operating, they can leave behind coal mines and associated coal processing lands that pose a risk to water quality, human health, and safety for many years. Even if these impacts are mitigated, there may be lingering stigma effects that limit alternative land use. Today coal mine operators are required by federal and state law to alleviate the environmental and health impacts at these sites, a process known as reclamation.¹⁸ The lack of full reclamation still poses a risk to water quality, human health, and safety. These legacy costs are expected to be significant due to the long-term nature of the extraction impacts but are difficult to quantify.

To incentivize reclamation, the U.S. Department of the Interior's Office of Surface

¹⁸ The 1977 Surface Mining Control and Reclamation Act (SMCRA) requires that coal mines be reclaimed and not cause water pollution for an indefinite period of time.

Mining Reclamation and Enforcement (OSMRE) collects a performance bond from operators before issuing mining permits. Once full reclamation is complete, the bond is returned to the operator. If full reclamation is not complete, these bonds are forfeited and used to fund reclamation projects. However, some mine operators find reclamation too costly and instead elect to pay any penalties levied by state and federal governments. Also, abandoned mines that existed before SMCRA (1977) required no bond.

As of September 2014, there were 17,331 acres of abandoned mines in Tennessee scattered across 20 counties.¹⁹ Campbell County is home to 24 percent (4,212) of these abandoned mine lands, while Claiborne County is home to 4 percent (714).²⁰ The estimated costs of restoring un-reclaimed mine sites plus the actual federal program completed costs of sites already reclaimed with Abandoned Mine Reclamation Fund monies in Campbell County is \$14,821,016, and in Claiborne County this figure is \$4,465,454.²¹ It is important to note that these estimates only represent the cost of reclaiming abandoned mines sites and will not reflect impacts to water quality, human health, and safety.

2.2 COAL OUTLOOK IN THE CENTRAL APPALACHIAN BASIN

Campbell and Claiborne County are part of what is known as the Central Appalachian Basin which encompasses eastern Kentucky, southern West Virginia, southwestern Virginia, and northeastern Tennessee. In 2012, the Central Appalachian Basin produced 137.9 million short

¹⁹ Abandoned mine acreage obtained from the Office of Surface Mining Reclamation and Enforcement, Abandoned Mine Land Inventory System. This number includes both reclaimed (6,465 acres) and un-reclaimed (10,568 acres) land on the federal Office of Surface Mining inventory. This number does not include 154 sites (1,142 acres at a cost of \$11.4 million) reclaimed by TDEC using state funding (discontinued in 2012), the bond fund, and the occasional matching dollars leveraged with state and bond funds.

²⁰ Office of Surface Mining Reclamation and Enforcement, Abandoned Mine Land Inventory System. Accessed September 27, 2014.

²¹ Office of Surface Mining Reclamation and Enforcement, Abandoned Mine Land Inventory System. Accessed September 27, 2014.

tons of coal.²² Thermal coal used primarily to generate energy accounted for 60 percent of this production while metallurgical coal used in the production of steel accounted for 40 percent. Historically, coal mining has been a source of needed jobs in isolated communities in Appalachia.

However, the coal industry has changed dramatically in recent decades. Environmental regulations and increased competition from unconventional oil and gas sources has slowed the growth in aggregate U.S. coal production. The coal industry in Appalachia has been hit particularly hard. Average prices for coal produced in Appalachia are expected to be over 50 percent higher than the national average following years of competitive prices for Appalachian coal (see Figure 4). This might be viewed as good news for Appalachian coal and the sign of a coal market boom in the region. However, Appalachia's share of U.S. coal production also fell from 43 percent in 1997 to 28 percent in 2012. Unlike the previous demand-driven increases in coal prices in the 1970s and 2000s, the combination of rising prices and falling production signals a supply-side shock in which the cost of extracting coal in the region is rising. While aggregate U.S. coal production is expected to remain relatively stable, Appalachian coal production is forecasted to decline by an additional 14 percent from 2012 to 2016 (see Figure 4).

²² U.S. Energy Information Administration *Coal Market Module 2014*.: [http://www.eia.gov/forecasts/aeo/nems/documentation/coal/pdf/m060\(2014\).pdf](http://www.eia.gov/forecasts/aeo/nems/documentation/coal/pdf/m060(2014).pdf). Accessed November 17, 2014. Howard H. Baker Jr. Center for Public Policy – January 9, 2015

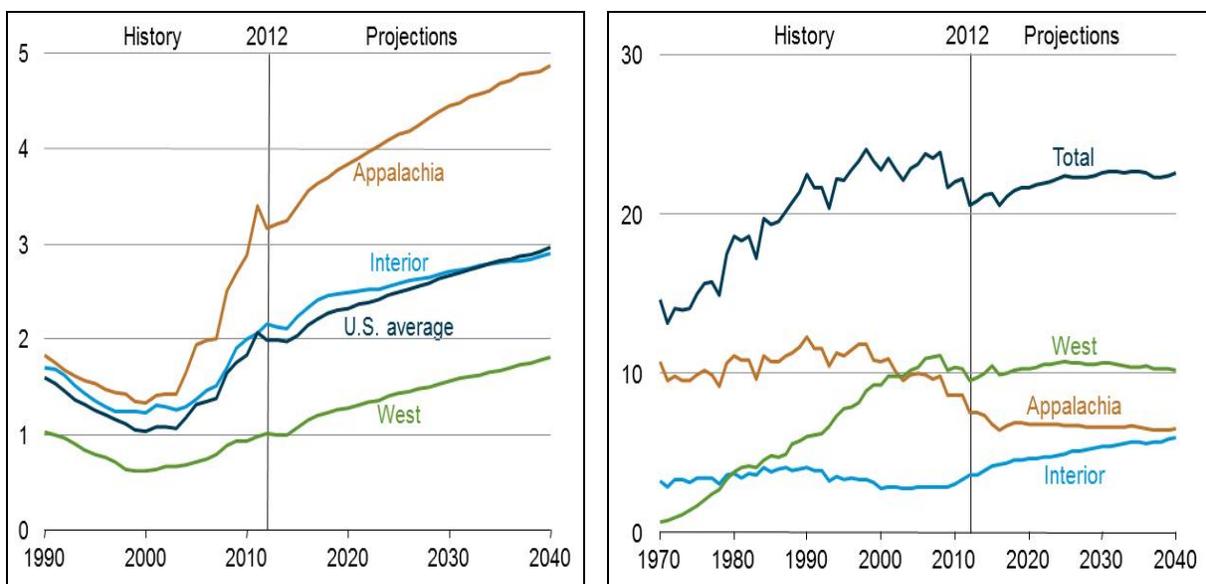


Figure 4. Historical Trends and Future Projections of (a) Average Minemouth price/quadrillion Btu and (b) Coal Production by Region, Quadrillion Btu. Source: U.S. Energy Information Administration Annual Energy Outlook 2014

These changes have created winners and losers between regions of the U.S. as well as within coal-dependent communities. The changes are being driven by many factors within the region, in other coal producing areas of the U.S., and in other energy markets such as natural gas. However, we have identified five primary drivers of coal's decline in Central Appalachia.

1. *The new source performance standards imposed by the Clean Air Act increased demand for low-sulfur, sub-bituminous Western coal at the expense of Appalachian coal* (Figure 5). Appalachian coal production has fallen by 37 percent since 1997 while Western production rose 20 percent. Regulatory changes have prompted the installation of scrubbers that remove sulfur dioxide from coal-fired emissions. As more scrubbers were installed, consumers returned to the relatively inexpensive high sulfur coal in the Illinois Basin. Thus while coal production in the eastern U.S. declined following the Clean Air Act of 1990, production in the Illinois Basin returned.

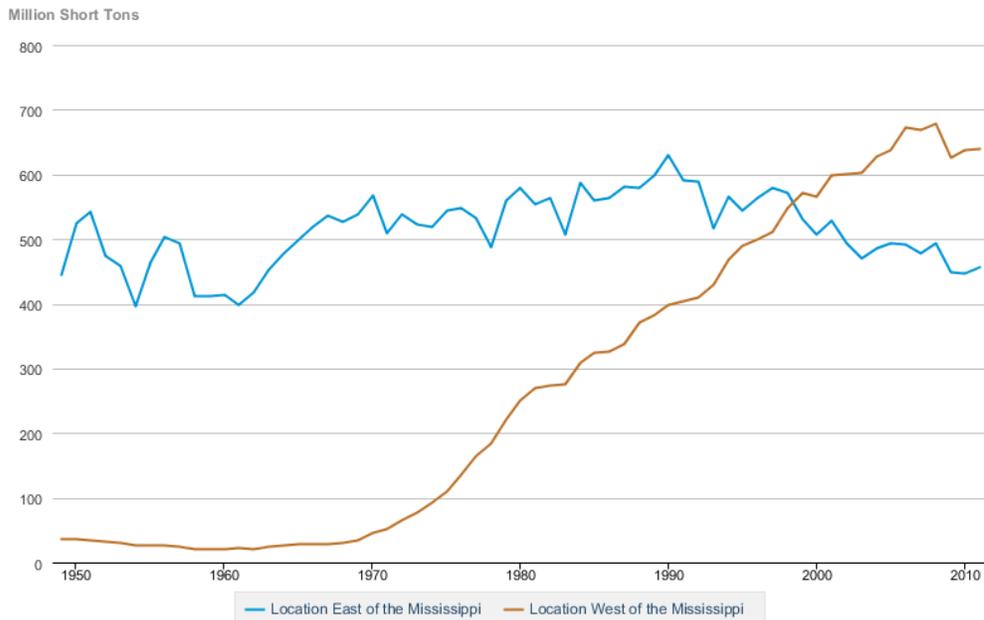
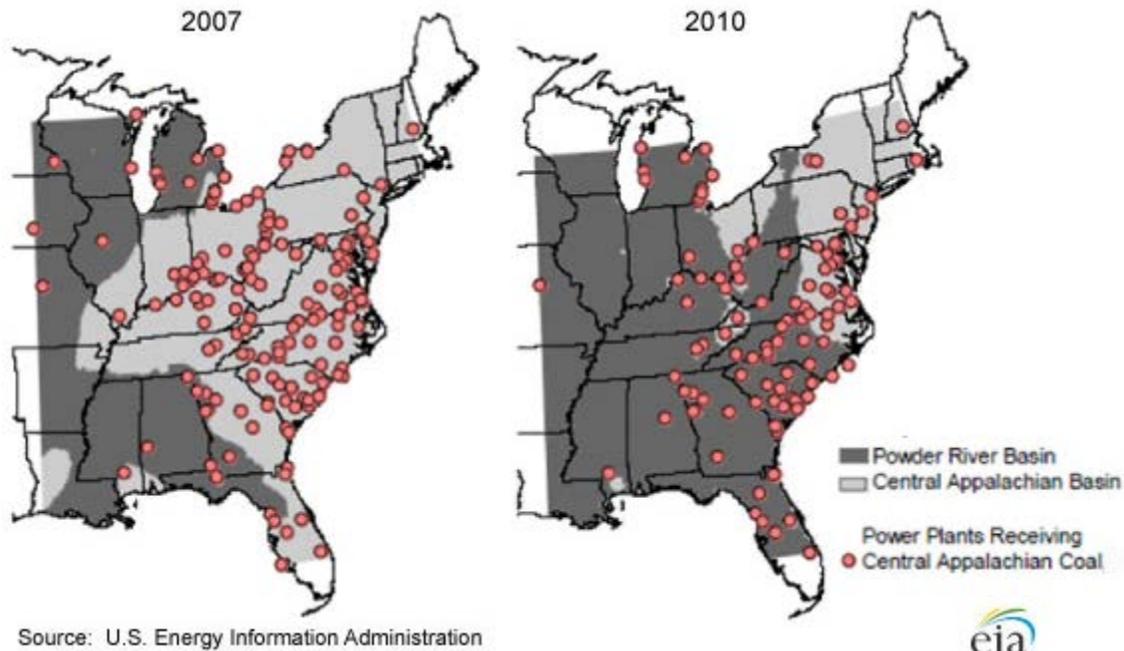


Figure 5. Coal Production, 1940-2011. Source: U.S. Energy Information Administration Annual Energy Outlook 2011

2. *Mine productivity in the Central Appalachian Basin has declined due to the higher-cost reserves remaining in the region following years of extensive mining.* As the cost of extracting coal in the region increases, minemouth prices have increased in order to allow mine owners to recoup the higher production costs, including those associated with harder-to-reach reserves. These recent increases in the average price of Appalachia coal, from \$1.33/MMBtu in 2000 to \$3.16/MMBtu in 2012, have reduced the ability of Appalachia coal to compete with coal from other regions (Figure 6). Appalachian coal production is forecasted to decline by 14 percent from 2012 to 2016 due to the higher-cost reserves remaining in the region following years of extensive mining.



Source: U.S. Energy Information Administration

Figure 6. Lowest Delivered Cost by Basin. Darker areas represent lower costs for coal from the Powder River Basin

3. *Innovations in unconventional oil and gas extraction have led to increased supply of these energy sources which have made coal a less competitive fuel source.* However, as natural gas distribution infrastructure is expanded and U.S. export terminals are completed, the price of natural gas will likely rise. This rise may allow coal to regain a portion of its competitive edge. We are already seeing evidence of this in the electricity generation sector where the fuel cost of electricity generation using Appalachian coal and natural gas is roughly equal. As shown in Figure 7, the delivered price from coal sources (CAPP = Central Appalachian coal and NAPP = Northern Appalachian coal) has trended down while the delivered price for electricity from natural gas has shown an upward trend. However, many regional and technical factors influence coal and natural gas competition including proximity to production, characteristics of power plants in the region, fuel inventory levels, and availability of natural gas transportation and storage.

These competitive forces between the two fuel sources are continuing to evolve.

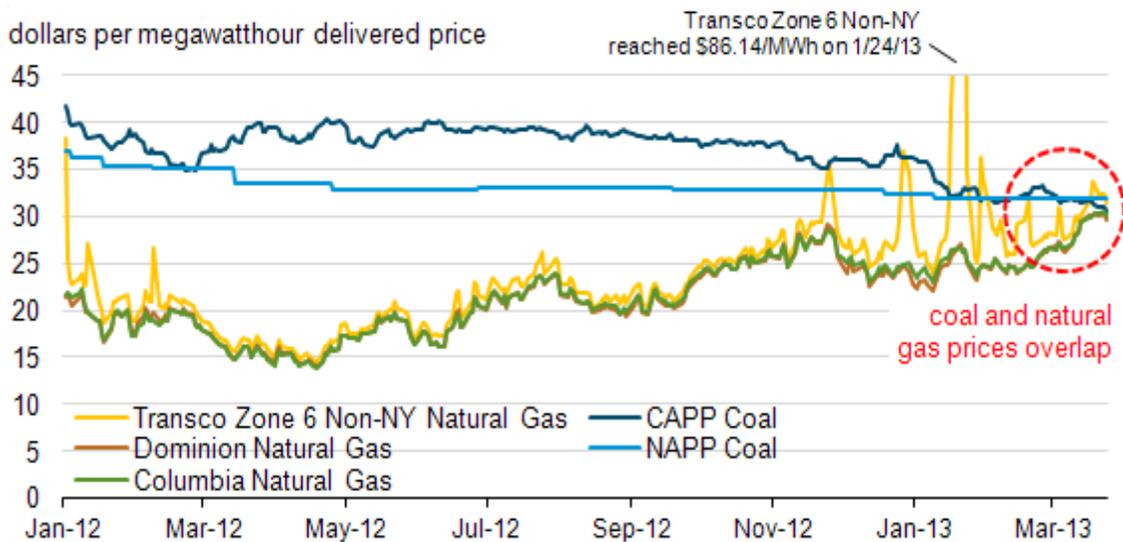


Figure 7. Fuel Cost of Generation for Appalachian Coal and Natural Gas Converging in Pennsylvania, 2012-2013. Source: Energy Information Administration

4. *U.S. climate change policies to reduce carbon emissions have halted, with only one possible exception, any new investments in coal-fired electricity generation.*²³ In March 2012, the U.S. Environmental Protection Agency (EPA) proposed a rule limiting CO₂ emissions from *new* fossil fuel-fired power plants. In response to public opposition, EPA withdrew the rule in September 2013 and proposed a revised rule. This proposed rule on new power plants is not yet final. In June 2014, the EPA proposed a similar rule limiting CO₂ emissions from *existing* power plants – the Clean Power Plan. EPA expects to release the final rule for existing power plants in June, 2015, but the date of effective implementation is not clear. Finalizing these rules would mean that some coal-fired power plants would no longer be economically viable, triggering early retirement of these facilities. Furthermore, new coal-fired plants would look less desirable compared to natural gas-fired plants. As shown in Figure 8, these responses would likely perpetuate a

²³ The lone exception is in Georgia. See <http://www.usnews.com/news/business/articles/2014/11/15/georgia-developer-still-trying-to-build-coal-plant>. Accessed November 17, 2014.

shift from coal to natural gas-fired electricity generation that has been evolving for the past seven years. From this figure, it appears that generation from coal has trended down while generation from natural gas has trended upward.

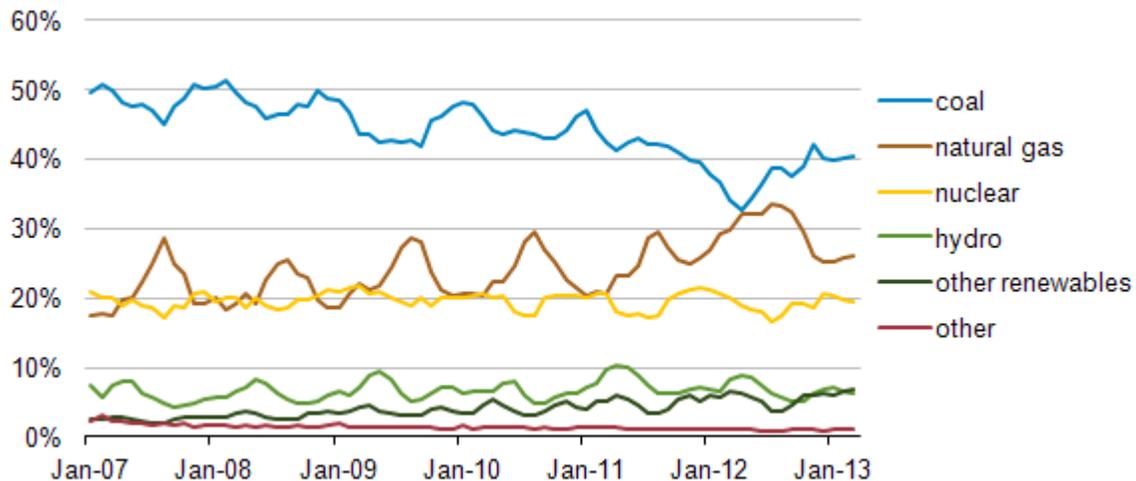


Figure 8. U.S. Monthly Net Electric Power Generation, January 2007-March 2013.
 Source: U.S. Energy Information Administration *Electric Power Monthly*

5. *Trade policies in China have limited the ability to export coal production in the Appalachian Basin to these emerging markets.* U.S. coal exports increased over the past decade.²⁴ In 2013, Europe (52 percent) and Asia (27 percent) accounted for over three quarters of U.S. coal exports.²⁵ But between June 2013 and June 2014, U.S. coal exports dropped nearly 15 percent. While exports dropped in nearly all world markets,²⁶ the drop was most pronounced in Asia where coal exports from the U.S dropped nearly 30 percent over the 12 month period. In September 2014, China (the world’s largest coal importer) announced it would ban the use of imported coal with more than 16 percent ash and 3

²⁴ EIA Monthly Energy Review: <http://www.eia.gov/todayinenergy/detail.cfm?id=11751> Accessed November 10, 2014.

²⁵ Table 7, EIA Quarterly Coal Report, 2nd Quarter, Released October 8, 2014. <http://www.eia.gov/coal/production/quarterly/pdf/t7p01p1.pdf>. Accessed November 19, 2014.

²⁶ Exports to Africa increased 45 percent.

percent sulfur for some users starting January 1, 2015 in a bid to improve air quality. In October 2014, the Chinese Ministry of Finance announced that import tariffs for metallurgical coal used for steel and iron production would be reinstated at 3 percent with a 6 percent tariff on thermal coal used for electricity generation.

