



Coal Production and Employment in the Appalachian Region 2000-2023

Appalachian Regional Commission

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Executive Summary

This report provides an update on coal production and employment in the Appalachian Region from 2000 through 2023. High level takeaways are as follows:

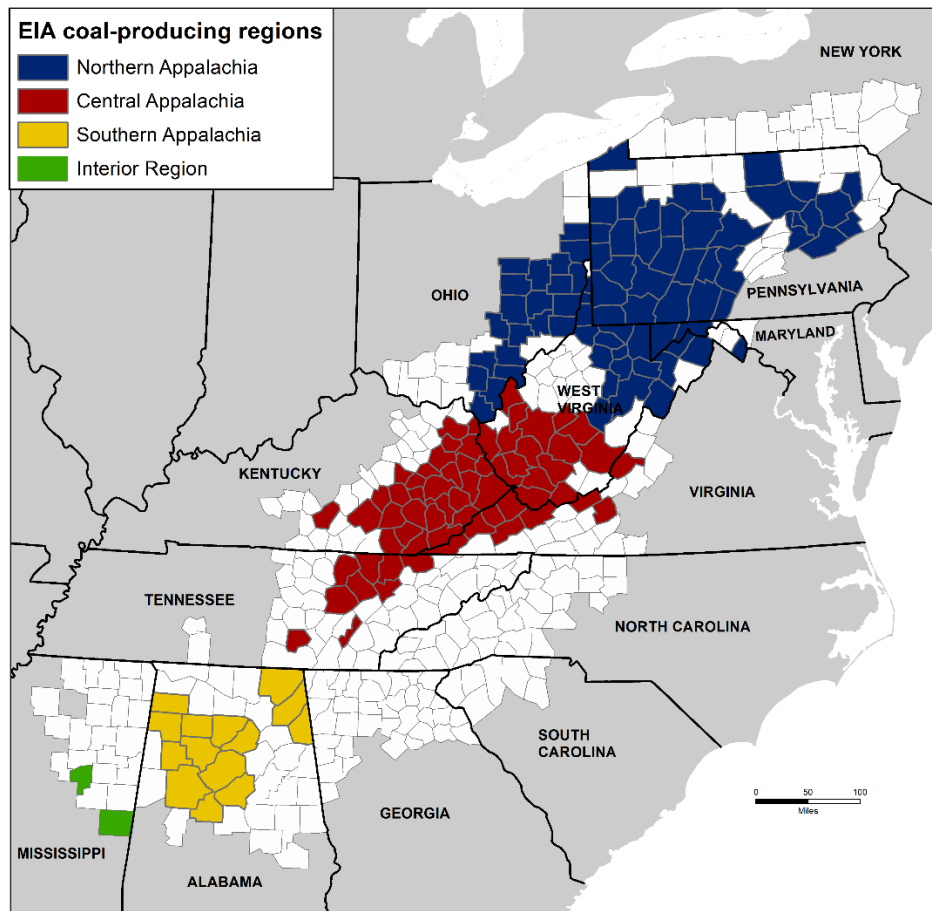
- Coal production has declined in both the Appalachian Region and the rest of the United States since 2000. Considering data for 2000-2023, production peaked in 2001 in Appalachia and in 2008 for the rest of the country. Since these recent highs, there have been decreases of 61 percent in Appalachia and 47 percent in the non-Appalachian U.S., respectively.
- A large portion of these declines have taken place over the past decade. From 2011 to 2023, Appalachia saw a decline in coal production of 50 percent; in the rest of the country, the decline was 46 percent.
- Despite these longer-term downward trends, there has been a slight uptick in coal production over the past few years. Production in Appalachia increased from approximately 142 million short tons in 2020 to 168 million short tons in 2023, an increase of 18 percent. The rest of the country experienced a more moderate increase over the time period, going from 394 million to 410 million short tons, an increase of 4 percent.
- Production within the region has shifted dramatically over the past two decades. Central Appalachia used to account for the majority of coal production in the region: in 2001 and 2002, the subregion produced 63 percent of the region's coal. By 2023, this figured had dropped to 38 percent. Northern Appalachia has accounted for the largest share of the region's production since 2014, with the subregion's share rising to as high as 58 percent in 2021. (Note: these subregions refer to the EIA's definition of coal-producing regions and do not align with ARC's five-subregion classification system.)
- Coal employment has declined in both the Appalachian Region and the rest of the United States since 2000. During the 2000-2023 period, employment peaked in 2011 in Appalachia (60,228 workers) and in 2012 for the rest of the country (32,158). Since then, considering data for 2023, there have been drops of 54 percent in Appalachia and 44 percent in the non-Appalachian U.S.
- Coal employment was lowest in the region in 2021, at 23,130 workers. Over the next two years, the region saw an increase of 21 percent, with coal employment reaching 28,000 in 2023. The rest of the country saw a smaller increase of 7 percent from 2021 to 2023, with employment increasing from 16,871 to 17,976 workers.

