

Spillover effects in welfare program participation

Yavor Ivanchev

To provide a welfare cushion for unemployed and low-income Americans, the Affordable Care Act (ACA) has furnished options for subsidized health insurance coverage, including a provision that allows states to expand their Medicaid programs. Since the act's implementation, some states have chosen to participate in the Medicaid expansion, whereas others have opted out. While previous research has focused mainly on examining the expansion's impacts on labor market outcomes and rates of health insurance coverage, much less attention has been paid to the provision's spillover effects on people's participation in safety net programs unrelated to the ACA. In "[The impact of expanding public health insurance on safety net program participation: evidence from the ACA Medicaid expansion](#)" (National Bureau of Economic Research, Working Paper 26504, November 2019), Lucie Schmidt, Lara Shore-Sheppard, and Tara Watson take a deeper dive into this topic.

The authors identify various ways in which the Medicaid expansion could affect people's participation in non-ACA welfare programs. One possibility is that workers living in jurisdictions that have adopted the expansion would see incentives to lower their earnings in order to meet Medicaid eligibility requirements, thus indirectly becoming eligible for other public safety nets. Likewise, an informational and transactional channel, whereby Medicaid coverage increases beneficiaries' awareness of other welfare programs and reduces their transaction costs, could make them more willing to apply to and take advantage of such programs. On the flip side, however, newly implemented Medicaid provisions, in particular those establishing higher income eligibility thresholds for certain participating groups, may reduce eligibility for other forms of income-based public assistance, working in the opposite direction.

To assess Medicaid expansion's implications for real-life outcomes, the authors focus on the provision's effects on workers' participation in two other major public programs—the Earned Income Tax Credit (EITC), which provides tax credits (cash assistance) to low-income individuals, and the Supplemental Nutrition Assistance Program (SNAP), which helps less well-off people meet their nutritional needs. The study's research design is based on pairwise comparisons of adjoining counties, with each pair containing one county that is affected by the Medicaid expansion and a bordering one that is not. This more granular geographic setup provides greater uniformity in background conditions, helping isolate the unique effects of the expansion. The study's main analyses rely on county-level data from the Internal Revenue Service (for the EITC) and the U.S. Department of Agriculture (for SNAP).

The authors' quantitative results show that, besides seeing rising rates of health insurance coverage, workers in counties affected by the Medicaid expansion tend to increase their participation in both cash and food assistance programs. However, while this spillover effect is statistically significant for SNAP, it is smaller and less precisely estimated for the EITC. In addition, a supplemental analysis using data from the American Community Survey suggests that the primary channel through which the Medicaid expansion drives higher participation in SNAP is

based on information-flow and transaction-cost mechanisms rather than changes in labor supply. On the whole, the authors conclude that “access to one safety net program may increase participation in others, highlighting the important connections across the safety net.”

Retirement expectations: whether to retire now or later

John C. Roach

As the mortality rates continue to decrease, the older population continues to increase. Discussions have emerged about the benefits of the older population for working past what has been the normal retirement age. Some of the benefits would be the ability to maintain their current standard of living by increasing lifetime income. In addition, continuing to work past the typical retirement age would reduce the need for federally funded programs, such as Medicaid, Medicare, and Social Security.

Some occupations have physical and cognitive requirements that could prevent the older population from delaying retirement. Older workers' job preferences and characteristics may differ from younger workers, and the types of jobs available to older workers may affect their decision to continue working and delay retirement.

In "[The effects of job characteristics on retirement](#)" (National Bureau of Economic Research, Working Paper 26332, October 2019), Péter Hudomiet, Michael D. Hurd, Andrew Parker, and Susann Rohwedder examine results from a survey, managed by RAND American Life Panel, regarding older workers' desired job characteristics and the effect that specific job characteristics would have on their retirement decisions.

Survey results showed that older workers' path to retirement could differ, depending on how they approach retirement. Some worked full time until retirement age and then stopped work completely, while others gradually went from full- to part-time employment before retirement. For a better understanding of their role in the retirement process, individuals who were age 50 to 79 were asked their preference for job characteristics and desired route. The authors found that the traditional route of completely retiring from a full-time job was by far the more preferred route to retirement.

Hudomiet and colleagues also discovered that many favored retiring more gradually, with 25 percent choosing to take a part-time job before retirement; a little over 10 percent don't plan to retire. In comparison, 8 percent chose self-employment before retirement. Female respondents preferred the more gradual route into retirement of part-time work and self-employment. Those who worked part-time jobs preferred the gradual route to retirement more so than full-time employees.

In conclusion, survey results showed that the respondents considered characteristics such as the ability to have flexible working hours may have the largest impact on delaying retirement. Job demands, stress, and especially the cognitive requirements in future employment were also major factors in retirement decisions. These findings suggest that the option to work part-time jobs, which could be more suitable for older workers, does not seem to have large effects on individuals' retirement decisions.

BOOK REVIEW

MAY 2020

Manufacturing violence at the border

Blood, Sweat, and Fear: Violence at Work in the North American Auto Industry, 1960–80. By Jeremy Milloy. Champaign, IL: University of Illinois Press by arrangement with UBC Press, 2017, 171 pp., \$28.89 hardback and paperback.

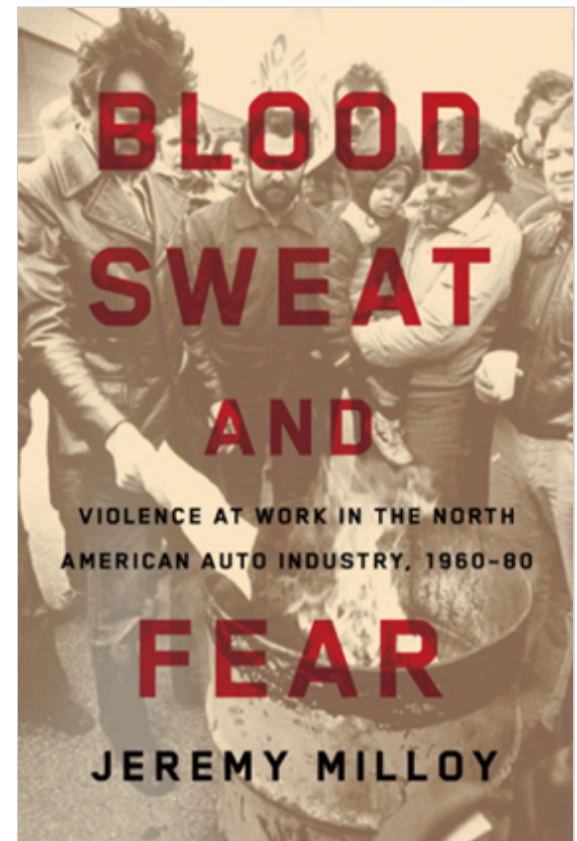
In *Blood, Sweat, and Fear: Violence at Work in the North American Auto Industry, 1960–80*, author Jeremy Milloy uses employee diaries, police reports, union documentation, interviews, and newspaper stories to reveal “a historical relationship between structural violence and individual violence in the workplace setting, as well as how levels of violence changed over time because of changes in the labour process.” Although the author does a good job of introducing the overarching theme of workplace violence and the many ways in which it was perpetrated (e.g., by management against workers, by workers against management, or among workers themselves), his analysis of the various circumstances and motivations of the perpetrators is not always clear. For example, Milloy jumps rapidly from discussing United Automobile Workers (UAW) organizations in the United States to describing UAW counterparts in Canada, often without drawing a clear demarcation between the two or without announcing which union is discussed. Further, while the book’s goal is to document an attitudinal shift in the labor force—namely, how the powerlessness caused by violence accounts for “why we stopped fearing class war and began fearing the lone gunman”—the evidence for that shift is largely anecdotal and sometimes lost in the storytelling.

According to Milloy, unions in the United States were strong in the first half of the 20th century, but they began to weaken in the 1960s and 1970s, mostly because of management decisions and actions. The dynamics of U.S. auto-factory employment layered many problems, usually beginning with unsafe working conditions and intensive productivity demands and often ending in individual violence. Workplace safety hazards and ever-increasing production quotas played a large role in the rise of injury rates throughout the period. The weakening of unions, combined with other social problems such as racism, sexism, and substance abuse (all exacerbated by the decline in, and fracturing of, collective bargaining), led to more workplace violence. This violence took various forms, including physical confrontations among production workers, between production workers and their supervisors, and among workers of different races or sexes.

The book first lays out very bleak statistics both on changing rates of accidents and incidents at automotive factories and on changing workforce demographics at the time. When White automotive workers in Detroit went on strike to demand better safety and pay, Black workers were hired at lower wages to fill their dangerous jobs. This led to management actively pitting Black and White workers against each other and to union members reacting in often violent and racist ways to their new coworkers. Because of racial tensions in the UAW, which was frequently hostile to non-White workers, some African American workers in Detroit formed the Dodge Revolutionary Union Movement (DRUM). Although racial issues predated these developments, Chrysler executives exploited the heightened tensions in order to undermine the power of both the UAW and DRUM. Instead of collectively demanding better pay and safer work conditions, Black workers often fought against UAW protections for their members because these protections tended to keep African Americans in the least skilled and most dangerous factory work. Since competing unions did not exist across the U.S. northern border, the Canadian UAW was more effective in negotiating with management, securing worker protections for both Black and White members.

