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# The Role of Public Benefits in Supporting Workers and Communities Affected by Energy Transition

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# About The Project

This report is the third in a series prepared by Resources for the Future (RFF) and the Environmental Defense Fund (EDF) that examines policies and programs to promote fairness for workers and communities in a transition to a low–greenhouse gas emissions economy, often referred to as a just transition (JT). The series looks at existing public policies and programs, grouped thematically as “tools in the toolbox” for policymakers seeking effective strategies to address challenges associated with the transition. We focus on policies and programs that can support workers and communities in regions where coal, oil, and natural gas production or consumption has been a leading employer and driver of prosperity. Other reports in the series present illustrative cases in the United States and describe policy innovation abroad.

This report focuses on federal public benefits programs, including some industry-specific programs that receive federal support. Please visit [www.rff.org/fairness-for-workers-and-communities/](http://www.rff.org/fairness-for-workers-and-communities/) and [www.edf.org/ensuring-fairness-workers-clean-economy](http://www.edf.org/ensuring-fairness-workers-clean-economy) for more information, including other reports in the series, blog posts, and more.

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# Abbreviations

ARC	Appalachian Regional Commission
ARRA	American Recovery and Reinvestment Act
BLDTF	Black Lung Disability Trust Fund
CHIP	Children’s Health Insurance Program
DOL	US Department of Labor
ETA	Employment and Training Administration (DOL)
FERS	Federal Employees Retirement System
FPL	federal poverty level
GDP	gross domestic product
HHS	US Department of Health and Human Services
OECD	Organisation for Economic Co-operation and Development
POWER	Partnerships for Opportunity and Workforce and Economic Revitalization initiative
SNAP	Supplemental Nutrition Assistance Program (USDA)
SSA	Social Security Administration
SSI	Supplemental Security Income
TANF	Temporary Assistance for Needy Families
UI	Unemployment Insurance
UMWA	United Mine Workers of America
USDA	US Department of Agriculture
VA	US Department of Veterans Affairs
VHA	Veterans Health Administration (VA)

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# 1. Executive Summary

Communities that are heavily dependent on fossil fuel–related economic activity—including the production, transformation, and consumption of coal, oil, and natural gas—will continue to experience substantial economic effects during the societal shift away from such fuels. This report seeks to understand how public benefits programs may play a role, alongside other programs, in delivering relief to affected workers and communities and providing a foundation on which they can thrive in a low-emissions future.

It is important to recognize that most US public benefits programs are not designed for the sustained transition of the energy sector, and therefore they cannot guarantee a fair economic future for energy communities on their own. Furthermore, many public benefits programs are designed to assist only those individuals with the greatest financial need and might not apply to many energy workers. However, it is critical for policymakers to understand which public benefits are best positioned to support fossil fuel workers and their broader communities facing economic shocks. Preservation or expansion of these benefits may complement the more tailored policy tools that we discuss in the other reports in this series, including government investments in economic development, workforce development, environmental remediation, and infrastructure.

In discussing public benefits programs, we refer to federal programs and policies that distribute resources to smooth economic volatility and guarantee a basic level of economic security and well-being for individuals and households. Many of these policies serve as the first line of defense for any individuals or communities facing economic hardship (i.e., the social safety net). Furthermore, general benefits programs can interact meaningfully with interventions designed specifically to support communities in transition. The following report reviews benefits programs overseen by the US Departments of Labor, Health and Human Services, Agriculture, and Veterans Affairs, as well as the Social Security Administration and Pension Benefit Guaranty Corporation. At the time of this writing, several of these programs are undergoing significant changes and increased scrutiny as the United States grapples with the economic and public health impacts of the COVID-19 pandemic.

For ease of analysis, we group public benefits programs into two categories based on eligibility criteria: (1) national **social safety net** programs, which are broadly applicable across all populations, and (2) **industry-specific benefits**.

Perhaps more than any other report in this series, our review of public benefits programs ventures into territory beyond energy and climate policy. We confine our analysis to the role public benefits have played, or could play, in ensuring fairness for workers and communities in the transition to a low-carbon economy. This report does not delve into or purport to assess the current debate over the overall costs and benefits associated with public benefits programs.

## 1.1. Insights and Implications

In this report, we describe relevant public benefits programs and, where available, review existing evidence from the peer-reviewed literature on the effectiveness of such programs. Based on this review, we draw eight insights that can help inform policy to support communities affected by a long-term shift away from fossil energy:

1. Public benefits programs have received limited treatment within the literature on fairness for workers and communities dependent on fossil fuels, but because the economic impacts of an energy transition will not be distributed evenly, policies that redistribute resources from those who benefit to those who bear costs are relevant. **The effectiveness of public benefits programs and the potential effects of reform or expansion are of critical concern for researchers and policymakers seeking to understand how to support communities in transition.**
2. **Social safety net programs contribute to fairness for fossil fuel workers in transition today, and their role will likely grow in the context of an accelerated energy transition.** Social safety net policies improve individual economic security and household well-being. In the context of a decline in local energy production, social safety net programs can help improve economic security and health for individuals and families facing job displacement. **Policymakers should recognize that regions with weaker social safety nets may require more robust interventions in a transition context, and vice versa.**
3. Benefits programs that automatically expand in times of economic hardship, known as automatic stabilizers—including Unemployment Insurance, the Supplemental Nutrition Assistance Program (SNAP), and Medicaid—have been successful at smoothing local consumption. Although there is limited empirical evidence on outcomes in fossil fuel-producing communities, the broader literature suggests that **automatic stabilizers can contribute to fairness for fossil fuel-dependent communities by dampening economic shocks.** There may also be opportunities to strengthen these policies to be more responsive to regionally concentrated economic shocks or to waive stringent eligibility criteria that may limit accessibility for fossil fuel communities, such as SNAP work requirements.
4. In contrast, Medicare and Social Security are not currently designed to respond to economic shocks and are unlikely to transfer significant resources to regions negatively affected by a transition away from fossil fuels. **However, they may be of increased importance for individual workers at risk of losing industry-specific health and retirement benefits.** A recent proposal to expand Medicare benefits to displaced coal workers, the Marshall Plan for Coal Country Act of 2020, offers one idea for tailoring social insurance programs for energy communities.



5. Many federal social safety net programs are means-tested (meaning they assess eligibility based on income or financial status) or require individuals or states to opt in. As a result, access is often limited by stringent eligibility requirements, state political choices, a lack of public information, or other institutional barriers. Social safety net policies that are means-tested also may be less directly applicable to miners and utility workers, who tend to have above-average incomes—though they may apply to other workers and community members who are indirectly affected by fossil fuel divestment. **Therefore, expanding program eligibility, access, and utilization could contribute to fairness for workers in the transition to a clean economy.**
6. Despite the usefulness of broad-based social safety net programs in certain contexts, our review suggests that these policies, even in an expanded form, cannot address all the needs of fossil fuel communities. **Additional, targeted policies will likely play a significant role in ensuring fairness for these communities**, because they can be deployed in direct response to the specific needs of fossil fuel–producing regions facing economic contraction. In other reports in this series, we discuss many of these more targeted policy tools. **However, existing social safety net programs can reduce the burden placed on targeted policy, which is often held up by the political process.**
7. Industry-specific pension and health benefits can contribute to individual well-being and community economic stability. With more than \$1 billion in authorized transfers to coal pension and health benefits alone in 2020, they also account for the lion’s share of targeted federal support to fossil fuel workers and communities. However, programs that depend on revenue from fossil fuel production have proven unsustainable in the context of industry decline and company bankruptcy. **Policymakers who hope to preserve these benefits may consider developing a more sustainable source of funding and reforming bankruptcy processes to hold companies accountable.**
8. **Other industry-specific programs may provide a helpful model to support workers and communities in transition.** For instance, the Veterans Health Administration (VHA) offers health care to a specific group of workers that share some characteristics with fossil fuel workers, including high occupational risk hazards, high rates of disability, and large numbers of workers facing transition. The program is considered successful because of its integrated structure and specialized medical capacity on issues of concern for veterans. Policymakers may look to the VHA as a model for designing an analogous program for the fossil energy workforce or consider extending coverage of the VHA or other federal health care programs to energy workers.

## 2. Introduction

Communities that are heavily dependent on fossil fuel–related economic activity—including the production of coal, oil, and natural gas and the transformation and consumption of these fuels—will experience substantial economic effects of a societal shift away from fossil fuels. That shift is, and will continue to be, prompted by increasingly competitive low-carbon energy sources such as wind, solar, and geothermal, along with public policies that drive reductions in greenhouse gas (GHG) emissions. As policymakers consider approaches to deeply reduce emissions and avoid the most dramatic impacts of climate change, it is critical to consider policies that enable affected communities to thrive in a low-emissions future.

The concept of fairness for workers and communities—language we borrow from the BlueGreen Alliance—suggests that deep reductions in GHG emissions should not disproportionately burden certain segments of society that are heavily dependent on the production, transformation, and use of fossil fuels (BlueGreen Alliance 2020). This is commonly referred to as a just transition (JT). The term just transition has a range of meanings in various forums, with one of the more widely cited definitions coming from the International Labour Organization’s “Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All” (ILO 2015). To maintain consistency with academic literature and major domestic and international policies, such as the Paris Agreement, we use the JT term throughout this series, and in so doing, we reference the concept of fairness for workers and communities provided by BGA.

The purpose of this review is to understand the possible role of public benefits programs in supporting fairness for workers and communities. We examine existing federal policies that redistribute resources—across households or temporally—in order to guarantee basic economic security, health, and well-being, and we assess the available evidence on program effectiveness. It is important to recognize that most US public benefits programs are not designed for the sustained transition of the energy sector, and therefore they cannot guarantee a fair economic future for energy communities on their own. However, many of these programs form the first line of defense for any individuals or communities facing economic hardship (i.e., the social safety net). Preservation or expansion of these benefits may complement the more tailored policy tools that we discuss in the other reports in this series.

At the time of this writing, the COVID-19 pandemic is dramatically affecting the global economic, policy, and social landscape. This includes significant effects on the energy sector, particularly the oil and coal industries (IEA 2020). The pandemic also has prompted significant changes to some of the public benefits programs that we discuss here, such as Unemployment Insurance. As the United States and the world emerge from the pandemic and associated recession, issues surrounding the JT concept may become even more prominent, as policymakers consider whether, and to what extent,

economic recovery efforts will focus on supporting affected energy communities.

Perhaps more than any other report in this series, this report on public benefits programs ventures into territory beyond energy and climate policy, and therefore beyond the authors' core expertise. Rather than attempt to review the extensive literature on these programs, we instead focus on highlighting the role these programs have played, and could play, in the JT context. Furthermore, we acknowledge the robust, ongoing conversation about the nature of the American social contract. Where possible, we highlight where that conversation may have important implications for fossil fuel-dependent communities in transition. Table 1 provides a summary of the public benefit policies and programs that we examine in this report.

**Table 1. Summary of Public Benefit Policies and Programs Examined in This Report**

	<b>Program name</b>	<b>Federal administrator</b>	<b>State run?</b>	<b>Means tested?<sup>a</sup></b>	<b>Primary benefit</b>	<b>Primary target</b>	<b>FY2019 spending (\$B)<sup>b</sup></b>
<b>Social safety net programs</b>	Social Security	US Social Security Administration	No	No	Retirement and disability benefits	Retirees	\$1,044
	Medicare	US Dept. of Health and Human Services	No	No	Health care	Retirees	\$651
	Medicaid	US Dept. of Health and Human Services	Yes	Yes	Health care	Low-income families	\$427
	Supplemental Nutrition Assistance Program (SNAP)	US Dept. of Agriculture	Yes	Yes	Economic security	Low-income families	\$63
	Supplemental Security Income (SSI)	US Social Security Administration	No	Yes	Economic security	Aged, disabled, or blind individuals	\$53
	Unemployment Insurance	US Dept. of Labor	Yes	No	Economic security	Unemployed workers	\$41 <sup>c</sup>
	Temporary Assistance for Needy Families (TANF)	US Dept. of Health and Human Services	Yes	Yes	Economic security	Low-income families with children	\$17 <sup>d</sup>
<b>Industry-specific benefits</b>	Federal Employees Retirement System (FERS)	US Office of Personnel Management	No	No	Retirement benefits	Retired federal civil service employees	\$88 <sup>e</sup>
	Veterans Health Administration (VHA)	US Dept. of Veterans Affairs	No	No	Health care	Military veterans	\$80
	Black Lung Disability Trust Fund (BLDTF)	US Dept. of Labor	No	No	Health care	Coal workers	\$0.4
	UMWA Health and Retirement Funds	United Mine Workers of America	No	No	Retirement benefits	Retired coal workers	\$0.3 <sup>f</sup>

<sup>a</sup>Means-tested programs assess eligibility based on income or financial status, or whether the individual has the means to do without government assistance.

<sup>b</sup>Many public benefits programs leverage both federal and state funds. The numbers in this column represent the fiscal year 2019 federal outlays, as reported by OMB (2020), unless otherwise indicated. They may not represent the full scale of the program as enacted by the states.

<sup>c</sup>We expect a significant increase in unemployment insurance (UI) expenditures in FY2020 as a result of the CARES Act, which expanded UI benefits eligibility and temporarily increased compensation by \$600 per week in response to the coronavirus pandemic (DOL 2020d). Increased benefits payments are covered by transfers from the General Fund of the US Treasury, with no requirement for repayment.

<sup>d</sup>Data from HHS (2020a)

<sup>e</sup>Data from Isaacs (2019). The Federal Employees Retirement System is funded through employer and employee contributions, not congressional appropriations. These contributions amounted to \$104 billion in FY2019.

<sup>f</sup>Data from DOI (2020). Includes interest and transfers from the US General Fund. As of 2020, the cap in authorized transfers from the US General Fund is \$750 million.