Introduction

This brief report examines coal production and employment trends in the Appalachian Region from 2000 to 2023, along with comparative analysis for the non-Appalachian U.S. The report relies on mine-level data from the U.S. Mine Safety and Health Administration (MSHA), gathered and compiled for the Appalachian Regional Commission by EconAlyze, LLC.

In addition to the region-wide analysis, the report also features subregion-level analysis. However, unlike other ARC research reports, which feature a five-part subregion classification system, this report uses the Energy Information Administration (EIA)'s definition of coal-producing regions, which includes three in Appalachia: Northern, Central, and Southern Appalachia. Below, Figure 1 shows all counties in the region that produced coal in any year from 2000 to 2023, along with their respective classifications in EIA's coal-producing regions.

Figure 1: Appalachian counties in EIA's coal-producing regions



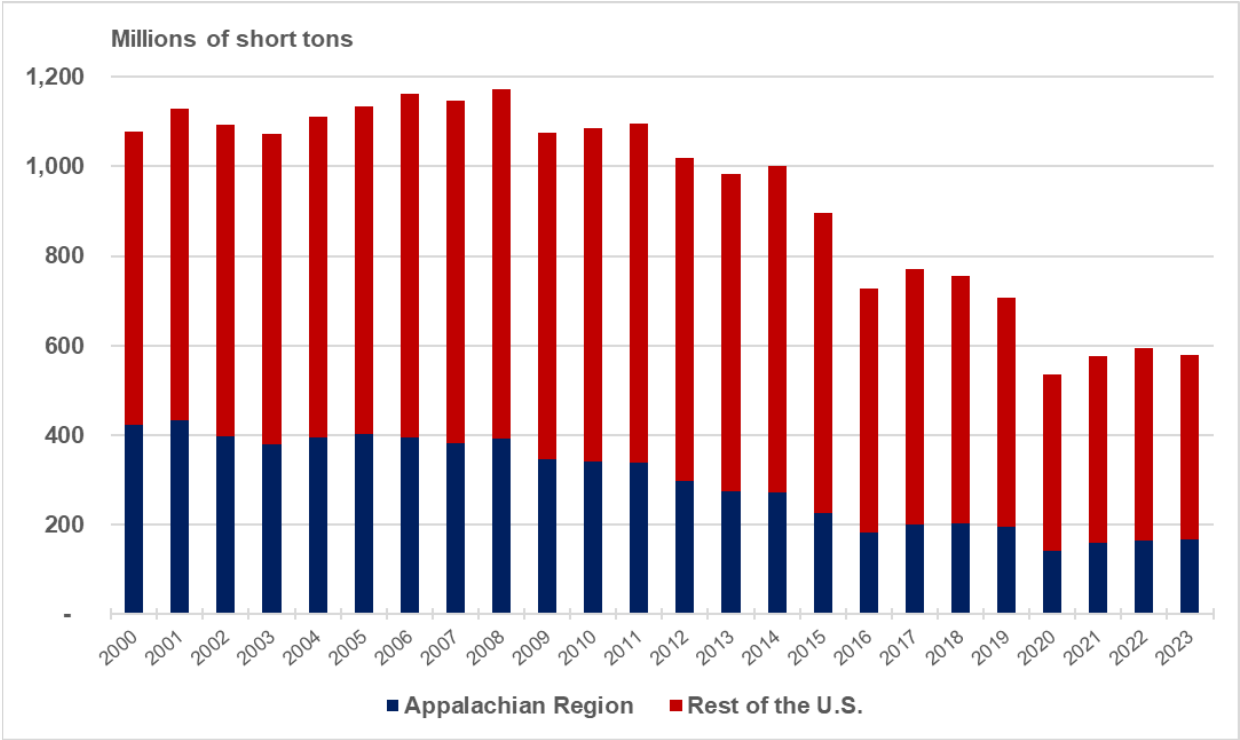
Sources: U.S. Mine Safety and Health Administration (MSHA); U.S. Energy Information and Administration (EIA). Note: two coal-producing counties in Appalachian Mississippi—Choctaw and Kemper—are classified by EIA as being within the Interior Region. These counties are included in region-wide totals but are excluded from the subregion-level analysis. County-level production and employment data are available in the report's accompany spreadsheet.

Coal Production

Looking at trends since the turn of the century, as seen in Figure 2, coal production in Appalachia peaked in 2001, at 433 million short tons. In the rest of the United States, production peaked in 2008, at 779 million short tons. Since then, despite some year-over-year increases for both geographies, there has been a downward trend in production. Compared to these recent highs, 2023 production levels in Appalachia (168 million short tons) and the rest of the country (410 million short tons) were 61 percent and 47 percent lower, respectively.