To illustrate the effects of unions on workplace violence and injury levels, Milloy examines the differences between two UAW branches in locations with Chrysler plants: one in Detroit and another just across the northern border, in Detroit’s sister city of Windsor, Canada. Given cross-country variations in union power and protections, as well as changing dynamics of unionization in the United States at the time, this comparison represents a natural experiment aiming to show the dampening effects of strong unions on the incidence of violence and injury in the workplace. Although Milloy notes that violence did occur on the Canadian side of the border, he observes that the racial and economic issues there were less pronounced than those in the United States. A more powerful union in Canada managed to secure stronger worker protections, largely mitigating the type of worker discontent that could have bubbled over into individual violence. In his own words,

“...violence was not an aberration or a freak occurrence but an understood part of the industrial culture and working-class manhood at Windsor Chrysler. However, different racial dynamics, the



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greater economic stability of Windsor Chrysler plants, a more effective union, and a safer city limited the atomization and brutalization of workers and thus limited the incidence of individual violence compared with the crisis of violence that exploded in Detroit Chrysler plants.”

After addressing factory violence in general, the palliative effects of inclusive union negotiations with management, and the individual violence that often results from denying protections to certain groups of workers, Milloy turns to examining changes in the perceptions of workplace violence in the courts and the press. He addresses this shift in the context of the civil rights movement and the decline in union strength in the 1970s, recounting three shooting-incident court cases, each characterized by very different legal defenses.

In the first case, which involved Black autoworker James Johnson, who shot two foremen and a coworker in 1970, the media reactions showed that “many recognized that individual violence at work was an outgrowth of the brutal processes of Detroit factory labour and the racial and other hierarchies that were central to how this labour was organized and carried out.” Johnson was declared temporarily insane—allegedly because of unfair and dangerous workplace conditions exacerbated by racism—and was eventually awarded worker’s compensation from Chrysler.

The second case, in 1973, dealt more directly with conflict within the UAW. A Black union leader, David Mundy, shot a skilled-trade worker who had violently objected to a contract deal between Ford Motor Company and the UAW. The deal allowed unskilled employees to work overtime in skilled-labor positions. Unlike Johnson, Mundy was politically involved and held considerable power in the UAW. He could not easily be thought of as a highly stressed and vulnerable employee subjected to aggression by a leadership with no regard for his safety or security. Instead, he became violent after being squeezed by both management and the rank and file, a situation suggesting that “with no simple narrative of worker versus company to present, Mundy’s action was seen as symptomatic of workplace conflict, not produced by it.” Essentially, Mundy had too much power to be considered a victim of his circumstances, although these circumstances had implications for violence and racial tensions similar to those of Johnson.

The third case is that of Black autoworker Clarence Talbot, who, after being fired in 1977, shot and killed Charlie Brooks, the president of a local union who was beloved and widely seen as fair. Talbot was described as an illiterate bully who grew up in a bad neighborhood. Although it was clear that Talbot had been the victim of racial animus from a young age, very few of those talking or writing about the shooting at the time had sympathy for his plight. Talbot’s lawyer refused to let him testify and did not address racism during the trial. Instead, his defense claimed medical, not circumstantial, insanity, a strategy that confined him to a mental hospital (instead of a prison) and did not require any changes in the practices of the UAW or the automotive factories. Two civil rights lawyers, Charles Roach and Michael Smith, tried to investigate Talbot’s experience with racial inequities and to provide their findings to his defense team. However, they ended up being investigated themselves, with Talbot’s court-appointed lawyer accusing them of trying to steal his client. These three cases illustrate a shift in public perceptions about workplace violence—from seeing Johnson’s insanity as a consequence of systemic racism to constructing the image of the lone gunman fighting demons beyond the context of the workplace.

Milloy’s book shows that “violence was a crucial variable in labour processes and workplace cultures of the automotive industry.” Furthermore, there was a change over time in who was perpetrating the violence, who was its target (managers, workers, or union officials), and what factors were responsible for it (systemic inequities and dangers or individual grievances). Although violence was partly driven by systemic causes, the blame for it gradually shifted from the collective to the individual, with management seeking to dilute union power and to pit individuals against one another. While violence was present in both U.S. and Canadian factories, its causes, levels, and outcomes differed across the border. In both countries, however, there was a shift toward individual blame over time. I recommend Milloy’s book to anyone trying to understand the dynamics of increasing workplace violence, the historical decline in collective bargaining power, the effects of racism and class divides on workplace conflict, and the systemic issues created by stifling the negotiating power of labor.

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Producer price inflation slows in 2019, as price increases for both services and goods decelerate from a year earlier

Using data from the Producer Price Index (PPI) program, this article describes changes in producer prices in 2019. Final-demand producer inflation over the year increased less than it did in 2018, because of smaller advances in the indexes for services, core goods, and foods. Intermediate-demand inflation for energy and core processed and unprocessed goods turned down in 2019, while that for food-based processed and unprocessed goods moved higher, following little change in 2018. In a broad-based shift, each of the major PPI components measuring intermediate-demand inflation for services advanced less in 2019 than in 2018.

The Producer Price Index (PPI) measures the average change over time in selling prices received by domestic producers for their output. The Final Demand–Intermediate Demand (FD–ID) aggregation system, the structure used to analyze the behavior of producer prices, measures final-demand inflation (price changes for goods, services, and construction sold for personal consumption, as capital investment, to government, and for export) and intermediate-demand inflation (price changes for goods, services, and construction sold to businesses as inputs to production). This article describes PPI price movements in 2019.¹

Overview

The slowing rate of producer price inflation in 2019 was widespread across the various stages of production.² The PPI for final demand rose 1.4 percent after increasing 2.6



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percent a year earlier, as price increases slowed for each of the three major final-demand components—services, goods, and construction.

In 2019, the index for final-demand services advanced 1.4 percent, following a rise of 3.0 percent in 2018. Leading this broad-based deceleration, margins for final-demand trade services moved up 0.8 percent, compared with a 3.1-percent increase a year earlier. (Trade indexes measure changes in margins received by wholesalers and retailers.³) Prices for final-demand services less trade, transportation, and warehousing moved up 1.8 percent in 2019, after climbing 2.6 percent in 2018. The rate of advance in the index for final-demand transportation and warehousing services slowed to 2.2 percent, following a 6.5-percent jump in the previous year. (See figure 1 and table 1.)

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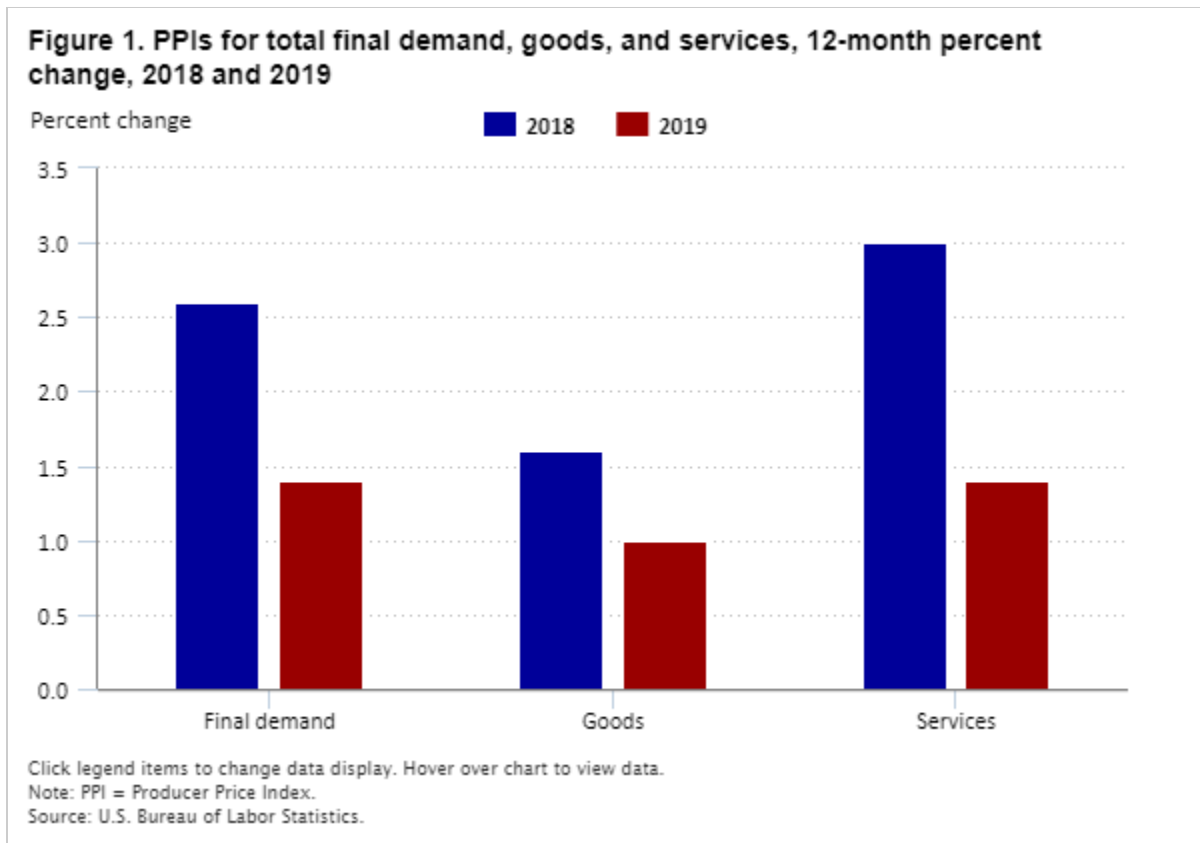


Table 1. Selected PPIs for final demand and intermediate demand, 12-month percent changes, 2018 and 2019

Index	2018	2019
Final demand		
Total final demand	2.6	1.4
Goods for final demand	1.6	1.0

See footnotes at end of table.