## 2.1. Scope of this Review

Policymakers have long sought tools that would quickly stabilize the economy against dramatic and unpredictable shocks and transfer resources within a society to ensure a basic level of security and well-being. These tools are often clustered together as the social safety net, the set of broad-based benefits guaranteed to a society's residents. Just as these broad benefits attempt to provide economic security at a national level, benefits within specific industries attempt to provide security specifically for workers and their families. Both sets of benefits—the **social safety net** and **industry-specific benefits**—can influence the ability of workers and communities to survive and ultimately thrive in the transition to a low-emissions economy. Policies that fall into these two categories form the basis of our review.

Entire research institutions are dedicated to understanding how social safety nets are implemented and how policymakers can tweak or reform programs to deliver greater benefits or reduce expenditures. The full range of social safety net programs may be construed to include the earned income tax credit (EITC), housing assistance, and more. It is worth noting that, taken as a whole, these programs have been shown to significantly reduce deep-poverty, poverty, and near-poverty rates in the United States (Ben-Shalom et al. 2011). However, given the focus of this series on federal policy to enable fairness for workers and communities, we cover a narrower set of existing programs at the federal level that we have judged to be most relevant to the JT context, as well as policies focused specifically on fossil fuel communities.

As we review the empirical literature on the effectiveness of existing programs, we also note where the literature evaluates proposed reforms of these programs that may be relevant to workers and communities in transition, such as Medicaid expansion. We do not closely examine other proposed additions to the social safety net, such as a federal jobs guarantee or universal health care. However, it is worth noting that the United States has a less robust social safety net than many other countries grappling with the energy transition, particularly European states (OECD 2020).

## 2.2. Metrics for Evaluating Program Effectiveness

Since public benefits programs are wide-reaching and account for a significant portion of public spending, they affect every facet of the economy. Therefore, the potential list of metrics through which we can evaluate the programs' effectiveness is large and diverse. Given our focus on federal policies that can enable a JT for workers and communities, we include a subset of metrics that indicate improvements to the financial security, well-being, and health of individuals alongside the economic well-being of communities. A selection of common metrics cited throughout our review can be found in Table 2.

**Table 2. Common Metrics Cited in This Review**

<b>Outcome</b>	<b>Scale</b>	<b>Policy objectives</b>
Health insurance coverage	Individual	Health benefits
Individual health outcomes	Individual	Health benefits
Change in benefits quantity or access	Individual	Basic economic security, health benefits, retirement benefits
Food security	Individual	Basic economic security
Financial security	Individual	Basic economic security, retirement benefits
Income	Individual	Health benefits, retirement benefits
Program enrollment	Individual	Basic economic security, health benefits, retirement benefits
Unemployment rate	Community	Basic economic security
Fiscal volatility	Community	Basic economic security, health benefits, retirement benefits
Economic volatility	Community	Basic economic security, health benefits, retirement benefits

The most common econometric evaluation method used in this review is difference-in-differences analysis, which identifies a policy intervention—such as the passage of Medicaid expansion—and compares the differences in a particular outcome before and after the policy comes into effect between individuals that received the intervention and those that did not.

### **2.3. Insights and Implications**

Based on our review, we draw eight insights that can help inform future public policy designed to enable communities affected by a long-term shift away from fossil energy to meet their basic needs for economic security and well-being:

1. Public benefits programs have received limited treatment within the literature on fairness for workers and communities dependent on fossil fuels, but because the economic impacts of an energy transition will not be distributed evenly, policies that redistribute resources from those who benefit to those who bear costs are relevant. **The effectiveness of public benefits programs and the potential effects of reform or expansion are of critical concern for researchers and policymakers seeking to understand how to support communities in transition.**

2. **Social safety net programs contribute to fairness for fossil fuel workers in transition today, and their role will likely grow in the context of an accelerated energy transition.** Social safety net policies improve individual economic security and household well-being. In the context of a decline in local energy production, social safety net programs can help improve economic security and health for individuals and families facing job displacement. **Policymakers should recognize that regions with weaker social safety nets may require more robust interventions in a transition context, and vice versa.**
3. Benefits programs that automatically expand in times of economic hardship, known as automatic stabilizers—including Unemployment Insurance, the Supplemental Nutrition Assistance Program (SNAP), and Medicaid—have been successful at smoothing local consumption. Although there is limited empirical evidence on outcomes in fossil fuel-producing communities, the broader literature suggests that **automatic stabilizers can contribute to fairness for fossil fuel-dependent communities by dampening economic shocks.** There may also be opportunities to strengthen these policies to be more responsive to regionally concentrated economic shocks or to waive stringent eligibility criteria that may limit accessibility for fossil fuel communities, such as SNAP work requirements.
4. In contrast, Medicare and Social Security are not currently designed to respond to economic shocks and are unlikely to transfer significant resources to regions negatively affected by a transition away from fossil fuels. **However, they may be of increased importance for individual workers at risk of losing industry-specific health and retirement benefits.** A recent proposal to expand Medicare benefits to displaced coal workers, the Marshall Plan for Coal Country Act of 2020, offers one idea for tailoring social insurance programs for energy communities.
5. Many federal social safety net programs are means-tested (meaning they assess eligibility based on income or financial status) or require individuals or states to opt in. As a result, access is often limited by stringent eligibility requirements, state political choices, a lack of public information, or other institutional barriers. Social safety net policies that are means-tested also may be less directly applicable to miners and utility workers, who tend to have above-average incomes—though they may apply to other workers and community members who are indirectly affected by fossil fuel divestment. **Therefore, expanding program eligibility, access, and utilization could contribute to fairness for workers in the transition to a clean economy.**

6. Despite the usefulness of broad-based social safety net programs in certain contexts, our review suggests that these policies, even in an expanded form, cannot address all the needs of fossil fuel communities. **Additional, targeted policies will likely play a significant role in ensuring fairness for these communities**, because they can be deployed in direct response to the specific needs of fossil fuel-producing regions facing economic contraction. In other reports in this series, we discuss many of these more targeted policy tools. **However, existing social safety net programs can reduce the burden placed on targeted policy, which is often held up by the political process.**
7. Industry-specific pension and health benefits can contribute to individual well-being and community economic stability. With more than \$1 billion in authorized transfers to coal pension and health benefits alone in 2020, they also account for the lion's share of targeted federal support to fossil fuel workers and communities. However, programs that depend on revenue from fossil fuel production have proven unsustainable in the context of industry decline and company bankruptcy. **Policymakers who hope to preserve these benefits may consider developing a more sustainable source of funding and reforming bankruptcy processes to hold companies accountable.**
8. **Other industry-specific programs may provide a helpful model to support workers and communities in transition.** For instance, the Veterans Health Administration (VHA) offers health care to a specific group of workers that share some characteristics with fossil fuel workers, including high occupational risk hazards, high rates of disability, and large numbers of workers facing transition. The program is considered successful because of its integrated structure and specialized medical capacity on issues of concern for veterans. Policymakers may look to the VHA as a model for designing an analogous program for the fossil energy workforce or consider extending coverage of the VHA or other federal health care programs to energy workers.



### 3. Social Safety Net Programs

Definitions of social safety net vary considerably and have evolved over time. The International Labour Organization (ILO) defines a social safety net policy as “a government provided anti-poverty benefit,” one subset of a broader suite of social protections and assistance that may be publicly or privately provided (Paitoonpong et al. 2008). Loprest and Nightingale (2018) of the Urban Institute “define the US social safety net broadly, including ... government programs and policies related to work, legislation regulating work standards, and benefits provided by employers.” For the purposes of this review, we include any policy provided by a government to its constituents to meet their basic needs for economic security, health, and retirement; thus we adopt the ILO’s focus on government-provided benefits and do not include benefits provided by employers.

The social safety net includes the earned income tax credit (EITC), housing assistance, job guarantee proposals, and many other policies that are not covered in this review. Given the focus of this series on federal policy to enable fairness for workers and communities, we examine a narrower set of social safety net programs at the federal level that we have judged to be most relevant to the JT context.

Our review of specific programs yields several insights, which we discuss in detail in subsequent sections and summarize as follows:

- Federal social safety net programs improve individual- and community-level health, economic stability, poverty rates, and food security. In some cases, the benefits of a program for just one of these metrics can justify its cost to society. Efforts to expand these programs, including Medicaid under the Affordable Care Act (ACA) and unemployment insurance through the CARES Act, can increase benefits with limited evidence of adverse outcomes, such as “job lock-in” or moral hazard effects.
- The benefits of social safety net programs classified as automatic stabilizers are well documented on a national scale. (One notable exception within this category is Temporary Assistance for Needy Families [TANF], which has been shown to respond poorly to economic shocks because of its block grant design, restrictive eligibility criteria, and incentives for decreasing caseload.) The sustained decline in fossil fuel employment, particularly coal, and the acute effects of the COVID-19 pandemic on fossil-fuel producing regions, suggest that many workers are likely receiving significant support from these programs today, a phenomenon that will grow as the fossil fuel economy declines.
- Automatic stabilizers, including unemployment insurance, SNAP, and Medicaid, are more likely to play a significant, positive role in ensuring fairness for workers and communities than social insurance programs, such as Social Security and Medicare. Social Security and Medicare may help cushion the blow of potential losses to industry-specific pensions, health care, or disability benefits, but they are not well suited to respond to economic shocks or distribute resources to specific communities, so they are of limited relevance to ensuring fairness for

fossil fuel communities in transition.

- Many federal social safety net programs are voluntary for individuals or, in the case of expanded benefits, states. Access is often limited by local political discretion, a lack of information, or other institutional barriers. For instance, race, educational attainment, and age all influence reciprocity rates of unemployment insurance. Additionally, means-tested programs may be too restrictive to provide significant support to higher-income fossil fuel workers, but they may be of importance for other community members negatively affected by the shift away from fossil fuels. Policy that expands program eligibility, access, and utilization can contribute to fairness for workers in the transition to a clean economy.
- Similarly, the robustness of the social safety net varies by jurisdiction. For instance, Texas and Wyoming, two major fossil fuel-producing states, have not adopted Medicaid expansion under the ACA. Policymakers looking to understand the appropriate scale or design of JT policy should consider this local context.

Four of the social safety net programs covered in this review—Supplemental Nutrition Assistance Program, Temporary Assistance for Needy Families, Medicaid, and Supplemental Security Income—are means-tested programs, meaning that eligibility varies by income. Unemployment Insurance, Social Security, and Medicare are universal social insurance programs, meaning that eligibility is not dependent on income.

SNAP, Medicaid, and UI are also automatic stabilizers. Automatic stabilizers are policies that are tied to economic performance and are thought to balance fluctuations in the economy.<sup>1</sup> Automatic stabilizers fall under the category of mandatory spending in the United States, meaning their budget is determined by demand for the services, rather than an expenditure level set during the appropriations process. Spending on these programs naturally expands in times of economic hardship and contracts in times of economic prosperity, allowing the government to respond quickly to dramatic shocks without congressional action (Blinder 2016). Empirical models of US automatic stabilizer programs find that policies that specifically redistribute resources from the wealthy to the needy have a stabilizing economic effect on US business cycles (McKay and Reis 2013). Table 4 summarizes which programs in our review are means-tested and which are commonly considered automatic stabilizers.

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1 Four key channels are identified in the literature through which automatic stabilizers are thought to smooth spending and decrease economic volatility: disposable income stabilization, marginal spending incentives, redistribution, and social insurance (McKay and Reis 2013). First, stabilizers smooth disposable income through policies like income taxes and sales taxes. Second, stabilizers can alter marginal incentives to spend. Third, stabilizers can play a redistributive role, moving resources from households that are unlikely to use them for consumption to households that will almost certainly use them for consumption, stimulating aggregate demand. Finally, stabilizers are thought to play a role as social insurance, altering the incentives for precautionary saving and smoothing investment resources.

**Table 3. Summary of Social Safety Net Programs Reviewed in This Section**

Program name	Key features and relevance to a just transition
Unemployment Insurance	Provides temporary payments to unemployed individuals based on their previous year’s income. Expansion of UI benefits and eligibility are common responses to economic shocks. In the JT context, UI can temporarily replace wages for individuals displaced by job losses in the fossil fuel industry but is not necessarily responsive to long-term displacement in its current form. At the community level, UI can also improve economic stability by smoothing consumption.
SNAP	Provides benefits to low-income households to purchase food. The program is linked to improved household food security, reduced health expenditures, and increased educational attainment. In the JT context, SNAP may buffer the impacts of an economic shock on the health and economic security of workers and their families, but the means-tested nature of the program suggests that it may be more relevant to lower-wage workers indirectly affected by the fossil fuel industry’s decline than to fossil fuel workers directly.
TANF	Provides block grants to states to flexibly administer cash assistance and other support to families with children (formerly Aid to Families with Dependent Children), with the goals of keeping families intact and promoting work. Since it has stringent eligibility criteria and is not very responsive to economic shocks, TANF is unlikely to play a significant role in a JT context.
Medicaid	Provides health insurance for low-income individuals with limited access to the private health-care market. The ACA enabled an expansion of Medicaid eligibility for workers who fell in the gap between traditional Medicaid and the new health care exchanges. In the JT context, Medicaid may improve health and financial stability of community members negatively affected by a decline in the fossil fuel economy, particularly given the elevated physical and mental health risks faced by fossil fuel-producing communities. However, the means-tested nature of the program suggests that it may be more relevant to lower-wage workers indirectly affected by the fossil fuel industry’s decline than to fossil fuel workers directly.
Social Security	Provides monthly cash payments to retired or disabled workers. In the JT context, Social Security is unlikely to provide significant new resources to fossil fuel communities, though it may be helpful in the event of lost industry-specific retirement or health benefits.
Supplemental Security Income	Provides monthly cash payments to aged, retired, or blind individuals who are otherwise unable to meet their basic needs and receive little to no Social Security income. In the JT context, SSI is unlikely to provide significant new resources to fossil fuel communities, though it may be helpful in the event of lost industry-specific retirement or health benefits.
Medicare	Provides subsidized health insurance for retirement-age individuals, regardless of income. In the JT context, Medicare is unlikely to provide significant new resources to fossil fuel communities in its current form. However, it may be helpful in the event of lost industry-specific health benefits.