These regional, national, and international drivers all help explain the current trends in the coal industry in Campbell and Claiborne Counties. However, the full effect of many of these market drivers is unknown and continues to evolve. Because coal producers also look to the future when making production and hiring decisions, the current state of the coal industry in these counties may be influenced by events that have not yet come to pass. In other words, the anticipation or expectation of these drivers can have impacts felt by Campbell and Claiborne County residents today.

2.3 A PROFILE OF COAL MINING IN CAMPBELL AND CLAIBORNE COUNTIES

Coal mining in Campbell and Claiborne Counties makes up the majority of coal production in Tennessee. From 2005 to 2013, coal production in these two counties accounted for anywhere between 83 and 98 percent of all mining in the state (see Figure 9).²⁷ Further dissection of coal production in Tennessee shows Campbell County accounting for somewhere between 14 and 52 percent of all mining and Claiborne County historically representing a larger percent of total production (between 34 and 82 percent). Additionally, it is clear from Figure 9 that coal production in both counties has been in steady decline over the past eight years.

²⁷ State and county-level coal production data comes from the Office of Surface Mining: Appalachian Region Office via a Freedom of Information Act request. Similar data is found on the U.S. Energy Information Administration's Coal Data Browser starting in 2010. Before 2010, the data on the EIA database is missing mines and production information. The Coal Data Browser can be found here: <http://www.eia.gov/beta/coal/data/browser/>.

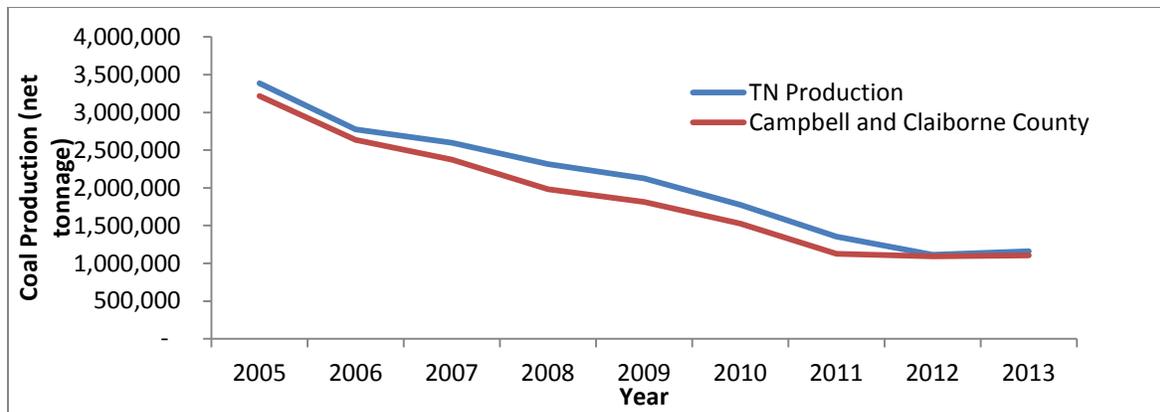


Figure 9. Tennessee Coal Production vs. Campbell and Claiborne County Coal Production, 2005-2013. *Source: Office of Surface Mining Appalachian Region Office via a Freedom of Information Act request.*

Coal mining can produce important economic benefits to residents, businesses, local communities, and the state. Production, employment and earnings are metrics that reflect the primary economic development benefits to residents and communities from mining activity. Severance, sales and property taxes are the primary revenue benefits to local communities, while the state may capture corporate franchise and excise taxes and sales tax revenues tied to coal-related economic activity.²⁸ Knowing past trends is useful for profiling the coal industry in the state and these two counties and identifying the pattern for coal-related economic and fiscal benefits.

The state saw a general decline in coal production and thus a decline in overall economic benefits over the timeline presented in Figure 10. Campbell County coal mining production was generally unchanged from 2005 to 2008, saw a rise for the following two years, and has fallen since then. Claiborne County, on the other hand, followed a pattern similar to the state as a whole, with coal production decreasing over most of the time horizon, but showing a modest increase since 2011.

²⁸ These are the primary revenue sources for localities and state government. Smaller revenues may accrue from various fees and excise taxes.

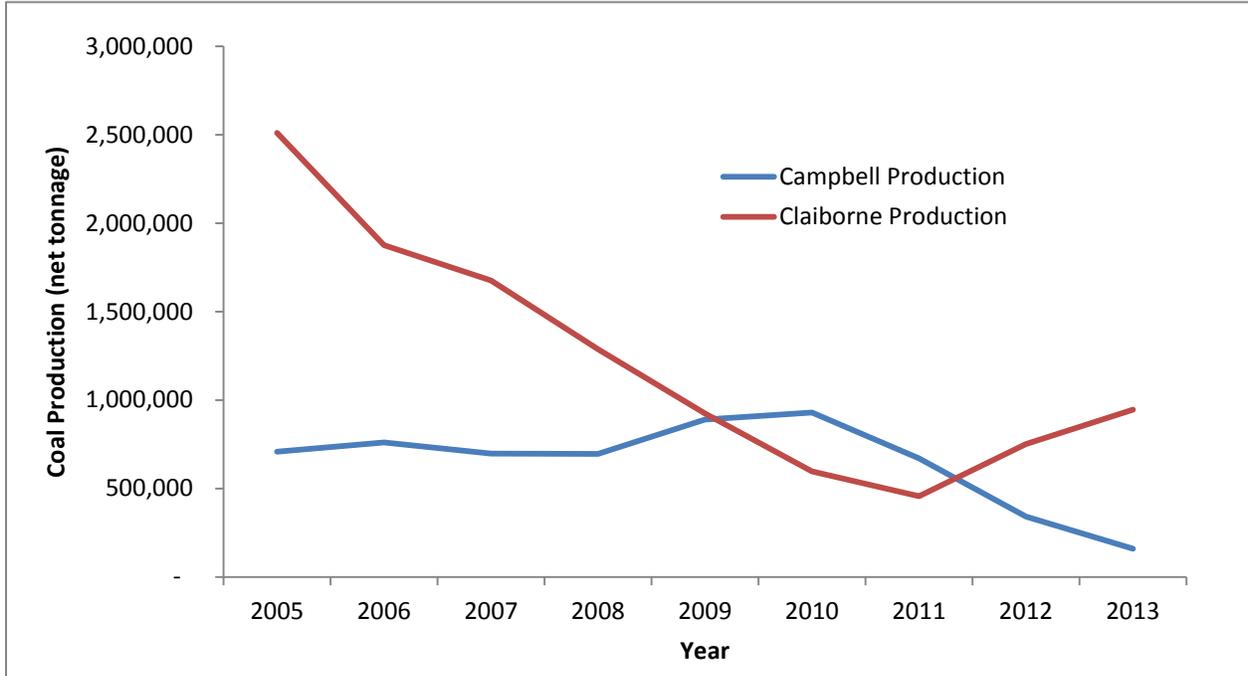


Figure 10. Campbell vs. Claiborne County Coal Production, 2005-2013. *Source: Office of Surface Mining Appalachian Region Office via a Freedom of Information Act request*

Employment in the coal industry reflects benefits that directly accrue to Tennesseans.²⁹

Figure 11 shows county-level employment trends in the coal industry for the two study counties. Both counties had fewer jobs in the coal industry in 2013 than in 2005. Campbell County had 46 coal industry employees in 2013; down from 151 in 2005. Coal industry employment in Campbell County increased from 2005 to 2009 and drops off afterwards. Conversely, Claiborne County’s coal mining employment steadily decreased until 2011 but has been on the rise since then. In 2005 Claiborne County employed 533 individuals in the coal industry, but that has fallen to 267 employees in 2013.

²⁹ Employment as measured here reflects the place of work, not the place of worker residence. Given the proximity to Kentucky, it is possible that some coal-related jobs accrue to non-residents of Tennessee.

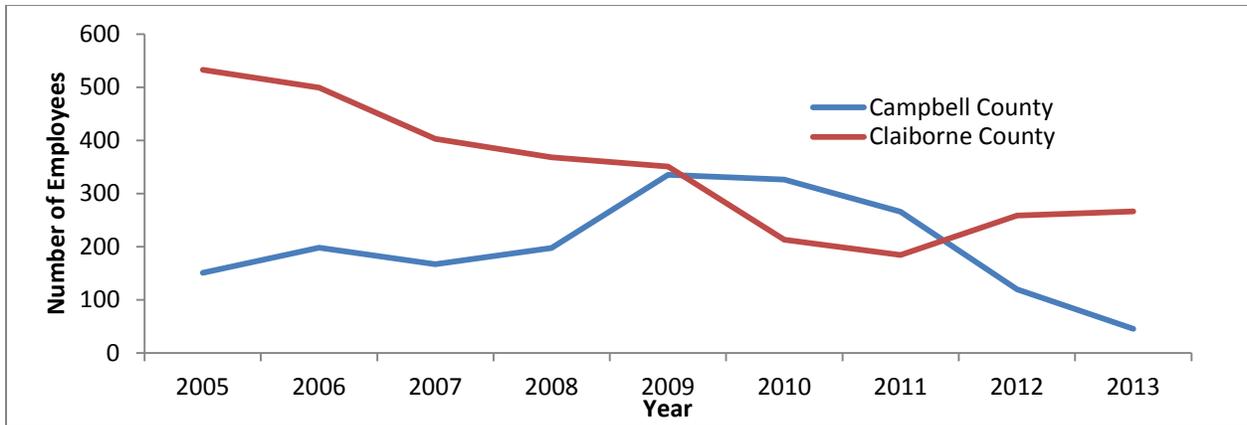


Figure 11. Campbell vs. Claiborne County Coal Industry Employment, 2005-2013. *Source: Office of Surface Mining Appalachian Region Office via a Freedom of Information Act request*

Aggregating Campbell and Claiborne County coal industry employment over this time frame and mapping it against Tennessee’s total coal industry employment, it can be seen that these two counties’ coal employment follow the same path as the state’s overall coal industry employment: peaking in 2009 and falling afterwards. This trend is not surprising since Campbell and Claiborne County encompass almost the entire state’s coal industry (see Figure 12). Overall employment in 2013 was less than one-half the level that prevailed as recently as 2005.

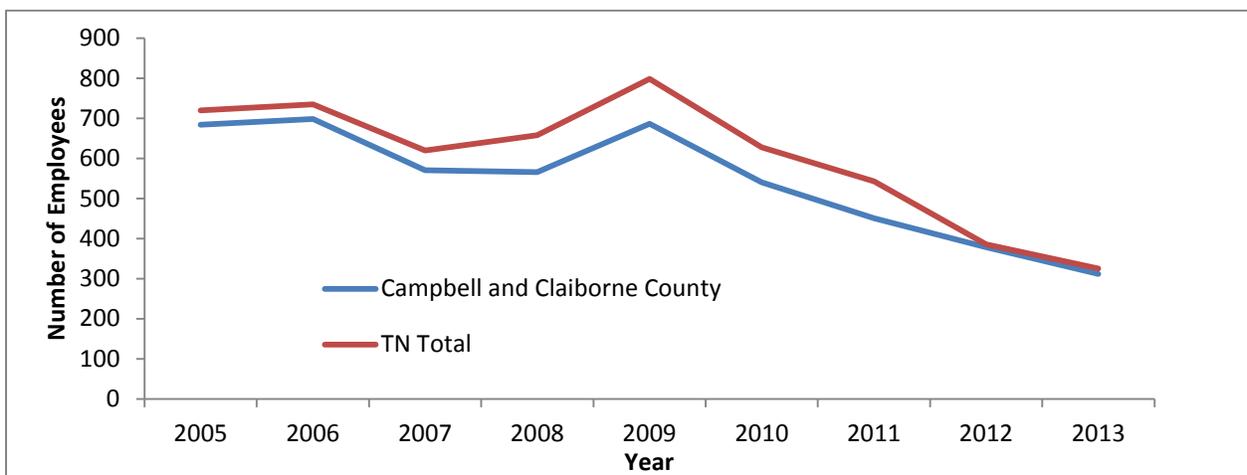


Figure 12. Tennessee Total vs. Campbell County and Claiborne County Coal Industry Employment, 2005-2013 *Source: Office of Surface Mining Appalachian Region Office via a Freedom of Information Act request*

Earnings are another important economic development benefit for employees of the coal industry. Average annual pay for the coal industry is the measure of earnings in this study.³⁰ Figure 13 shows the general increase of average annual pay from 2007 to 2013 for the state of Tennessee, including both Campbell and Claiborne Counties. While employment has been in decline in the coal industry, nominal and real earnings have shown modest growth.

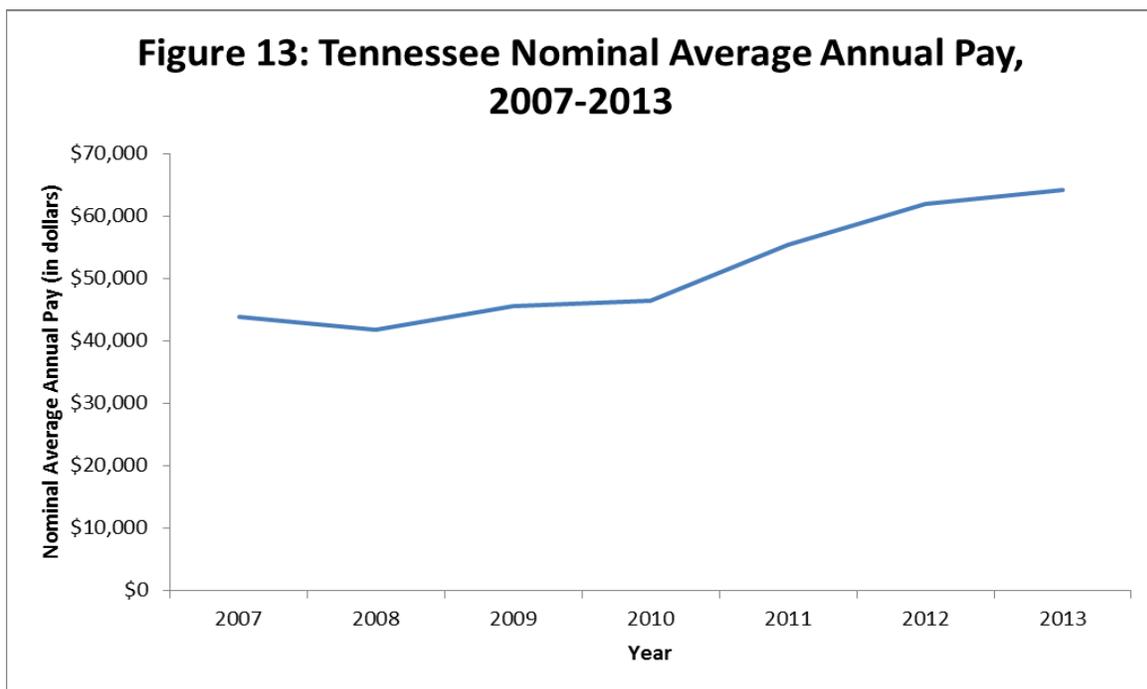


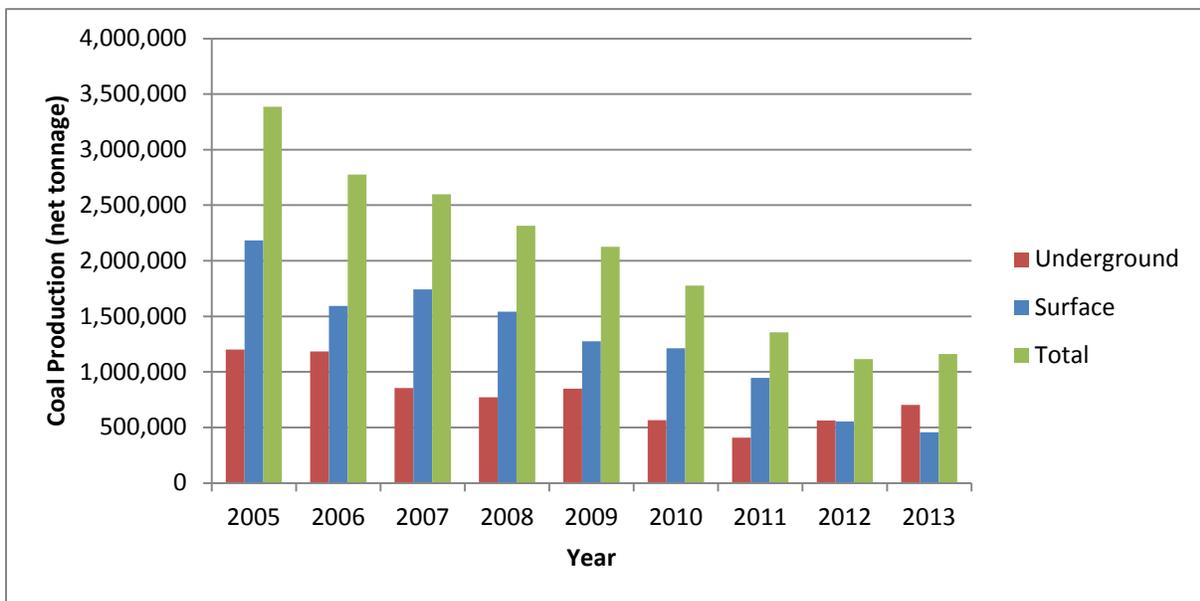
Figure 13. Tennessee Average Annual Pay for Coal Mining (North American Industry Classification System code 2121) from 2007 to 2013. Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages: <http://www.bls.gov/cew/>

Workers in the coal industry, who earned a statewide average of \$64,207 in 2013, are paid relatively well compared to jobs in other sectors of the economy. For example, in 2013 the

³⁰ Tennessee average annual pay for coal mining (North American Industry Classification System code 2121) from 2007 to 2013, Bureau of Labor Statistics, Quarterly Census of Employment and Wages: <http://www.bls.gov/cew/>. Howard H. Baker Jr. Center for Public Policy – January 9, 2015

statewide average annual wage across *all* sectors of the economy was \$44,285.³¹ In Campbell County the overall average annual pay was \$31,539 and in Claiborne County the average was \$33,512.³² Average annual pay for coal workers is also relatively high compared to per capita personal income which was \$39,558 for the state, \$30,734 for Campbell County and \$29,883 for Claiborne County in 2013.³³

Mine type (surface versus underground) is an important facet of the coal industry in Tennessee that must be considered since production processes for surface and subsurface mining differ, and both technologies have changed over time. Since 2005, the net tonnage produced by surface mines in the state has decreased. Underground mine production has also been falling (i.e. net tonnage), but there has been some growth since 2011. In 2012 and 2013, for the first time in many years, underground mines produced more net tonnage than surface mines in the state, as shown in Figure 14. This represents a reversal from recent trends.



³¹ Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) Program, State and County Wages: www.bls.gov/cew/. Accessed January 6, 2015.

³² Ibid.

³³ U.S. Bureau of Economic Analysis, Table CA05N, Personal Income by Major Source and Earnings by NAICS Industry: www.bea.gov/iTable/iTableHtml.cfm?reqid=70&step=26&isuri=1&7022=10&7023=7&7024=naics&7025=4&7001=710&7029=32&7090=70&7031=47000. Accessed January 6, 2015.

Figure 14. Tennessee Coal Production Technology Breakdown 2005-2013. *Source: Office of Surface Mining Appalachian Region Office via a Freedom of Information Act request*

Separating the technology breakdown to the county-level, Campbell County and Claiborne County coal production tell two different stories. Underground mines in Campbell County have consistently produced fewer net tons of coal since 2005, as indicated in Figure 15. However, surface mines in Campbell County produced increasing levels of coal until 2010 and then production dropped. Looking at Claiborne County, as indicated in Figure 16, coal production from both underground and surface mines has decreased from 2005 levels, with slight increases in coal production from both surface and underground mines in 2011 and 2010, respectively.