Table 1. Selected PPIs for final demand and intermediate demand, 12-month percent changes, 2018 and 2019

Index	2018	2019
Foods	2.8	1.2
Energy goods	-3.1	2.4
Goods less foods and energy	2.6	0.6
Services for final demand	3.0	1.4
Trade services	3.1	0.8
Transportation and warehousing services	6.5	2.2
Services less trade, transportation, and warehousing	2.6	1.8
Construction for final demand	5.2	3.9
Intermediate demand, by type of commodity		
Processed goods for intermediate demand	2.8	-1.7
Processed foods and feeds	0.1	2.9
Processed energy goods	1.5	-3.5
Processed materials less foods and energy	3.5	-1.8
Unprocessed goods for intermediate demand	3.7	-7.3
Unprocessed foodstuffs and feedstuffs	-0.6	4.1
Unprocessed energy materials	8.8	-18.7
Unprocessed nonfood materials less energy	2.9	-5.0
Services for intermediate demand	3.1	1.7
Trade services for intermediate demand	4.5	4.2
Transportation and warehousing services for intermediate demand	4.1	2.7
Services less trade, transportation, and warehousing for intermediate demand	2.6	0.8
Construction for intermediate demand	2.4	2.2
Intermediate demand, by production flow		
Stage-4 intermediate demand	3.1	1.4
Total goods inputs to stage-4 intermediate demand	2.9	0.4
Total services inputs to stage-4 intermediate demand	3.2	2.3
Stage-3 intermediate demand	2.0	0.8
Total goods inputs to stage-3 intermediate demand	1.0	-0.1
Total services inputs to stage-3 intermediate demand	3.1	1.7
Stage-2 intermediate demand	3.6	-3.2
Total goods inputs to stage-2 intermediate demand	5.4	-9.9
Total services inputs to stage-2 intermediate demand	2.3	2.0
Stage-1 intermediate demand	3.1	-2.2
Total goods inputs to stage-1 intermediate demand	2.6	-4.8
Total services inputs to stage-1 intermediate demand	4.0	1.1

Note: PPI = Producer Price Index.

Source: U.S. Bureau of Labor Statistics.

In the goods-producing sector, the index for final-demand goods moved up 1.0 percent in 2019, after rising 1.6 percent in 2018. Leading this deceleration, price increases for final-demand goods less foods and energy slowed to 0.6 percent, compared with a 2.6-percent advance a year earlier. In addition, the index for final-demand foods moved up 1.2 percent in 2019, after climbing 2.8 percent in the preceding year. In contrast, the index for final-

demand energy rose 2.4 percent, reversing a 3.1-percent decline in 2018. This countervailing movement is mostly attributable to gasoline prices, which climbed 11.4 percent in 2019, after falling 12.7 percent in the previous year.

The index for final demand less foods, energy, and trade services (sometimes referred to as the final-demand core PPI) rose 1.5 percent in 2019, after advancing 2.8 percent in 2018.⁴ In late 2019, the inflation rate for this index, like that for overall final demand, was the lowest it had been since late 2016. The index for final demand less foods, energy, and trade services aggregates the PPIs for final-demand core goods; final-demand transportation and warehousing services; final-demand services less trade, transportation, and warehousing; and final-demand construction.

Among the PPIs for intermediate demand, which measure business-to-business price movements, the indexes for processed and unprocessed goods turned down in 2019, and the index for services for intermediate demand rose less than it did in 2018. The index for processed goods for intermediate demand fell 1.7 percent, compared with a 2.8-percent increase a year earlier. Leading the downturn, prices for processed goods less foods and energy declined 1.8 percent in 2019, compared with a 3.5-percent rise in the previous year. The index for processed energy goods also reversed course, falling 3.5 percent after advancing 1.5 percent in 2018. In contrast, prices for processed foods and feeds moved up 2.9 percent in 2019, after edging up 0.1 percent a year earlier.

Similarly, the index for unprocessed goods for intermediate demand fell 7.3 percent in 2019, reversing a 3.7-percent rise in 2018. Most of this reversal is attributable to prices for unprocessed energy goods, which dropped 18.7 percent after increasing 8.8 percent in 2018. The index for unprocessed core goods also fell in 2019, by 5.0 percent, following a 2.9-percent advance a year earlier. Conversely, prices for unprocessed foodstuffs and feedstuffs moved up 4.1 percent, compared with a 0.6-percent decline in 2018.

The index for intermediate-demand services decelerated broadly, advancing 1.7 percent in 2019, down from 3.1 percent in the preceding year. Leading the slower rate of advance, the index for services less trade, transportation, and warehousing inched up 0.8 percent, compared with a 2.6-percent rise in 2018. In addition, prices for transportation and warehousing services for intermediate demand increased 2.7 percent in 2019, after climbing 4.1 percent a year earlier, and margins for trade services for intermediate demand rose at a slightly slower rate (4.2 percent) than they did in 2018 (4.5 percent).

Economic background

This section describes the economic events that influenced PPI movements in 2019.

Services

A slower rate of increase in margins for trade services drove the deceleration in overall final-demand inflation. Most of this shift in trade margins is attributable to the index for fuels and lubricants retailing, which fell substantially in 2019 after surging in 2018. In contrast, the PPIs for both crude petroleum and gasoline from refineries increased considerably more in 2019 than in 2018.⁵ It should be noted that the relationship between crude petroleum prices and retail fuel margins is often misunderstood. PPI research shows that, generally, this relationship is inverse; that is, rising crude petroleum prices typically correspond to falling retail fuel margins, whereas falling crude petroleum prices typically correspond to higher margins received by gasoline retailers.⁶

Margins for food wholesaling, which turned down in 2019, and margins for food retailing, which rose less than they did in 2018, also contributed considerably to the slower rate of inflation in the trade sector. Prices received by producers of pork, dairy products, and processed poultry moved higher in 2019, after decreasing a year earlier. The Consumer Price Indexes for pork, poultry, and dairy and related products also turned up in 2019, although the shifts in consumer prices for these products were more moderate.⁷

In the financial sector, the U.S. Federal Reserve reduced the target federal funds interest rate three times in 2019—in August, September, and October. The federal funds rate began the year at 2.25–2.50 percent and closed it at 1.50–1.75 percent. The federal discount rate also was reduced three times in 2019, beginning the year at 3.00 percent and ending it at 2.25 percent.⁸ In response to these interest rate reductions, the PPI for consumer loans fell 7.0 percent in 2019, after climbing 5.8 percent a year earlier, and prices for business loans dropped 11.7 percent, reversing a 17.5-percent jump in 2018. In addition, the PPI for services related to securities brokerage and dealing declined 15.0 percent in 2019, after surging 27.9 percent in 2018. This index includes many business-to-business financial activities (e.g., loan repurchase agreements), whose transaction prices are typically affected by changes in interest rates.

The PPI for securities brokerage, dealing, and investment advice also declined in 2019, after rising in 2018. An industrywide trend to reduce or eliminate commissions and transaction fees for retail brokerage services can be traced to aggressive competition among financial services firms, as well as to technological advances that have reduced the business costs of trading securities instruments for clients. Trading firms hope that lower trading fees will expand their client base and profits.⁹

Inflation for transportation services also increased less in 2019 than in 2018. The PPI for truck transportation of freight was unchanged over the year, after rising 6.5 percent in 2018. This slowdown substantially reduced inflation for both intermediate-demand and final-demand transportation and warehousing services. The PPIs for rail transportation of freight, ground courier services, and water transportation of freight advanced at slower rates in 2019. Falling diesel fuel prices affected the fees charged by the freight transportation sector, because contracts for freight transportation services commonly include fuel-adjustment factors that take into account the cost of fuel.¹⁰

Other factors that reduced the pricing power of freight transportation firms include a slowdown in U.S. manufacturing and stagnant international trade in goods. The Institute for Supply Management reported that, as of December 2019, the U.S. manufacturing sector had been in decline for five consecutive months. New orders, production, and inventories also were trending lower.¹¹ In a joint release, the U.S. Census Bureau and the U.S. Bureau of Economic Analysis reported that, through the first 11 months of 2019, both total exports and imports of goods were little changed from the same period a year earlier.¹²

Core goods

In the industrial goods market, global disruptions, including an unsettled tariff climate, have contributed to lower prices for both unprocessed goods (such as iron and steel scrap, aluminum scrap, wastepaper, and raw cotton) and processed goods (such as steel mill products, fabricated metal products, and various chemicals and related products).¹³ Prices for many highly processed goods, including general purpose machinery and equipment, machine shop products, heavy motor trucks, and motor vehicle parts, also pulled back after seeing larger advances in 2018.¹⁴ In November 2019, the Organisation for Economic Co-operation and Development (OECD) released a report forecasting worldwide growth of 2.9 percent in 2019, compared with 3.5 percent in 2018.¹⁵

According to the OECD report, global economic activity had been hampered by a slowdown in new orders, industrial production, and retail sales. The OECD also reported that the rate of global trade growth in 2019 retreated to below 2 percent, down from substantially higher levels in 2016–18.¹⁶

Energy

The energy sector in 2019 was dominated by diverging price trends in the markets for natural gas and crude petroleum. The PPI for natural gas dropped roughly 50 percent in 2019, after surging more than 40 percent a year earlier, whereas the index for crude petroleum climbed 19.1 percent, reversing a 16.0-percent drop in 2018.