**Table 4. Characteristics of Programs Reviewed in This Section**

<b>Program name</b>	<b>Means-tested?<sup>a</sup></b>	<b>Automatic stabilizer?</b>
Unemployment Insurance	No	Yes
SNAP	Yes	Yes
TANF	Yes	No <sup>b</sup>
Medicaid	Yes	Yes
Social Security	No	No
Supplemental Security Insurance	Yes	No

<sup>a</sup>Means-tested programs assess eligibility based on income or financial status, or whether the individual has the means to do without government assistance.

<sup>b</sup>Depending on state eligibility criteria, TANF caseload may expand in times of crisis. However, evidence suggests that this effect is much smaller than seen with UI, SNAP, or Medicaid, and some states may even see decreased caseload in times of crisis. Further, federal block grant funding to states is fixed (see Section 3.3). Thus we do not classify TANF as an automatic stabilizer.

When automatic stabilizers are insufficient to buffer households and communities from an economic downturn, policymakers can consider additional discretionary fiscal policies. Discretionary fiscal policies are policies that are considered and implemented on a case-by-case basis, rather than as a result of existing policies with mandatory spending rules. Compared with other wealthy nations, the United States leans heavily on discretionary fiscal spending in times of crisis (Fatas and Mihov 2012). Discretionary spending is often favored over expanding automatic stabilizers because it enables flexible responses to specific economic needs; for that reason, discretionary fiscal spending will prove important in addressing the unique, regionally concentrated economic impacts of a transition away from fossil fuels. However, it is more beholden to the political process, which can cause delays and hinder effectiveness of the resulting policies. This can be observed in the federal response to the COVID-19 pandemic. While we do not review discretionary fiscal policy in detail in this report, many economists believe expanded automatic stabilizers can reduce the burden on discretionary policy to deliver needed relief (Fatas and Mihov 2012).

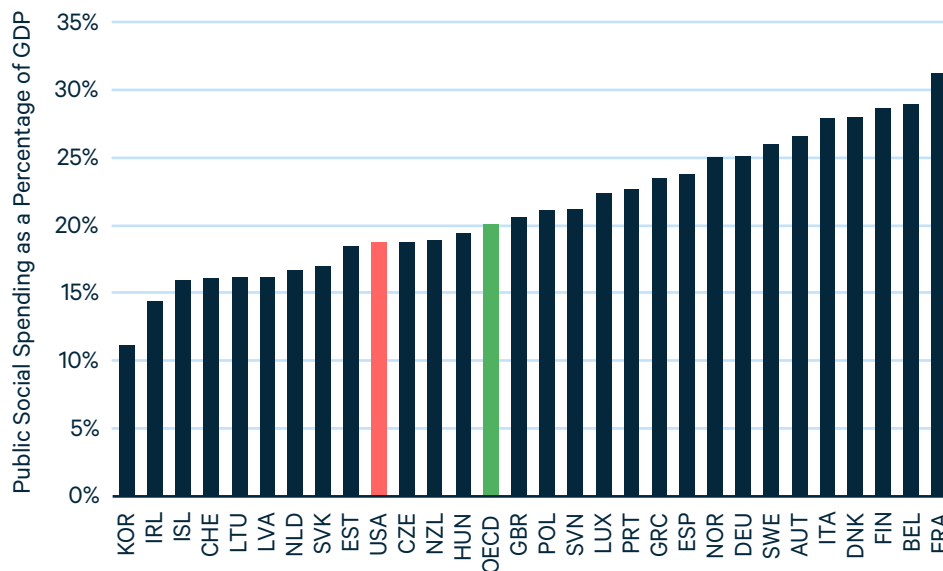
Government-subsidized health care is a central social safety net policy. Beyond the moral and ethical justifications for subsidizing health care, there are economic justifications for doing so. The health of a population is directly tied to its ability to be productive in the economy. For example, increasing access to health care can lead to higher educational attainment and incomes later in life (Currie 2008).

For communities heavily reliant on coal production, Morris and colleagues (2019) find that the decline of coal production has contributed significantly to local and regional

fiscal instability over the past decade, and that dependence on coal creates major fiscal risks moving forward. Similarly, Raimi et al. (2019) find that fluctuations in oil and gas prices and production have contributed to fiscal volatility in regions that rely heavily on the extraction of these fuels. Government spending (through both automatic stabilizers and additional discretionary spending) has been found to have a stabilizing effect on regional economic volatility, though estimates of this stabilizing effect have ranged widely (Melitz and Zumer 2002). The role of government spending in distributing resources to communities in need highlights the relevance of social safety net programs in JT policy discussions.

In a JT context, the extent of existing social safety net programs can help inform the need for additional, more targeted interventions. The United States ranks 21st among Organisation for Economic Co-operation and Development (OECD) nations in social spending as a percentage of GDP, below the OECD average (Figure 1).<sup>2</sup> This suggests that policymakers looking to various jurisdictions—whether international or domestic—for models of successful, targeted JT policies may want to consider disparities in the robustness of support delivered through the social safety net. Jurisdictions with relatively weak social safety nets, such as the United States in comparison with peer nations, may require more targeted JT policy than jurisdictions with stronger social safety nets.

**Figure 1. Public Social Spending as a Percentage of GDP in OECD Countries, 2018**



Data source: OECD (2020).

Notes: The green bar indicates the OECD total. See footnote 2 regarding social spending.

<sup>2</sup> The OECD classifies social spending as compulsory and redistributive government programs with social purposes, which may be cash benefits, in-kind goods and services, or socially focused tax breaks.

Finally, the relative strength of the social safety net may have political implications for the passage of JT policy. From a political economy perspective, failing to support workers negatively affected by an economic change could reduce public support for that change. In one specific example, Scheve and Slaughter (2001) find that fears of job loss explain low levels of support for trade liberalization, but that support increases significantly if trade liberalization is paired with increased public assistance. In the JT context, this suggests that a more robust set of public benefits programs could help mitigate fear and political opposition to the transition away from fossil fuels.

In the following sections, we review prominent social safety net programs in the United States and discuss their potential relevance in providing fairness for workers and communities negatively affected by the transition to clean energy.

### **3.1. Unemployment Insurance**

Unemployment insurance (UI) provides temporary taxable payments to unemployed individuals, typically for a length of 26 weeks based on a percentage of earnings over the most recent year. States levy taxes on employers to finance UI benefits for unemployed workers, while the federal government levies Federal Unemployment Tax Act taxes on employers to finance the administration of state programs. The federal government also funds temporary emergency UI benefits programs. These taxes fill UI trust funds that are “forward funded,” because they build up in periods of growth and are spent down in times of contraction (Stone and Chen 2014). The US Department of Labor’s Employment and Training Administration provides grants to states to administer UI programs and to deliver funds to workers (DOL 2020c). For FY2020, Congress appropriated \$2.5 billion for state grants to administer unemployment insurance (Pascrell 2019).

Workers are eligible for UI if they have been separated from their jobs through no fault of their own and meet their state’s work and wage requirements (CareerOneStop 2020). However, states have flexibility in how they assess UI criteria, how they determine weekly benefit levels, and the length of benefits they deliver (Stone and Chen 2014). As a result, the number of jobless workers who can access UI varies wildly by state, ranging from just 9 percent of jobless workers in Mississippi to 57 percent in Massachusetts (Stone 2020; Leachman and Sullivan 2020).

UI has been periodically expanded in times of economic contraction or crisis. For instance, the Emergency Unemployment Compensation (EUC) program ran from 2008 to 2013, providing 34 weeks of federal unemployment benefits in all states and 53 weeks in states with 8.5 percent or greater unemployment rates. The permanent Extended Benefits (EB) program—which usually provides an extra 13 or 20 weeks to workers in states with severe increases unemployment, with costs split between federal and state governments—received full federal funding from 2009 to 2013 under the American Recovery and Reinvestment Act. This built on regular UI and EUC to theoretically provide up to 99 weeks of UI, though in practice it fell to 73 weeks

(Stone and Chen 2014). The EB program highlights both the potential for temporarily extending UI benefits in times of crisis and the limits of standard UI for addressing long-term, multiyear displacement.

Similarly, UI grants to states saw a significant increase in FY2020 as part of the CARES Act, which expanded eligibility to receive UI benefits, added weeks of benefits, and temporarily provided a federally funded supplement of \$600 per week in response to the coronavirus pandemic (DOL 2020d). The emergency federal benefits have since expired. States that exhaust their trust funds for paying regular benefits automatically receive federal loans financed with general revenue that, if not subsequently forgiven, must eventually be repaid. Federal benefits are financed through general revenue.

### **3.1.1. Evidence on the Benefits of UI and UI Expansion**

At the community level, there is evidence that UI benefits can provide economic stability for communities in transition by providing a more stable income stream during times of unemployment. This enables workers to more easily continue purchasing goods and services, a process referred to in economics as “consumption smoothing” (Gruber 1997). In addition, UI can increase labor productivity and increase GDP because it encourages workers to search for jobs that best match their skills, rather than take the first job that becomes available (Farooq et al. 2020). With a more risk-tolerant workforce, businesses are more able to find employees to staff higher-risk endeavors, further incentivizing innovation (Acemoglu and Shimer 2000). All these effects can contribute to economic stability in fossil fuel-producing regions, particularly in response to a sudden shock that affects a significant portion of the local workforce and economic activity, such as a power plant closure.

UI expansion has been shown to increase individual security and well-being for displaced workers. While the recency of the CARES Act limits our ability to judge its effectiveness, one notable study from Karpman and Acs (2020) evaluated the impact of the CARES Act in providing economic security for adults who became unemployed or lost work-related income during the COVID-19 pandemic. Using family unit-level survey data, the authors use difference-in-difference analysis to estimate the relationship between UI payments and both material hardship and level of concern over meeting basic needs. They find that between March and May 2020, worries about food insecurity declined among UI recipients from 27.1 to 24.1 percent, compared with no change for adults who applied but were not accepted for UI benefits, and that medical care hardship grew 8.6 percent more for families that were not accepted for UI benefits than for those that did receive UI. Concerns about having the means for food, housing payments, utility bills, debt servicing, and medical costs declined substantially among UI benefits recipients following the implementation of the CARES Act, with these basic needs insecurities falling by 12, 17, 15, 13.5, and 6 percentage points, respectively.

Some economists theorize that unemployment insurance creates a moral hazard risk by reducing incentives to seek out new employment opportunities. However, Acemoglu and Shimer (2000) find that an increase in UI generosity, simulated in two scenarios over a benchmark—a 10 percent increase in the benefits level and an extension of the same benefits over 2.8 more weeks—does not reduce overall output and welfare (in fact, both measures increase, though by less than 1 percent). They attribute this to an increase in job quality that searchers seek and select when granted more time or benefits, but no change in job search effort. They note that a large body of evidence finds that economies with moderate unemployment insurance have higher economic output and overall welfare than those without such insurance. An empirical analysis of the CARES Act, conducted by Petrosky-Nadeau and Valletta (2020), finds that temporary UI enhancements through the CARES Act have had little to no adverse impact on job search behavior thus far, thereby maintaining economic activity without disincentivizing work. However, they note that job seekers do not have the luxury of turning down salaried work in part due to the temporary and uncertain nature of the UI benefits. This observation suggests that temporary expansion of UI is useful for stabilizing US business cycles, but it perhaps less directly addresses job displacement due to other factors.

Fuller and colleagues (2012) address another common concern about UI: overpayment of benefits, whether due to simple errors or outright fraud. The authors identify the propagation of this concern and motivation for their work as stemming from newspaper reporting of a statistic that 11 percent of all UI benefit expenses from 2007 to 2011 were overpayments. While acknowledging the accuracy of this figure, the authors emphasize that a non-negligible number of individuals eligible for UI do not actually collect benefits. They found that in most years between 1989 and 2011, the number of people eligible for but not collecting UI benefits and the value of forgone payments vastly outweighed the number of people receiving overpayments and the value of the additional expenses, with unclaimed benefits nearly reaching seven times the amount of overpayments made during the time period. Overall, these findings indicate that UI might be underproviding benefits to people in need.

Disparity in UI eligibility, access, and forgone payments may be a more significant issue than overpayments, particularly as these disparities tend to cut along dimensions of existing economic inequity. For instance, Enchautegui (2012) examines the role of education, age, and race in receipt of UI benefits. In looking at each state's percentage of unemployed individuals who received state UI benefits, she finds that Black and Latino communities are more likely to live in states with low UI recipient rates. Additionally, young individuals (ages 16 to 24) and those without a high school diploma are found to have significantly lower recipiency rates, at just 10 and 24 percent, respectively, than the average individual (44 percent).



### **3.1.2. Relevance to the JT Context**

UI is automatically responsive to any economic shock that generates job loss, as is likely at a local or regional level in a transition away from fossil fuels. UI has also been commonly expanded in times of crisis. These expansions have demonstrated UI's effectiveness in smoothing US business cycles and improving household- and community-level economic stability, but they are not necessarily well tailored to address permanent displacement, as may be the case in a JT context.