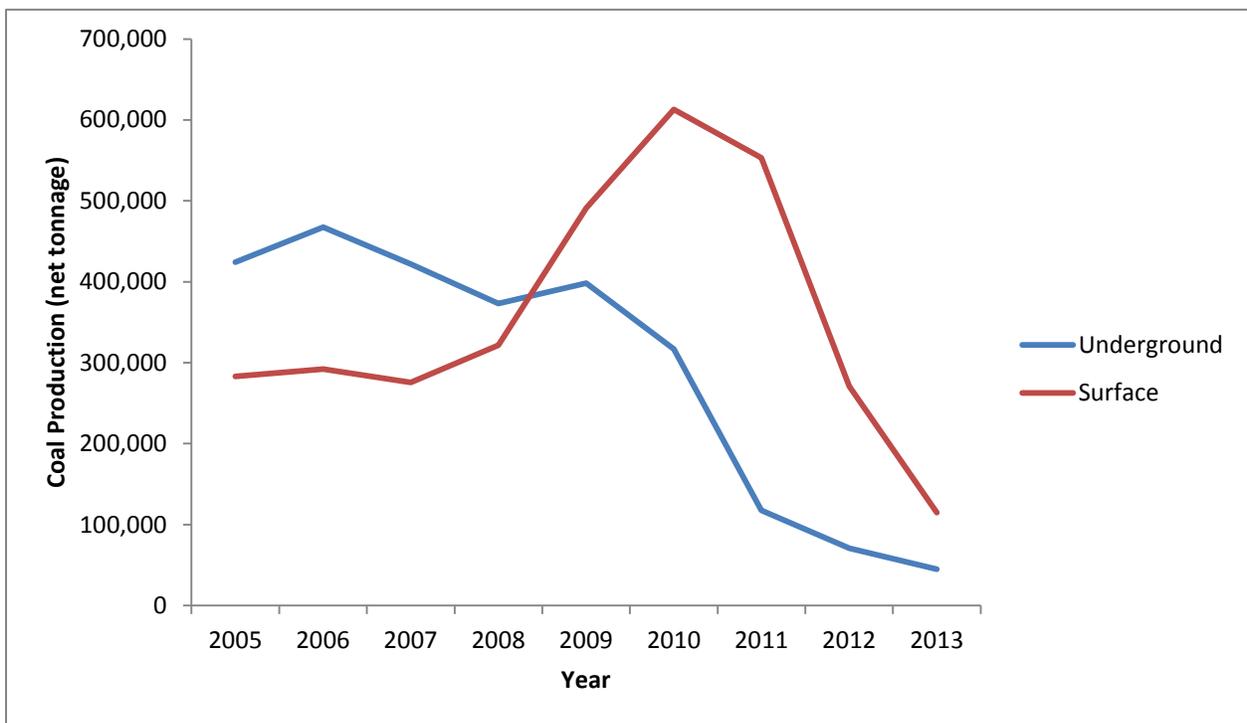


Figure 15. Campbell County Underground and Surface Mine Production 2005-2013. *Source: Office of Surface Mining Appalachian Region Office via a Freedom of Information Act request*

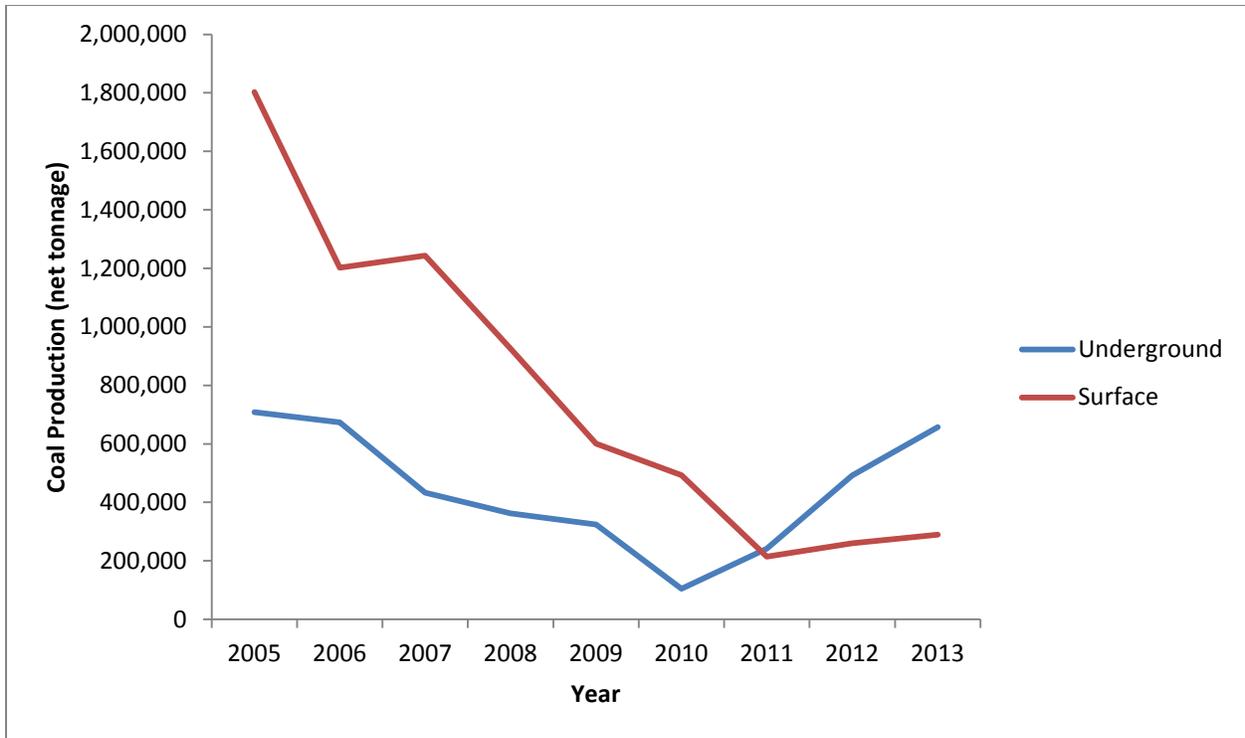


Figure 16. Claiborne County Underground and Surface Mine Production 2005-2013. *Source: Office of Surface Mining Appalachian Region Office via a Freedom of Information Act request*

While Tennessee’s coal industry is chiefly located in Campbell County and Claiborne County, there are several other counties in the state that have had (active) operating coal mines between 2005 and 2013. These counties include: Anderson, Cumberland, Fentress, Grundy, Morgan, Scott, and Sequatchie. Figure 17 depicts the number of companies mining in Tennessee counties since 2005. The trend shown indicates an increase in the number of companies operating in fewer counties over time. By 2013, only three counties in the state had active coal mining companies operating.

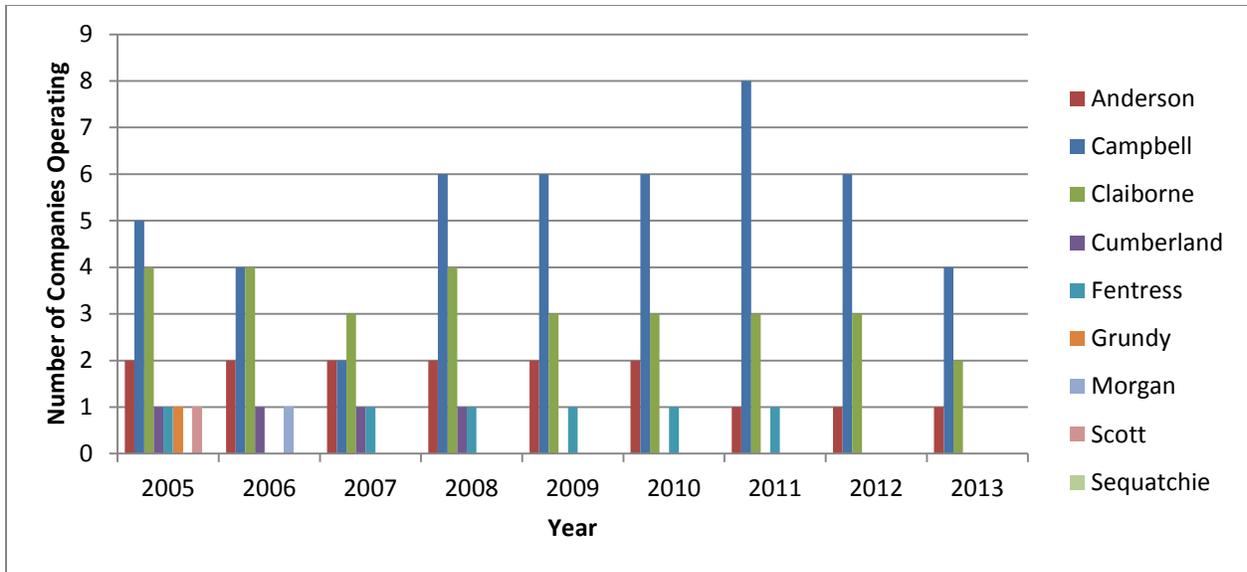


Figure 17. Number of Companies Mining in Tennessee Counties, 2005-2013. *Source: Office of Surface Mining Appalachian Region Office via a Freedom of Information Act request*

Another indicator of coal industry activity is operation status. There are coal mines that find it optimal to quit producing coal for a year or longer, entering idle status, based on market factors. Conversely, active or operating status indicates that the mine is producing coal. As shown in Figure 18, between 2005 and 2013, the number of underground mines that are considered operating has fallen, but with small increases in 2008, 2009, and 2011. Surface mines operating in the state over the same overall time frame fell between 2005 and 2007, but rose significantly in 2008 before falling to a similar number of operating mines as underground operating mines.

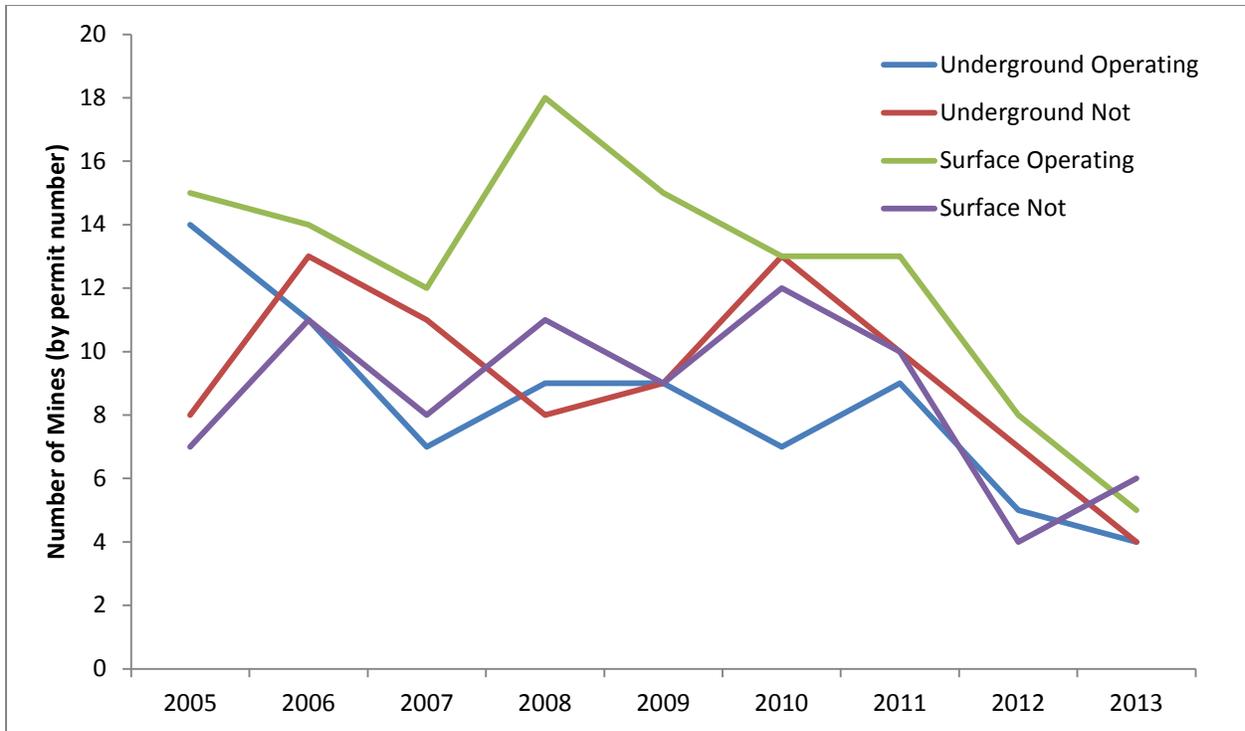


Figure 18. Number of Mines Operating and Idling in Tennessee, 2005-2013. *Source: Office of Surface Mining Appalachian Region Office via a Freedom of Information Act request*

Collectively, the patterns for Tennessee’s coal industry described above generally mirror the broader patterns of coal production activity of the Central Appalachian Basin, which has seen production decreases since 2008.³⁴ Approximately 233,958,878 short tons were produced in 2008 in the Central Appalachian Basin, falling to 147,788,994 short tons in 2012, with steady decreases in each intervening year. Similarly, the number of coal workers in the Basin has been steadily decreasing, going from a total of 38,209 employees in 2008 to 34,103 employees in 2012.³⁵ Tennessee, including Campbell and Claiborne counties, seems to be following the general trend of production and employment in the Central Appalachian Basin.³⁶ Further, aggregate coal production and employment in the U.S. has been fluctuating, but generally has

³⁴ EIA Coal Data Browser (<http://www.eia.gov/beta/coal/data/browser/>). Accessed November 21, 2014.

³⁵ Mine Safety and Health Administration, United States Department of Labor: <http://www.msha.gov/OpenGovernmentData/OGIMSHA.asp>. Accessed November 21, 2014.

³⁶ EIA Coal Data Browser (<http://www.eia.gov/beta/coal/data/browser/>). Accessed November 21, 2014.

been trending downwards – thus, Tennessee is also following the same trend as coal production nationally.³⁷

2.4 ECONOMIC IMPACT OF COAL IN THE STUDY AREA

The presence of the coal industry in Tennessee generates significant economic benefits for the small economies of Campbell and Claiborne Counties. Everyday operations create jobs and income for residents, and increase local as well as state tax revenues. The analysis presented here enriches the discussion above and summarizes the economic impacts of the coal industry on Campbell County, Claiborne County and on the state economy for 2013. These separate impact analyses allow for comparisons with impacts from other industries, in this case tourism, that are discussed more fully below. The coal impact analysis focuses on current economic impacts as measured by employment, personal income, and state Gross Domestic Product (GDP or output). These three economic measures are the most commonly employed metrics in economic impact analyses since they capture the broad benefits to the regional economy and its residents. Moreover, they are the outputs captured by the Regional Input-Output Modeling System (RIMS II) that is used here.³⁸ There are three main components of the impact analysis: (1) the direct effects of the coal industry, (2) the indirect effects, and (3) the multiplier effects.³⁹

Coal industry sales are the ultimate source of economic impact benefits and represent the *final demand* that drives the impact analysis. Coal sales from Tennessee mines allow the coal industry to provide jobs and income to employees. Jobs and income are two primary outcomes

³⁷ EIA Coal Data Browser (<http://www.eia.gov/beta/coal/data/browser/>). Accessed November 21, 2014.

³⁸ The RIMSII modeling system multipliers that are used here are acquired from the U.S. Bureau of Economic Analysis. Documentation is available at <http://www.bea.gov/scb/pdf/regional/perinc/meth/rims2.pdf>. Accessed January 5, 2015.

³⁹ A user-friendly explanation of this type of analysis, including the RIMSII multipliers, can be found in the Tennessee Department of Tourism Development, “Economic Impact of Traveler Spending in Tennessee for 2013,” Appendix E. <http://www.tnvacation.com/industry/research>, Accessed November 3, 2014. The tourism impacts are discussed more fully below.

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that are created for the state from coal sales and are referred to as *direct economic effects*. In addition, the coal industry has *indirect economic effects*, which account for employment and income that is generated when the coal industry purchases goods and services from Tennessee manufacturers, service providers, and other vendors. These supplier firms in turn hire workers, generate payroll income for workers and earn profits. In practice, these purchases might include things like mining equipment and office supplies. *Multiplier effects* are then created as the additional income generated by the direct and indirect economic effects is spent and re-spent within the local and state economies. The multiplier impacts may arise in virtually any sector of the economy, from retail trade to health care services. The multiplier process results in the creation of additional employment and income as workers spend their incomes in-state and as firms within the state generate sales, earn profits, and hire new employees. In short, economic impact multipliers capture the ripple effects of the spending and re-spending process.

The overall value of economic impact multipliers for small, rural counties like Campbell and Claiborne tend to be small due to a phenomenon called *leakage*. Leakages of spending dissipate overall economic impacts, especially for small local economies like those considered here, but also for the state as a whole.⁴⁰ For example, many of the dealers and vendors that supply inputs to coal companies, as well as the companies themselves that produce these inputs, do not likely exist in Campbell County or Claiborne County, and some specialized equipment suppliers/producers may not even be located in the state. Additionally, the set of retailers and commercial establishments where employees from the coal industry and supplier firms would purchase consumer products are limited in those same counties. For example, neither Campbell nor Claiborne County offer large malls or retail outlets to support consumer spending. Thus,

⁴⁰ The leakages from Tennessee will create positive economic impacts in other regions of the country but are not germane to the impacts on the state.

consumer spending (and sales tax revenue) will spill over to nearby metropolitan areas like Knoxville and the Tri-Cities, or perhaps through the Internet. As a result, there are significant leakages of spending that have little or no impact on the local economy, or even the state economy. Multipliers for larger regions, like an entire state, tend to be larger since there is less spending leakage. Thus economic impact analysis of the coal industry at the state level will generally capture larger impacts than sub-state regional economic impact analysis focused on a single county.

To capture the total impacts of the coal industry in Campbell County and Claiborne County on the counties themselves and the state as a whole, we utilize the 2013 Regional Input-Output Modeling System (RIMS II) multipliers that were noted above for the mining industry.⁴¹ These multipliers will capture the direct, indirect and multiplier effects that were discussed above and reveal the total economic impact benefits for the respective counties and the state. The multipliers are used in conjunction with 1) data on state and county-level coal production (referred to above as “final demand”) that comes from the Office of Surface Mining: Appalachian Region Office via a Freedom of Information Act request and 2) Mine Safety and Health Administration data on coal employment. RIMS II multipliers are one of only a handful of input-output modeling systems that generate multipliers for regions. Tennessee state government has used RIMS II multipliers previously – one example is the report on “The Economic Impact of Travel on Tennessee Counties 2013” completed by the Tennessee Department of Tourist Development.⁴²

Multipliers have been acquired for two separate economies—1) the two study counties

⁴¹ Unfortunately, the language here can be confusing. “Multiplier effects” refer to the spending and re-spending process described in the text; a “multiplier,” on the other hand, is the metric used to estimate indirect *and* multiplier effects from a given change in final demand.

⁴² Tennessee Department of Tourist Development; “The Economic Impact of Travel of Tennessee Counties – 2013.” Nashville, Tennessee. Available at: <http://www.tnvacation.com/industry/research>. Accessed October 28, 2014. Howard H. Baker Jr. Center for Public Policy – January 9, 2015

combined since they have a similar coal extraction base and likely share some economic linkages and 2) the state as a whole.⁴³ Two separate sets of multipliers are used because this report examines the impact of the coal industry at both the state and local (county) levels. As noted above, the multipliers take on different values when evaluating the economic impact of the coal industry on the state versus a county economy. These multipliers quantify the cumulative local and statewide ripple effects on total industry output, earnings, and employment that result from a change in final demand, i.e. coal sales. Because of the scope of local spending leakages, direct employment and earnings effects will dominate and thus reflect the primary benefits at the county level.

2.4.1. Campbell County

The coal industry in Campbell County directly produced \$12.0 million in county-level output (GDP) in 2013.⁴⁴ An additional \$2.9 million was directly paid to employees in the form of payroll disbursements and 46 direct coal industry jobs are linked to the coal industry in Campbell County.⁴⁵ (These direct benefit measures are mirrored later in the report when tourism impacts for the counties and the state are considered.) After this direct injection of economic activity, additional income and employment effects are generated via the indirect and multiplier processes discussed above.

Table 3 shows both the county and overall statewide economic benefits of coal industry spending in Campbell County in 2013. As a result of indirect and multiplier effects, total output

⁴³ Using separate multipliers for each individual county would produce marginally smaller results than using multipliers for the two counties combined. This has no bearing on the impacts that are estimated at the state level.

⁴⁴ State and county-level coal production data comes from the Office of Surface Mining: Appalachian Region Office via a Freedom of Information Act request. A value of \$72.50 per ton was used based on sales information for Claiborne County. See <http://www.eia.gov/coal/annual/pdf/table30.pdf>.