Contributing to the volatility in prices for natural gas, the inventory of working gas in underground storage had, as of January 17, 2020, expanded to 23.2 percent above its year-ago level and to 9.3 percent above its 5-year historical average.¹⁷ This increase in inventory can be traced to a 9.7-percent rise in U.S. natural gas marketed production.¹⁸ Through October 2019, total consumption of natural gas was slightly higher than a year earlier, although well below the increase in marketed production.¹⁹ Henry Hub natural gas spot prices hovered near \$2 per million British thermal units (Btu) in late 2019, much lower than their level of \$4 per million Btu in December 2018.²⁰ As a result, the PPIs for utility natural gas, including natural gas for electric power generation, also declined substantially in 2019, after rising in 2018.

In the crude petroleum market, spot prices for West Texas Intermediate (WTI) crude oil rose from \$49.52 per barrel in December 2018 to \$59.88 per barrel in December 2019. Internationally, the corresponding spot-price dollar figures for Brent (North Sea) crude were \$57.36 and \$67.31, respectively.²¹ However, these year-over-year gains provide an incomplete picture of the crude petroleum spot-price market, which remained volatile. For example, the spot prices for WTI crude oil fell from \$70.75 per barrel in October 2018 to \$53.96 per barrel in October 2019. Similarly, on an October-to-October basis, spot prices for Brent crude dropped from \$81.03 to \$59.71 per barrel.²² This volatility, along with the timing of price transmission through the economy, resulted in mixed movements for the PPIs for refined petroleum products in 2019. On a December-to-December basis, gasoline prices turned up in 2019, whereas prices for diesel fuel and heating oil turned down and the index for jet fuel rose less than it did in 2018.

The U.S. Energy Information Administration reported that, in 2019, U.S. weekly field production of crude petroleum climbed 10.3 percent.²³ In contrast, crude petroleum imports fell 10.8 percent from their 2018 levels.²⁴ In addition, U.S. net inputs of crude petroleum to refineries declined 3.6 percent over the same period.²⁵ Similarly, in terms of average monthly production, total U.S. finished petroleum product supplied (a common proxy for demand) was 1.2 percent lower in January–October 2019 than during the same period in 2018,²⁶ while total gasoline ending stocks were 1.0 percent higher in December 2019 than 12 months earlier.²⁷

Outside the United States, crude oil production by the Organization of the Petroleum Exporting Countries inched down in 2019.²⁸ Russian crude oil production was little changed, edging 0.7 percent higher than its year-earlier level.²⁹

Food

In 2019, producer inflation for foods was mixed. For unprocessed foods, the PPIs for slaughter hogs, slaughter cattle, and raw milk rose in 2019, reversing declines in 2018. For processed foods, the PPIs for pork and dairy

products also turned up. In contrast, beef prices turned down in 2019. In the grains market, the PPI for corn rose at a slower rate, while wheat prices fell after rising in 2018.

Although domestic beef production grew 1.0 percent in 2019, late-year increases in worldwide demand for beef, along with expectations for further gains in global trade and consumption in 2020, helped lift prices for slaughter cattle. If it were not for a large over-the-month drop in prices in December 2019, the PPI for beef and veal also would have increased substantially over the year. In the market for pork products, total U.S. production rose 5.2 percent in 2019. For most of the year, trade barriers limited U.S. pork exports to China, and prices for both live hogs and pork products declined. However, an outbreak of African swine fever in East Asia, particularly in China, along with the announcement by the Chinese government that it would scale back tariffs on U.S. farm products, including pork and soybeans, substantially lifted prices for both live hogs and pork products during the final quarter of 2019.³⁰

In 2019, the PPI for raw milk rose 26.2 percent, and prices for dairy products climbed 8.3 percent. Domestic milk production increased 0.3 percent in 2019, while total cheese production rose 0.7 percent over 2018 levels.³¹ Internationally, the combination of drought and wildfires in Australia (a major global dairy supplier) resulted in higher prices for dairy inputs and lower output.³² This development strained international supplies, leading to an increase in dairy exports from the United States as global demand for dairy products grew.³³ Dairy demand, in particular that for dry, shelf-stable milk, is projected to expand further in 2020.³⁴

In terms of production and supply in the grains market, corn yields per acre fell 5.3 percent in 2019, and total production decreased 5.2 percent. Wheat yields per acre climbed 8.6 percent, and total production rose 1.8 percent.³⁵ On the demand side, corn utilization for both feed and ethanol fell in 2019, reversing increases in 2018.³⁶ In the wheat market, domestic and global demand were little changed in 2019, and the same is expected for the 2019–20 marketing year.³⁷ These market trends coincided with movements in the PPI for corn, which increased at a slower rate in 2019, and the PPI for wheat, which turned down after rising a year earlier.

Final demand

In 2019, the index for final demand rose 1.4 percent, down from 2.6 percent in 2018. This deceleration was due to movements in the indexes for final-demand services and final-demand goods, both of which advanced less in 2019 than in 2018.

Final-demand services

The index for final-demand services rose 1.4 percent in 2019, after advancing 3.0 percent in 2018. Nearly 30 percent of this deceleration can be traced to margins for fuels and lubricants retailing, which turned down 16.0 percent, reversing a 24.6-percent increase in 2018. The indexes for loan services (partial); securities brokerage, dealing, investment advice, and related services; and food wholesaling also declined in 2019, after moving higher in the previous year. Prices for truck transportation of freight were unchanged after rising in 2018, while the index for inpatient care rose less than it did in the preceding year. In contrast, the advance in the index for machinery and equipment parts and supplies wholesaling accelerated to 8.4 percent in 2019, up from 4.3 percent a year earlier. Prices for portfolio management and hospital outpatient care also increased more than they did in 2018.

Final-demand goods

In 2019, the index for final-demand goods rose 1.0 percent, down from 1.6 percent in the previous year. A major reason for this deceleration was a downturn in the index for carbon steel scrap, which fell 27.4 percent, reversing a 16.2-percent increase in 2018. Prices for fresh and dry vegetables, steel mill products, beef and veal, and utility natural gas also decreased in 2019, after increasing in the previous year. The index for pharmaceutical preparations rose less than it did in 2018. Conversely, prices for gasoline increased 11.4 percent in 2019, after falling 12.7 percent in the preceding year. The index for pork also turned up, and prices for communications and related equipment rose more than in 2018.

Intermediate demand by commodity type

This section describes producer price movements associated with business-to-business sales of processed goods, unprocessed goods, and services. These sales, captured in the intermediate-demand portion of the FD-ID aggregation system, exclude sales of capital equipment, sales to government, and exports.

Processed goods for intermediate demand

The index for processed goods for intermediate demand fell 1.7 percent in 2019, after rising 2.8 percent in the previous year. Over one-third of this downturn can be attributed to prices for steel mill products, which dropped 16.0 percent, reversing a 19.3-percent increase in 2018. The indexes for utility natural gas, pulp and paper products, fabricated structural metal products, and plastic resins and materials also turned down in 2019, after rising in the previous year. Prices for industrial chemicals fell more than they did in 2018. In contrast, the index for natural cheese (except cottage cheese) rose 14.9 percent in 2019, after decreasing 5.0 percent in the preceding year. Prices for softwood lumber (not edge worked) and gasoline also turned up after falling in 2018.

Unprocessed goods for intermediate demand

The index for unprocessed goods for intermediate demand fell 7.3 percent in 2019, after rising 3.7 percent a year earlier. This downturn was primarily driven by the index for natural gas, which dropped 50.9 percent, reversing a 41.8-percent jump in 2018. Prices for iron and steel scrap, fresh vegetables (except potatoes), and hay and hayseeds also fell after rising in 2018. The index for corn rose less in 2019 than in the previous year, while prices for wastepaper fell more than in 2018. Conversely, prices for raw milk jumped 26.2 percent in 2019, reversing a 4.6-percent decrease a year earlier. The indexes for crude petroleum and nonferrous metal ores also rose after declining in 2018.