More recently, there was a sharp drop in coal production from 2019 to 2020, as the COVID-19 pandemic weighed heavily on already declining numbers. While production has increased in Appalachia each year since 2020, the production level in 2023 was still well below recent highs. The rest of the country, after seeing increases from 2020 to 2022, saw a decline in coal production in 2023. Compared to 2019 figures, both Appalachia and the rest of the United States had much lower coal production levels in 2023: 14 percent and 20 percent lower, respectively.

Figure 2: Coal Mining Production, Appalachia and the Rest of the United States

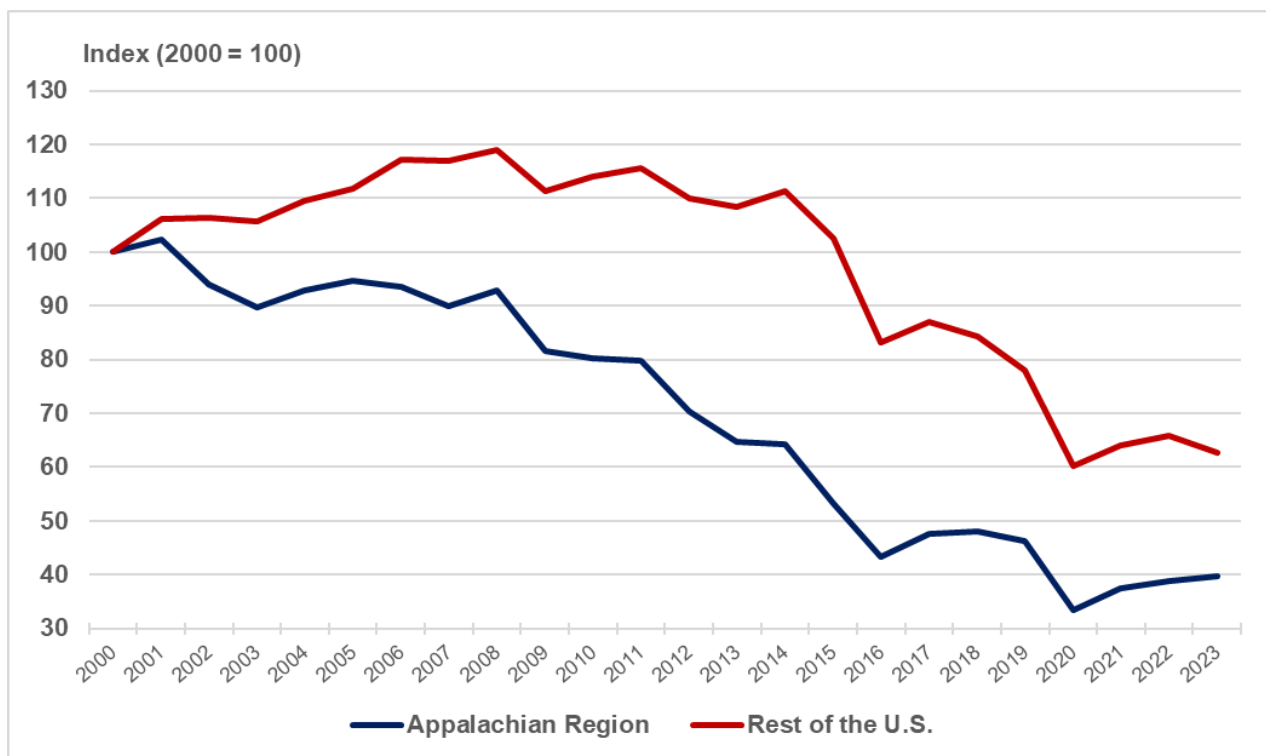


Source: U.S. Mine Safety and Health Administration (MSHA)

Figure 3 tracks how coal production in Appalachia and the rest of the United States has changed over the past two-plus decades, relative an initial indexed year (2000). As can be seen, from 2000 to 2023, coal production dropped more sharply in Appalachia than elsewhere in the country.

While coal production increased in the region from 2000 to 2001, there has been a downward trend since then, and in 2023, Appalachia's production level was just 40 percent of what it was in 2000. The rest of the country saw higher coal production levels through 2015—relative to its production level in 2000—but then production dropped sharply in 2016 and has been mostly declining ever since. For the non-Appalachian U.S., its production level in 2023 was 63 percent of what it was in 2000.