⁴⁵ Direct coal industry employment comes from Mine Safety and Health Administration data, and Tennessee coal mining salary data comes from the U.S. Bureau of Labor and Statistics.

in the county increased \$18.1 million, personal income for county residents increased \$4.4 million, and 100 full-time equivalent jobs were created.

Table 3. Summary of Economic Benefits of the Coal Industry in Campbell County, FY13

Impact Measure	Direct County	Indirect & Multiplier	Total
Output (GDP)	\$12,039,694	\$6,022,255	\$18,061,949
Personal Income	\$2,921,419	\$1,494,741	\$4,416,160
Employment	46	54	100
Own-source tax revenue	\$38,331	\$19,612	\$57,943

Tax revenues are an important benefit arising from coal production.⁴⁶ A severance tax is levied on the extraction of coal, with most revenues accruing to the county where coal was severed. The severance tax rate is \$1.00 per ton severed. The Tennessee Department of Revenue retains 1.125 percent of the severance taxes collected for administrative expenses,⁴⁷ and the remainder is returned to the county. In 2013, approximately \$200,000 in severance taxes was collected in Campbell County (2013 - State Shared Revenue by County, 2014). These revenues could be used to finance public services or offset other taxes within the county.

Additional own-source tax revenues accrue to the county and its constituent cities as well as to state government. At the local level, the primary revenue sources are the property tax and the local sales tax (the latter levied at a 2.25 percent rate). At the state level, we account for the state sales tax, corporate franchise and excise taxes, and specific excises, like the tobacco tax (see Table 5 below). For the county (and its cities) and for the state, the starting point for the revenue estimates is identification of the amount of revenues that accrue from each relevant

⁴⁶ Small economic and fiscal impacts associated with Tennessee’s coal industry have been estimated by others. See “Coal and Renewables in Central Appalachia: The Impact of Coal on the Tennessee State Budget,” West Virginia Center on Budget & Policy and Downstream Strategies, June, 2010. http://www.downstreamstrategies.com/documents/reports_publication/DownstreamStrategies-coalTN.pdf. Accessed November 24, 2014. The report notes that the relative importance of the coal industry to the Tennessee state budget and economy is negligible, accounting for less than 1 percent of state revenues and an even smaller percentage of total employment.

⁴⁷ <http://www.tn.gov/revenue/tntaxes/sevtax.shtml>. The Tennessee severance tax rate on coal changed from \$0.75 per ton to \$1.00 per ton effective July 1, 2013.

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revenue source.⁴⁸ The next step was to calculate local tax revenues as a share of county personal income and state tax revenues as a share of state personal income.⁴⁹ These figures reflect the average burden of local taxes as a share of county personal income and state taxes as a share of state personal income – average tax rates. The final step is to multiply these average tax rates by the estimated increase in county and state personal income arising from coal production activity. This three-step method yields estimates of local revenues presented in Tables 3 and 4 and state tax revenues presented in Table 5. Following this method, Campbell County collected \$38,331 in local tax receipts associated with *direct* mining activity. Using a similar method, total local collections derived from *total* local impacts of coal production (including direct, indirect and multiplier effects) were \$57,943.

2.4.2. Claiborne County

Depending on the recent time frame chosen, the coal industry in Claiborne County accounts for between 34 and 82 percent of all coal production in Tennessee, with an 82 percent share in 2013. Thus, the coal industry’s economic impact on output, personal income, employment, and tax revenues will be larger in Claiborne County. The direct, indirect/multiplier

⁴⁸ Tax revenues for the counties were taken from the Annual Financial Reports of Campbell County and Claiborne County, Tennessee compiled by the Tennessee Comptroller of the Treasury, 2013. For Campbell County see <http://www.comptroller.tn.gov/repository/CA/2013/CampbellAFR.pdf> and for Claiborne County see <http://www.comptroller.tn.gov/repository/CA/2013/ClaiborneAFR.pdf>. The value of tax revenues for the cities within a county was taken from the Tennessee Comptroller of the Treasury Division of Local Government Audit’s Investigative Report. The cities within Campbell County that are accounted for in tax revenues are Caryville, Jacksboro, Jellico, and LaFollette. The cities within Claiborne County that are accounted for in tax revenues are Cumberland Gap, Harrogate, New Tazewell, and Tazewell. To find the list of cities with Investigative Reports on local governments, see http://www.comptroller.tn.gov/RA_MA_Financial/Default.aspx. The 2014 state budget was used to identify state-level revenues. The Department of Revenue for the state provided a direct value of corporate franchise and excise taxes that coal companies in Campbell and Claiborne Counties paid to the state. All online tax revenue sources were accessed on November 24, 2014.

⁴⁹ Personal income for Campbell and Claiborne Counties comes from the Federal Reserve Bank of St. Louis, accessed on November 24, 2014. For Campbell County see <https://research.stlouisfed.org/fred2/series/PI47013> and for Claiborne County see <https://research.stlouisfed.org/fred2/series/PI47025>. Personal income for the state of Tennessee comes from the Tennessee Business and Economic Outlook 2013, prepared by the Center for Business and Economic Research, accessed on November 24, 2014. For the state see <http://cber.bus.utk.edu/tefs/fall13.pdf>. Howard H. Baker Jr. Center for Public Policy – January 9, 2015

and total county impacts are presented in Table 4 below. In 2013, the coal industry in Claiborne County directly generated \$71.2 million in output,⁵⁰ \$17.1 million in personal income, and 267 jobs.⁵¹ Adding indirect and multiplier effects, the total county-wide economic impact of Claiborne County’s coal industry amounts to \$106.8 million in GDP, \$26.1 million in personal income and 545 jobs in 2013.

A total of \$639,000 was collected in severance taxes for Claiborne County. Similar to Campbell County, the property tax and 2.25 percent sales tax are the primary own-source revenue categories in Claiborne County. Using the same method as employed above, Claiborne County collected \$148,764 in local tax receipts linked to *direct* coal mining effects. Total local revenues, accounting for direct, indirect and multiplier effects, are \$226,934.

Table 4. Summary of Economic Benefits of the Coal Industry in Claiborne County, FY13

Impact Measure	Direct County	Indirect & Multiplier	Total
Output (GDP)	\$71,162,416	\$35,595,441	\$106,757,857
Personal income	\$17,111,166	\$8,991,209	\$26,102,374
Employment	267	278	545
Own-source tax revenue	\$148,764	\$78,170	\$226,934

Together the economic impact of the coal industry in Campbell County and Claiborne County increases direct output (GDP) by \$83.2 million,⁵² direct personal income by \$20.0 million, and supports 313 jobs.⁵³ (These figures and those immediately below are sums of the data presented in Tables 3 and 4.) Total output across the two counties, including direct, indirect and multiplier effects, is \$124.8 million, while income totals \$30.5 million and total county jobs

⁵⁰ State and county-level coal production data comes from the Office of Surface Mining: Appalachian Region Office via a Freedom of Information Act request.

⁵¹ Direct coal industry employment comes from Mine Safety and Health Administration data, and Tennessee coal mining salary data comes from the U.S. Bureau of Labor and Statistics.

⁵² State and county-level coal production data comes from the Office of Surface Mining: Appalachian Region Office via a Freedom of Information Act request.

⁵³ Direct coal industry employment comes from Mine Safety and Health Administration data, and Tennessee coal mining salary data comes from the U.S. Bureau of Labor and Statistics.

sum to 645.

The 2013 direct economic impacts as well as overall *statewide* economic impacts of the coal industry in Campbell and Claiborne Counties can be found in Table 5. The statewide impacts will be larger than the county impacts by virtue of smaller leakages and thus larger multipliers. Incorporating the direct, indirect and multiplier effects of coal industry spending in the state, the total state GDP generated is \$172.3 million. Total statewide personal income resulting from the coal activity in Campbell and Claiborne Counties was \$44.6 million. Finally, 893 full-time equivalent jobs were created statewide in 2013 through direct, indirect and multiplier effects of the coal industry in Campbell and Claiborne Counties.

Table 5. Summary of the Statewide Economic Benefits of the Coal Industry, FY13

Impact Measure	Direct State	Indirect & Multiplier	Total State
Output (GDP)	\$83,202,110	\$89,101,140	\$172,303,250
Personal income	\$20,032,584	\$24,538,786	\$44,571,370
Employment	313	580	893
Own-source tax revenue	\$1,219,627	\$1,047,040	\$2,266,667

The coal industry in the two counties provided the state with \$852,960 in state tax receipts based solely on direct effects, i.e. final coal sales. (Approximately \$2.5 million in severance taxes were collected by the state, but only \$28,100 of that was retained for administrative expenses.)⁵⁴ Over the last three tax years (2011 through 2013) coal companies in Campbell and Claiborne Counties paid a total of \$1.1 million in franchise and excise taxes.⁵⁵ If corporate tax collections across the two counties are roughly commensurate with each county's share of direct coal employment, then about \$161,700 in revenue is derived from Campbell County and \$938,300 is sourced in Claiborne County across these three years. One-third of

⁵⁴ State Government Tax Collections, Severance Taxes in Tennessee, 2014. See http://www.comptroller.tn.gov/confirmations/ssr_ca.aspx?y=2013. Accessed January 7, 2015.

⁵⁵ The value for franchise and excise taxes linked to coal companies in the two counties comes from direct correspondence with the Tennessee Department of Revenue, November 4, 2014.

these revenues has been assigned as directly-related revenue impacts and are included in the \$1.2 million in direct own-source revenue reported in Table 5. Total state government own-source tax collections tied to coal activity in the two counties is estimated to be \$2.3 million accounting for direct and statewide indirect and multiplier effects. To put this figure in perspective, total Department of Revenue tax collections for the 2013 fiscal year totaled \$11,661 million.⁵⁶

2.5 THE FUTURE OF THE COAL INDUSTRY IN THE STUDY AREA

The previous section provides a snapshot of the economic impact of coal in 2013. Based on production and employment trends, the impacts documented above have been declining in recent years. The attractiveness of coal-based economic development moving forward depends on a county's ability to retain and potentially attract coal mining companies and sustain extraction activities. In areas historically dependent on coal mining, the decision to shift away from that legacy and towards supporting alternative development strategies will be difficult if mining operations and the associated economic benefits are expected to remain in the region. However, if this industry is expected to contract further or terminate operations and exit the region, affected communities may wish to initiate the transition to an alternative economic base to ease the economic and fiscal impacts on residents.

Accurately weighing the pros and cons of transitioning away from a legacy of coal mining in Campbell and Claiborne Counties forces these communities to predict how long and to what extent the coal industry will remain in the area. Likewise, the future of the coal industry in these counties will depend on market conditions like coal prices, the amount of coal reserves remaining in the area, environmental and regulatory decisions, and various other considerations. The price of coal in the region is a good predictor of the marginal revenue received for each ton

⁵⁶ Department of Revenue tax collections for the state for the 2013 fiscal year are taken from the 2014/2015 state budget. See <http://www.tn.gov/finance/bud/documents/2015BudgetDocumentVol1.pdf>. Accessed January 5, 2015. Howard H. Baker Jr. Center for Public Policy – January 9, 2015

of coal extracted from a mine. The size of the recoverable reserves is a primary determinate of the cost of extracting each ton of coal with extraction costs rising as recoverable reserves decline.⁵⁷ Combined, these two factors largely determine coal production levels.⁵⁸ Knowledge of these factors allows one to develop projections of the industry's future.

Much like the operators of the mine itself, a resource-dependent rural community's decisions regarding the path of economic development hinges critically on predictions of the future. In this setting, a rural community with coal reserves can be viewed as holding a coal asset whose value is being assessed by coal companies that may or may not choose to operate in these counties. Coal companies develop estimates of the value of the coal assets, but this value is inherently uncertain due to variability in coal prices and uncertain recoverable coal reserve estimates. The asset value represents the *potential* value of developing the coal reserves in these counties. Financial economic techniques can be used to value this coal asset by using historic data on coal prices and coal reserves to assign a likelihood to different future outcomes. This asset value incorporates the important sources of uncertainty associated with following a coal-based economic development path and provides rural communities with an indication of how the region's coal assets will be viewed by coal mining companies in the future. Similar asset valuation studies have been performed on coal (Yang and Blyth 2007), petroleum (Ekern 1988), and natural gas reserves (Smith and McCardle 1999) to understand the incentives that natural resource companies face when choosing whether to operate in an area. Unlike traditional benefit-cost analysis, discounted cash flow analysis, or economic impact analysis (like that

⁵⁷ According to the Energy Information Agency, recoverable reserves are coal in the demonstrated reserve base considered recoverable after excluding coal estimated to be unavailable due to land use restrictions or coal currently economically unattractive for mining. For more information on how recoverable reserves are estimated see *Appendix A: Review of U.S. Coal Resource and Reserve Data Criteria and Terminology* in [U.S. Coal Reserves: A Review and Update](#).

⁵⁸ Production levels may also be determined by a mine's long-term contracts with consumers. Such data is considered proprietary and not included in our analysis.

presented above), the asset valuation approach is forward looking and captures the likelihood of different potential future outcomes in the rural economy.

Here we provide an indication of the value of coal assets in Campbell and Claiborne Counties from the perspective of coal mining companies that are choosing whether to operate in these counties. Our approach identifies the likelihood of different future outcomes related to coal-based development by separating the trend and the variability in price and recoverable reserve data. For instance, the average minemouth price of Appalachian coal increased 125 percent while Tennessee's recoverable coal reserves fell by 82 percent between 2001 and 2012. Based on these recent trends, a rural community would expect higher coal prices but less coal available to mine in the future. However, these trends are far from certain and basing economic development strategies on only these trends can lead to unexpected outcomes. After a period of relatively stability, Appalachian coal prices have become more variable of late. A region's reserves are also highly speculative owing to the nature of geologic surveys and the potential for future technological advances that may make previously unrecoverable reserves economically viable. Coal-based development strategies may be viewed more favorably if coal reserves drop more slowly or coal prices increase more rapidly than expected. Alternatively, development strategies such as tourism may be viewed more favorably if coal reserves drop more rapidly or coal prices increase more slowly than expected.

Figure 19 shows historic minemouth coal prices in the Appalachian Basin. This data shows the decline in coal prices in the region in the 1990s followed by the coal market boom in the 2000s. While these boom-bust cycles suggest an impending downturn in coal prices, this is not expected to materialize in the Appalachia Basin due to declining coal reserves and increasing costs of production. This phenomenon is detailed below. The figure also shows the most likely

future scenario. Based on price data from 1990-2012, Appalachian minemouth coal prices are increasing at a rate of 2.0 percent per year. By comparison, EIA's *Annual Energy Outlook 2014* projects Appalachia minemouth coal prices will grow at 1.6 percent per year. We investigate the impact of EIA's slower growth projections in Tables 6 and 7 on page 58.⁵⁹

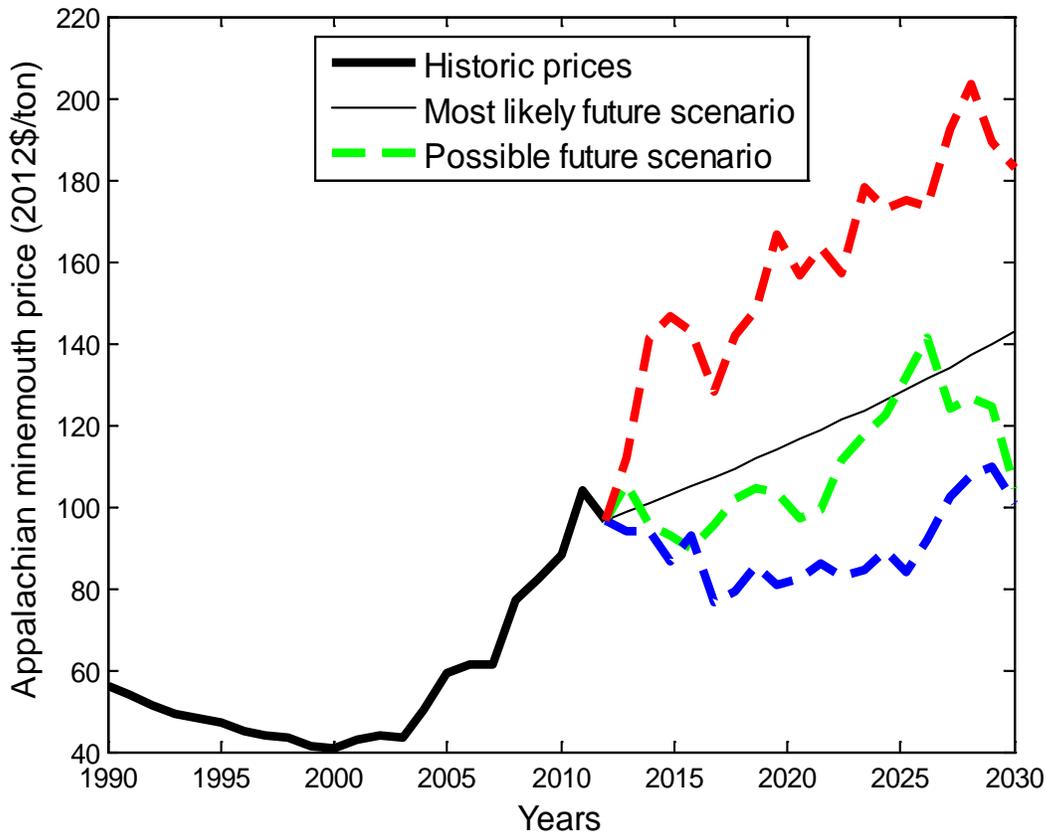


Figure 19. Historic and Projected Minemouth Coal Prices in the Appalachian Basin. Historic price data from U.S. Energy Information Administration, Coal Industry Annual, DOE/EIA-0584

The 2.0 percent annual growth in prices is an average based on historic coal price data. These expected prices may not come to pass. Historically, coal prices in the region have been relatively stable suggesting that a reasonable estimate of future prices could be found by

⁵⁹ Our benchmark estimates of price growth rates are based only on historic data. EIA uses a similar methodology but adjusts these estimates based on expert recommendations of future coal market conditions.

increasing current prices by 2.0 percent per year. But future prices may be much higher or lower than expected. Based on price data from 1990-2012, Appalachian minemouth prices have varied from year to year by an average of 9 percent. The expected rate of price increase and the average annual variability in these prices allows us to describe future coal prices using a probability distribution.⁶⁰ This probability distribution conveys the probability or likelihood of observing a given coal price in the future. For example, with an expected rate of price increase of 2 percent and 9 percent variability around this trend, there is a 57 percent chance the price in 2015 will be less than \$100/ton, a 47 percent chance the 2015 price will be less than \$90/ton, and a 37 percent chance the price in 2015 will be less than \$80/ton.

The three dashed lines in Figure 19 reflect possible future scenarios. Each scenario is created by randomly drawing a coal price observation from our estimated coal price probability distribution at different points in the future. The green line represents a scenario where coal prices evolve roughly as expected for the next 20 years. A coal market where potential scenarios are similar to the most likely scenario indicates a very stable coal market. However, when potential scenarios differ dramatically from the most likely scenario, the coal market is unstable and characterized by a great deal of uncertainty. For example, the blue line represents a scenario where coal prices are much lower than expected. The blue scenario becomes more likely if the EPA finalizes the proposed Clean Power Plan which would lower overall demand for thermal coal. The red line represents a scenario where coal prices are higher than expected. This would arise if recoverable coal reserves decline faster than expected.

⁶⁰ For more information on mean-variance forecasting see Harrison (1985). Our analysis assumes future coal prices are log-normally distributed.

Figure 20 shows recoverable reserves at producing mines in each of the two counties from 2001 to 2012 and projects recoverable reserves for future scenarios through 2030.⁶¹ In both counties we see a general trend of declining recoverable reserves at producing mines due to 1) a reduction in the number of operating mines and 2) a long history of resource extraction in the region. Based on coal reserve data from 2001-2012, recoverable reserves at producing mines in Campbell and Claiborne Counties decreased 9.9 percent and 16.9 percent per year respectively. This represents the best guess of future recoverable coal reserves in the two counties. Again we note considerable variability in year-to-year reserve estimates, signaling a great deal of uncertainty in these estimates. This variability may be due to actual physical removals, EIA adjustments to previously released reserve estimates, and/or new coal discoveries. Recoverable reserves at producing mines varied annually by an average of 54.3 percent in Campbell County and 39.3 percent in Claiborne County. In short, recoverable coal reserves are decreasing more slowly in Campbell County but this decrease involves more variability and thus greater uncertainty. The expected rate of recoverable reserve decrease and the average annual variability in these reserves allows us to describe future recoverable reserves using a probability distribution.⁶² Like the probability distributions previously calculated for coal price, this probability distribution conveys the probability or likelihood of observing a given recoverable reserve in the future.