Services for intermediate demand

The index for services for intermediate demand advanced 1.7 percent in 2019, down from 3.1 percent in the previous year. A major reason for this deceleration was a downturn in the index for loan services (partial), which decreased 9.1 percent after jumping 11.0 percent in 2018. The indexes for securities brokerage, dealing, investment advice, and related services and for food wholesaling also turned down after rising in 2018. The indexes for metals, minerals, and ores wholesaling and for nonresidential real estate rents increased less in 2019 than in the previous year, and prices for truck transportation of freight were unchanged after rising a year earlier. In contrast, margins for machinery and equipment parts and supplies wholesaling advanced 8.4 percent, up from 4.3 percent in 2018. The indexes for staffing services and U.S. postal services also rose more in 2019 than in the previous year.

Intermediate demand by production flow

The production-flow treatment of intermediate demand is a stage-based system of price indexes. These stage-based indexes can be used to study price-transmission relationships between the sequential intermediate-demand stages, and between the last stage of intermediate demand and final demand. The production-flow system contains four main indexes, each corresponding to one of four stages of intermediate demand (stages 1 through 4). The system tracks price change for the *net inputs consumed by industries assigned to each of the four stages*. The stage-4 intermediate-demand index, for example, tracks price change for inputs consumed, not produced, by industries included in the fourth stage. Hence, this index measures price change in the inputs to production for industries that primarily produce final-demand goods, services, and construction.

Stage-4 intermediate demand

The index for stage-4 intermediate demand rose 1.4 percent in 2019, down from 3.1 percent in the previous year. The index for total goods inputs to stage-4 intermediate demand moved up 0.4 percent, compared with a 2.9-percent rise in 2018. Prices for total services inputs climbed 2.3 percent in 2019, after advancing 3.2 percent a year earlier. A major reason for the deceleration in the overall index for stage-4 intermediate demand was a downturn in the index for fabricated structural metal, which fell 1.5 percent after advancing 8.9 percent in 2018. The indexes for loans services (partial); steel mill products; securities brokerage, dealing, investment advice, and related services; plastic products; and food wholesaling also decreased after increasing in 2018. Prices for nonresidential real estate rents increased less in 2019 than a year earlier. In contrast, the index for machinery and equipment parts and supplies wholesaling jumped 8.4 percent, up from 4.3 percent in 2018. Prices for portfolio management also rose more in 2019, and the index for gasoline increased after falling in 2018.

Stage-3 intermediate demand

The index for stage-3 intermediate demand advanced 0.8 percent in 2019, down from 2.0 percent in 2018. Prices for total services inputs to stage-3 intermediate demand rose 1.7 percent in 2019, after moving up 3.1 percent in the previous year. The index for total goods inputs turned down 0.1 percent, reversing a 1.0-percent increase in 2018. A major reason for the slowdown in prices for overall stage-3 intermediate demand was a decline in the index for securities brokerage, dealing, investment advice, and related services, which turned down 9.8 percent in 2019, after increasing 8.8 percent a year earlier. The indexes for steel mill products, loan services (partial), agricultural chemicals and chemical products, and food wholesaling also declined after advancing in 2018. Prices for industrial chemicals fell more in 2019 than in the previous year. Conversely, the index for gasoline jumped 11.4 percent, reversing a 12.7-percent drop in 2018. Prices for raw milk also turned up in 2019, and the index for machinery and equipment parts and supplies wholesaling rose more than it did a year earlier.

Stage-2 intermediate demand

Prices for stage-2 intermediate demand decreased 3.2 percent in 2019, after rising 3.6 percent in the previous year. The index for total goods inputs to stage-2 intermediate demand turned down 9.9 percent, reversing a 5.4-percent advance in 2018. Prices for total services inputs climbed 2.0 percent in 2019, compared with a 2.3-percent increase a year earlier. Leading the downturn in the overall stage-2 index was the index for gas fuels, which dropped 46.5 percent after increasing 29.7 percent in 2018. Prices for steel mill products; securities brokerage, dealing, investment advice, and related services; plastic resins and materials; and paperboard also moved down in 2019, after rising in the previous year. The index for industrial chemicals fell more than in 2018. In contrast, the

index for crude petroleum jumped 19.1 percent in 2019, reversing a 16.0-percent drop in the prior year. Prices for staffing services and portfolio management rose more than in 2018.

Stage-1 intermediate demand

The index for stage-1 intermediate demand fell 2.2 percent in 2019, after climbing 3.1 percent a year earlier. Prices for total goods inputs to stage-1 intermediate demand turned down 4.8 percent, reversing a 2.6-percent advance in 2018. The increase in the index for total services inputs slowed to 1.1 percent in 2019, down from 4.0 percent in 2018. Nearly 40 percent of the reversal in prices for overall stage-1 intermediate demand can be traced to the index for carbon steel scrap, which dropped 27.4 percent after rising 16.1 percent in 2018. The indexes for gas fuels; loan services (partial); steel mill products; and securities brokerage, dealing, investment advice, and related services also turned down in 2019, after rising in the preceding year. Conversely, prices for crude petroleum rose 19.1 percent, reversing a 16.0-percent decline in 2018. The index for gasoline also turned up in 2019, and that for machinery and equipment parts and supplies wholesaling rose more than it did in 2018.

Conclusion

In 2019, final-demand producer inflation advanced at a slower pace than it did a year earlier. This slowdown was due to smaller advances in the indexes for services, core goods, and foods. Within intermediate demand, producer inflation for energy goods and core goods turned down in 2019, while prices for foods advanced after seeing little change in 2018. Producer inflation for services sold to other businesses advanced less in 2019 than a year earlier.

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NOTES

¹ Producer Price Index (PPI) data for September–December 2019 were preliminary through May 13, 2020. All PPI values presented in this article are recalculated values that reflect late reporting by survey respondents.

² The Final Demand–Intermediate Demand (FD–ID) system was first introduced in January 2011 as a set of experimental indexes. With the release of data for January 2014, the FD–ID system replaced the Stage of Processing (SOP) system. Nearly all FD–ID services and construction indexes provide historical data back to either November 2009 or April 2010. The FD–ID indexes for goods that correspond to the historical SOP indexes go back to the 1970s or earlier. For more information about the FD–ID system, see Jonathan C. Weinhausen, "A new, experimental system of indexes from the PPI program," *Monthly Labor Review*, February 2011, <https://www.bls.gov/opub/mlr/2011/02/art1full.pdf>, or visit the PPI FD–ID system webpage at <https://www.bls.gov/ppi/fdidaggregation.htm>.

³ PPIs for trade services measure changes in margins received by wholesalers and retailers. For more information on these PPIs, see Producer Price Index program staff, "Wholesale and retail producer price indexes: margin prices," *Beyond the Numbers: Prices and Spending*, vol. 1, no. 8 (U.S. Bureau of Labor Statistics, August 2012), <https://www.bls.gov/opub/btn/volume-1/pdf/wholesale-and-retail-producer-price-indexes-margin-prices.pdf>.

⁴ Historically, the PPIs for food and energy goods have exhibited greater short-term volatility than the PPIs for goods less foods and energy. For this reason, the PPI program long ago introduced a number of goods indexes that exclude one or both of these potentially volatile components. With the transition from the SOP to the FD–ID system, PPI continues to produce these indexes. In addition, with

the FD–ID expansion to include prices for many services, it has been observed that the indexes for wholesale and retail trade, which measure changes in margins, also are subject to short-term volatility. Consequently, PPI calculates a number of indexes that exclude prices for trade services. These indexes include those for [final-demand services less trade services](#) and [final demand less trade services](#). In addition, PPI calculates an index for [final demand less foods, energy, and trade services](#), removing all three potentially volatile components.

⁵ The PPI data series used for this comparison include [crude petroleum](#) (series ID: wpu056), [gasoline](#) (series ID: wpu0571), and [fuels and lubricants retailing](#) (series ID: wpu58F).

⁶ Jonathan C. Weinhagen, “Crude petroleum prices and retail fuel margins: an empirical examination,” *Monthly Labor Review*, January 2018, <https://doi.org/10.21916/mlr.2018.2>.

⁷ The PPI data series used for this comparison include [pork](#) (series ID: wpu022104), [processed poultry](#) (series ID: wpu0222), and [dairy products](#) (series ID: wpu023). The Consumer Price Index data series include [pork](#) (series ID: CUUR0000SEFD), [poultry](#) (series ID: CUUR0000SEFF), and [dairy and related products](#) (series ID: CUUR0000SEFJ).

⁸ See “Open market operations,” *Policy Tools* (Board of Governors of the Federal Reserve System), <https://www.federalreserve.gov/monetarypolicy/openmarket.htm>; and “Primary and secondary credit,” *Historical Discount Rates* (Federal Reserve), <https://www.frbdiscountwindow.org/pages/discount-rates/historical-discount-rates>.

⁹ Ben Winck, “Fund giant Vanguard is the latest brokerage to slash trading fees to zero,” *Markets Insider*, January 2, 2020, <https://markets.businessinsider.com/news/stocks/vanguard-cuts-trading-fees-commission-zero-following-other-brokerage-firms-2020-1-1028791802>. See also Rebecca Ungarino, “Wells Fargo just eliminated online commissions. Here’s everything we know about brokerages’ latest moves in the race to zero,” *Business Insider*, December 10, 2019, https://www.businessinsider.com/charles-schwab-td-ameritrade-interactive-brokers-e-trade-cut-fees-2019-10?utm_source=markets&utm_medium=ingest.