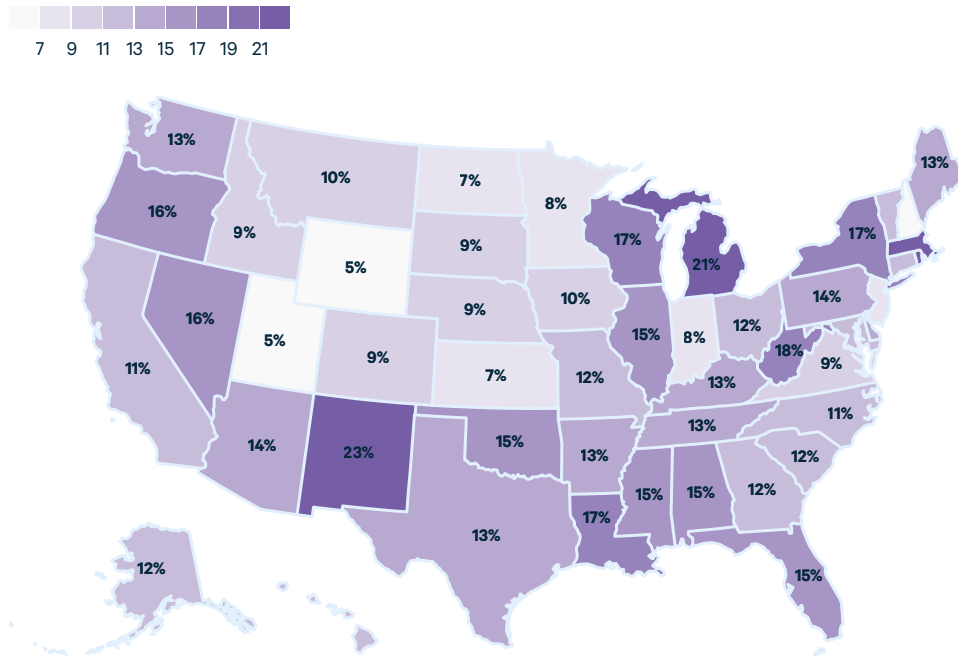
Even in its most basic form, the criteria, benefits levels, and length of benefits vary by state (Stone and Chen 2014; Stone 2020). When assessing the role of UI in ensuring fairness for workers and communities, policymakers may consider whether fossil fuel-dependent workers and communities, including workers in adjacent industries, are well positioned to access UI, and whether states that depend heavily on fossil fuels are implementing the discretionary portions of UI in a manner that maximizes benefits for communities in transition.

## **3.2. Supplemental Nutrition Assistance Program (SNAP)**

The Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program, offers cash benefits to eligible low-income households that apply, which can be used to purchase food at more than 250,000 authorized retailers (CBPP 2019). The program was born out of medical studies conducted in the rural South and Appalachia that found regionally concentrated symptoms of malnutrition, particularly among children (Keith-Jennings et al. 2019). Today SNAP is run by the US Department of Agriculture (USDA) and typically receives appropriations through the Farm Bill. Whether one qualifies for the program is determined by either categorical eligibility—based on receipt of cash assistance through other programs described later in this section, such as TANF or Supplemental Security Income (SSI)—or being below a resource threshold set by federal law. In FY2019, SNAP had a monthly gross income threshold of \$2,250 for a household of three people, as well as a liquid assets threshold of \$2,250, or \$3,500 for households with an elderly or disabled member (Aussenberg and Falk 2019). Additionally, individuals have three-month time limits for receiving SNAP benefits if they do not meet certain minimum work requirements, though states have long had an opportunity to waive these requirements statewide or for certain counties with high unemployment.

In FY2017, 82 percent of SNAP households were in poverty and 38 percent were in deep poverty. Those in deep poverty received 55 percent of the program's benefits. That year, 80 percent of households included a child, an elderly adult, or an individual with a disability; the majority of SNAP households with children were single-adult households (Cronquist and Lauffer 2019). In 2018, roughly 40 million people received SNAP benefits (Aussenberg and Falk 2019). In 2019, Congress enacted appropriations of approximately \$73.5 billion for SNAP (Aussenberg and Billings 2019). Figure 2 demonstrates the vast reach of the program across the United States.

**Figure 2. Individuals Receiving SNAP Benefits as a Percentage of State Population, April 2020**



Data sources: USDA (2020); US Census Bureau (2019).  
 Note: Not numbered or shown are the states of VT (12%), NH (6%), NJ (8%), MA (22%), CT (11%), MD (11%), DE (13%), RI (21%), and HI (12%), as well as DC (17%).

### 3.2.1. Evidence on SNAP’s Effectiveness

SNAP benefits overwhelmingly go to families in poverty and deep poverty (Cronquist and Lauffer 2019). The wide-ranging positive impacts of SNAP on individual health and economic security is well documented in the literature (Keith-Jennings et al. 2019). While we cannot capture the full breadth of the literature, we describe some notable studies here.

Mabli et al. (2013) conduct longitudinal and cross-sectional statistical analysis, commissioned by the USDA, on survey data to see how SNAP affects the number of households that are classified as either food insecure or having low food security within the first six months of enrollment. In the longitudinal sample, they find that the percentage of food insecure and low food security households declined by 13 percentage points (from 66 to 53 percent) and 9 percentage points (from 39 to 30 percent), respectively, from new entrants to six-month households. The authors conduct a regression analysis and determine that SNAP drove the majority of this improvement. They also find that more generous SNAP benefits more deeply reduce food insecurity.

Like the other social safety net programs described in this report, SNAP has been expanded in response to economic shocks. The American Recovery and Reinvestment Act of 2009 (ARRA) increased the maximum benefits per household by 13.6 percent. It also suspended, in 2009 and 2010, a provision severely limiting SNAP eligibility for unemployed nondisabled adults without dependents at home to 3 months in a 36-month period (Nord and Prell 2011). Nord and Prell (2011) find that from late 2008 to late 2009, the ARRA expansion led to an increase of 3 percent in SNAP participation among low-income households, an increase of 16 percent in SNAP benefits received by the median participating household, an increase in food expenditures, and a decline in households with food insecurity and very low food security of about 2 percentage points.

Studies have also linked SNAP benefits to positive outcomes beyond food security, including improvements in individuals' economic security and health. Hoynes and colleagues (2016) evaluate the effects of childhood access to SNAP on life-long health and economic opportunity, finding that eligible children who received SNAP had a 6 percent lower likelihood of stunted growth, 5 percent lower likelihood of heart disease, 16 percent lower likelihood of obesity, and 18 percent higher likelihood of high school completion. SNAP reciprocity has also been shown to reduce physician visits and the number of days of work missed due to illness (Gregory and Deb 2015) and to increase the probability of very good to excellent health among adults by 38 percent (Miller and Morrissey 2017). Another study finds that SNAP participation reduces subsequent annual health care expenditures among low-income adults by \$1,400; given that the average SNAP benefit is \$1,548 over a 12-month period, this suggests that SNAP benefits may nearly outweigh their costs to society in reduced health care expenditures alone (Berkowitz et al. 2017).

A recent report from Bauer and colleagues (2020) examines the effects of increasingly restrictive work requirements on access to SNAP benefits. They model the impact of a final rule from the USDA to establish more restrictive conditions for states to receive waivers for SNAP work requirements. The rule was stayed by a federal court in March 2020, and work requirements in general have been suspended for the duration of the COVID-19 pandemic. However, the authors find that the rule, when implemented, would cause 1.3 million people to be newly exposed to time limits on their SNAP benefits unless they could satisfy the work requirement. They also look at how the rule would have affected benefits historically and find that 69 percent of SNAP recipients live in places that would have lost work requirement waivers during the 2009 recession. The authors conclude that work requirements materially hinder the effectiveness of SNAP in providing rapid assistance during economic shocks.

Finally, while not empirical analysis, the National Academies of Science, Engineering, and Medicine (NASEM 2019) have simulated increases in SNAP benefits ranging from 20 to 35 percent, alongside additional benefits for teenagers, and found that an expanded SNAP could reduce the US child poverty rate by 2 to 3 percentage points, a significant reduction against a baseline of 13 percent in 2015.

### **3.2.2. Relevance to the JT Context**

SNAP was founded, at least in part, in response to observed nutritional outcomes in Appalachia (Keith-Jennings et al. 2019). A significant portion of households in certain regions of the country that have experienced a sustained decline in fossil fuel production, such as West Virginia, are using SNAP benefits. In the context of a JT, disinvestment in fossil fuels is likely to increase the number of SNAP-eligible households by income across a broader swath of communities.

However, individual SNAP participation is voluntary, and new rules are set to restrict the ability of states to waive work requirements, which may hinder the ability of fossil fuel communities to access SNAP. SNAP's income and assets thresholds may limit access to SNAP for high-wage fossil fuel workers but could play an important role for other workers and families in communities negatively affected by the decline of the fossil economy. Policies that address these challenges by expanding the scale of benefits provided by SNAP, reducing restrictive work requirements, and increasing utilization rate among eligible populations may all provide significant relief to communities experiencing economic shocks in the transition away from fossil fuels.

### **3.3. Temporary Assistance for Needy Families (TANF)**

Temporary Assistance for Needy Families (TANF) is administered by the Department of Health and Human Services and provides block grants to states to flexibly administer cash assistance and other support to families with children, with the stated goals of keeping families intact and promoting work to ultimately reduce family need. States determine eligibility thresholds and benefits amounts, and they also contribute state funds to TANF. TANF receives fixed federal grants for cash incentives, which means that increased demand for assistance comes at states' expense. Each year, including FY2020, Congress appropriates \$17.3 billion for TANF, \$16.4 billion of which goes to state block grants (HHS 2020a).

TANF is best understood as a set of changes to the goals, limits, and implementation of preexisting benefits, rather than as a stand-alone set of benefits. The culmination in 1996 of a decades-long campaign to "reform" welfare, TANF superseded Aid to Families with Dependent Children (AFDC), which provided cash assistance for medical services, social services, child care, and foster care, primarily for single-parent families (Falk 2020). TANF tightened eligibility for cash assistance, particularly through work requirements; the program requires 50 percent of the caseload to be engaged in work or work activities, establishes a five-year limit on cash assistance to families, allows states to impose a family cap prohibiting increasing cash benefits for babies born to families already on the rolls, administers welfare-to-work and fatherhood programs, and provides additional bonus payments for states that meet certain employment outcomes.

In response to the 2007–8 economic crisis, ARRA allocated \$5 billion to the TANF Emergency Contingency Fund (ECF) for fiscal years 2009 and 2010. The fund

reimbursed states for 80 percent of increased expenditures on basic assistance, short-term emergency aid, and subsidized employment for families (Falk 2020).

### **3.3.1. Evidence on TANF's Effectiveness**

While TANF is a means-tested program, the welfare reform campaign of the 1990s is widely considered to have decreased its role in the social safety net. Unlike UI and SNAP, which expand by design in times of crisis, the fixed nature of federal grants leaves the states to meet increased demand for TANF during economic downturns. Further, the strict eligibility requirements that the federal government and states impose can significantly decrease its ability to provide support for the most vulnerable families. These include welfare-to-work requirements, which can exclude those with physical or mental health issues that hinder their ability to work; time limits; and policies that terminate assistance. Thus TANF's effectiveness in ameliorating economic shocks is limited by both its shrinking caseload and its restrictions for individual recipients (Sherman 2009).

These limits left many families without cash aid during the Great Recession. An analysis by Pavetti and colleagues (2011) demonstrates that TANF coverage increased by only 13 percent during the Great Recession, while SNAP coverage increased by 45 percent and unemployment doubled. The authors also find that TANF response varies widely across states, with some states increasing caseloads by 30 percent or more and six states experiencing caseload declines during the recession. This variation was not fully explained by differences in unemployment but was at least in part due to TANF's fixed block grants and built-in incentives for states to reduce their rolls (Pavetti et al. 2011). One bright spot was the ECF, which the authors say "undoubtedly helped some families to stay off the regular TANF rolls" and allowed states to be more responsive to increased caseloads.

Sherman (2009) shows that TANF has been the single largest reason for the declining efficacy of the social safety net in lifting children out of poverty. TANF lifted just 21 percent of children out of deep poverty in 2005, compared with its predecessor, AFDC, which lifted 62 percent of children out of deep poverty just a decade prior. Over this period, 1995–2005, AFDC/TANF went from covering 2.2 million to 645,000 families, and the rate of eligible families who actually received assistance declined from 80 to 40 percent.

A study by Muennig and colleagues (2014) attempts to assess the net benefits of TANF compared with AFDC to understand whether the reduced expenditures due to stricter limits might outweigh the potential harm to families due to less coverage. The authors use a Markov model to evaluate the economic and health benefits of TANF and AFDC. They find that while AFDC was more expensive over the lifetime of a recipient, the assistance provided by AFDC generated an additional 0.44 years of life and therefore was more cost-effective than TANF by \$64,000 per statistical life-year.

### **3.3.2. Relevance to the JT Context**

Given TANF's limited funding, relatively narrow coverage compared with other social safety net programs (Ben-Shalom et al. 2011), lack of clear expansionary mechanisms, strict work requirements, and demographic targeting households with children in deep poverty, TANF as currently designed is very unlikely to play a significant role for JT communities. Further, since federal funding for TANF cash assistance is fixed, and there are incentives for states to shed their caseloads, even during a downturn—with the notable exception of the TANF ECF under ARRA—TANF is unlikely to stabilize the economy in fossil fuel regions experiencing disinvestment.

## **3.4. Medicaid**

Medicaid was created in 1965 by the Social Security Act to provide health insurance to low-income Americans who have limited access to the private health insurance market because of prohibitively expensive premiums. Medicaid is the largest insurer in the country and covers nearly 66 million Americans. The main goals of the program are to (1) expand access to health care and increase the uptake of preventive health measures and (2) provide financial support to state economies.

Medicaid is a federal program, governed by federal guidelines, but states are responsible for organizing and facilitating Medicaid programs for their residents. Funding responsibilities are shared between federal and state governments. The federal government's share of expenses for each state is the federal medical assistance percentage (FMAP), which is used to reimburse states based on their level of expenses in any given year and must fall between 50 and 83 percent. States with lower per capita income receive higher FMAP rates. Medicaid is an open-ended benefit, meaning there is no cap on state expenditures (Mitchell 2015). For FY2020, Medicaid was appropriated \$422 billion for grants to states (HHS 2020b).