⁶¹ EIA's Coal Data Browser reports recoverable reserves (in short tons) at producing mines for the entire state of Tennessee. Estimates of recoverable reserves in Campbell and Claiborne County are obtained by two step process. First, we calculate the proportion of Tennessee's total operating mines in the two counties. Second, we apply this proportion to the EIA estimate of Tennessee's recoverable reserves at producing mines. This two-step process should provide a reasonable estimate of county-level recoverable reserves provided average mine production does not differ significantly between Campbell and Claiborne Counties.

⁶² For more information on mean-variance forecasting see Harrison (1985). Our analysis assumes future recoverable reserves are log-normally distributed.

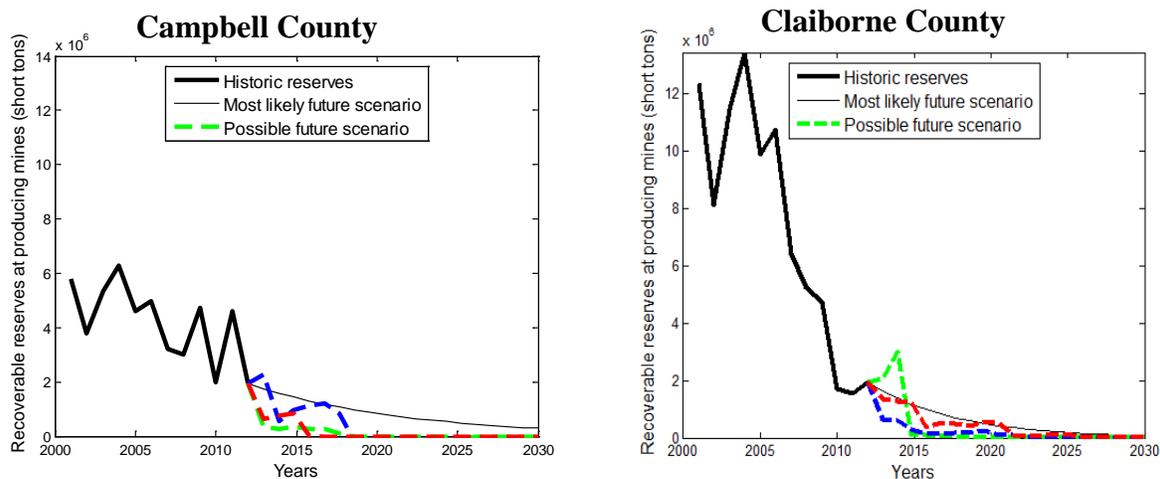


Figure 20. Historic and Projected Recoverable Coal Reserves at Producing Mines. Historic reserve data from EIA’s Coal Data Browser (<http://www.eia.gov/beta/coal/data/browser/>).

One might expect that the increase in price would make more coal reserves economically viable. However, we have not yet seen this trend in the data indicating that the low-cost reserves have already been exploited and large increases in coal prices will be needed to access remaining reserves. Figure 21 shows the relationship between recoverable reserves at producing mines and gross tonnage extraction in Campbell and Claiborne Counties. The quantity of coal extracted in each county tends to decline as the recoverable reserves in that country decline due to the fact it is more costly to extract when recoverable reserves are small.⁶³ We use this relationship to predict future production levels at mines in Campbell and Claiborne Counties.⁶⁴ Since recoverable reserves in Campbell County declined at a rate of 9.9 percent per year between 2001 and 2012, the relationship in Figure 21 suggests coal production in Campbell County declined by 6.6 percent per year over the same period. Similar calculations over the 2001-2012 period

⁶³ For more information on the relationship between extraction costs and recoverable reserves see (Luppens, Rohrbacher et al. 2009).

⁶⁴ Utilizing this relationship allows us to indirectly capture the effect of long-term supply contracts that influence production decisions. Such data is considered proprietary precluding explicit treatment and use here.

suggest a 13.8 percent per year decline in coal production in Claiborne County. By comparison, EIA’s *Annual Energy Outlook 2014* projects total coal production in the Appalachia region will decline by 14 percent between 2012 and 2016. We investigate the impact of EIA’s slower production decline projections in Tables 8 and 9.

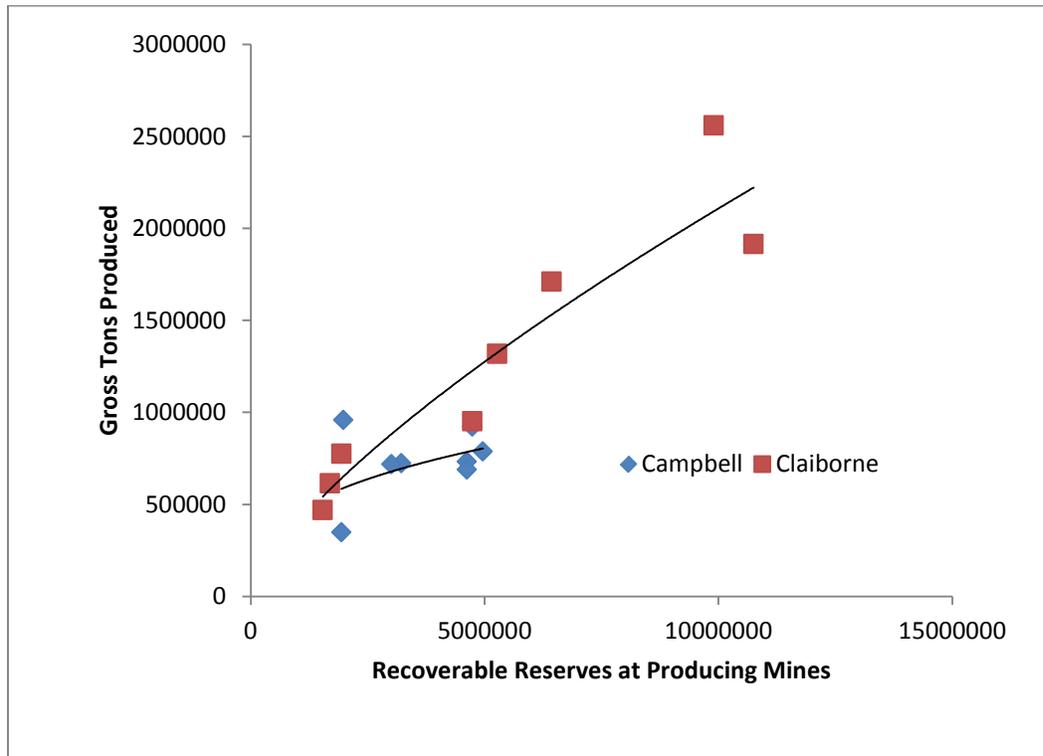


Figure 21. Recoverable Reserves and Coal Production. Higher extraction costs at low levels of reserves leads to lower levels of production for coal mining firms. *Source: Gross Tons Produced - Office of Surface Mining Appalachian Region Office via a Freedom of Information Act request; Recoverable Reserves – EIA Coal Data Browser*

Our approach estimates the most likely coal mining profits in each county, given historic data on Appalachian coal prices and reserves in each county. These most likely profits represent the “best guess” for future coal profits. Due to instability in the coal market and uncertainty about accessibility of coal reserves in the future, our approach also considers the degree of certainty in that best guess estimate. A well-known result in economics suggests that investors will only accept additional risk in an investment if it is also accompanied by a higher rate of

return. Investments in coal mining face a similar tradeoff between risk and return. If riskiness associated with developing a coal mine is high due to regional coal market instability and uncertainty in recoverable reserves, coal companies will require higher profits in order to start coal mining operations in that area. Our approach captures this risk-return tradeoff. For more information on our approach see Dixit and Pindyck (1994).

Figure 22 shows the value of the coal assets in the ground in Campbell County (contour lines) for various combinations of coal prices in the region (along the vertical axis) and recoverable reserves in the county (along the horizontal axis).⁶⁵ In 2001, recoverable reserves in Campbell County were 5.8 million short tons and the price of coal in the region was \$43 per ton. At this point in time, the value of the coal assets in Campbell County was \$182 million. In other words, a coal company would have viewed the value of mining all the recoverable reserves in Campbell County at \$182 million. By 2012, the price had risen to \$97 per ton but recoverable reserves had dropped to 1.9 million short tons. This increase in price is only partially offset by the decrease in recoverable reserves which increases the value of the coal assets in Campbell County to \$210 million. The coal in the ground in Campbell County looked more valuable to coal companies in 2012 than it did in 2001.

⁶⁵ Asset values are calculated using stochastic dynamic programming techniques. This technique assumes the value of the coal asset in each county is determined by 1) the discounted profits earned by extracting and selling the coal and 2) an option value that capture the coal mining firm's conditional value of information concerning coal prices and recoverable reserves. Profits are discounted (at 4 percent) to reflect a preference for current profits over future profits. The option value arises because coal mining firms do not know future profits with certainty and tends to increase coal asset values higher than suggested by traditional benefit-cost analysis. The technique uses as inputs 1) the relationships in Figure 21 and 2) the estimated probability distributions for coal prices and recoverable reserves. For more information on this technique see Dixit and Pindyck (1994).

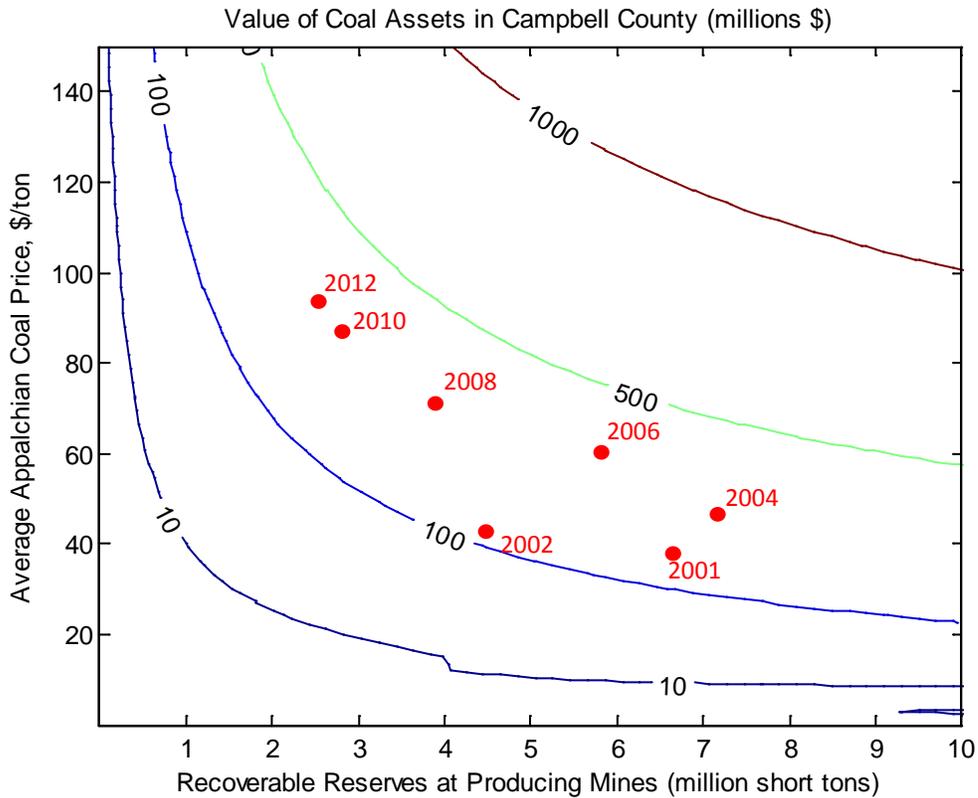


Figure 22. Value of Coal Assets in Campbell County in Millions of Dollars.

Figure 23 shows the value of the coal assets in Claiborne County. In 2001, recoverable reserves in Claiborne County were 12.4 million short tons and the price of coal in the region was \$43 per ton. At this point in time, the value of the coal assets in Claiborne County was \$345 million. In other words, a coal company would have viewed the value of mining all the recoverable reserves in Claiborne County at \$345 million. By 2012, the price had risen to \$97 per ton but recoverable reserves had dropped to 1.9 million short tons. This decline in recoverable reserves is only partially offset by the increase in prices which lowers the value of the coal assets in Claiborne County to \$14 million. While Claiborne County looked more attractive to coal mining companies in 2001 due to its larger recoverable reserves, it looks less valuable than Campbell County in 2012 signaling a greater difficulty retaining/attracting coal

mining companies to the county. The lower asset value for Claiborne County coal is due to the recent rapid decline in recoverable reserves in the county. This decline was more pronounced in Claiborne County than Campbell County due to the larger decline in operating mines in Claiborne County between 2001 and 2012.

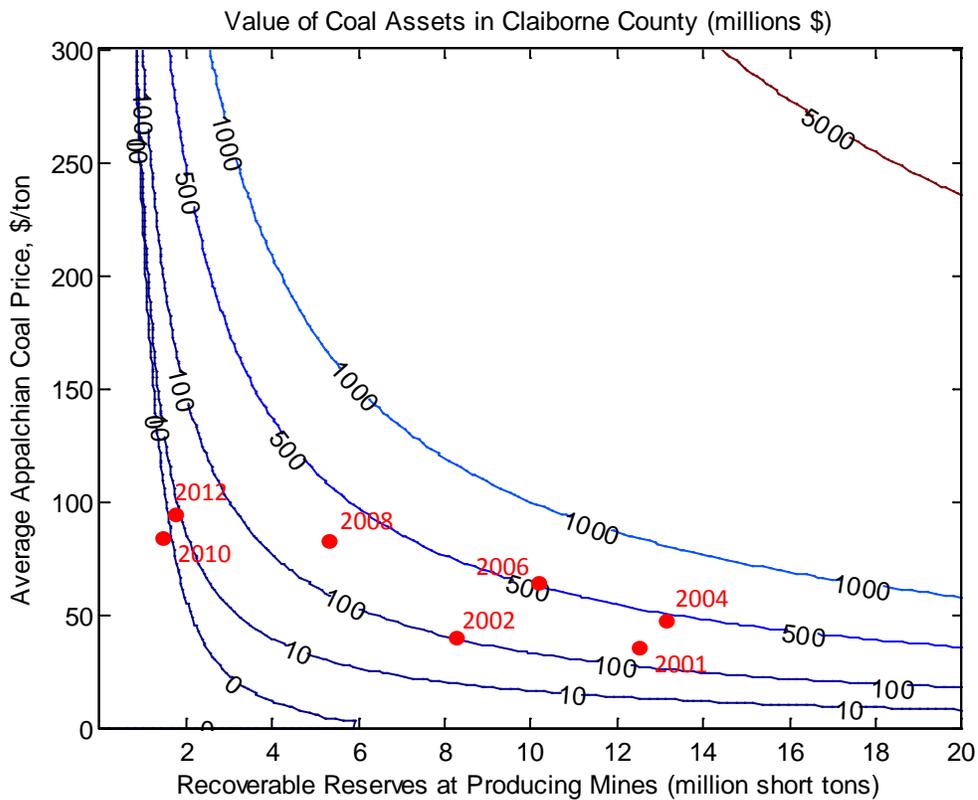


Figure 23. Value of Coal Assets in Claiborne County in Millions of Dollars

These asset values are based on recent trends and variability in coal prices and recoverable reserves. However, projecting historic activity into the future can be misleading if the future differs appreciably from the past. There are reasons to believe that the future of the coal mining industry in these counties may be changing in ways that are not necessarily reflected in historical data. For instance, if EPA’s Clean Power Plan is finalized, demand for thermal coal may decline as states seek to lower carbon dioxide emissions associated with burning coal. This

would trigger a much slower increase in coal prices in the short term. Likewise, the recent announcement of trade restrictions on Chinese coal imports may likely slow the increase in price further than the analysis above suggests due to decreased demand for Appalachian coal. However, if natural gas prices rebound further than currently anticipated, coal will be a more competitive fuel source than anticipated causing coal prices to rise faster than suggested in the previous analysis. All these changes are likely to add more volatility to coal markets which have been historically stable compared to other fuel sources.

Initiating a transition to an alternative development strategy will also add variability to regional coal markets that will not be captured in historic data. Tourism may preclude future coal development to the extent that land ownership is transferred and potentially excluded from future mining activities. For instance, the state of Tennessee submitted a Lands Unsuitable for Mining petition in 2010 for the North Cumberland Wildlife Management Area (NCWMA) and Emory River Tracts Conservation Easement.⁶⁶ The petition designates areas within 600 feet of all ridge lines lying within the NCWMA (67,000 acres total) as unsuitable for surface coal mining in support of a conservation project called “Connecting the Cumberlands.” If this petition were to ever be finalized, recoverable coal reserves in Campbell County would be lower than historic trends suggest.

Tables 6 and 7 show how changes in recent coal market trends and volatility influence the asset values in the two counties.⁶⁷ In both counties, a faster-than-expected increase in prices increases the value of the coal assets. Also, increased coal market variability increases the value

⁶⁶ Office of Surface Mining Reclamation and Enforcement. Knoxville Field Office Annual Report: Fiscal Year 2013. (<http://www.arcc.osmre.gov/about/states/tn.shtm>). Accessed November 4, 2014.

⁶⁷ The results in Tables 6 and 7 are generated using the same techniques, data sources, and assumptions as the coal asset values in Figures 22 and 23 except the price trend (mean of the coal price probability distribution) and price volatility (variance of the coal price probability distribution) are changed slightly. The purpose of this exercise is to show the sensitivity of the coal asset values to changes in data inputs.

of the coal assets in these two counties. While market volatility may be harmful to producers and rural economies that depend on coal in the short term, the long term effect of this volatility on the attractiveness of coal mining in the region is positive.

Table 6. 2012 Campbell County Coal Asset Values under Alternative Coal Market Futures*

		Price trend: growth per year			
		Slower than expected 1%	Expected 2%	Faster than expected 4%	
Price Volatility: variability per year	Less volatile than expected	4%	\$160 million	\$197 million	\$254 million
	Expected	9%	\$169 million	\$210 million	\$270 million
	More volatile than expected	12%	\$178 million	\$222 million	\$290 million

* All scenarios based on an annual 9 percent decline in recoverable reserves at producing mines in Campbell County with a 54 percent variability around this trend. The expected values are consistent with the 2012 coal asset value in Figure 22.

Table 7. 2012 Claiborne County Coal Asset Values under Alternative Coal Market Futures*

		Price trend: growth per year			
		Slower than expected 1%	Expected 2%	Faster than expected 4%	
Price Volatility: variability per year	Less volatile than expected	4%	\$12 million	\$7 million	\$11 million
	Expected	9%	\$13 million	\$14 million	\$24 million
	More volatile than expected	12%	\$14 million	\$18 million	\$29 million

* All scenarios based on an annual 17 percent decline in recoverable reserves at producing mines in Claiborne County with a 39 percent variability around this trend. The expected values are consistent with the 2012 coal asset value in Figure 23.

We use the results in Tables 6 and 7 to highlight how three recent events will impact the attractiveness of coal mining in Campbell and Claiborne Counties. First, if EPA’s proposed rules limiting CO₂ emissions from new and existing fossil fuel-fired power plants are finalized,

coal prices nationwide will increase more slowly than expected (see Figure 4a above). This would lead to a devaluing of coal assets in both counties. Second, new trade restriction in China will limit markets for Appalachian coal. This will also result in a slower than expected increase in coal prices and a devaluation of coal assets in both counties. Third, the decline in natural gas prices means that coal will be a less competitive fuel source in the future. Even though natural gas prices are expected to rise from recent lows, they are not expected to return to levels seen ten years ago when coal was clearly the least cost fuel source in most areas. As the competitive forces continue to evolve, coal prices can be expected to be more volatile than they have been in the past. This increase in coal market volatility will devalue the coal assets in both counties.