¹⁰ For a discussion of fuel surcharges and their effect on transportation prices, see “Current price topics: the impact of fuel surcharges on the PPI,” *Focus on Prices and Spending*, vol. 2, no. 6 (U.S. Bureau of Labor Statistics, August 2011), <https://www.bls.gov/opub/btn/archive/producer-price-indexes-the-impact-of-fuel-surcharges-on-the-ppi.pdf>.

¹¹ *December 2019 Manufacturing ISM® Report On Business®* (Tempe, AZ: Institute for Supply Management, January 3, 2020), <https://www.instituteforsupplymanagement.org/about/MediaRoom/newsreleasedetail.cfm?ItemNumber=31162&SSO=1>.

¹² *U.S. International Trade in Goods and Services: November 2019*, CB20-03, BEA 20-01 (U.S. Census Bureau and U.S. Bureau of Economic Analysis, January 7, 2020), exhibit 1, p. 14, <https://www.bea.gov/system/files/2020-01/trad1119.pdf>.

¹³ The PPI measures the average change in prices U.S. producers receive for the sale of their products. Since tariffs and taxes are not retained by producers as revenue, they are explicitly excluded from the PPI. However, the pricing decisions producers make in reaction to tariffs are included in the PPI. For example, if a domestic producer is manufacturing a product that faces import competition and if that competition is subject to tariffs, the domestic producer may increase its prices in order to maximize revenue. In this case, the domestic producer’s price increase would be included in the PPI. Similarly, if a domestic producer is exporting a product to a foreign country and if that country has placed tariffs on U.S. products, the domestic producer may lower its prices either to better compete in the export market or to sell excess inventory (resulting from the tariffs) in the domestic market. Here, the domestic producer’s price decrease would also be reflected in the PPI. For information on U.S. trade enforcement actions, see “Trade enforcement” (U.S. Department of Commerce), <https://www.commerce.gov/issues/trade-enforcement>.

¹⁴ For a detailed discussion of price transmission across stages of processing, see Jonathan Weinhagen, “An empirical analysis of price transmission by stage of processing,” *Monthly Labor Review*, November 2002, <https://www.bls.gov/opub/mlr/2002/11/art1full.pdf>; and Weinhagen, “Price transmission within the PPI for intermediate goods,” *Monthly Labor Review*, May 2005, <https://www.bls.gov/opub/mlr/2005/05/art4full.pdf>. In general, more highly processed goods exhibit price movements that are somewhat different from those of less processed goods. Basic material costs tend to be a smaller portion of total costs for producers of more highly processed goods than for manufacturers of less processed goods. Contracts and escalation agreements also can delay or mitigate the pass-through effect of early stage price volatility on successive stages of processing.

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[19](#) “U.S. natural gas total consumption” (U.S. Energy Information Administration), <https://www.eia.gov/dnav/ng/hist/n9140us2m.htm>.

[20](#) “Henry Hub natural gas spot price” (U.S. Energy Information Administration), <https://www.eia.gov/dnav/ng/hist/rngwhhdd.htm>.

[21](#) “Spot prices,” *Petroleum & Other Liquids* (U.S. Energy Information Administration), https://www.eia.gov/dnav/pet/pet_pri_spt_s1_m.htm.

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[23](#) “4-week average U.S. field production of crude oil,” *Petroleum & Other Liquids* (U.S. Energy Information Administration), <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=WCRFPUS2&f=4>. The percent increase reported here is calculated by comparing production figures for December 27, 2019, and December 28, 2018.

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The Survey of Occupational Injuries and Illnesses Respondent Follow-Up Survey

Nonfatal workplace injury and illness data published by the U.S. Bureau of Labor Statistics (BLS) Survey of Occupational Injuries and Illnesses (SOII) provide a valuable measure of the safety and health of U.S. workers. Concerns have been raised about the completeness of the SOII data—in particular, that the number of injury and illness cases are underreported in the survey. In 2015, BLS conducted a survey of SOII respondents to determine if follow-up interviews or company records could be used to capture cases that were not initially reported by employers in the SOII. Results from the SOII Respondent Follow-Up Survey indicate that keeping of injury and illness logs is not widely prevalent and that small establishments are less likely than midsized and large establishments to keep records. The survey results also show that there is considerable misunderstanding of the recordkeeping requirements as well as some of the key concepts of the SOII.

The U.S. Bureau of Labor Statistics (BLS) collects and publishes information on nonfatal workplace injuries and illnesses from the national Survey of Occupational Injuries and Illnesses (SOII). From the information collected in the SOII, BLS publishes estimates of the total numbers and rates of work-related injuries and illnesses. The SOII also provides estimates for detailed industries for cases that require at least 1 day away from work as well as cases that require job transfer or work restriction. For those cases that require at least 1 day away from work, estimates are also published for case circumstances and worker demographics, measures that give a more comprehensive description of the kinds of occupational injuries and illnesses. The SOII is the only national source of these data, and millions of occupational injury and illness estimates are produced annually.^[1]

The SOII is conducted annually and includes approximately 230,000 establishments; it requires that the employers selected for the survey report all recordable workplace injuries and illnesses that occur among their employees. To maintain records of injuries and illnesses throughout the year, respondents are asked to record their information in Occupational Safety and Health Administration (OSHA) injury and illness logs.^[2] OSHA is responsible for



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maintaining recordkeeping guidelines for what constitutes a workplace injury or illness to be reported in the SOII and for issuing interpretations of the rules and guidelines. Recordable cases are those resulting in one or more of the following: (1) loss of consciousness, (2) days away from work, (3) restricted work activity or job transfer, and (4) medical treatment beyond first aid.[3] Separately, OSHA requires employers in certain industries to maintain records at their establishment and to report those records to OSHA. There is an overlap between these two groups of establishments. The recordkeeping requirements for OSHA (and therefore the SOII) are not the same as the criteria for determining if an injury or illness is covered by workers' compensation. In addition, workers' compensation criteria vary across states, while OSHA rules are consistent across states, allowing for the production of consistent national estimates.

Research indicates that the number of injuries and illnesses is likely underreported in the SOII.[4] Preliminary BLS and BLS-funded research focused on matching cases reported to the SOII (including the detailed information available for cases with at least 1 day away from work) with other available data sources, such as workers' compensation claims.[5] This research indicates that cases were underreported in the SOII, but variations in datasets and methodology in the studies result in different estimates of underreporting.[6] Additional research focused on interviewing employers to determine their injury and illness recordkeeping practices. Some of these studies included conducting qualitative interviews with a limited number of employers.[7] These qualitative interviews pointed to potential issues with employer understanding of OSHA recordkeeping guidelines and SOII survey instructions.

To produce statistically valid estimates of employers' understanding of recordkeeping and their responding to the SOII, BLS partnered with four states (Minnesota, New York, Oregon, and Washington) to conduct four state-based surveys.[8] In addition to the separate state reports from this effort, a report combining results from all states was produced.[9] Previous SOII respondents were sampled, contacted by telephone, and asked about OSHA recordkeeping practices, injury and illness tracking, SOII reporting practices, and their understanding of OSHA recordkeeping guidelines. The study found that a large number of establishments were unfamiliar with OSHA recordkeeping or recording guidelines and had often not had multiple years of experience reporting to the SOII. Across the four states, only 19 percent of establishments reported that the person directly responsible for responding to the SOII had participated for multiple years.

National SOII Respondent Follow-Up Survey

As data collection for the four-state study was concluding, BLS contracted with the professional services firm Westat to conduct a nationally representative survey of SOII respondents. The SOII Respondent Follow-Up Survey (henceforth referred to as the Respondent Survey) was undertaken to provide understanding about employers' recordkeeping practices and knowledge of OSHA guidelines for the entire United States, especially given variations in state workers' compensation laws.

Goals and methodology

The national Respondent Survey was designed to further examine employer recordkeeping and reporting practices, particularly those related to the potential reporting of late cases. A sample of 3,703 private sector establishments was drawn from a universe of respondents who had been sampled to participate in the 2013 SOII and who had then provided a response.[10]

All estimates presented in this article were weighted, and the sample weights were developed to account for this two-phase survey design. State and local government establishments were excluded from the national Respondent Survey. Establishments in the railroad and mining sectors, for which injury and illness data are maintained by the Federal Railroad Administration and the Mine Safety and Health Administration, respectively, were also excluded from the Respondent Survey.^[11] The sample was stratified by state, size class, and industry sector. Size class was defined as small-, medium-, and large-sized establishments, which is a collapsed version of the five-category size-class structure of the SOII. Industry was defined by using 15 North American Industry Classification System (NAICS) sectors, with some sectors combined. (See table 1.)