The Centers for Medicare and Medicaid Services (CMS) outlines state rules and procedures that state programs must adhere to. In exchange, the federal government will match state funds for Medicaid-covered services. Different services are matched at different rates. For example, family planning services are matched at 90 percent, while basic tests and services are matched at 50 percent. States that are interested in testing new models of health care can apply for waivers—typically for a five-year period—to bypass certain rules and procedures set up by CMS but maintain federal funding (Medicaid 2020a). At the time of this writing, nearly every state and the District of Columbia had an approved waiver for at least one aspect of their Medicaid obligations, including 10 states with waivers specifically for the Medicaid expansion program under the Affordable Care Act (ACA; Medicaid 2020e)

In addition to the most basic programs, Medicaid offers supplementary health care coverage through the Children's Health Insurance Program (CHIP) and the Basic Health Program. CHIP extends health benefits to children in uninsured families with incomes too high to qualify for Medicaid but too low to afford private coverage, and

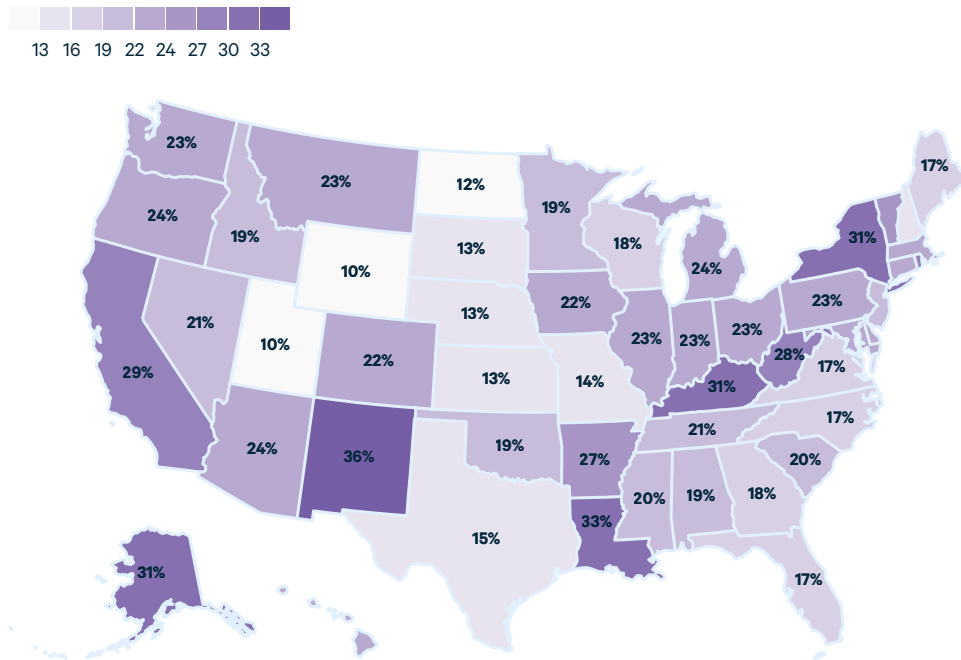
it includes mandatory benefits as well as some coverage options for states (Medicaid 2020c). CHIP covers nearly 10 million children nationwide as of mid-2020. The ACA also provided an option for states to establish a Basic Health Program to deliver services at low premiums for households between 133 and 200 percent of the federal poverty level (FPL)—those that struggle to pay for private insurance but do not meet the income requirements for traditional Medicaid (Medicaid 2020b). These programs are supplementary and were established after the core Medicaid program was in place.

Since Medicaid was signed into law in 1965, states and the federal government have implemented several expansions of the program to increase its influence. Methods of expansion include the following:

- raising the income level required for eligibility
- expanding access to new populations such as children and the elderly
- increasing services covered by Medicaid insurance
- increasing the federal matching rate for state funds

The ACA allowed states to opt in to a Medicaid expansion that would extend access to adults in households at 138 percent of the FPL, filling a coverage gap between regular Medicaid and premium tax credits for those accessing the newly established health insurance marketplaces. States that did not opt into this expansion offer Medicaid to households at 100 percent of the FPL or lower. At the time of this writing, 38 states and the District of Columbia have adopted Medicaid expansion for low-income adults under the ACA, although three—Missouri, Nebraska, and Oklahoma—have not yet implemented it. Twelve states have not expanded Medicaid, including some states heavily dependent on fossil fuels, such as Wyoming (Medicaid 2020d). Disparities in enrollment are evident in Figure 3, which shows Medicaid reciprocity by state.

**Figure 3. Medicaid and CHIP Enrollees as a Percentage of State Population, April 2020**



Data sources: Medicaid (2020d); US Census Bureau (2019).  
 Note: Not numbered or shown are the states of VT (25%), NH (14%), NJ (19%), MA (23%), CT (24%), MD (22%), DE (24%), RI (28%), and HI (24%), as well as DC (32%).

### 3.4.1. Evidence on Medicaid’s Effectiveness

Numerous studies have shown that Medicaid, particularly Medicaid expansion through the ACA, reduces socioeconomic inequalities in access to health care, improves chronic disease management, and increases financial well-being (Kino and Kawachi 2018; Fry and Sommers 2018; Hu et al. 2018). One notable study by Remler and colleagues (2017) evaluates the poverty impacts of public benefits programs under the ACA and finds that Medicaid is among the most effective antipoverty programs, reducing poverty for beneficiaries by 17.1 percentage points compared with nonbeneficiaries. Medicaid reduced overall US child poverty by 5 percent, more than all nonhealth public benefits programs combined.

Fry and Sommers (2018) evaluate the impact of Medicaid expansion through the ACA on health-care coverage and access among low-income adults with depression. The authors survey populations suffering from depression in Kentucky, Arkansas, and Texas (the lone nonexpansion state) from 2013 to 2016 and conduct difference-in-differences analysis on insurance status, health-care access and utilization, and affordability of care. They find that Medicaid expansion contributed to a 23 percent reduction in the number of adults with depression who lacked health insurance, as well as significant reductions in delaying care or skipping medication due to costs.



Recent work by Hu et al. (2018) examines the impact of Medicaid expansion through the ACA on financial well-being, using financial credit data for a national sample of adults and a synthetic control method to conduct a quasiexperiment between expansion and nonexpansion states. The authors first confirm that overall insurance coverage increased in expansion states as a result of the ACA and that private insurance crowding out was likely minimal. On financial well-being, the authors find a significant reduction in unpaid bills and debt balances sent to third-party collection for adults located in zip codes expected to see the greatest impact of the Medicaid expansion. These debt reductions amount to an average of \$1,140 per adult. They also find marginally significant results suggesting a 4.1 percent decrease in average total debt as a result of the expansion.

One potential concern is that expanding Medicaid could lead some individuals to leave employment because they may no longer depend on their employer for medical benefits. Gooptu et al. (2016) used difference-in-difference analysis on employment data for low-income households in Medicaid expansion and nonexpansion states, considering the 2005–13 period prior to the ACA and the 15 months after ACA implementation. Multiple model specifications show small and insignificant increases in cases of worker transition from employment to either unemployment or part-time employment following passage of the ACA. The authors conclude that Medicaid expansion does not cause unemployment to increase.

Similarly, a study by Leung and Mas (2016) looks at the relationship between ACA Medicaid expansion and childless adult labor supply. Results provide further evidence that Medicaid expansion has minimal effects on labor supply or wages. If anything, the authors note that employment may have increased in states that expanded Medicaid.

### **3.4.2. Relevance to the JT Context**

A sizable portion of the population in every US state relies on Medicaid for their health insurance (Medicaid 2020d). Workers in the fossil fuel industry have faced significant job displacement in recent years as a result of economic volatility and the decline of coal production (FRED Economic Data 2020). Many of these workers, even those with union-backed health benefits, face the loss of health and disability coverage. Additionally, any decline in coal, oil, and gas jobs will tend to reduce nonenergy jobs in fossil fuel-dependent communities (Black et al. 2005; Marchand 2012), which may drive additional loss of employer-based health insurance. Further, fossil fuel production presents unique occupational and nonoccupational health hazards (Witter et al. 2014). Coal production jobs, as well as residential proximity to coal production sites, have been correlated with lower health status, increased rates of disease, and increased risk of depression, substance use disorders, and other mental health challenges (Metcalf and Wang 2019; Hendryx and Ahern 2008; Rauner et al. 2020; Canu et al. 2017). Thus Medicaid is likely to serve an important role for communities in transition.

While we have not found studies that compare Medicaid effects in energy-producing communities with those in nonenergy communities, evidence shows that expansion of Medicaid in low-income populations decreases the number of uninsured individuals and can have a substantial impact on individual financial well-being (Hu et al. 2018) and physical and mental health (Fry and Sommers 2018; Kino and Kawachi 2018). This has important implications for workers and communities in states heavily affected by the decline of fossil fuels. Some states that depend heavily on fossil fuel production, such as West Virginia and Kentucky, have adopted Medicaid expansion and have some of the highest per capita Medicaid utilization rates in the nation (28 and 31 percent, respectively). Other states that depend heavily on fossil fuel production, such as Wyoming and Texas, have not adopted Medicaid expansion and have some of the lowest per capita Medicaid utilization rates in the nation (10 and 15 percent, respectively).

### **3.5. Social Security and Supplemental Security Income (SSI)**

The primary public retirement benefit in the United States is Social Security. Social Security also provides social insurance for workers who become disabled or households whose primary earner dies. Social Security is the federal government's largest program by expenditure, accounting for roughly \$1 trillion in outlays per year, or just under one-fourth of the federal budget and 5 percent of GDP (CBO 2019). Unlike UI, SNAP, or Medicaid, which are means-tested and function as automatic stabilizers, Social Security is a cash benefit available to all Americans who contribute to the program through employee and employer contributions. Eligibility is contingent on some relatively modest work-based requirements, rather than on financial need (Huston 2020; Ben-Shalom et al. 2011).

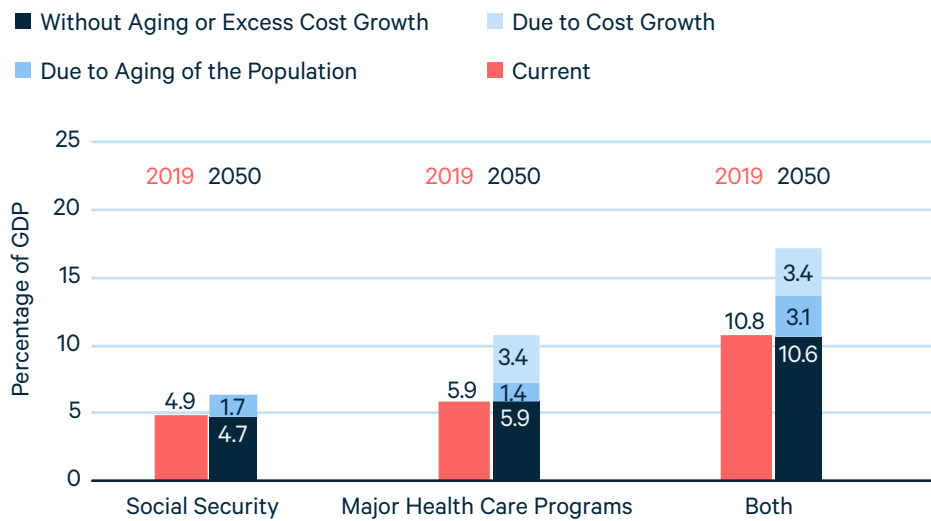
The Supplemental Security Income (SSI) program provides additional cash benefits to low-income individuals who cannot meet their basic needs and have little to no Social Security or other income. Although SSI is a means-tested program (unlike Social Security), it is administered by the Social Security Administration. Because it supplements the income of individuals who have low Social Security benefits, we discuss these two programs in tandem.

#### **3.5.1. Social Security**

Social Security provides monthly cash benefits to retired individuals who have made contributions throughout their lifetimes and life insurance benefits to the families of workers who die before they reach retirement age, known collectively as Old-Age and Survivors Insurance (OASI), and Disability Insurance (DI) benefits to workers under age 65 (Huston 2020). Individuals can begin receiving benefits at age 62 (Ben-Shalom et al. 2011). Retired or disabled workers make up 83.5 percent of Social Security recipients; the remaining 16.5 percent are dependents of retirees or surviving family members.

Employers withhold 6.2 percent of an employee’s earnings for Social Security taxes, and that, along with a 6.2 percent employer contribution, is paid into an OASI and a DI trust fund and invested in special interest-earning Treasury securities. Benefits are paid out of the contributions to and interest earned in these trust funds. Although projections show that benefits can be fully and promptly paid through 2035 (Huston 2020), the long-term solvency of these trust funds is a topic of concern for Congress. According to the Congressional Budget Office (CBO 2019), the aging of the US population is the major reason for the expected increase in Social Security outlays over the next few decades, contributing to a rise in expenditure equivalent to 1.7 percent of GDP (Figure 4).

**Figure 4. Projected Change in US Expenditures as a Percentage**



**of GDP, 2019 to 2050**

Source: Adapted from CBO (2019). Major Health Care Programs include Medicare, Medicaid, CHIP, and subsidies offered through health insurance marketplaces.