Tables 8 and 9 show how coal asset values respond to changes in recent trends in recoverable coal reserves in the two counties.⁶⁸ If recoverable reserves in the two counties fall slower than suggested by recent history, coal asset values in the two counties will generally be higher than suggested in Figures 22 and 23. This is more consistent with EIA's projections for the decline in coal production in the region. Increased variability in recoverable reserve estimates tend to decrease the value of coal assets in Campbell County but increase the value of coal assets in Claiborne County. This difference is likely due to the differences in the current rate of recoverable reserve decline in the two counties. Because Claiborne County's decline in recoverable reserves over the last decade has been so rapid and relatively predictable, more variability in reserves is welcomed as good news by potential investors.

⁶⁸ The results in Tables 8 and 9 are generated using the same techniques, data sources, and assumptions as the coal asset values in Figures 22 and 23 except the reserve trend (mean of the recoverable reserve probability distribution) and reserve volatility (variance of the recoverable reserve probability distribution) are changed slightly. The purpose of this exercise is to show the sensitivity of the coal asset values to changes in data inputs.

Table 8. 2012 Campbell County Coal Asset Values under Alternative Recoverable Reserve Futures*

		Reserve trend: decline per year			
			Slower than expected	Expected	Faster than expected
			8%	10%	12%
Reserve Volatility: variability per year	Less volatile than expected	40%	\$262 million	\$225 million	\$196 million
	Expected	54%	\$237 million	\$210 million	\$185 million
	More volatile than expected	60%	\$224 million	\$199 million	\$178 million

* All scenarios based on an annual 2 percent increase in Appalachian minemouth prices with an 9 percent variability around this trend. The expected values are consistent with the 2012 coal asset value in Figure 22.

Table 9. 2012 Claiborne County Coal Asset Values under Alternative Recoverable Reserve Futures*

		Reserve trend: decline per year			
			Slower than expected	Expected	Faster than expected
			14%	17%	20%
Reserve Volatility: variability per year	Less volatile than expected	30%	\$2 million	\$4 million	\$7 million
	Expected	40%	\$26 million	\$14 million	\$11 million
	More volatile than expected	50%	\$38 million	\$26 million	\$21 million

* All scenarios based on an annual 2 percent increase in Appalachian minemouth prices with an 9 percent variability around this trend. The expected values are consistent with the 2012 coal asset value in Figure 23.

2.6 SUMMARY

Table 10 provides a summary of the coal industry in the study area including a current (2013) snapshot and an assessment of the future potential of the coal industry. Today, Campbell and Claiborne Counties dominate coal extraction in the state. The coal industry in Campbell County is characterized by small producers (average annual output per mine 40,026 net tons) who primarily engage in surface mining. In contrast, Claiborne County is characterized by larger

producers (average annual output per mine 236,577 net tons) with a focus on underground mining. The larger amount of coal production in Claiborne County results in larger GDP, personal income, and tax revenue impacts compared to Campbell County. Also the focus on underground mining in Claiborne County may be responsible for the larger total coal-related employment—direct employment plus employment created indirectly and through the multiplier process— compared to Campbell County.⁶⁹

Table 10: Summary of Coal Industry in the Study Area

	Campbell County	Claiborne County
FY13 snapshot		
Total coal production (net tonnage)	160,102	946,309
Percent of total Tennessee coal production	14%	82%
Percent of total production with surface mining	72%	31%
Number of coal companies operating	4	2
Number of operating mines	4	4
Total output (GDP) generated	\$18,061,949	\$106,757,857
Total personal income generated	\$4,416,160	\$26,102,374
Total employment	100	545
Own-source tax revenue	\$57,943	\$226,934
Future potential		
FY12 Appalachian minemouth price (\$ per short ton)		\$96.82
Annual expected change in minemouth price		+2%
Minemouth price volatility (variability/year)		9%
FY12 Recoverable reserves at producing mines (short tons)	1,937,413	1,937,413
Annual expected change in recoverable reserves	-10%	-17%
Recoverable reserve volatility (variability/year)	54%	40%
FY12 Value of coal assets	\$210,000,000	\$14,000,000

Recent trends suggest that the downturn in the coal industry has spread throughout central Appalachia. This may reflect the boom-bust cycle characteristic of this industry. If the coal industry rebounds, so too will the benefits arising from extraction. However, it may also

⁶⁹ Underground mining employed more workers than surface mining in Central Appalachia in 2012. However, employment numbers are roughly equal for the two mining processes in Tennessee. See EIA’s Annual Coal Report 2012, Table 18 for more information (<http://www.eia.gov/coal/annual/pdf/table18.pdf>).

reflect more fundamental changes in the coal industry. If the coal industry continues its descent, economic impacts will be diminished further and potentially vanish.

While it is impossible to say with certainty which of these alternative futures will come to pass, it is possible to use historic data to determine the likelihood of different future outcomes. Using this approach, we find that the value of the coal assets in Campbell County remained relatively stable between 2001 and 2012. The decline in recoverable reserves in Campbell County over this time was largely offset by increasing minemouth prices. In contrast, the value of coal assets in Claiborne County declined significantly over the same period due to a more drastic decline in recoverable reserves. This suggests that if historic trends and volatility continue, Campbell County's ability to retain and attract coal mining will not change while Claiborne County will find it more difficult to retain and attract coal mining. However, three recent events (EPA proposed rules, export restrictions to China, and increased coal market volatility due to competition from natural gas) all signal a devaluation of coal assets in both counties. Given that these events have not yet fully manifested themselves in coal markets, both counties should anticipate a more difficult time retaining and attracting coal industry jobs and dollars.

3. TOURISM

3.1 TOURISM AS A DRIVER OF RURAL ECONOMIC DEVELOPMENT

Rural communities generally face serious challenges in promoting economic development due to a host of factors including their relative isolation, lack of proximity to markets, small labor pools that have limited capacity to support economic diversity and limited infrastructure (including interstate highways and airports). Tourism is one option that may allow

communities to grow based on their natural amenities and/or significant investments in the creation of destination-based attractions and activities.

The conventional wisdom among researchers and industry experts is that recreation and tourism have both positive and negative impacts. On the positive side, recreation and tourism helps to diversify the local economy (Gibson and Barkley 1993, English, Marcouiller et al. 2000, Marcouiller and Green 2000) and generate economic growth (Gibson and Barkley 1993). These gains are achieved because tourism and recreation can be thought of as an export industry in which money from outside the area is spent on goods and services produced locally.⁷⁰ It can also stimulate infrastructure development such as highways, conference centers, and airports which may attract other non-recreation industries to the area.

There are also a number of negative aspects of tourism as a rural economic development strategy. Much like the coal industry, tourism development is often accompanied by significant economic leakages—many of the goods and services required to fuel this development strategy often come from outside the community. For example, most food available at grocery stores and restaurants that is sold to tourists will be produced elsewhere. Similarly, retail outlets will sell products that are largely produced in other regions or countries. In addition, there are often few opportunities for residents to spend their income on cars, groceries, appliances, etc. Residents of these communities often travel to larger metropolitan areas to spend their income as well as purchase these items online. This suggests that a significant share of the money spent by tourists, seasonal residents and workers ends up leaving the locality. Another economic drawback stems from the seasonality of many tourism and recreation activities meaning that economic growth is far from consistent across a year.⁷¹ Tourism also supports a large number of

⁷⁰ This is similar to coal extraction where coal is exported to consumers outside the mining region.

⁷¹ Coal production is subject to a different form of volatility as described above.

relatively low-paying and part-time jobs in sectors like retail and hospitality services that typically do not provide extensive fringe benefits.

Some studies have concluded that the positive aspects of tourism development tend to outweigh the negatives (English, Marcouiller et al. 2000, Deller, Tsai et al. 2001, Reeder and Brown 2005). However, this does not imply that tourism development has been beneficial in all places, nor does it imply that tourism is necessarily superior to reliance on resource extraction. Studies have found that many of the benefits of tourism-based development have been experienced in ski resort communities and areas that have a history of serving as second-home destinations and not by counties characterized by reservoir lake recreation and those counties in the southern Appalachians (Reeder and Brown 2005). These rural recreation counties tend to be the poorest and have poorly-educated populations. Much like Campbell and Claiborne Counties, these counties tend to offer open space and parks instead of man-made destination attractions.

3.2 TOURISM TRENDS ACROSS TENNESSEE

In order to frame the strength of tourism-based development in Campbell and Claiborne counties, we first consider broader trends in the state. These state trends are presented in Table 11. According to the Tennessee Department of Tourist Development,⁷² total travel spending in Tennessee (direct plus indirect and induced/ multiplier impacts) was \$27.3 billion in 2013.⁷³ This represents a 3.4 percent increase from 2012. Total direct travel spending (by domestic and international travelers) in Tennessee in 2013 reached \$16.7 billion, up 3.4 percent from 2012 and

⁷² Tennessee Department of Tourist Development; “The Economic Impact of Travel on Tennessee Counties – 2013.” Nashville, Tennessee. Available at: <http://www.tnvacation.com/industry/research>. Accessed October 28, 2014. Appendix A of the report describes the methods used and defines key terms.

⁷³ Indirect and induced effects are analogous to those explained in the coal impact analysis presented above, where induced are synonymous with multiplier effects. Appendix E of “The Economic Impact of Travel on Tennessee Counties – 2013” explains the indirect and induced effects along with RIMS II multipliers.

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57.6 percent from 2003. These trends are consistent with nationwide growth in the tourism sector and a rebound from the trough of the recession.

Unfortunately, tourism does not have a unique sectoral identity (i.e. NAICS designation), nor does it have its own Standard Occupation Code that defines jobs and their duties. Instead, tourism ripples across a number of economic sectors, including retail trade and leisure and hospitality services. The food service sector enjoyed \$5.0 billion in sales and accounted for nearly one third (31.0 percent) of the state’s domestic travel expenditures and was the largest domestic traveler spending sector. Domestic traveler spending in 2013 on auto transportation ranked second (21.2 percent of the domestic total) with more than \$3.4 billion spent. This represents a 3.4 percent increase from 2012. Domestic expenditures on lodging totaled \$2.8 million or 17.4 percent of the domestic total.

Table 11. Impact of Travel Spending in Tennessee in 2013 and (percent change from 2012)

	Direct Impact	Indirect and Induced Impact	Total Statewide Impact
Expenditures (\$ millions)	\$16,714.60 (3.4%)	\$10,600.80 (3.3%)	\$27,315.30 (3.4%)
Earnings (\$ millions)	\$3,318 (0.0%)	\$2,365.80 (0.2%)	\$5,683.80 (0.1%)
Employment (thousands)	148.7 (1.7%)	87.5 (1.5%)	236.2 (1.6%)

Another important measure of positive economic development success associated with tourism is travel-generated employment and payroll.⁷⁴ During 2013, total traveler spending in Tennessee supported 148,700 direct jobs including full-time and seasonal/part-time positions. This is 5.4 percent of total non-farm employment in Tennessee and represents a 1.7 percent increase from 2012. Over one-half of the travel-generated employment in Tennessee was in the food service sector (52.5 percent). Travel-generated payroll is the wage and salary income paid to employees directly serving the traveler within the industry sectors from which these travelers

⁷⁴ All of the tourism data for 2013 that follow come from the Tennessee Department of Tourist Development’s report on “The Economic Impact of Travel of Tennessee Counties – 2013.” Howard H. Baker Jr. Center for Public Policy – January 9, 2015

purchase goods and services. In 2013, total salary and wages directly attributable to traveler spending was \$3.3 billion which is unchanged from 2012. Nearly \$1.2 billion (35.9 percent of the state domestic total payroll) was paid to employees in the food service sector in 2013. This represents a 3.5 percent increase from 2012 making it the largest payroll category in Tennessee.

Tourism-related tax revenue, much of which is drawn directly from tourists, is also important to the state and its localities.⁷⁵ Travel tax receipts in the state tourism industry reports include the federal, state, and local tax revenues attributable to travel spending in Tennessee. (The revenue data are aggregated and not available by individual tax.) The local tax revenue may be especially important to rural communities with a limited tax base. In 2013, total tax revenue generated directly by traveler spending in Tennessee increased by 2.2 percent from 2012 reaching \$2.6 billion. It is important to note that the state tourism reports account for tax revenues attributable to direct effects, but there are *no* estimates of revenues from indirect and multiplier effects. This applies to both the county and state impact estimates.

While the impact of tourism in Tennessee is clear, historically most of the activity has not been concentrated in small, rural counties such as Campbell and Claiborne. The five counties in Tennessee with the largest amount of tourism spending for 2013 are, in order, Davidson, Shelby, Sevier, Hamilton, and Knox Counties (see Table 12 below). Davidson County saw \$4,992.1 million in tourist expenditures (the county ranked highest), and Knox County captured \$930.7 million in traveler spending (ranked 5th highest). All of these counties are characterized by large, diverse economies with a mixture of natural and manmade amenities that together support tourism activity.

⁷⁵ Tennessee Department of Tourist Development; “The Economic Impact of Travel of Tennessee Counties – 2013.” Nashville, Tennessee. Available at: <http://www.tnvacation.com/industry/research>. Accessed October 28, Howard H. Baker Jr. Center for Public Policy – January 9, 2015

Table 12: Economic Impacts of Tourism in Tennessee, 2013

County	Expenditures (\$ Millions)	Payroll (\$ Millions)	Employment (Thousands)	State Tax Receipts (\$ Millions)	Local Tax Receipts (\$ Millions)
Top Counties by Expenditure Levels					
DAVIDSON	\$4,992.13	\$1,146.17	54.79	\$234.82	\$126.25
SHELBY	3019.71	539.54	20.44	139.56	83.82
SEVIER	1767.92	382.78	18.76	95.34	51.04
HAMILTON	934.56	91.07	5.88	51.54	20.40
KNOX	930.74	292.13	9.50	46.70	22.11
Study Area					
CAMPBELL	50.44	8.62	0.42	2.80	2.59
CLAIBORNE	16.54	2.65	0.12	0.92	1.23
STATE TOTALS					
	\$16,182.96	\$3,200.42	143.49	\$823.39	\$466.09

Source: Tennessee Department of Tourist Development; “The Economic Impact of Travel of Tennessee Counties – 2013.” Nashville, TN. Available at: <http://www.tnvacation.com/industry/research>. Accessed October 28, 2014.

3.3 ECONOMIC IMPACT OF TOURISM IN THE STUDY AREA

3.3.1 Campbell County

According to the Tennessee Department of Tourist Development,⁷⁶ tourism activity in Campbell County in 2006 generated \$43.6 million in *direct* tourist spending, \$8.2 million in worker income and paychecks, \$2.2 million in local county tax revenues, \$2.5 million in state tax revenue and 435 jobs. All of these are solely related to direct spending since the tourism reports do not estimate indirect and multiplier impacts at the county level. By 2013, direct traveler-related expenditures in Campbell County grew to \$50.4 million. This represents a 15.6 percent

⁷⁶ Unless otherwise indicated, the data that follow on tourism are taken from a series of annual reports. See Tennessee Department of Tourist Development; “The Economic Impact of Travel on Tennessee Counties - 2006.” Nashville, TN. Available at: <http://www.tnvacation.com/industry/research>. Accessed October 28, 2014 and Tennessee Department of Tourist Development; “The Economic Impact of Travel of Tennessee Counties – 2013.” Nashville, TN. Available at: <http://www.tnvacation.com/industry/research>. Accessed October 28, 2014. Howard H. Baker Jr. Center for Public Policy – January 9, 2015

increase from 2006 and a 5.9 percent increase from 2012 (see Table 13). Campbell County’s change between 2012 and 2013 is the 8th fastest growth rate among all Tennessee counties.

Direct travel expenditures in Campbell County generated 420 direct jobs and \$8.6 million in direct payroll in 2013. This represents a 2.6 percent and 1.8 percent increase, respectively, from 2012. Campbell County’s growth rate in employment ranked 17th and the growth rate in payroll ranked 15th among all counties.

Table 13. Percent Change in 2013 Travel-Generated Impact Measures in Campbell County

	Expenditures	Payroll	Employment	State Tax Receipts	Local Tax Receipts
From 2006	15.6%	5.5%	3.6%	12.5%	15.6%
From 2012	5.9%	1.8%	2.6%	6.2%	6.3%

The impacts for 2013 are summarized in Table 14, including the \$50.4 million in direct output and \$8.6 million in direct personal income. In addition, over \$2.5 million in local taxes were collected from direct tourism activity. Direct effects are the primary community benefits of tourism because of the substantial leakages of spending out of the county that dampen multiplier effects. Nonetheless, once direct spending by tourists is injected into the economy, additional income and employment are generated indirectly when establishments that entertain tourists and their employees make purchases from manufacturers, service providers, and vendors. These manufacturers, service providers, and vendors in turn hire workers, earn profits, and generate income. Multiplier effects are then created as the additional income generated by the direct and indirect effects is spent and re-spent within the local economy. As with coal-related spending, much of this spending spills out to other regional economies.

As noted above, it is unfortunate that the state tourism reports do not provide estimates of indirect and multiplier effects associated with *county-level* tourism. This limits comparisons to

the coal industry impact analysis where these extended impacts were accounted for.⁷⁷ However, total output, earnings and employment impacts inclusive of indirect and multiplier effects are provided at the *state level* in the tourism reports. Thus it is possible to estimate the statewide impacts of local tourism activity in Campbell County.

The statewide impacts of county-level tourism are estimated as follows. If we assume that each county's share of total statewide direct traveler spending is the same as each county's share of statewide indirect and multiplier effects, we can estimate the statewide impacts associated with direct traveler spending in a county. The process to determine the indirect and multiplier effects associated with a county's tourism is as follows: 1) determine the percent of statewide total direct traveler spending that is spent in a given county; 2) multiply this percentage by total traveler output (personal income and employment) in the state to determine total output (personal income and employment) in a county that corresponds to tourism. Campbell County's direct traveler expenditures of \$50.4 million in 2013 were just over 0.3 percent of total statewide direct spending. Thus Campbell County can lay claim to about 0.3 percent of statewide indirect and multiplier impacts. This represents about \$32.0 million in statewide output benefits for the state.

Applying this method yields a total impact of traveler spending in Campbell County on statewide output of \$81.9 million. This means that for every local dollar spent by travelers, \$1.62 is generated in total output for the state economy. Total statewide personal income in Campbell County linked to tourist spending is \$17.1 million, which includes direct impacts of \$8.6 million in Campbell County plus Campbell County's 0.3 percent share of statewide indirect and multiplier income, or \$8.5 million. Finally, the total statewide number of jobs in Campbell

⁷⁷ The state tourism reports do not explain why this detail is omitted from the analysis.
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County maintained by traveler expenditures in the county is 709, including 420 direct traveler-related jobs plus 0.3 percent of statewide indirect and multiplier jobs, or 289 jobs.

Table 14: Summary of Economic Benefits of the Tourism Industry in Campbell County, FY13

Impact Measure	Statewide Indirect &		Total Statewide
	Direct County	Multiplier	
Output (GDP)	\$50,440,000	\$31,505,900	\$81,945,900
Personal Income	\$8,620,000	\$8,431,400	\$17,051,400
Employment	420	289	709

In 2013, \$2.8 million in state own-source revenues from taxes were generated from traveler-spending in Campbell County, where state tax receipts include sales, excise, personal income, and corporate income taxes. A tax that generates significant revenue for the county is the hotel-motel tax, which is 5 percent in Campbell County.⁷⁸ In addition to the county-wide hotel-motel tax, municipalities located within the county can levy their own hotel-motel tax. In Campbell County, Caryville (2 percent) and Jellico (5 percent) have their own municipality-wide tax on hotel-motels. Local tax receipts created from direct traveler spending total \$2.6 million in the county, where local tax receipts include sales and property taxes. These measures are based solely on direct traveler expenditures and do not account for indirect or multiplier impacts that would produce additional revenues.

3.3.2 Claiborne County

Direct tourism spending in Claiborne County in 2006 generated \$13.6 million in direct output, \$2.4 million in direct worker income, \$1.0 million in local county tax revenues tied to direct impacts, \$780,000 in state tax revenue and 124 direct jobs. In 2013, direct travel-generated expenditures in Claiborne County totaled \$16.5 million. This represents a 21.7 percent

⁷⁸ The state tourism reports do not provide detail on revenues from specific taxes, only totals. For hotel-motel tax rates, see Municipal Technical Advisory Service. http://trace.tennessee.edu/cgi/viewcontent.cgi?article=1046&context=utk_mtastech. Accessed November 24, 2014, Howard H. Baker Jr. Center for Public Policy – January 9, 2015

increase from 2006 and a 1.7 percent increase from 2012 (see Table 15). By 2013, direct employment had slipped to 120, while payroll had grown to \$2.7 million and local own-source tax collections had risen to \$1.2 million. Claiborne County traveler-generated expenditures increased faster than Campbell County over the past seven years but slower than Campbell County over the past year.