Table 1. Percentage of sample by industry sector

Industry	NAICS code	Percentage of sample
Agriculture, forestry, fishing, and hunting	11	1.0
Mining, quarrying, and oil and gas extraction	21	0.5
Utilities	22	0.7
Construction	23	6.5
Manufacturing	31–33	13.9
Wholesale trade	42	5.3
Retail trade	44–45	16.7
Transportation and warehousing	48–49	4.2
Information	51	1.9
Finance and insurance, real estate and rental and leasing	52–53	4.5
Professional, scientific, and technical services; management of companies and enterprises; administrative and support and waste management and remediation services	54–56	11.8
Educational services	61	1.7
Health care and social assistance	62	15.2
Arts, entertainment, and recreation; accommodation and food services	71–72	12.6
Other services	81	3.6

Note: NAICS = North American Industry Classification System.
 Source: U.S. Bureau of Labor Statistics.

A questionnaire was developed to examine key concepts, including the following:

- Could BLS use records or follow-up interviews to capture cases that may have been left off initial SOII reporting?
- How common are recordkeeping errors, especially those that may lead to SOII underreporting?
- What kinds of SOII reporters are associated with late cases and measurement errors?
- Are SOII respondents able and willing to send in updated OSHA logs?

The survey was conducted by Computer Assisted Telephone Interviewing (CATI). Respondents were notified of the request to participate in the Respondent Survey by email or letter. Interviews were obtained from 1,852 locations, with a response rate of 52.7 percent and 777 OSHA logs collected.

Nonresponse bias analysis, adjustment, and estimation

After data collection was completed, the sample weights were adjusted for survey nonresponse by using the same categories of sampling criteria. Point estimates for each of the interview questions were produced. This article presents these estimates as proportions of responses, in some cases cross-tabulated by size class or industry sector. Variances for each estimate were also produced and are available from BLS upon request. All statements were tested for statistical validity.

Results of the SOII Respondent Follow-Up Survey

Each establishment sampled to report data to the SOII is required to keep OSHA logs for the duration of the reference year in which it has been sampled. At the beginning of the reference year, every establishment is notified that it is required to complete the SOII and to provide a copy of the OSHA logs. All SOII notifications to keep records for the 2013 reference year were delivered to respondents by the United States Postal Service. The OSHA logs are to be used by the respondents to record specific cases through the year, and they are totaled at the end of the reference year and entered into a summary form. For the SOII, respondents are also asked to record detailed case-specific information on the OSHA-provided case form for cases that required at least 1 day away from work (or for a sample of the cases if there are more than 15 cases). The respondents are asked to maintain OSHA logs throughout the year and not to rely on other sources or memory, with the intention of increasing the accuracy of information reported to the SOII. Despite this requirement, about one-half (43 percent) of the establishments maintained OSHA logs, which was not statistically different from the percentage that reported that they did not keep logs (44 percent).

In addition to the requirement to keep these records when sampled by the SOII, some establishments are also required by OSHA to keep these records on an annual basis. OSHA exempts establishments in some industries from the requirement to keep injury and illness records.^[12] All establishments with 11 or more employees in the following sectors must keep OSHA records: agriculture, forestry, fishing and hunting; oil and gas extraction; utilities; construction; manufacturing; and wholesale trade. No establishments in the educational services sector are required to keep OSHA records unless sampled by the SOII. All other sectors include a mix of partially exempt and nonexempt industries.

The percentage of establishments that indicated that they kept OSHA logs ranged from 92 percent in agriculture, forestry, fishing, and hunting to 17 percent in educational services. The percentage of establishments that reported that they kept OSHA logs was higher than the percentage that did not keep logs in the following industry sectors: agriculture, forestry, fishing, and hunting (92 percent); utilities (83 percent); construction (70 percent); manufacturing (74 percent); retail trade (60 percent); and transportation and warehousing (73 percent). Most establishments in these sectors are required by OSHA to keep logs if they employ more than 10 employees.^[13] By contrast, the percentage of establishments that indicated that they did not keep OSHA logs was higher than the percentage that did keep logs in finance and insurance, real estate and rental and leasing (73 percent); educational services (70 percent); and arts, entertainment and recreation, accommodation and food services (62 percent), even though some industries within these sectors are required by OSHA to do so. Small establishments reported the lowest percentage of keeping OSHA logs (41 percent), compared with midsized (71 percent) and large establishments (85 percent). (See table 2.)

Table 2. Percentage of establishments indicating that OSHA logs are maintained

Industry	Yes	No	Do not know	Refused to respond
Private industry	43	44	13	0
Agriculture, forestry, fishing, and hunting	92	8	0	0
Mining, quarrying, and oil and gas extraction	21	75	3	0
Utilities	83	2	15	0
Construction	70	28	2	0
Manufacturing	74	18	8	0
Wholesale trade	42	57	1	0
Retail trade	60	30	11	0
Transportation and warehousing	73	26	1	0
Information	46	53	1	0
Finance and insurance, real estate and rental and leasing	19	73	8	0
Professional, scientific, and technical services; management of companies and enterprises; administrative and support and waste management and remediation services	32	53	16	0
Educational services	17	70	12	0
Health care and social assistance	49	32	19	0
Arts, entertainment, and recreation; accommodation and food services	24	62	14	0
Other services	20	32	47	0

Note: OSHA = Occupational Safety and Health Administration, an agency of the U.S. Department of Labor.

Source: U.S. Bureau of Labor Statistics.

Who keeps track of OSHA recordkeeping?

The majority (87 percent) of establishments indicated that the person directly responsible for answering the Respondent Survey was also responsible for completing (or assisting with completing) the OSHA recordkeeping or other injury and illness tracking. Of those who responded that multiple people were responsible for these tasks, a majority (71 percent) of establishments said that the person directly responsible for answering the Respondent Survey was also the person primarily responsible for OSHA recordkeeping and injury and illness tracking.

OSHA recordkeeping training

Training in OSHA recordkeeping requirements is designed to increase recordkeepers' knowledge of the kinds of injuries and illnesses that should be recorded and what information recordkeepers are required to include about those cases. This training intends to increase the quality of the information that employers record in OSHA logs. For respondents who indicated that OSHA logs were kept at their establishment or firm, the Respondent Survey asked if the person primarily responsible for OSHA recordkeeping had ever received formal training such as classes, seminars, or online courses. Around one-half (48 percent) of the establishments reported that the person primarily responsible for OSHA recordkeeping had received formal recordkeeping training. About the same percentage of establishments (46 percent) responded that their employees had not received formal training.

A majority of establishments in the utilities (92 percent) and information (87 percent) sectors reported that their primary recordkeeper had received formal training. Construction was the only sector in which a majority of establishments (83 percent) indicated that the primary recordkeeper had never received formal training. Of the establishments who indicated that their employees had received formal OSHA recordkeeping training, a higher

percentage (66 percent) said that the training had last occurred between 1 and 5 years than any other period prior to the Respondent Survey. Only 12 percent reported that the recordkeeping training had occurred in the previous year. (See table 3.)

Table 3. Percentage of respondents keeping OSHA logs who had received formal OSHA recordkeeping training

Industry	Yes	No	Do not know	Refused to respond
Private industry	48	46	6	0
Agriculture, forestry, fishing, and hunting	72	28	0	0
Mining, quarrying, and oil and gas extraction	45	55	0	0
Utilities	92	8	0	0
Construction	17	83	0	0
Manufacturing	63	31	6	0
Wholesale trade	24	73	3	0
Retail trade	66	17	18	0
Transportation and warehousing	47	51	1	0
Information	87	7	6	0
Finance and insurance, real estate and rental and leasing	62	37	2	0
Professional, scientific, and technical services; management of companies and enterprises; administrative and support and waste management and remediation services	41	56	3	0
Educational services	42	58	0	0
Health care and social assistance	68	31	1	0
Arts, entertainment, and recreation; accommodation and food services	47	44	8	1
Other services	9	62	29	0

Note: OSHA = Occupational Safety and Health Administration, an agency of the U.S Department of Labor.

Source: U.S. Bureau of Labor Statistics.

SOII reporting

Fifty-one percent of establishments indicated that the person directly responsible for completing the SOII in 2013 was a first-time respondent to the SOII in that year, while an additional 29 percent did not know if that person had completed the SOII before 2013. Twenty percent of establishments indicated that that person was not a first-time responder to the SOII. Although the questions asked were not the same, this 20-percent figure is similar to the percentage of establishments in the four-state study that responded that the person directly responsible for completing the SOII had completed it multiple times (19 percent across the four states). Previous experience in completing the SOII is likely to increase knowledge of the survey and therefore the accuracy of the information reported.

The Respondent Survey asked establishments to provide information on the sources that they used to complete the SOII at the conclusion of the 2013 reference year and to indicate all of the sources they had used to do so. Despite being provided the OSHA logs at the time they were notified of their mandatory responsibility to report to the SOII, 37 percent of establishments used OSHA Form 300A (“Summary of Work-Related Injuries and Illnesses”), and 25 percent of establishments used the OSHA Form 301 detailed case form (“Injury and Illness Incident Report”). Many establishments used sources that are not consistent with OSHA recordkeeping or SOII concepts. Sixty-three percent used company-specific injury and illness records, such as injury report forms or

individual files kept on employees, and 43 percent of respondents used workers' compensation records such as claims or first state reports.^[14] These results suggest that individual company definitions of injuries and illnesses or workers' compensation criteria may form some of the basis of reporting occupational injuries and illnesses to the SOII rather than OSHA recordkeeping guidelines.