Figure 3: Coal Mining Production, Appalachia and the Rest of the United States



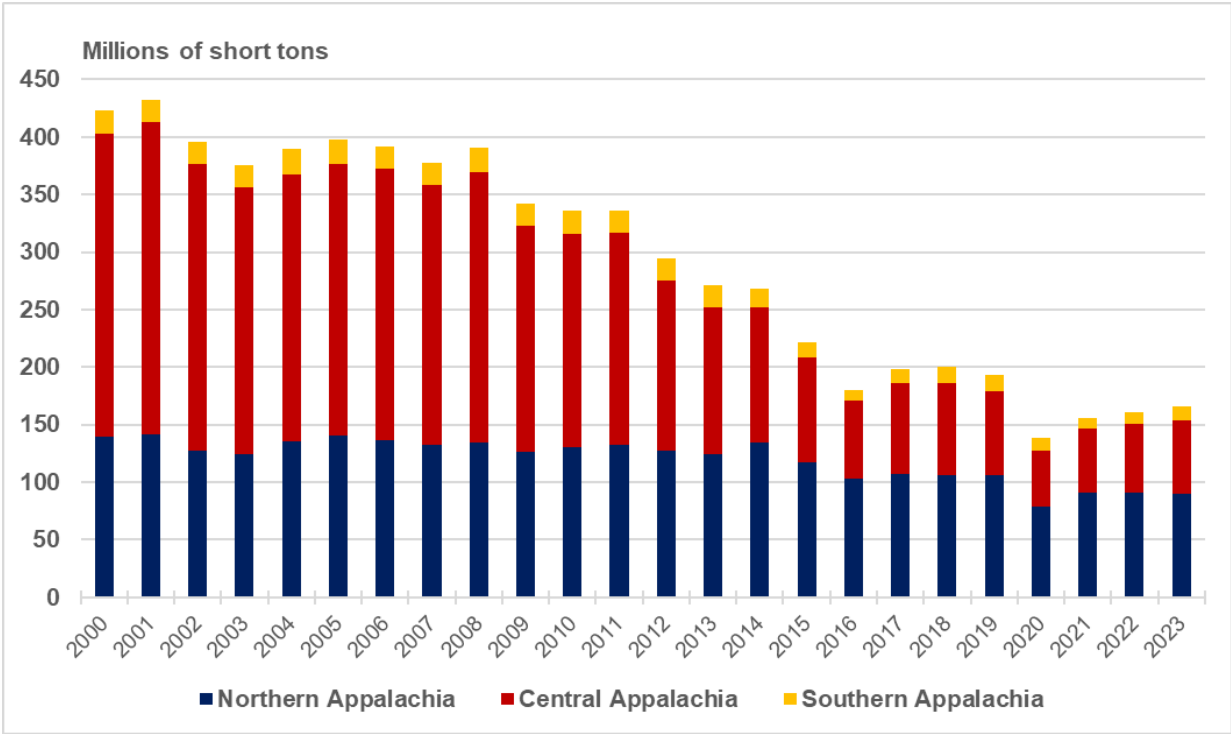
Source: U.S. Mine Safety and Health Administration (MSHA)

Figure 4 shows how production has changed across the three coal-producing Appalachian subregions from 2000 to 2023. Northern and Central Appalachia have accounted for the majority of coal production in the region, ranging from 91 to 95 percent of the region’s total production over the time period.

However, there has been a significant shift in terms of where coal is produced in Appalachia. Early on in the time period, Central Appalachia accounted for approximately twice the amount of production as Northern Appalachia. For example, in 2003, production in Central Appalachia was 231 million short tons; in Northern Appalachia, it was 125 million short tons.

In 2014, however, Northern Appalachia produced more coal (134 million short tons) than Central Appalachia (117 million short tons) for the first time in the period considered—and this has been the case for every year since. In 2023, Northern Appalachia produced 90 million short tons, compared to 63 million short tons in Central Appalachia and 12 million short tons in Southern Appalachia.