To receive Social Security benefits, a worker needs to have had 10 years of Social Security–covered employment. Disabled workers may qualify with fewer years of employment, though the exact criteria vary. The size of an individual worker’s retirement benefits is the primary insurance amount, which is designed to replace a portion of work wages. Therefore, it is based on the individual’s career-average earnings during covered employment and a progressive benefit formula to support those with low career-average earnings. The benefit formula is modestly progressive, providing proportionally higher benefits per dollar of earnings to those with lower lifetime earnings (Huston 2020). Workers can begin receiving retirement benefits at

age 62 at a reduced rate below the full retirement age (FRA) amount to keep lifetime benefits equalized, regardless of starting age. The FRA was originally 65 but has been slowly phasing up to 67, the result of a reform bill passed in 1983 (Huston 2020).

An estimated 178 million workers are covered by Social Security, and Social Security had 64.5 million beneficiaries as of March 2020, with an average monthly benefit of \$1,509 (Huston 2020). Social Security is expected to pay out \$1.1 trillion in benefits in 2020 (CBO 2020; SSA 2020a).

### **3.5.2. Supplemental Security Income**

Supplemental Security Income (SSI) aims to provide a minimum income to individuals who cannot meet their basic needs and have little to no Social Security or other income. To qualify for SSI, one must be over the age of 65, blind, or otherwise disabled (Morton 2020). The majority (86 percent) of SSI recipients are eligible because of severe disability (CBPP 2020). States can supplement the SSI program with additional benefits (Ben-Shalom et al. 2011). As of January 2020, SSI provided federal payments to 8 million individuals, at an average monthly amount of \$575 (Morton 2020).

SSI benefits are an entitlement that, unlike Social Security, is primarily financed through congressional appropriations; however, benefits are not constrained by these appropriations. In FY2020, SSI was appropriated \$57 billion for federal benefits and \$4.3 billion for administrative expenses (SSA 2020b).

### **3.5.3. Evidence on Social Security's Effectiveness**

The evidence on the effectiveness of Social Security, the largest federal program, is extensive. Here we highlight a few recent studies that we deem to be most relevant to a JT context.

One recent report by Romig (2020) analyzes 2019 US Census Bureau poverty measure data to understand the impact of Social Security income on economic security. With both the official poverty measure and supplemental poverty measure (SPM), the author finds that Social Security reduces poverty in every US state and lifts more individuals out of poverty than any other public benefits program. Without Social Security, 21.7 million more Americans would fall below the official poverty line, 6.9 million of whom are under 65. For Americans 65 and older, most of whom receive the majority of their income from Social Security, the program reduces the official poverty rate from 38 to 10 percent. The author also finds that this effect is more pronounced for women and people of color, as seen in Table 5.

**Table 5. Impact of Social Security on Poverty Rates, March 2019**

Demographic group	Percentage in poverty		Number lifted out of poverty by Social Security
	Excluding Social Security	Including Social Security	
<b>Sex</b>			
Men	33.6%	8.1%	6,104,000
Women	41.3%	11.1%	8,707,000
<b>Race/ethnicity</b>			
White	35.4%	7.3%	11,287,000
Black	50.5%	18.8%	1,525,000
Latino	47.2%	19.5%	1,260,000
Other	35.6%	12.7%	738,000
<b>Total, age 65+</b>	<b>37.8%</b>	<b>9.7%</b>	<b>14,810,000</b>

Source: Adapted from a Center for Budget and Policy Priorities report based on US Census Bureau data (Romig 2020, Table 2).

There is limited evidence of the community-wide effects of Social Security in fossil fuel-producing regions. A 2005 study from the Institute for America's Future, a left-leaning think tank and advocacy organization, compares federal data on Social Security income in rural and nonrural counties to determine the percentage of income that comes from Social Security. The authors find that rural West Virginia counties, the primary subject of their study, receive 10.4 percent of their income from Social Security, compared with 7.9 percent of income in nonrural counties. In Pennsylvania, Ohio, Indiana, and Kentucky, rural counties similarly derive a greater percentage of their income from Social Security than nonrural counties. The authors suggest that this disparity is explained by the higher concentrations of seniors and higher prevalence of disability, due to dangerous work, in rural communities (IAF 2005).

While Social Security is not traditionally considered an automatic stabilizer, a study by Ghilarducci and colleagues (2012) finds that Social Security programs serve a

modest countercyclical function, decreasing net outflows as the economy expands and increasing net outflows as the economy shrinks. Specifically, combined outflows from OASI and DI decreased by 0.04 percentage points for every 1 percentage point increase in the output gap, or by 5 cents for every \$1 increase in GDP. The authors also conclude that Social Security has a net negative effect on household consumption, stabilizing consumption in times of expansion and increasing consumption during recessions.

### **3.5.4. Relevance to the JT Context**

As a social insurance program, Social Security reduces poverty and provides significant retirement benefits to all workers and communities, including those dependent on fossil fuel production. However, since it is not responsive to economic downturns and is only modestly redistributive, it is unlikely that the core Social Security program is well tailored to play a large role in a JT context.

However, it is likely that Social Security Disability Insurance and SSI fill a more critical economic role in fossil fuel communities than in other regions of the United States, given the aging population and higher prevalence of physical and mental health conditions in rural regions in general (Baernholdt et al. 2012) and in coal-producing communities in particular (Metcalf and Wang 2019; Hendryx and Ahern 2008; Rauner et al. 2020; Canu et al. 2017). Both programs may serve an increased role in stabilizing local fossil fuel economies should workers lose pensions or health benefits funded by the fossil fuel industry, even if they are unlikely to provide targeted support to JT communities.

## **3.6. Medicare**

Established under the Social Security Act in 1965, Medicare is a pillar of US social insurance, providing subsidized health insurance to retired individuals over age 65 and younger individuals with disabilities (Davis et al. 2020). Medicare is not means-tested or designed to stabilize the economy from shocks (Ben-Shalom et al. 2011). The Social Security Administration enrolls beneficiaries in Medicare, but the Centers for Medicaid and Medicare Services at the Department of Health and Human Services administers the program. Medicare offers four parts:

- Medicare Part A covers inpatient hospital care, nursing care, hospice care, and some home health care. Most individuals over 65 are automatically enrolled in premium-free Part A, if they paid Medicare payroll taxes during their employment. Those who are not eligible can pay a monthly premium.
- Medicare Part B covers physician services, outpatient care, and some home health and preventive care. It is typically voluntary and enrollees must pay a premium, which is higher for high-income individuals.

- Medicare Part C, also called Medicare Advantage (MA), is a private plan option that covers Part A and Part B on a fee-for-service basis, with the exception of hospice care. Individuals can elect to enroll in MA in lieu of Parts A and B during the annual open enrollment period, and the private plans are paid a per-person amount to provide Medicare services.
- Medicare Part D is an optional benefit that covers outpatient prescription drugs. About 77 percent of Medicare beneficiaries are enrolled in a Part D plan.

Medicare services are paid for out of two trust funds. The Hospital Insurance (HI) Fund is funded by a 2.9 percent payroll tax, shared equally between employees and employers, and covers Part A. It is expected to become insolvent in 2026. The Supplemental Medical Insurance (SMI) Fund receives 25 percent of revenues from premiums and 75 percent from the US general revenues, and it covers Parts B and D. Participants in the Part C private plan option enroll in Parts A and B, and therefore these services are still funded through HI and SMI (Davis et al. 2020).

In FY2020, Medicare is expected to cover 63 million individuals—54 million retirees and 9 million individuals with disabilities—at a cost of \$836 billion (Davis et al. 2020). For the year, Congress appropriated \$411 billion for Payments to Health Care Trust Funds (HHS 2020b). As with Social Security, the aging of the US population is one major reason for the expected increase in Medicare outlays over the next decade (CBO 2019). The other main reason is the rising costs of health care (see Figure 4).

In 2010, the ACA made significant statutory changes to Medicare, seeking to change provider reimbursements, increase quality of care, enhance benefits, and more (Davis et al. 2020). A number of recent proposals have also explored the prospect of expanding eligibility for Medicare beyond retirement-age individuals or using Medicare as the foundation of a single-payer health care system.

### **3.6.1. Evidence on Medicare's effectiveness**

The academic literature on Medicare is large and diverse. Since Medicare is a payer, not a provider, of health care, many studies focus on specific processes or medicines accessed through Medicare, rather than on the program's overall ability to deliver individual- or community-level economic security and health outcomes. Further, since Medicare Part A is an automatic-enrollment, universal insurance program for retirees of all incomes, it does not offer the same opportunity for comparison as Medicaid, which can be evaluated based on divergent outcomes in expansion and nonexpansion jurisdictions and across enrolled and nonenrolled populations. Here we focus on two studies that highlight how Medicare may be particularly valuable for rural and low-income populations, which may overlap with the population most acutely affected by a transition away from fossil fuels.

Bhattacharya and Lakdawalla (2006) investigate the progressivity of Medicare based on educational attainment as a proxy for lifetime income. They find that Medicare benefits are progressive—distributing net benefits from higher-income to lower-income populations—by a large margin. For Medicare Part A, net present dollar flows are higher for high school dropouts than for college graduates. In addition, individuals with less than a college education receive net benefits from Medicare, while in some cases college graduates incur net costs.

Frenzen (1997) looks at the potential impact of Medicare cost-cutting on rural communities. The author finds that Medicare covers a larger share of revenue for rural physicians (33 percent) than urban ones (27 percent) and for rural hospitals (38 percent) than urban ones (34 percent), because of a higher proportion of beneficiaries in rural areas. The author finds several ways in which cutting federal Medicare spending could challenge rural communities in particular. First, increasing the share of costs borne by beneficiaries or raising the eligibility age would likely affect rural communities more than urban communities because of higher concentrations of low-income and elderly individuals. Rural areas also struggle with affordable health care options, and a larger share of rural hospitals run negative margins, so Medicare payments play a more critical role in rural areas.

### **3.6.2. Relevance to the JT context**

Medicare likely delivers significant benefits to all Americans, including fossil fuel communities today, particularly given their high exposure to health risks (Metcalf and Wang 2019; Hendryx and Ahern 2008; Rauner et al. 2020; Canu et al. 2017; Witter et al. 2014). Like Social Security, in its current form Medicare is unlikely to play a large additive role in a JT context, as it is not responsive to economic shocks and has a relatively small redistributive function. However, it could cushion the blow caused by a potential loss in other sources of benefits, such as the Black Lung Disability Trust Fund (BLDTF) or United Mine Workers of America (UMWA) Health Fund.

Additionally, there is a robust conversation around reform and expansion to Medicare, such as a reduction in the eligibility age, as well as more targeted proposals that would enhance Medicare benefits for fossil fuel communities. One recent bill, the Marshall Plan for Coal Country Act of 2020, would expand eligibility for Medicare Parts A and B to all workers who lost their jobs at a coal mine or coal-fired power plant, alongside other economic development, workforce development, and environmental remediation provisions. These general or targeted reforms could support fairness for workers and communities by providing increased protection against the loss of work-based health insurance, as might occur in regions negatively affected by a transition away from fossil fuels, or potentially enabling earlier retirement for workers.



## 4. Industry-Specific Benefits

Our second category of public benefits programs, which we refer to as industry-specific benefits, includes those that (1) seek to achieve many of the same outcomes as social safety net policies, but do so contingent on employment in a specific industry; and (2) receive at least some amount federal government funding and/or administration.

Two of the programs included here apply specifically to the coal industry: the Black Lung Disability Trust Fund (BLDTF), an industry-specific health benefit, and the United Mine Workers of America (UMWA) Health and Retirement Funds, an industry-specific health benefit and retirement benefit. We supplement these with one industry-specific health benefit, the Veterans Health Administration (VHA), and one industry-specific retirement benefit, the Federal Employees Retirement System (FERS).

For the purposes of our analysis, we exclude industry-specific benefits that do not receive federal support, such as state pension plans or other union-negotiated benefits, though these may also offer lessons for federal policymakers.

Our review of specific programs yields several insights, which we discuss in detail in the following sections and summarize here:

- The UMWA pension program and BLDTF provide substantial health benefits to coal miners and their families. With more than \$1 billion in authorized transfers to coal pension and health benefits alone in 2020, they account for the lion's share of targeted federal support to fossil fuel workers and communities, dwarfing the economic or workforce development programs covered elsewhere in this series.
- Still, industry-specific programs are relatively narrow in scope and are unlikely to provide sufficient support in an economy-wide transition away from fossil fuels. For instance, roughly 100,000 coal workers are covered by the UMWA pension program (Topoleski 2019), but millions of people live in communities that are heavily reliant on revenues from coal production. Research from the Economic Policy Institute suggests that for every 100 jobs in coal mining, oil and gas extraction, energy generation, and natural gas distribution, between 500 and 600 jobs are indirectly supported (Bivens 2019).
- Programs that rely on fossil fuel excise taxes or other production-based revenue sources are increasingly at risk of insolvency and may prove unsustainable in a JT context. Significant reforms will be necessary to avoid insolvency.
- Coal industry health benefits programs, including the BLDTF and UMWA Health Fund, have allowed companies to externalize the health costs of coal production. Many coal companies have shed their health care obligations in bankruptcy processes. The outcomes of these programs suggest that moral hazard effects should be considered carefully in the design of just transition policy.

- The VHA and FERS differ in many respects from the BLDTF and UMWA programs. However, both offer potential models for federal delivery of industry-specific benefits in a JT context, where workers are at risk of losing health and pension benefits. VHA, in particular, serves a group that experiences high health risks and job turnover, which may be comparable to the elevated occupational risks faced by fossil fuel workers.

Table 6 summarizes the programs we review in this section, including distinctive features and their relevance for the JT concept.