Table 15. Percent Change in 2013 Traveler-Generated Impact Measures in Claiborne County

	Expenditures	Payroll	Employment	State Tax Receipts	Local Tax Receipts
From 2006	21.7%	8.6%	-3.2%	18.0%	21.8%
From 2012	1.7%	-1.7%	-0.2%	1.8%	2.2%

As with Campbell County, we have estimated the total statewide impact of county-level tourism spending attributable to Claiborne County. Claiborne County can lay claim to approximately 0.1 percent of statewide indirect and multiplier impacts. This means that an additional \$10.8 million in statewide output benefits for the state are sourced in Claiborne County. Thus the total impact of traveler spending in Claiborne County on state output is estimated at \$27.3 million (see Table 16). This means that for every dollar spent locally by travelers in Claiborne County, \$1.60 is generated in total output for the state. Direct impacts of personal income linked to tourism spending are \$2.7 million, and an additional \$3.0 million of statewide indirect and multiplier income (0.1 percent) generate a total statewide impact of local traveler spending in Claiborne County of \$5.7 million. Finally, the total statewide number of jobs maintained by local traveler expenditures in the county is 236 jobs. This includes 120 direct traveler-related jobs plus 0.1 percent of statewide indirect and multiplier jobs, or 116 jobs.

Table 16: Summary of Economic Benefits of the Tourism Industry in Claiborne County, FY13

Impact Measure	Statewide		Total Statewide Impact
	Direct County	Indirect & Multiplier	
Output (GDP)	\$16,540,000	\$10,775,300	\$27,315,300

Personal Income	\$2,650,000	\$3,033,800	\$5,683,800
Employment	120	116	236

Estimates for 2013 show \$0.9 million in state tax receipts and approximately \$1.2 million in local tax receipts are directly created by tourism spending in Claiborne County. The hotel-motel tax rate in Claiborne County is 3 percent, which accounts for a portion of tax revenues for the county.⁷⁹ No municipalities within Claiborne County levy their own hotel-motel tax.

3.3.3 Future Tourism Impacts

Tourism activity is likely to see sustained growth in the years ahead, consistent with the historical record. For the state, total travel expenditures were up every year between 2003 and 2013 except for 2010 which was at the end of the Great Recession.⁸⁰ Overall travel-related spending advanced 57.6 percent over this period of time. Projections for the national economy show steady growth through 2017, from 4.1 percent growth in 2015 to 5.5 percent growth in 2017. (Projections for the state are not available.)

Campbell and Claiborne Counties have similarly seen growth in tourism activity over time, though there is some variation depending on the time period chosen. For example, between 2002 and 2013, direct travel-related spending in Campbell County grew 35.8 percent while spending in Claiborne County was up 42.2 percent.⁸¹ Payroll income directly tied to tourism spending also grew in the two counties—13.2 percent for Campbell County and 16.2 percent for Claiborne County. Direct travel-related employment grew 81.5 percent in Claiborne County, but there was a surprising 6.7 percent decline in employment in Campbell County.

⁷⁹ Municipal Technical Advisory Service at http://trace.tennessee.edu/cgi/viewcontent.cgi?article=1046&context=utk_mtastech. Accessed November 14, 2014.

⁸⁰ The data in this section are drawn from tables 4 and 6 in Tennessee Department of Tourist Development; “The Economic Impact of Travel of Tennessee Counties – 2013.” Nashville, TN. Available at: <http://www.tnvacation.com/industry/research>.

⁸¹ Tennessee Department of Tourist Development; “The Economic Impact of Travel of Tennessee Counties – 2002.” Nashville, TN. Available at: <http://www.state.tn.us/tourdev/pdf/tia2002.pdf>. Accessed: January 6, 2015.

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A shorter historical review indicates a somewhat different pattern of growth. Table 13 shows that Campbell County saw expenditures, payroll and employment grow in 2013 compared to both 2006 and 2012. Table 15, which focuses on Claiborne County, shows expenditure gains in 2013 compared to both 2006 and 2012. On the other hand, payroll increased compared to 2006 but contracted compared to 2012; employment was lower in 2013 than in 2006 and 2012.

While the historical data show some variation, the overall trend indicates rising tourism-related travel and expenditures for the state and the two study counties. This represents an opportunity for Campbell and Claiborne counties to pursue additional avenues for economic development benefits from tourism activity.

3.4 POTENTIAL TOURISM STRATEGIES

Much like the discussion of coal in section 2, recent historical trends and current economic impacts of tourism do not fully reflect the future potential for tourism-based development in Campbell and Claiborne counties. The coal asset valuation exercise in section 2.6 considers this future potential by estimating the value of the coal assets in the ground in the study area given the inherent uncertainty in coal markets and recoverable reserves. These asset values reflect the ability to attract and retain coal mining firms in these areas making them a valuable measure of the future success of coal-based development strategies. Unfortunately, a similar asset valuation exercise for tourism-based economic development is not possible. While coal assets are pre-existing in the study area and their development follows a relatively standard process of extraction and sale, tourism assets can be developed following a number of different strategies from taking advantage of the natural environment to the creation of man-made amenities that will support tourism. The ability to undertake a variety of development strategies makes the future of tourism in these counties much more difficult to pinpoint. Instead of the

quantitative asset valuation approach used in section 2, here we take a qualitative approach and discuss various tourism-based development strategies that have been employed by other rural counties in Tennessee.

Both Campbell and Claiborne counties have existing state parks, music and art festivals, wildlife management areas, national historical parks, cultural festivals, agritourism, and historic places that can be a starting point for tourism development. For additional information, see Appendices A and B. The appendices show the many tourism assets already in place in these counties. Drawing from other rural communities in the region, Table 17 identifies three potential strategies for further growth: retirees and vacation homes, historical and cultural destinations (i.e., heritage tourism), and enhanced outdoor recreation areas. Based on existing tourism assets, Campbell County may be best suited to exploit the outdoor recreation model while Claiborne County has more attributes suitable to the pursuit of a historical and cultural strategy. However, additional tourism assets could be developed to enhance these strategies or pursue alternative strategies. Such assets would need to be identified through a more thorough process than presented here and include stakeholder participation from the local communities.

Table 17. Examples of Economic Impact Associated with Potential Tourism Strategies

County	Expenditures (\$ Millions)	Payroll (\$ Millions)	Employment (Thousands)	State Tax Receipts (\$ Millions)	Local Tax Receipts (\$ Millions)
Retirement communities and vacation homes					
Cumberland	\$102.35	\$20.98	0.90	\$5.62	\$4.25
Loudon	\$51.73	\$8.03	0.39	\$3.00	\$1.30
Historical and cultural tourism					
Scott	\$10.51	\$1.53	0.07	\$0.57	\$0.62
Anderson	\$111.63	\$18.03	0.90	\$6.42	\$2.38
Outdoor recreation					
Bradley	\$126.80	\$11.18	0.88	\$7.44	\$2.67
Unicoi	\$8.54	\$1.77	0.07	\$0.46	\$0.69

Source: Tennessee Department of Tourism Development; "The Economic Impact of Travel of Tennessee Counties – 2013." Nashville, TN. Available at: <http://www.tnvacation.com/industry/research>. Accessed October 28, 2014.

3.4.1 Retirement Communities and Vacation Homes

Retirees and second-home owners have been a fruitful target for other Tennessee communities, including Tellico Village in Loudon County and Cumberland County. In 2011, *Where to Retire* magazine named the Fairfield Glade Community Club in Cumberland County as one of the 50 Best Master-Planned Communities.⁸² It is a popular golf retirement community, known as the “Golf Capital of Tennessee,” that is home to five championship golf courses, eleven lakes with two marinas, swimming pools, and recreation and fitness complexes. The development is large enough (12,500 acres) to support multiple subdivisions with a wide range of lots, homes and townhomes for sale. The community is managed by the Fairfield Glade Community Club, which is a homeowner’s association. In addition to the Fairfield Glade Community Club in Cumberland County, the area plays host to the Bear Trace at Cumberland Mountain State Park, which is another golf course.

By creating amenities used by retirees, the county has constructed a destination attraction for travelers to vacation. For example, the Fairfield Glade Community Club constructed high quality golf courses that now attract an enormous number of visitors and vacationers. Also, according to the Tennessee Department of Tourist Development’s report on the economic impact of travel on Tennessee counties for 2013, Cumberland County sees approximately 102.9 percent and 518.8 percent more expenditures by travelers than Campbell and Claiborne County, respectively.⁸³ In comparison, a similar 2003 study showed that Cumberland County gained

⁸² *Fairfield Glade*. (2014). <http://www.privatecommunities.com/tennessee/fairfieldglade/>. Accessed November 1, 2014.

⁸³ Tennessee Department of Tourist Development; “The Economic Impact of Travel of Tennessee Counties – 2003.” Nashville, Tennessee. Available at: <http://www.tnvacation.com/industry/research>. Accessed October 28, 2014. Howard H. Baker Jr. Center for Public Policy – January 9, 2015

\$75.35 million from traveler spending, thus yielding growth of \$102.35 million over the 10 year time frame. This dramatic growth in traveler expenditures within the county is evidence that investing in a strategy that draws tourists to the area, specifically a retirement community, can have a large impact on the county.

Both Campbell and Claiborne County currently possess tourism assets that would support a retirement/vacation home strategy. Campbell County boasts The Greens at Deerfield, an 18-hole championship golf course located in LaFollete. Claiborne County is home to Woodlake Lodge, Golf and Country Club in Tazewell. Both counties also possess lakefront property along Norris Lake that is currently attracting vacationers. However, additional amenities and marketing would need to be undertaken to trigger the economic development experienced in Fairfield Glade and Tellico Village.

3.4.2 Historical and Cultural Tourism

Scott and Anderson Counties show the results of a focus on the historical and cultural destination strategy. Rugby, in Scott County, provides a rich example of an area highly visited for its historic and cultural prominence. Thomas Hughes, a famous novelist, dedicated the Rugby Colony in 1880 with the vision that the new community would be a strong agricultural community with cooperative enterprise (removing the rigid class distinctions that prevailed in Britain). The ideology behind Hughes' vision came from the fact that younger sons of British families typically didn't inherit anything from their parents. Hughes believed that these young men could build a community through agriculture, thus mitigating the custom of primogeniture (right of the firstborn male child to inherit the family fortune). The town flourished under this vision and gained attention worldwide. The pride of the colony was the Thomas Hughes Public Library that contained thousands of volumes donated by admirers and publishers. With this

historic legacy, Brian Stagg led the charge in the 1960s to recreate the vibrant community that existed following Thomas Hughes' establishment of the colony. In 1972, he managed to get many of Rugby Village's historic buildings placed on the National Register of Historic Places as the Rugby Colony Historic District.⁸⁴

Today, Historic Rugby offers guests lodging facilities, full service restaurants and stores, and tours of several important historic buildings. Historic Rugby also many events including the Rugby British Motorcar and Motorbike Show and Antique Street Fair. During the holiday season, members of the Historic Rugby organization portray Victorian era villagers during their popular Ghostly Gathering in October and in December for the Christmas in Rugby event. In this sense, Scott County's Rugby Village plays directly into the historic and cultural destinations strategy for tourism. The area hosts travelers throughout the year who visit the area to learn about the unique history and culture of a colony founded for a Utopian dream. Traveler spending in Scott County increased from \$8.60 million in 2003 to \$10.51 million in 2013.⁸⁵ While this isn't nearly as large as the gain in tourist spending as Cumberland County, a gain of \$1.91 million for a small, rural county is significant.

Norris, in Anderson County, is a National Historic District and home to the Museum of Appalachia. The Museum of Appalachia is a living history museum dedicated to the pioneer and early 20th-century period of the Southern Appalachian region. The museum was also recently named an Affiliate of the Smithsonian Institution. Anderson County is also one of three sites

⁸⁴ *Historic Rugby*. (2014). Available at <http://www.historicrugby.org/history-of-organization/>. Accessed November 5, 2014.

⁸⁵ Tennessee Department of Tourist Development; "The Economic Impact of Travel of Tennessee Counties – 2013." Nashville, Tennessee. Available at: <http://www.tnvacation.com/industry/research>. Accessed November 25, 2014. Howard H. Baker Jr. Center for Public Policy – January 9, 2015

that would comprise the proposed Manhattan Project National Historical Park which commemorates East Tennessee's role in the Manhattan Project.⁸⁶

Claiborne County has many historic attractions that would be well-suited to adopt the historical and cultural destination tourism strategy. The Cumberland Gap National Historical Park in Claiborne County has historic attractions like Civil War cannons in their original bunkers and trenches and forts used by both the Union and Confederate armies. According to a National Park Service Report, 768,362 people visited the Cumberland Gap National Historical Park in 2013. These visitors spent \$46 million in communities near the park and that spending supported 639 jobs in the local area.⁸⁷ Another historical aspect of the county is the Genealogy Jamboree and Pioneer Day annual event where visitors can learn about genealogical research and history. Finally, the county has numerous properties on the National Register of Historic Places, including the Cumberland Gap Historic District, the Speedwell Academy and others. In the cultural realm, the county hosts the White Lightning Trail Festival that showcases the culture of East Tennessee and the bootleggers that lived in the area. Claiborne County is in the process of drawing attention to agricultural heritage in the area with a Committee on Agritourism that seeks to utilize the state of Tennessee's "Pick Tennessee Products" program to promote agritourism. With this initiative, the historical and cultural destination strategy makes the most sense for Claiborne County.

3.4.3 Outdoor Recreation

Another tourism strategy surrounds outdoor recreation. A prime example of a county with ample recreation activities that bring in tourists is Bradley County, Tennessee. The Ocoee Region offers a host of recreation activities, including biking, camping, canoeing, fishing, hiking,

⁸⁶ Legislation has been passed by both houses of Congress and awaits President Obama's signature.

⁸⁷ The report is available at <http://www.nature.nps.gov/socialscience/economics.cfm>.

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and whitewater rafting.⁸⁸ The Ocoee River and its rapids are the only Olympic River in the U.S. It was the site of the 1996 Olympic Whitewater Competition, and now it is open for whitewater rapid enthusiasts over the age of 12 to enjoy. In the same area is the Cherokee National Forest, home to the Tanasi Trail system and the Chilhowee Mountain Trails. These two trails are among many that pull mountain bikers into the county. The 100-Mile Mountain Bike Race, the SERC Mountain Bike Race, and the Black Bear Rampage are all extreme mountain biking competitions that are just a small sample of the many races that occur in the area. The Ocoee Region also has a Greenway that runs through Cleveland's center if road/casual biking is preferred. Additionally, a portion of the Cherokee National Forest is located in Bradley County offering ample fishing opportunities at Parksville Lake (and other forest reservoirs).

Bradley County and its Ocoee Region offer several recreation opportunities to tourists that make it especially attractive. Investing in trails, fishing areas, hiking, and rafting areas are a prime aspect of the recreation strategy for tourism development. In 2013, Bradley County captured 151.4 percent and 666.6 percent more traveler spending than Campbell County and Claiborne County, respectively.⁸⁹ In 2003, Bradley County saw \$85.85 million due to traveler expenditures in the county. This number grew to \$126.80 million in 2013, showing a sharp upward trend for tourism-related spending in the county.

Unicoi County is another example of a county that has utilized its natural amenities as a foundation for economic development. Unicoi County is the gateway for the northern portion of the Cherokee National Forest with horseback riding, hiking, and mountain biking trails. The city of Erwin serves as a major resupply point for hikers on the Appalachian Trail. Erwin is also

⁸⁸ *Ocoee Region*. (2014). Retrieved November 2014, from Visit Cleveland TN: <http://www.visitclevelandtn.com/www>.

⁸⁹ Tennessee Department of Tourist Development; "The Economic Impact of Travel of Tennessee Counties – 2013." Nashville, TN. Available at: <http://www.tnvacation.com/industry/research>. Accessed November 25, 2014. Howard H. Baker Jr. Center for Public Policy – January 9, 2015

home to numerous river outfitters that lead whitewater rafting trips on the nearby Nolichucky, Watauga, and Holston Rivers.

Campbell County has a number of natural amenities that make an outdoor recreation strategy possible. Campbell County is home to Cove Lake State Park, Indian Mountain State Park, Norris Dam State Park, and the Cumberland Trail State Scenic Trail. Each of these parks offers an opportunity for recreation of many forms. Campbell County also possesses a large portion of the North Cumberland Wildlife Management Area. This area, just north of LaFollette boasts one of the few state managed off-highway vehicle riding areas in the state. A recent report details the economic impact of the NCWMA (English, Menard et al. 2012). The estimated economic impact of recreational users to the NCWMA in 2009 was \$14.1 million in total industrial output⁹⁰ and \$9.2 million in total value added.⁹¹ The NCWMA also generated \$1.4 million in indirect business taxes⁹² and 230 jobs.⁹³ From hiking and fishing to biking and canoeing, the basic natural amenities needed to draw in tourists already exist in Campbell County.

3.5 SUMMARY

Tourism activity in Campbell and Claiborne Counties is a small piece of the state's overall tourism sector, but it offers an important contribution to the local economic and fiscal base of these communities. And like the state, there has been a general increase in tourism-related expenditures in these counties in recent years. As noted above, between 2002 and 2013,

⁹⁰ Annual dollar value of goods and services an industry produces.

⁹¹ Estimated employee compensation, proprietary income, other property type income (payments from interest, rents, royalties, dividends, and profits), and indirect business taxes.

⁹² Consists of excise taxes, property taxes, fees, licenses, and sales taxes paid by businesses.

⁹³ Estimates number of total wage and salary employees (both full- and part- time) as well as self-employed.

tourism expenditures in Campbell County grew 35.8 percent while expenditures in Claiborne County were up 42.2 percent.

Table 18 provides a summary of the tourism industry in the study area. Current tourism assets are largely confined to the rich natural environment which offers a range of outdoor activities for the recreation enthusiast. In 2013, direct tourism employment in Campbell County totaled 420 compared to 120 in Claiborne County while total employment impacts were 709 and 236, respectively. Tied to the direct employment was \$8.6 million in worker earnings in Campbell County and \$2.7 million in earnings in Claiborne County. Total income, inclusive of indirect and multiplier effects, were estimated to be \$17.1 million and \$5.7 million, respectively. In 2013, Campbell County saw \$2.5 million in tax revenues tied to direct tourism effects while Claiborne County’s local collections totaled almost \$1.2 million. Total revenues were much larger than this as can be seen in Table 18.

For both counties, the key to further developing these assets will be marketing these counties as the “gateway” to their respective assets. For example, two cornerstones for an outdoor recreation strategy in Campbell County are the Cumberland Trails and North Cumberland Wildlife management Area (NCWMA). Both of these areas span multiple counties which provide visitors with multiple destinations to spend their money. Campbell County must position its cities, such as LaFollette, as the primary destination for visitors to Cumberland Trails and NCWMA. Likewise, the cornerstone of a historical and cultural strategy for Claiborne County is the Cumberland Gap National Historical Park. However, visitors may choose to stay in nearby Middlesboro, Kentucky.

Table 18: Summary of the Tourism Industry in the Study Area, FY13

	Campbell County	Claiborne County
Total output (GDP) generated	\$81,945,900	\$27,315,300
Total personal income generated	\$17,051,400	\$5,683,800

Total employment	709	236
Local tax receipts	\$2,590,000	\$1,230,000
State tax receipts	\$2,800,000	\$920,000
Suggested tourism strategy	Outdoor recreation	Historical and cultural
Select tourism assets	Cove Lake State Park, Indian Mountain State Park, Norris Dam State Park, Cumberland Trail State Scenic Trail, North Cumberland Wildlife Management Area	Cumberland Gap National Historical Park, White Lighting Trail Festival, Genealogy Jamboree, Pioneer Day, Historic Sites

While tourism has not shown robust growth in recent years, over the longer term there has been significant growth at the state level and for Campbell and Claiborne Counties. These trends are expected to continue as the economy sees ongoing growth in the years ahead. This will likely translate into further growth in travel expenditures, employment and income and further expansions in the tax base.