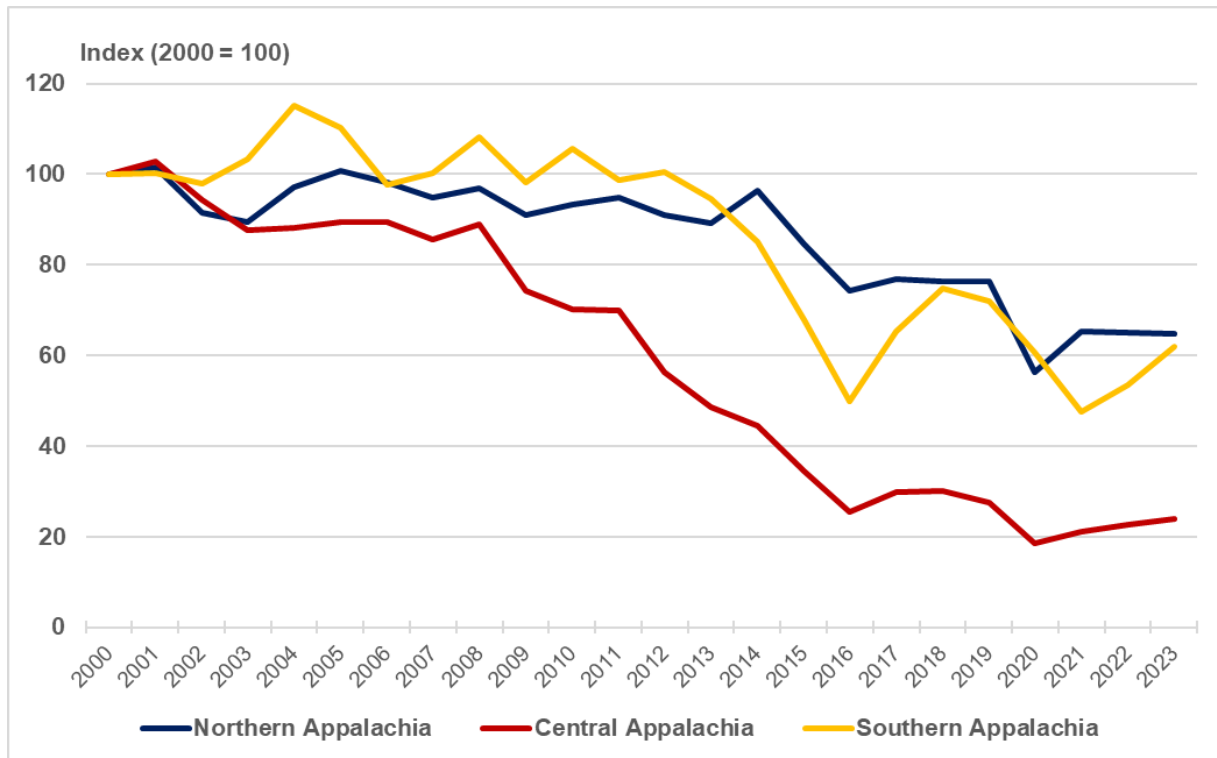
Figure 4: Coal Mining Production, Appalachian Coal-Producing Subregions



Source: U.S. Mine Safety and Health Administration (MSHA)

Figure 5 sheds more light on these shifting coal production patterns within the region. While both Northern and Southern Appalachia have seen steady declines in coal production over the past two decades, Central Appalachia has seen a particularly sharp drop in production: its 2023 production level was just 24 percent of its 2000 level. In other words, coal production in Central Appalachia is now just one-quarter of what it was at the turn of the century. This compares to figures of 65 percent and 62 percent, respectively, for Northern and Southern Appalachia.

Figure 5: Coal Mining Production, Appalachian Coal-Producing Subregions



Source: U.S. Mine Safety and Health Administration (MSHA)