**Table 6. Summary of Industry-Specific Benefits Programs Reviewed in This Section**

<b>Program name</b>	<b>Key features and relevance to a just transition</b>
Black Lung Disability Trust Fund (BLDTF)	Provides cash payments to address the negative health effects of black lung disease on coal miners, funded by placing an excise tax on coal production, as well as through transfers and loans from the US General Fund. The BLDTF has long faced declining funds, and these financial struggles will only grow as coal production declines in the context of a JT.
United Mine Workers of America (UMWA) Health and Retirement Funds	Provides multiemployer pensions and medical benefits to coal miners, insured by the federally chartered Pension Benefit Guaranty Corporation. These funds have struggled financially as a result of declining coal production and underpayment by employers due to bankruptcies. In a JT context, the 100,000 miners who are obligated to receive benefits through the funds face increased risk of losing pension and health benefits, which could threaten both individual and community stability.
Veterans Health Administration (VHA)	Provides physical and mental health care to military veterans through an integrated network of facilities. In a JT context, VHA may provide a model for targeted federal health benefits to veterans of the energy industry, who, like military service members, may have faced higher-than-average occupational risks and challenges in accessing employer-based health care.
Federal Employees Retirement System (FERS)	Provides pensions to retired federal civil service employees, from a trust fund that consists of employer and employee contributions and is managed by the Office of Personnel Management. The program is popular among participants and considered a successful product of federal pension reform. In a JT context, FERS may provide a model for addressing energy worker pension challenges, perhaps to support fossil fuel workers at risk of losing pensions today or to inform the design of retirement benefits in emerging low-carbon industries.

There is long-standing precedent for federal government delivery or securitization of benefits for energy workers and communities. Some of these are covered in another report in this series, which details the ways in which the federal government provides funding for environmental remediation in fossil fuel-producing regions. The two programs we cover in this report, the BLDTF and UMWA Health and Retirement Funds, are funded through coal production revenues; as a result, federal support for these programs is a common concern in the context of a transition away from coal use.

The BLDTF is an example of an industry-specific benefit that is publicly funded and operated. Such a program is economically justified because it forces producers to pay for some of the health externalities associated with coal production, though it does not consider the large health externalities from coal consumption (Jaramillo and Muller 2016). There is also an equity argument for providing compensation to harmed coal miners (Cummins and Olson 1974).

In contrast, the UMWA pension fund is an example of a private pension plan that is publicly insured and subsidized. The UMWA pension fund is a multiemployer pension that was expected to become insolvent in 2020 (Walsh 2019), and Congress intervened with legislation, the Bipartisan American Miners Act of 2019, to help workers receive promised benefits. The program combines taxes on coal companies with other sources of government revenues. This public assistance was necessary because firms have not adequately funded their pension obligations (Brown 2008).

Today the federal government directly provides health and retirement benefits to veterans and civil servants. While energy workers are not employed by the state, the VHA and FERS are existing federal institutions that could serve as models for delivery of industry-specific benefits. As an energy transition affects many energy workers beyond the unionized coal miners covered by existing programs, these alternative models may become increasingly relevant.

As with any industry, the fossil fuel industry has indirect effects on local and regional job markets and economies that lie beyond the scope of industry-specific support. Research from the Economic Policy Institute suggests that job multipliers for fossil fuel extraction and distribution are between 5 and 6 (Bivens 2019). In other words, for every 100 jobs in fossil fuel industries, 500 to 600 jobs in other industries are indirectly supported. Additionally, a large portion of the workforce that depends on the fossil fuel economy—such as the nearly 1 million gas station employees across the United States (BLS 2020)—are not covered by the industry-specific benefits we review here. These limitations are useful when considering the utility of industry-specific support within the JT context.

## **4.1. Black Lung Disability Trust Fund (BLDTF)**

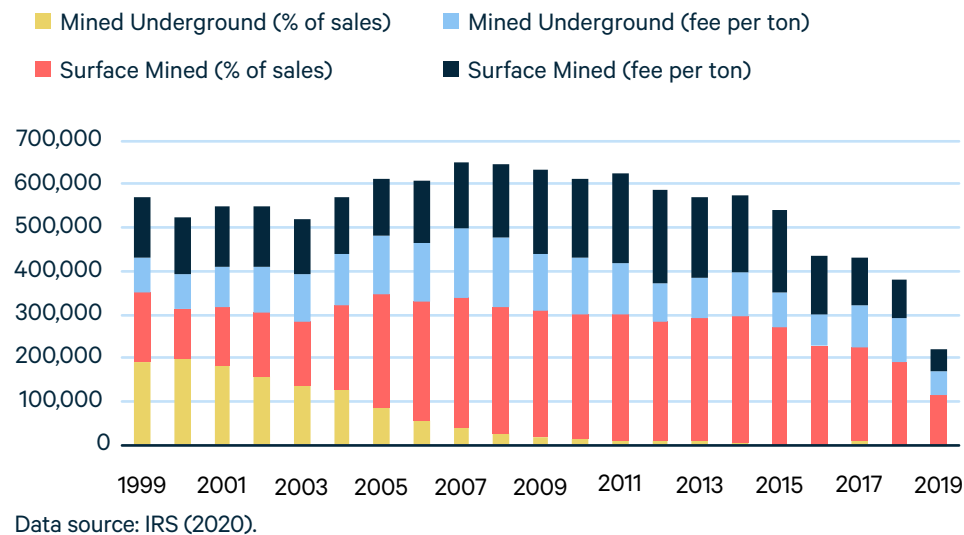
The Black Lung Disability Trust Fund (BLDTF) is a publicly operated, industry-specific health benefits program. It was born out of the Federal Black Lung Program, established under the Federal Coal Mine Health and Safety Act of 1969 (“Coal Act”) to address negative health impacts for coal miners. This legislation set standards for work safety to limit miners’ exposure to coal dust, the cause of coal workers’ pneumoconiosis (CWP, or black lung disease), and authorized the payment of cash benefits to coal workers suffering from CWP-related disability and to survivors of miners who die from CWP. Claims filed prior to December 31, 1972, were paid from general revenue and administered by the Social Security Administration. These are referred to as Part B benefits. Today mine operators are responsible for paying benefits for all claims

submitted after 1972, but where mine operators no longer exist, the federal government is responsible for paying the benefits (Szymedera and Sherlock 2019). These claims are referred to as Part C benefits and are managed by the Department of Labor’s Office of Workers’ Compensation Programs (DOL 2020a).

The BLDTF was founded in 1977 to make benefit payments in cases where an operator no longer could. The fund is financed largely by a per-ton excise tax on the sale and use of coal, in addition to resources from the Treasury’s General Fund and loans (Szymedera and Sherlock 2019). Before 2019, the black lung excise tax (BLET) was the lesser of (a) \$1.10 per ton on underground coal and \$0.55 on surface-mined coal or (b) 4.4 percent of the sale price. As of January 1, 2019, the BLET was reduced to \$0.50 and \$0.25, respectively (or 2 percent of the sale price). The BLET has not historically generated enough proceeds to meet the demands on the BLDTF, requiring additional funds from the General Fund.

Because of this funding mechanism, the decline of the coal industry simultaneously makes coal workers more vulnerable and reduces funding for the health care program. Figure 5 shows a stark decline in revenue from excise taxes over the past decade.

**Figure 5. Coal Excise Tax Collections, FY1999 to FY2019**



Cash payments from the BLDTF are used to cover three forms of benefits:

- Medical benefits: Medical expenses to treat a miner's CWP are paid in full and are generally available at any preferred medical provider.
- Disability benefits: Disability is paid based on the federal general schedule (GS) with no locality adjustments. A claimant with no dependents can receive the equivalent of 37.5 percent of the GS-2, Step 1 pay rate, which in 2019 was about \$660 per month. Benefits increase by the number of dependents (one dependent, 150 percent of the basic benefit; two dependents, 175 percent of the basic benefit; three or more dependents, 200 percent of the basic benefit).
- Survivor benefits: Survivors of a miner who died of CWP can also apply for cash benefits equivalent to the miner's benefits. The disability benefits are paid first to the spouse or else are divided among children or other dependents.

For FY2020, Congress provided an appropriation of \$72 million from the BLDTF for operation of the benefits program, in addition to the full use of the fund for any payment obligations, which amounted to roughly \$272 million (Pascrell 2019; DOL 2020b).

#### **4.1.1. Evidence on the BLDTF's Effectiveness**

Since compensation from the BLDTF consists of claim-based payments directly to miners and their dependents, the value of federal financial support provided to coal miners with black lung through the fund has remained roughly fixed on a per capita basis since the program's inception. There is no evidence that the program has incentivized behaviors by individuals or firms that decrease the prevalence of black lung disease. The Centers for Disease Control and Prevention find that there has been a resurgence of black lung disease in Appalachia since 2000 (CDC 2018). Prevention is not a core objective of the program, which intervenes after a miner contracts black lung disease to provide treatment and does not differentially impose costs on employers based on their relative riskiness.

Researchers have pointed to several weaknesses in the BLDTF model. Most notably, the excise tax has not always been sufficient to fully fund the program, thereby leading to debt forgiveness from Congress and meaning that coal producers are not fully absorbing the costs (Cummins and Olson 1974; Barth 1987). BLDTF revenues are expected to drop precipitously over coming years as a result of this tax rate decrease, the overall decline in sales for the coal industry, an increase in coal sector bankruptcies, and an increase in CWP cases. The Government Accountability Office projects that by 2050, the fund will be approximately \$15.4 billion in debt under current assumptions (Barnes 2019).

#### **4.1.2. Relevance to the JT Context**

As a public health program, the BLDTF provides critical services to miners and their families, but it is imperfectly structured as a policy to support economic transition. It relies on continued growth of coal production to provide its benefits; the loss of revenue from the black lung excise tax puts these disability benefits at risk. A report from the Congressional Research Service discusses several options to improve the stability of the trust fund: increasing the excise tax, eliminating tax preferences for coal, providing additional funds from the US General Fund, or forgiving the fund's debt (Szymedera and Sherlock 2019). In the JT context, proposals that rely on new taxes or offsetting tax preferences from the continued production of coal are not well suited to ensure the long-term viability of the BLDTF.

### **4.2. United Mine Workers of America (UMWA) Health and Retirement Funds**

In 1946, the US Department of the Interior helped broker an agreement between the United Mine Workers of America (UMWA) and the coal industry to secure pensions and adequate medical benefits for coal mine workers, codified as the UMWA Health and Retirement Funds. The agreement, known as the Promise of 1946, ended a nationwide miners' strike after World War II. UMWA administers the multiemployer benefits programs, which are funded through contributions from mining employers and employees, and distributes benefits to eligible miners. Typically, workers qualify if they worked in the coal industry for 5 to 10 years prior to 2012 and are 55 years of age or older (UMWA 2018).

The UMWA Health Fund offers three different health plans, funded through a combination of employer premiums, some participant contributions, and federal assistance—in the form of both interest transferred from the Abandoned Mine Land (AML) Reclamation Fund and payments from the US General Fund. These General Fund payments were historically capped at \$490 million per year but recently increased to \$750 million per year (Manchin 2019a; Pascrell 2019). For the 2017 plan year, the Health Fund paid out \$423 million in benefits and received \$256 million in federal assistance (Topoleski 2019).

The UMWA Retirement Fund houses the multiemployer pension plan, which pays coal miners a monthly benefit based on their length of service in the industry and a set benefit rate. The federal government insures UMWA pensions through the Pension Benefit Guaranty Corporation (PBGC). The PBGC is funded through premiums collected from employers (in this case, coal companies) and other sources such as bankruptcy recoveries. From July 2017 through June 2018, the UMWA Retirement Fund paid \$614 million in benefits and had about \$3 billion in assets (Topoleski 2019).

The Obama administration's POWER+ Initiative was intended to restructure funding pathways and provide support for health benefits and pension protection, including transferring \$3.9 billion to the pension plan over 10 years, but was not adopted by Congress.

#### **4.2.1. Evidence on the UMWA Retirement and Health Fund's Effectiveness**

There is limited empirical evidence on the benefits of UMWA health and pension services for coal workers or communities. We find just one noteworthy study on health services, by Figinski and Troland (2018). Using county-level data from 1946 to 1965 in Appalachia, the authors evaluate the effect of a UMWA benefits expansion in the 1950s, when the union began providing free health insurance to coal miners and their families. The research indicates that the program had significant positive effects on the prevalence of hospital births for pregnant women and improved infant health outcomes.

Figinski and Troland also look at the effect of UMWA's hospital program, which established 10 hospitals in Appalachia shortly after the insurance expansion described above. They find the hospital program complemented the insurance program, resulting in a 60 percent increase in hospital beds per 1,000 people and more than double the number of equivalent hospital employees per 1,000 in counties receiving a hospital. Further, they do not find this health care supply to have resulted in substantial crowding out of existing hospital beds. Health care utilization impacts were modestly positive, and the authors admit that these potential hospital admission increases did not persist through state-year trends. The authors conclude that the two UMWA efforts were effective through their complementary benefits, while increased demand from insurance expansion alone likely would not have resulted in increased health service supply.

We find one survey-based evaluation on UMWA pensions in the peer-reviewed literature. Mayer (2018) surveys policy actors in Colorado and Utah on their support for several potential JT policies, including pension for coal workers. Seventy-two percent of respondents supported pension protection, and a policy to guarantee full funding of miners' pensions had the most enthusiastic support of the options presented.

#### **4.2.2. Relevance to the JT Context**

JT literature often discusses the uncertain future of the UMWA pension fund, which has faced insolvency as a result of the 2008 recession and the ongoing decline of the coal industry, in a carbon-constrained economy (Pollin and Callaci 2019; Abraham 2017; Mayer 2018; Pai et al. 2020). While the immediate solvency crisis of the UMWA fund has been resolved through the increase in transfers from the US General Fund, concerns remain about the structure of the federal insurance program, the PBGC, and other multiemployer pension programs. In a JT context, the challenges facing UMWA pensions reveal some larger concerns about industry-specific benefits affected by a transition away from fossil fuels.