4. DISCUSSION AND CONCLUDING REMARKS

It is no easy task to identify fruitful economic development strategies for rural communities. Community residents and policymakers must evaluate the unique attributes of their region, including location, natural amenities and endowments, labor force size and quality and so on. These considerations should then produce candidate paths for the direction of the local economy. Economic impact analysis can provide insights on the strengths and weaknesses of different development strategies by quantifying employment, personal income, output, and tax revenue consequences. In the end, communities will face hard decisions and difficult tradeoffs.

The analysis here has focused on coal and tourism as possible development strategies for Campbell County and Claiborne County in East Tennessee. Each county has coal reserves and a history of active coal mining which has contributed to the local economic and fiscal base. Each county also possesses a growing tourism sector – supported by unique natural, historical, and

cultural resources - that has created a significant number of jobs and enhanced local government tax collections.

Coal mining and tourism each have strengths and weaknesses. Resource-based industries are commonly characterized by boom-bust cycles which confound efforts to clearly forecast future benefits of a resource-based development strategy. Tourism, on the other hand, follows the ups and downs of the business cycle and tends to support seasonal rather than year-round employment. Rates of pay tend to be higher for those in the coal industry than in tourism. As noted above, average annual pay in the mining sector and coal industry tend to be much larger than earnings in the retail trade and leisure and hospitality service sectors which support tourism. Coal mining generates unique revenues for local communities via the severance tax while tourism generates significant revenues from local hotel/motel taxes and the local sales tax. Thus **a key question for rural areas is whether substituting resource-extractive industries with service-oriented jobs will actually yield community-wide improvements in economic wellbeing.**

Based on estimates of output, personal income, employment, and local tax revenues, the **tourism industry in Campbell County provides greater overall economic benefits to both county and state residents than the coal industry.** The *direct*, county-level output (GDP) due to tourism is over four times larger than similar measures for the coal industry. Direct county-level personal income in the county's tourism sector is nearly three times larger than coal's direct income impact while direct tourism employment is nine times larger than direct coal employment. **In contrast, the coal industry in Claiborne County provides more economic benefits than tourism.**

As shown in Table 19, the *total* county-level output (GDP) due to the coal industry in Claiborne County is 3.9 times larger than the tourism industry. Total county-level personal income and employment attributable to the coal industry are 4.6 and 2.3 times larger than tourism, respectively. Total output effects associated with Campbell County’s tourism sector, accounting for direct, indirect and multiplier effects, are 4.5 times the total effect arising from coal production. Total personal income related to tourism is 3.9 times larger than coal-related income and total employment tied to tourism is 7.1 times larger than total coal-related employment.

It is clear from Table 19 that local tax revenues derived from tourism are much larger than those derived from coal in both counties, even though the tourism impacts are based solely on direct effects. Unfortunately, we have no information regarding the methodology used in the tourism reports to develop these estimates. While the coal impacts developed here and the tourism impacts developed in the state tourism reports each rely on RIMSII multipliers, these multipliers are only an input to the calculation of revenue effects. (See section 2.4 for a discussion of the methodology used to estimate tax revenues associated with the coal industry.)

Table 19: Summary of Total Economic Impacts in the Study Area, FY13

	Campbell County		Claiborne County	
	Coal	Tourism	Coal	Tourism
Output (GDP)	\$18,061,949	\$81,945,900	\$106,757,857	\$27,315,300
Personal income	\$4,416,160	\$17,051,400	\$26,102,374	\$5,683,800
Employment	100	709	545	236
Local tax revenue	\$57,943*	\$2,590,000**	\$226,934*	\$1,230,000**

*includes severance, property, and sales tax revenues based on direct, indirect, and multiplier expenditures

** includes hotel-motel, property, and sales tax revenues based solely on direct traveler expenditures

These 2013 impact estimates derived from one year of data tell part of the story. Based on recent trends and variability in the Appalachian coal market and recoverable reserves at

producing mines in these counties, Campbell County experienced a slight uptick in the value of its coal reserves over the past decade thanks to a surge in coal prices in the region. However, this increase in price is accompanied by higher costs of production. Thus more valuable coal reserves in Campbell County do not necessarily signal a greater likelihood of coal mining in the region because the costs of extraction have also risen. Also the emergence of the tourism industry in Campbell County suggests that the opportunity cost of coal development may have also risen due to potentially incompatible land uses triggered by these two industries. In contrast, the value of the coal reserves in Claiborne County has declined significantly over this same time period. This signals a greater likelihood of decreased coal production in the county in the future and greater difficulty attracting coal companies to the area moving forward. Given Claiborne County's current reliance on this industry, alternative development strategies will likely be needed.

As coal-related economic activity has declined in Campbell and Claiborne County, most measures of tourism activity have seen growth. This growth in tourism activity has left Campbell County well positioned to transition from its resource-extraction heritage. A tourism-based development strategy centered on outdoor recreation will allow Campbell County to capitalize on its existing recreation amenities. Other counties in Tennessee have successfully or are currently in the process of following a similar strategy. Campbell County and state officials should look to these counties to identify what works and what doesn't work while remaining mindful of Campbell County's unique attributes.

If current trends in the coal industry continue, Claiborne County will likely be unable to attract and retain a viable coal industry. Given that this industry is currently such a large part of the local economy, Claiborne County should consider identifying alternative

development strategies to offset declines in personal income, employment, and local tax revenues. While Claiborne County possesses a number of historical and cultural assets (see appendix B), these have yet to generate economic impact comparable to the coal industry.

Claiborne County will have to develop additional tourism assets or pursue more aggressive marketing strategies if tourism is expected to fill the void left by the declining coal industry.

As **rural communities** assess potential responses to the downturn in the coal industry, they **must also be mindful of consequences for local tax revenues**. Severance taxes associated with the coal industry are directly tied to the local community whereas increases in sales taxes associated with tourism may leak out to neighboring counties and states. On the other hand, unique hotel/motel taxes allow communities to derive revenues directly from tourism spending and expanded retail trade opportunities will help communities keep sales tax revenue in the county.

Rural communities must also be mindful of competition when assessing the merits of tourism-based development. Tennessee's natural beauty and rich heritage provide multiple destinations for outdoor recreation, and historical/cultural tourism. Rural communities must provide assets that stand out from numerous other destinations in order to attract visitors. To address this competition, **Campbell and Claiborne Counties must market a unique experience involving multiple activities and multiple assets instead of focusing on a single destination.**

Finally, **this report does not directly consider the environmental and health impacts of the coal and tourism industries on local residents.** For example, certain coal mining practices may negatively impact water quality wildlife habitat, and scenic views. Abandoned mine lands may pose threats to human health from groundwater contamination. Many of these

impacts of coal mining may also negatively impact tourism in these counties if natural amenities are compromised or visitors are concerned about their health when visiting the areas. **Tourism can create its own unique problems including traffic congestion and higher public safety costs.** These impacts are difficult to quantify in practice but must be recognized as part of any economic development strategy.

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APPENDIX A: Tourism Assets in Campbell County

The following is a profile of selected tourism assets in Campbell County.

State Parks

Campbell County is home to four state parks.

- The 717 acre ***Cove Lake State Park*** is located near Caryville. The park has 106 campsites, six large picnic pavilions, and 130-person indoor pavilion. The park also contains an 11-mile stretch of the Cumberland Trail. Cove Lake Restaurant is open year-round, seats 115 persons, has a recreation lodge featuring a large banquet/meeting room. Cove Lake State Park also boasts an Olympic-sized pool, along with a kiddie pool, bath house, and concession stand.
- ***Indian Mountain State Park*** near Jellico is a 213 acres park that began as a reclaimed surface coal mine. The park has 49 paved campsites and several ponds stocked with bluegill, large-mouth bass, crappie and catfish. Park facilities include three picnic pavilions, playground, and a new swimming facility with bathhouse.
- ***Norris Dam State Park*** spans both Campbell and Anderson Counties. Located on the shores of Norris Lake, this park focuses on the historical heritage of the area. Lenoir Pioneer Museum (an 18th century gristmill), a threshing barn, and a shop featuring authentic Tennessee crafts are among the cultural attractions for park visitors. The park has a variety lodging options with 19 rustic vacation cabins, 10 three-bedroom fully-equipped deluxe cabins, and two camping areas with a total of 90 campsites. Picnic areas are also available with a large commercial marina, miles of woodland trails, Olympic-sized pool, and large children pool.

- Cumberland Trail State Scenic Trail* became Tennessee's 53rd state park in 1998 and is Tennessee's first linear state park spanning 11 Tennessee counties. When completed, the hiking trail will extend more than 300 miles from Cumberland Gap National Historical Park in Claiborne County to Signal Mountain outside of Chattanooga. Trail segments totaling 185 miles are now complete. The largest stretch of completed trail connects La Follette in Campbell County with Cove Lake State Park, the North Cumberland Wildlife Management Area, and Frozen Head State Park in neighboring

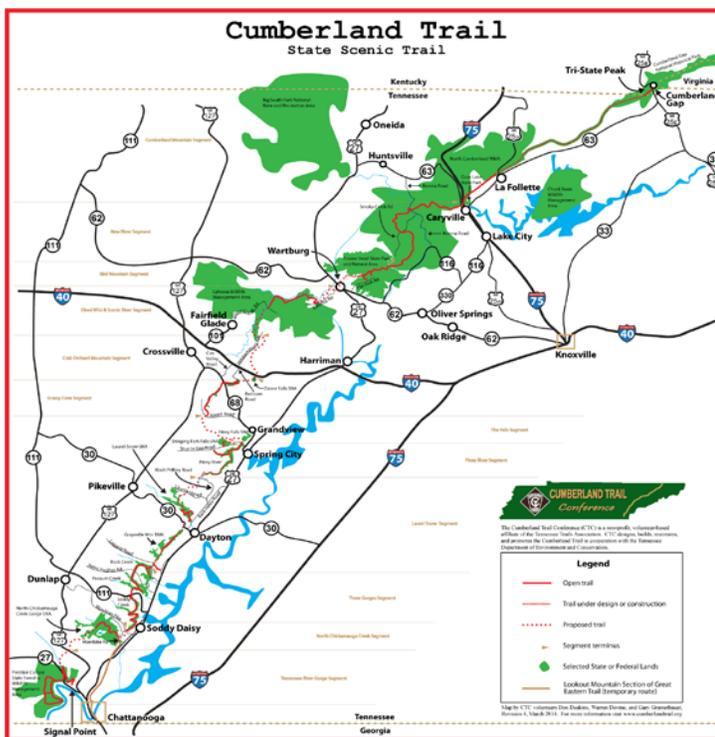


Figure 24. Map of Cumberland Trail

Louie Bluiie Music and Arts Festival

The Louie Bluiie Music and Arts Festival is a family oriented music, movie and art festival. There are music stages for traditional old-time, blues, gospel, mountain jazz, and bluegrass music as well as handmade arts and crafts. Named in honor of Howard "Louie Bluiie" Armstrong,

a LaFollette native and internationally acclaimed string band musician, the festival is held in every year at Cove Lake State Park, Caryville.

North Cumberland Wildlife Management Area

The North Cumberland Wildlife Management Area (NCWMA) is comprised of the Royal Blue, Sundquist, and New River WMAs as well as the Emory River Tract Conservation Easement. Large tracts of the Royal Blue and Sundquist WMAs lie in Campbell County (Figure 25). Royal Blue WMA is over 53,000 acres of mountain forests maintained by the Tennessee Wildlife Resources Agency (TWRA). A variety of animals such as whitetail deer, wild turkeys, beavers, black bear, and elk can be found in the area. It also provides over 600 miles of roads for mountain bikes and off-highway vehicles. Royal Blue WMA is open year round to the public. A portion of the Royal Blue and Sundquist WMAs in Campbell County includes a multi-use trail system just north of LaFollete open to horseback riders, off-highway vehicles, and bicyclists (Figure 26). Hunting licenses or access permits must be purchased to use the trail system and these permits range from \$12.50 for a resident day-use permit to \$191 for a nonresident annual permit.

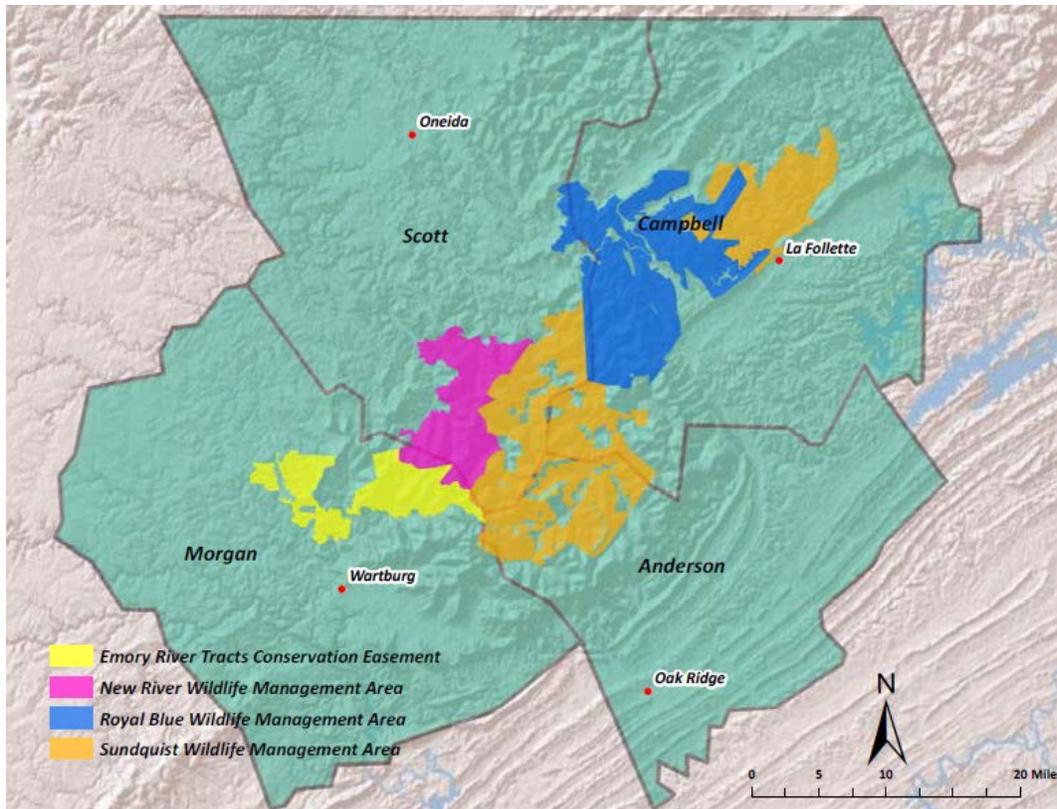


Figure 25. North Cumberland Wildlife Management Area. *Source: Office of Surface Mining*

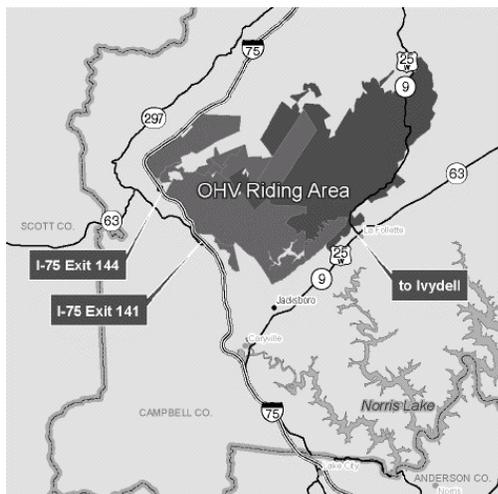


Figure 26. NCWMA off-highway vehicle riding area in Campbell County

APPENDIX B: Tourism Assets in Claiborne County

The following is a profile of the tourism assets in Claiborne County.

Cumberland Gap National Historical Park

Cumberland Gap National Historical Park is located on the border between Kentucky, Tennessee and Virginia. Covering more than 20,000 acres with 50 miles of hiking trails, the park features beautiful wild mountain scenery, historic attractions such as Civil War cannons in their original bunkers and earthen trenches and forts used by both the Union and Confederate armies, and naturally rare sites such as Gap Cave. In 2013, 768,362 people visited the park and spent \$46 million in communities near the park which also supported 639 jobs in the local area (Cullinane, Huber et al. 2014).

Festivals

- The ***White Lightning Trail Festival*** is an annual festival in Cumberland Gap that recognizes the culture of East Tennessee, the bootleggers that lived in the area, and the fast cars they drove. The White Lightning Trail begins in Knoxville and travels through eight other counties including Campbell and Claiborne Counties. The associated festival includes demonstrations, food, antique cars, craft vendors, games, bike run and a variety of music. The White Lightning Trail Festival was named one of the top 20 events in the southeast in 2013 and 2014 by the Southeast Tourism Society.
- The ***Genealogy Jamboree*** and ***Pioneer Day*** in Cumberland Gap is an annual event where visitors can learn genealogical history and heritage and see the lifestyle of the area's pioneer ancestors. The event includes booth with genealogy experts, craft demonstrations, and military reenactments.

Agritourism

In addition to coal, agriculture is an important industry in Claiborne County. Recent efforts are attempting to harness this heritage as an economic development strategy. The Claiborne County Tourism Commission has a separate Committee on Agritourism that is seeking to utilize the state of Tennessee's "Pick Tennessee Products" program to promote opportunities for agritourism in the area. An effort is currently underway to develop a Claiborne-Hancock-Union Counties "Farm Guide Map" that will enable visitors to find these agricultural products and pick-your-own farms while visiting from outside the area. Claiborne County will feature numerous pick-your-own farm sites, a cashmere goat farm, and a farm specializing in in apple tree grafting.

Historic Places

Claiborne County has numerous properties on the National Register of Historic Places (Table 22). The following provides additional details on a few of these historic places:

- The ***Cumberland Gap Historic District*** is located in the rural community of Cumberland Gap in a valley on the eastern approach to Cumberland Gap. The majority of properties in the Cumberland Gap Historic District were built between the 1890s and the 1930s and include several single-family and multiple-family dwellings, commercial buildings, public buildings, a church, and an unevaluated archaeological site. The historic district offers a variety of unique shops and art galleries. The ***Little Congress Bicycle Museum*** displays the unique bicycle collection of Judge R.E. McClanahan II who is a Senior Judge, Kentucky Court of Justice.
- ***Speedwell Academy*** in Speedwell was established in 1806 by George Shutter, who came

to Tennessee from Pennsylvania in the early 1800's. It was called Powell Valley Male Academy and later changed its name to Speedwell Academy. The Academy was used as headquarters by General Zollicoffer and a hospital by both Union and Confederate forces during the Civil War.

- ***Big Spring Union Church*** in Springdale is one of the oldest church buildings in Tennessee that is still in active use as a church.
- ***Claiborne County Jail*** in Tazewell is a two-story limestone and brick jail built in 1819 and used until 1931.

Table 20. Locations on the National Register of Historic Places in Claiborne County

Historic Place	Location
Cumberland Gap Historic District	Cumberland Gap and Harrogate
Speedwell Academy	Speedwell
Big Spring Union Church	Springdale
Claiborne County Jail	Tazewell
Grant-Lee Hall	Harrogate
James Wier House	Tazewell
Graham-Kivette House	Tazewell
Kesterson-Watkins House	Tazewell
Kincaid House	Speedwell
Kincaid-Ausmus House	Speedwell
McClain-Ellison House	Speedwell

Norris Lake

Claiborne County encompasses the northern portion of Norris Lake. Norris Lake is famous for water-based recreation. Numerous marinas provide amenities for water sports such as cruising, water skiing and boating. The clean and deep water of Norris Lake contains over 56 species of fish and hosts a number of competitive fishing tournaments. Located near Norris Lake,

Woodlake Golf Course is a four-star rated course featuring with bent grass greens, Bermuda fairways, fescue roughs and several holes along picturesque Norris Lake.

Howard H. Baker Jr. Center for Public Policy – January 9, 2015

Tazewell Speedway

Tazewell Speedway, built in 1965, is one of the country's most famous 1/3 mile dirt race tracks. Known for its extremely steep banked turns, Tazewell Speedway hosts competitive dirt track races from March to October.

Abraham Lincoln Library and Museum

The Abraham Lincoln Library and Museum is located on the campus of Lincoln Memorial University in Harrogate. The facility houses one of the most diverse Lincoln and Civil War collections in the country including Lincoln artifacts and approximately 30,000 books, manuscripts and photographs about the Civil War period.