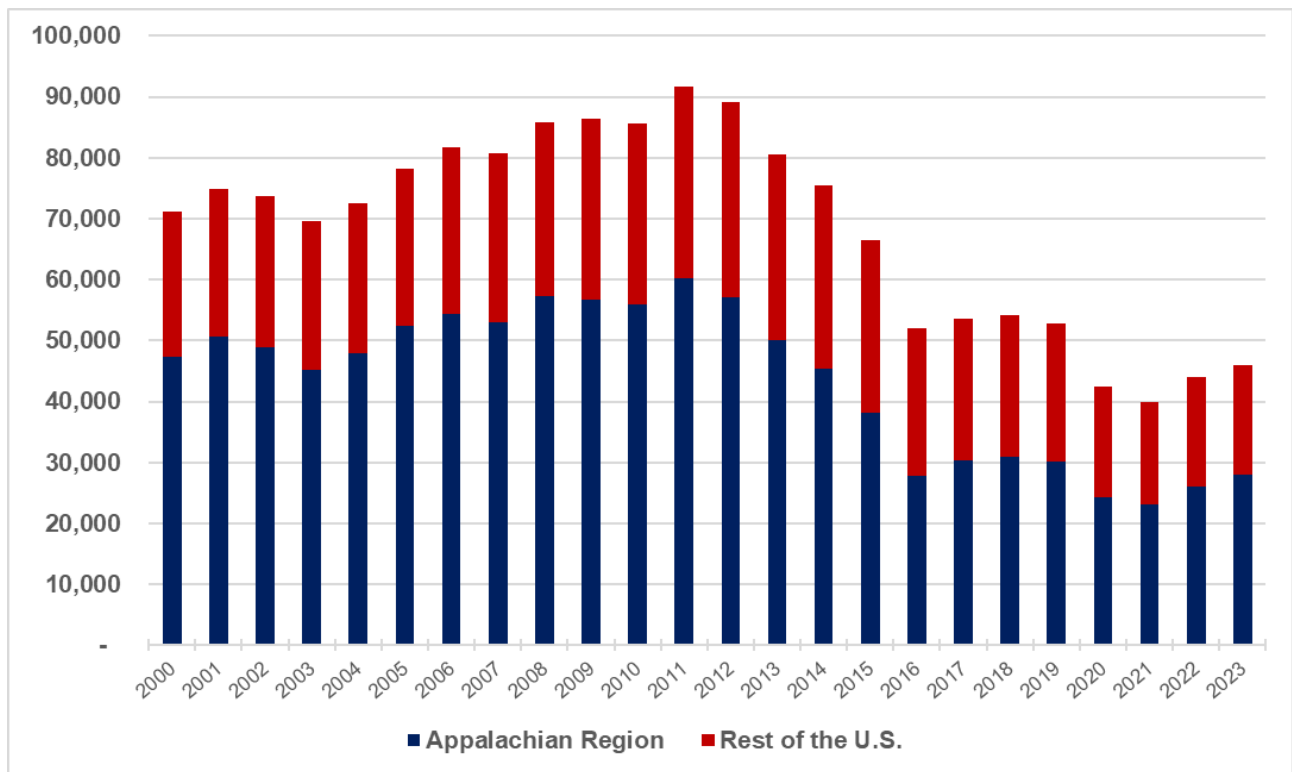
Coal Mining Employment

Turning to coal mining employment, trends in Appalachia and the rest of the country have been similar to those for production: long-term downward trends with occasional year-over-year increases. However, peaks in employment levels during the 2000-2023 time period were more recent than the peaks in production. Coal mining employment was at its highest level in 2011 for Appalachia (60,228 workers) and in 2012 for the rest of the country (32,158). Since these recent peaks, 2023 data show there have been drops of 54 percent in Appalachia and 44 percent for the non-Appalachian U.S., respectively.

Coal mining employment was lowest in the region in 2021, at 23,130 workers, though there was an increase of 21 percent over the next two years, with employment in the industry reaching 28,000 workers in 2023. The rest of the country saw a smaller increase of 7 percent from 2021 to 2023, with coal mining employment increasing from 16,871 to 17,976 workers.

Despite these recent increases, coal mining employment levels in both geographies were lower in 2023 than in 2019, the last “pre-pandemic” year of data.

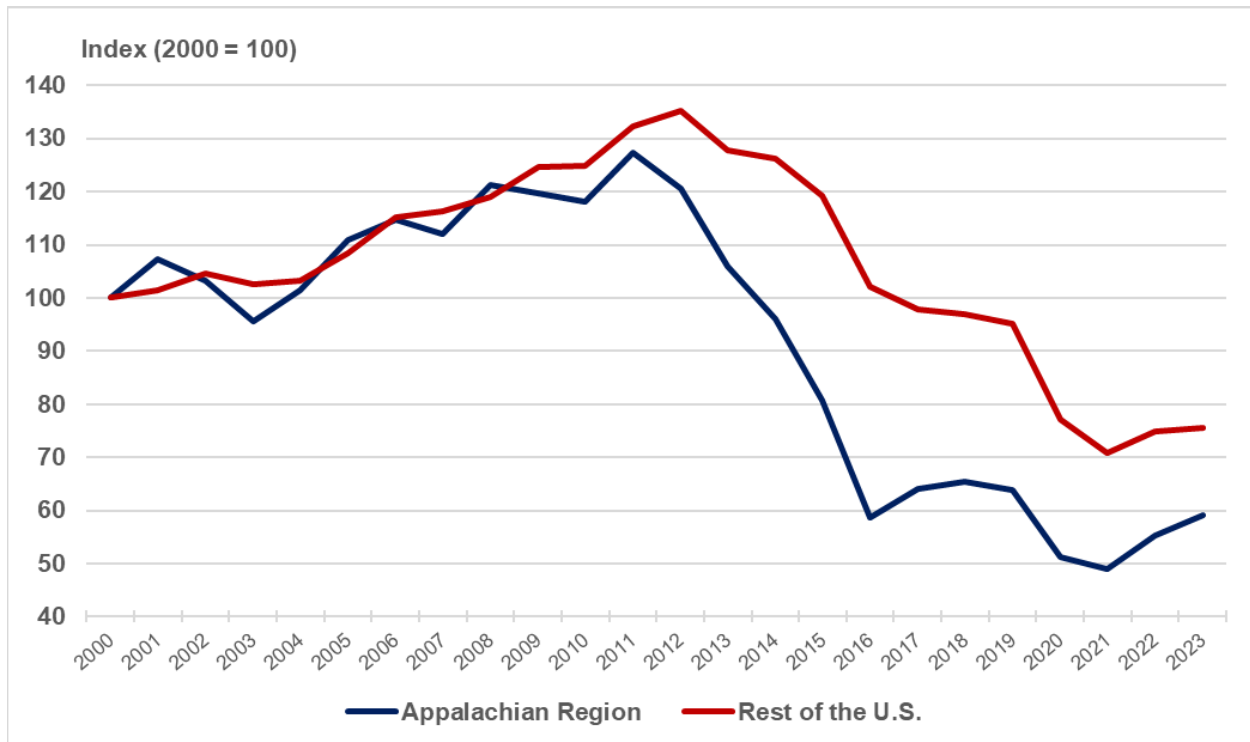
Figure 6: Coal Mining Employment, Appalachia and the Rest of the United States