In the case of UMWA, pension solvency issues have come from both the decline of coal production and structural issues in the federal insurance program, the PBGC. The PBGC does not price pension insurance at a proper level, which encourages employers

to engage in excessive risk-taking and fail to adequately fund pension obligations (Brown 2008; Wilcox 2006). This moral hazard risk for multiemployer pension funds like the UMWA fund (unlike single-employer pension funds) is particularly strong, because federal pension laws are less stringent for multiemployer pensions due to the assumption that those plans distribute risk and are therefore safer (Walsh 2019). This challenge exists in all multiemployer private pension funds and is not unique to the coal industry; however, the industry's structural decline in recent years has amplified the federal role and made the UMWA funds the subject of political debate. Insolvency of one of the major pension programs could make the entire PBGC insolvent (Topoleski 2019; Walsh 2019).

The transition away from coal has resulted in employer bankruptcies, and numerous news reports, studies, and the UMWA itself have pointed to the increased trend for employers to discard pension obligations during bankruptcy proceedings (Jamieson 2019; Congress Reaches Deal 2019; Topoleski 2019). Some proposed legislation would reform bankruptcy law to require companies to pay their pension obligations first in bankruptcy proceedings (Ryan 2019; Manchin 2019b). Major coal producers were reported to be carrying approximately \$2 billion in unfunded pension liabilities as of 2015, while oil and gas companies carry \$14.2 billion in unfunded pensions (Hu et al. 2018). Similarly, utilities and fossil fuel-supporting industries carry \$9 billion and \$1.1 billion in unfunded pensions, respectively. Recent analysis has suggested that the number of coal pensioners in the United States is nearly equal to the current workforce, pointing to the importance of retirees as much as current workers in the shift away from fossil fuels (Pai et al. 2020).

### **4.3. Veterans Health Administration (VHA)**

The Department of Veterans Affairs (VA) provides certain military veterans with a range of benefits, including pensions, disability benefits, educational assistance, and health care. We focus here on the Veterans Health Administration (VHA) as one prominent example of a federally provided health benefit that serves an industry with some clear similarities to the fossil fuel workforce.

The VHA provides health care and related services for eligible military veterans and their families, based on certain minimum duty requirements. Veterans who served in combat are typically eligible for five years of comprehensive coverage after their discharge. After those five years, they are assigned to a priority group that determines their coverage based on level of disability and income (NASEM 2018). VHA also conducts medical research and provides support as needed to the Department of Defense medical system, National Disaster Medical System, and Department of Health and Human Services in times of emergency (Panangala and Sussman 2019). In 1995, VHA underwent a number of reforms to integrate services to improve timely care, increase the utilization of information technology and reporting, and realign payment policies.



Today VHA physical and mental health care is provided to veterans through an integrated network of VA Medical Centers, community living centers, outpatient clinics, and more, administered through 18 Veterans Integrated Service Networks across the United States. Unlike Medicare or private health insurance, which reimburse providers, VHA is a direct provider of care, primarily owning the facilities and employing health care workers. It does pay for some external, community-based care if a veteran is not able to access a needed service through VHA. Not all enrollees in the VHA access health benefits every year, either through lack of need or because they use private coverage, Medicaid, or Medicare.

In FY2020, 9.3 million veterans were enrolled in the VHA. Congress appropriated \$83 billion for VHA medical care (VA 2020).

### **4.3.1. Evidence on VHA's Effectiveness**

The quality of health care provided by VHA has been thoroughly scrutinized, with mixed results. However, most recent studies show that VHA health care has improved since the 1990s and outperforms non-VHA care—including publicly subsidized and fully private programs. Trivedi et al. (2011) conduct a systematic review of 175 unique studies of nonsurgical care in VHA and non-VHA settings, finding that VHA regularly follows recommended processes of care more closely than non-VHA providers, though there is no notable difference in actual health outcomes, such as mortality. Weeks and West (2019) review VHA and non-VHA hospital performance across 121 local markets and find that VHA hospitals are more likely than non-VHA hospitals to provide quality care in a given local market and rarely provide the worst care in a market. Jha et al. (2003) look at the improvement in VHA before and after the reengineering efforts of the mid-1990s, compared with Medicare. They find that the share of VHA patients receiving appropriate care in 2000 was more than 70 percent across 13 out of 17 quality-of-care indicators, a significant improvement against the same indicators in 1994 and outperforming Medicare in almost every category. The authors suggest that VHA's superior quality of care was likely due to specific reengineering efforts initiated in 1995 to increase utilization of information technology, integrate services, and improve payment practices.

Another recent study echoes this conclusion that VHA more closely follows appropriate care processes than private providers, but with a focus on mental health disorders. Watkins et al. (2016) compare appropriate rates of treatment for patients with mental health conditions in VHA and private health plans, including prescriptions filled and treatments received. For the seven key indicators used in the study, the authors find that VHA coverage outperforms private coverage by at least 30 percent. Veterans with schizophrenia or depression are more than twice as likely to receive appropriate initial treatment from the VHA as those in private plans, and those with depression were more than twice as likely to receive appropriate long-term treatment. The authors attribute this disparity, at least in part, to the integrated and colocated services of VHA. This allows both providers and patients to monitor and adhere to

mental health treatment, it and enables network-wide oversight and sharing of best practices in a way that the fragmented private market does not.

Finally, Selim et al. (2010) conducted a retrospective analysis on the health outcomes of elderly (65+) male veterans in the VHA system in comparison with those in the Medicare Advantage (MA) program. They find that veterans had a higher probability of being alive or in better health at a two-year follow-up than MA patients, in terms of both physical health (69 versus 64 percent) and mental health (76 versus 70 percent). They also find that MA patients had higher two-year mortality hazard ratios than VHA patients.

### **4.3.2. Relevance to the JT Context**

Workers who may be negatively affected in the transition to a clean economy are occasionally referred to in popular and political discourse as “energy veterans” to invoke the importance of supporting transitioning energy workers in the same way the United States has historically aimed to support transitioning military members, through programs like the GI Bill (Whitehouse and Slevin 2020; Yeo 2017).

The ongoing federal transfers to BLDTF and UMWA health programs suggest that public support is increasingly necessary to ensure health benefits for coal workers, but it might not necessarily take the form of these existing programs, especially as the transition away from fossil fuels affects nonunionized workers. VHA provides a potential model for delivering industry-specific benefits in a JT context, particularly as it serves a constituency with high occupational risk, disability rates, and job transition challenges. There is a growing body of evidence that VHA facilities provide, on average, higher quality care than non-VHA facilities, due in part to their integrated delivery system. The federal government could serve fossil fuel industry veterans directly through a new federal health system analogous to the VHA or by expanding eligibility to the VHA, Medicare, or another public health program to energy workers.

## **4.4. Federal Employees Retirement System (FERS)**

Federal, state, and municipal governments across the United States operate thousands of programs that provide pension benefits for their employees (Urban Institute 2015). While all of these may provide lessons for federal support for pensions in a JT, we focus here on the most prominent example of federally funded, industry-specific pensions, the Federal Employees Retirement System (FERS).

FERS pays annual retirement pensions to civil service employees hired after 1984. Employees hired before 1984 are covered by the Civil Service Retirement System (CSRS) but were offered an open enrollment window into FERS several years ago. FERS and CSRS annuities are funded by employee and employer contributions to the Civil Service Retirement and Disability Fund (CSRDF), as well as interest earned on

Treasury bonds held by the fund (Isaacs 2019). For FY2020, the Office of Personnel Management, which administers the fund, estimates that the CSRDF will receive \$104 billion and pay out \$92 billion in annuities. The fund's income continues to outpace its expenditures, and it faces no solvency issues (Isaacs 2019).

Today under FERS, retirees receive three categories of retirement benefits: Mandatory Social Security coverage, a basic defined benefits plan, and the voluntary Thrift Savings Plan (TSP) (Gale et al. 2016; Cowen 2011). Employees contribute 0.8 percent of pay to the defined benefits plan. TSP is similar to a 401(k) savings plan. Government agencies are responsible for an automatic contribution of 1 percent to an employee's TSP, but employees can also contribute up to \$17,500 per year (or \$23,000 for those over the age of 50). The federal government matches all employee contributions up to 5 percent of pay. All income levels "can significantly boost their retirement income by contributing to the TSP" (Isaacs 2013).

The transition from CSRS to FERS is considered a success for shoring up budgetary concerns faced by CSRS in the 1980s and providing more flexibility for federal workers, particularly those who transition out of public service, while still maintaining CSRS for older employees. Many state pension programs are now considering similar reforms (Gale et al. 2016; Cowen 2011). Surveys of FERS participants show that they strongly support the plan overall and that TSP is the most popular federal benefits program, with 94 percent enrolled in TSP, 85 percent considering it an "extremely important" offering, 90 percent saying that it met employee needs either "to a moderate extent" or "to a great extent," and 79 percent saying that it provides "good" or "excellent" value for the money (OPM 2013).

#### **4.4.1. Evidence on FERS's Effectiveness**

There is limited academic research on FERS. One study (Martin 2003) compares the replacement rates achieved by CSRS and FERS participants with those of employees with comparable private retirement programs, accounting for the benefits also accrued from Social Security and 401(k) accounts. The replacement rate is the percentage of preretirement salary available to individuals during retirement. The author finds that the FERS and private retirement program replacement rates can be similar, but that accessing the highest replacement rates is more common for federal civil servants. Federal employees can reach a 100 percent or higher replacement rate by contributing 6 percent to TSP throughout their career. To achieve similar replacement rates, private sector employees usually must participate in both a defined benefit and a defined contribution pension plan, something just 14 percent of private employees do.

FERS also provides the option for retirees to forfeit a portion of their annuities as a premium for benefit insurance, so their spouses can receive survivor benefits after the retirees' death. Retirees can choose to insure 25 or 50 percent of their annuities. Davis et al. (2018) construct a Monte Carlo simulation to determine the cost-benefit trade-off of enrollment in the survivor benefit, including by constructing a distribution of how

many years spouses outlive retirees. They find that the survivor benefit is lucrative for couples with a male FERS retiree, but potentially less so (or even costly) for couples with a female FERS retiree. The authors suggest that policy reform could reduce the premiums paid or realign default enrollment procedures to produce better outcomes for couples with female retirees.

#### **4.4.2. Relevance to the JT Context**

While evidence is limited, FERS is a popular federal pension program that allows participants—particularly those who contribute heavily to a TSP—to achieve very high salary replacement rates in retirement. Achieving similar retirement benefits from a career in private industry is far less likely. Furthermore, the transition from CSRS to FERS in 1986 addressed budget concerns at the time, created a program that has been remarkably stable since, and is inspiring similar reform processes in state pension programs (Cowen 2011). In a JT context, FERS may provide lessons for how to design or reform worker benefits—either for fossil fuel workers whose pensions are at risk or for the growing industries of a clean economy—to maximize replacement rates and ensure economic security.

## 5. Conclusion

Communities that are heavily dependent on fossil fuel–related economic activity will experience substantial economic effects of a societal shift away from carbon-intensive fuels. This review has aimed to provide insight into the role of public benefits programs in supporting fairness for workers and communities. We have summarized existing federal policies that attempt to guarantee basic economic security, health, and well-being for workers and communities and assessed any available evidence on program effectiveness.

Public benefits programs have received limited treatment within the literature on fairness for workers and communities dependent on fossil fuels. However, since questions about fairness often arise when one segment bears the adjustment costs of an economic transition while another benefits, policies that redistribute resources from those who benefit to those who bear costs are relevant. We conclude that the effectiveness of public benefits programs and the potential benefits of reform or expansion are of critical concern for policymakers seeking to understand how to support communities in transition. They can also inform the design and scale of other, targeted transition policies. Regions with weaker social safety nets may require more robust interventions in a transition context and vice versa.

We find that social safety net programs contribute to fairness for fossil fuel workers in transition today, and their role will likely grow in the context of an accelerated economic transition. While social safety net programs are insufficient on their own to replace employment-based income and benefits, they are likely to improve economic security and health for individuals and families facing job displacement. In particular, programs classified as automatic stabilizers—Unemployment Insurance, SNAP, and Medicaid—have been successful at dampening economic shocks at the community level and are likely to contribute to fairness for fossil fuel–dependent communities by improving economic stability in the face of regionally concentrated shocks.

However, social safety net programs are not designed for fossil fuel communities, and we have identified three key limitations in providing relief in a JT context. First, programs that are means-tested may not be accessible to higher-income fossil fuel workers. Still, given that local job multipliers in fossil energy and utility sectors are estimated between 5 and 6, many other community members in lower-income occupations are likely to be negatively affected by a transition away from fossil fuels; their ability to access public benefits programs can be important both for their individual well-being and for regional economic stability. Second, many social safety net programs are voluntary for individuals or, in the case of benefits expansion, require state adoption. Therefore, policy that expands eligibility, access, and utilization of these programs is likely to contribute to fairness for workers in the transition to a clean economy. Third, while social insurance programs like Medicare and Social Security may provide backstops for fossil fuel communities at risk of losing their industry-

specific health and retirement benefits, they are not designed to transfer resources geographically or respond swiftly to economic shocks and are unlikely to provide significant support to regions negatively affected by a transition away from fossil fuels.

Finally, there is strong precedent for federal support for industry-specific benefits and evidence that industry-specific pension and health benefits contribute to individual well-being and community economic stability. With more than \$1 billion in authorized transfers to coal pension and health benefits alone in 2020, federally backed coal industry benefits also account for the lion's share of targeted federal support to fossil fuel workers and communities, dwarfing any fossil fuel community-targeted economic or workforce development programs. However, policies that depend on revenue from fossil fuel production are likely to be unsustainable in the context of industry decline. In a JT context, policymakers could consider reforms that both shore up the budgets of existing programs that are dependent on revenue from production and minimize moral hazard risk by reforming bankruptcy rules. They may also wish to leverage other federal programs, such as the Veterans Health Administration, as models for delivering health and retirement benefits to the larger population that may be affected by the energy transition.

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