Source: U.S. Mine Safety and Health Administration (MSHA)

Figure 7 tracks how coal mining employment has changed in Appalachia and the rest of the country over the past two-plus decades, relative to an initial indexed year (2000). The region and non-Appalachian U.S. saw general increases in employment for the first half of the time period, reaching peaks in 2011 and 2012, respectively. Since then, however, coal mining employment in Appalachia has declined more sharply than that in the rest of the country. In 2023, coal mining employment in the region was just 59 percent of its 2000 level; in the rest of the country, this figure was 76 percent.

Figure 7: Coal Mining Employment, Appalachia and the Rest of the United States

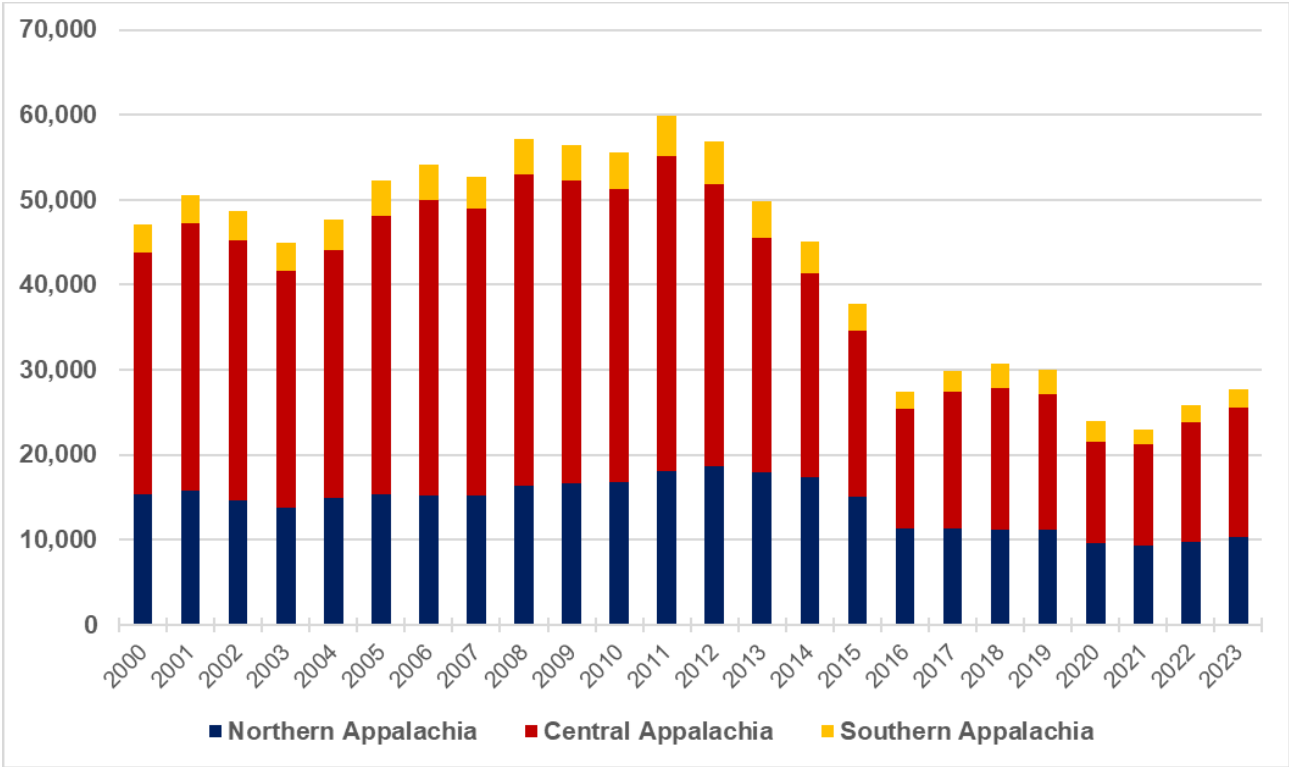


Source: U.S. Mine Safety and Health Administration (MSHA)

Figure 8 shows how coal mining employment has changed in the Appalachian coal-producing subregions from 2000 to 2023. The majority of the region’s employment in the coal industry has been found in Northern and Central Appalachia, with these two subregions accounting for anywhere from 90 to 93 percent of Appalachia’s total employment in the industry over the time period.

Similar to production, Central Appalachia’s share of coal mining employment has declined over the past two decades, though the decrease hasn’t been quite as sharp—and the Central subregion does still have the largest coal mining employment level among subregions (whereas Northern Appalachia has produced more coal than any subregion since 2014). In 2023, Central Appalachia had 15,259 workers employed in the industry (55 percent of the region’s total), compared to 10,289 in Northern Appalachia (37 percent) and 2,210 in Southern Appalachia (8 percent).

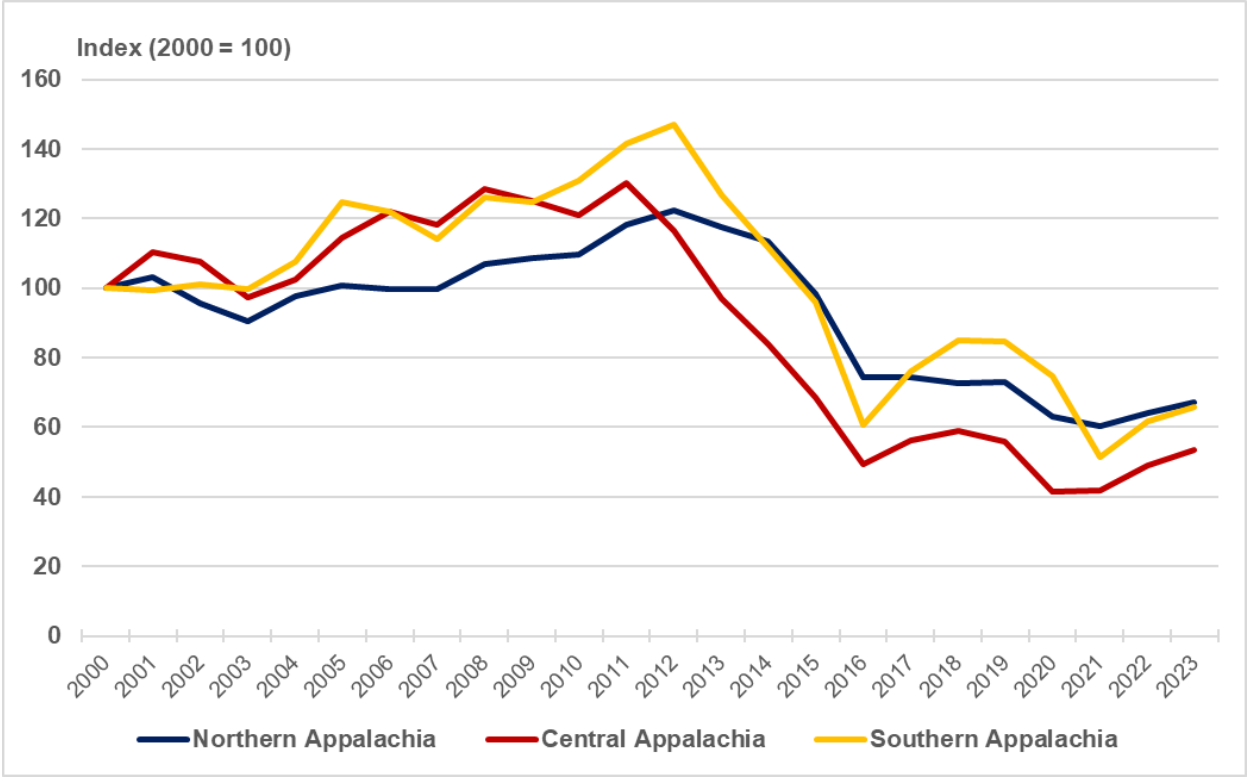
Figure 8: Coal Mining Employment, Appalachian Coal-Producing Subregions



Source: U.S. Mine Safety and Health Administration (MSHA)

Figure 9 shows coal mining employment levels for the three subregions, relative an initial indexed year (2000). All three subregions followed similar patterns from 2000 to 2023, though the decline for Central Appalachia has been slightly more pronounced. In 2023, its coal mining employment level was just 54 percent of its 2000 figure; this compares to 67 percent and 66 percent for Northern and Southern Appalachia, respectively.

Figure 9: Coal Mining Employment, Appalachian Coal-Producing Subregions



Source: U.S. Mine Safety and Health Administration (MSHA)