Workers' compensation completion

Most establishments (81 percent) reported that the person directly responsible for answering the Respondent Survey was also involved in the completion of workers' compensation claims. As the guidelines for workers' compensation differ from OSHA recordkeeping rules and vary by state, establishments with employees responsible for reporting to the SOII and also for completing workers' compensation claims may be more likely to have difficulty in correctly applying OSHA recordkeeping rules when reporting to the SOII.

General recordkeeping practices

Establishments were asked a series of questions about general recordkeeping practices, separate from the practices at their establishment or firm for completing the 2013 SOII. If an establishment indicated that OSHA logs were maintained, it was asked about recordkeeping practices related to the OSHA log; if not, the question was altered to refer more generally to the "BLS survey," meaning the SOII. For the purposes of determining the respondents' understanding of general recordkeeping practices, responses from these two groups are considered together. OSHA requires that injuries and illnesses be recorded on the log within 7 days of occurrence. Most establishments (68 percent) stated that cases were recorded within 1 week. A majority of establishments in the following sectors reported recording injuries and illnesses within a week: mining, quarrying, and oil and gas extraction (98 percent); construction (86 percent); manufacturing (76 percent); wholesale trade (89 percent) and educational services (83 percent).

Establishments also reported practices that were not compliant with OSHA recordkeeping guidelines and showed confusion among their recordkeeping employees about how to correctly identify information to be included on the OSHA log and to the SOII. Approximately a quarter of establishments (28 percent) accurately identified calendar days as the basis for determining the number of days away from work. Fifty-five percent incorrectly identified shift days as the days-away-from-work measure. Respondents in small establishments were less likely (25 percent) to correctly identify calendar days than were respondents in midsized and large establishments (60 and 71 percent, respectively).

According to OSHA recordkeeping guidelines, injuries and illnesses to temporary workers should be recorded at the establishment where the employees are supervised. However, for establishments in companies in which temporary workers are employed from staffing agencies, 37 percent include injuries or illnesses to these workers on the SOII. Of the establishments that maintained OSHA logs, 41 percent did not add or update cases on the previous year's OSHA log, an additional 14 percent never needed to add or update cases in the log, and 35 percent did add or update cases to the previous year's log.

Recordkeeping vignettes

In a further attempt to gauge respondents' recordkeeping knowledge about key OSHA rules, recordkeeping vignettes were asked of each respondent. Because each vignette has a correct answer, it is possible to assess the sophistication of respondents' understanding of OSHA recordkeeping. The establishments that indicated that they

maintained logs were asked specifically about OSHA recordkeeping, while establishments that did not keep logs were asked if they would include the injury in the SOII. The responses to the questions indicate that there is considerable confusion about key OSHA recordkeeping concepts.

Vignette 1

“Let’s say an employee sprained their ankle at work on Friday. The doctor recommended they take 2 days off from work. They were not scheduled to work on the weekend, and returned to work on Monday.”

Three questions were asked related to the vignette:

1. Would your company consider this an OSHA recordable injury [or] include this injury on the BLS survey?
2. (If yes) would you record any days away from work?
3. (If yes) how many?

The correct responses to the three questions are (1) this is a recordable case that should be included on the OSHA log/SOII, (2) days away from work should be recorded, and (3) the number of days away from work recorded should be “2.” Approximately one-half (56 percent) of establishments correctly responded “yes” to the first question, 28 percent answered the question incorrectly, and an additional 16 percent reported that they did not know the answer. Of those who correctly responded “yes” to the first question, about half (54 percent) then incorrectly answered that this is not a days-away-from-work case. Of those who responded correctly to the first two questions related to the vignette, a majority (78 percent) correctly reported that the number of days away from work should be recorded as “2.”

Vignette 2

“Let’s say a worker broke their arm at work, saw their family doctor and did not file a workers’ compensation claim, instead using their personal medical insurance. Would your company consider this an OSHA recordable injury / include this on the BLS survey?”

The correct response is that this is a recordable case that should be recorded and included in the SOII. About three-fifths (61 percent) of the establishments correctly identified this as a recordable case.

Vignette 3

“Let’s say a worker was injured, and the doctor recommended 2 days away from work and 10 days of modified or restricted job duties. Would your company classify this as a ‘days away from work’ case or a ‘days of job transfer and restriction’ case on the OSHA 300 Log / BLS survey?”

The correct answer is that this should be identified as a days-away-from-work case. Twenty-nine percent of establishments correctly identified it as a days-away-from-work case, 31 percent identified it as a days-of-job-transfer-or-restriction case, 17 percent considered it an “other” kind of case, and 22 percent said that they did not know.

Timing issues that may prevent inclusion of an injury or illness case in the SOII

Another goal of the Respondent Survey was to determine if there are cases that occur that do not get recorded on the OSHA log or reported to the SOII because of timing issues (such as the case being reported in November or December, the case worsening after it was initially reported, or the case being reported or worsening after the submission of the SOII), pending workers' compensation status, or employment considerations (such as the injured employee no longer working at the company). Establishments were asked if they could recall any of these scenarios happening at their company. Most establishments (87 percent) reported that they did not recall any of these kinds of situations ever occurring at their company.

When asked about each of the specific situations, a majority of establishments responded that none of them had ever happened and none had happened in 2013. Despite a majority of establishments saying that they did not recall situations happening that were likely to cause missing cases or that their company did not update the OSHA log, most (72 percent) establishments indicated that they could produce an OSHA log with updates if asked to do so.

Summary and conclusions

The goals of the Respondent Survey included determining whether there were recordkeeping issues found among establishments (especially those that would lead to SOII underreporting), whether the SOII could capture late cases by following up with establishments, and whether establishments could supply BLS with OSHA logs after the submission of SOII. The results show that a number of notable recordkeeping issues were found, especially related to the percentage of establishments that keep OSHA logs. The results also show a fairly low level of recordkeeping training, the use of sources other than the OSHA forms in responding to the SOII, and considerable confusion related to general recordkeeping knowledge.

The results of the Respondent Survey also suggest that establishments commonly do not keep OSHA logs, with about the same percentage of establishments reporting that they do and do not maintain logs. Smaller establishments are less likely to keep OSHA logs than mid-sized or large establishments. Of the 15 industry sectors, 6 reported more establishments maintaining OSHA logs than did not. The other sectors either reported a higher percentage of establishments that did not maintain logs or no difference in the percentage of establishments keeping or not keeping OSHA records. Even in sectors in which some establishments are required to keep OSHA logs on a regular annual basis, results show that not all establishments replied that OSHA logs were kept. Also, only around a third of establishments indicated using OSHA Form 300A and a quarter of establishments indicated using OSHA Form 301 to complete the survey.

About half of establishments reported that the person responsible for keeping the OSHA log (if it was maintained) had some kind of formal recordkeeping training, with most reporting that the training had occurred within the previous 5 years. The survey questions that were designed to indicate understanding of recordkeeping requirements showed that there was considerable misunderstanding of the survey concepts. Reported answers related to occupational injury and illness scenarios suggest that there is some confusion over the use of calendar days to determine the duration of an injury or illness, which is likely to contribute to the underreporting of both the total number of cases with days away from work and the total number of days away from work required for cases that are correctly identified. Also, similar levels of confusion over the requirement to record the injuries and

illnesses of temporary workers should be examined further to determine if this confusion increases the underreporting of injuries and illnesses among these workers.

Most establishments indicated that although late cases had never happened at their company before, they could supply an updated OSHA log if they were asked to do so. Further research is required to determine if improvements can be made in communication or training of SOII respondents about required recordkeeping. Improvements to SOII collection procedures should also be examined, with a focus on mitigating any effects that these procedures might have on the quality of SOII estimates. Possible changes to SOII collection methods could include redesigning survey materials, increasing the use of email notifications (to include first-time respondents to the survey), and providing notifications throughout the reference year.

To improve the recordkeeping knowledge of SOII respondents, BLS could provide access to available online OSHA recordkeeping training modules and other SOII-related training resources. BLS could also work with OSHA to help develop new training options for establishments required to keep OSHA logs, whether as respondents to the SOII or as required by OSHA. Finally, BLS could share with OSHA its knowledge of situations in which employers may be confused by or unaware of recordkeeping guidelines, which could help guide the training toward areas that are most in need of improvement.

SUGGESTED CITATION

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NOTES

¹ For the latest data on work-related illnesses and injuries, see *Employer-Reported Workplace Injury and Illness, 2018*, USDL-19-1909 (U.S. Bureau of Labor Statistics, November 7, 2019), <https://www.bls.gov/news.release/osh.nr0.htm>. For more detailed information, see "Survey of Occupational Injuries and Illnesses data," *Injuries, Illnesses, and Fatalities* (U.S. Bureau of Labor Statistics, April 29, 2020), <https://www.bls.gov/iif/soii-data.htm#newsrelease>.

² For a complete set of the OSHA recordkeeping forms, see "Injury & illness recordkeeping forms—300, 300A, 301" (Occupational Safety and Health Administration, U.S. Department of Labor), <http://www.osha.gov/recordkeeping/RKforms.html>; and "OSHA injury and illness recordkeeping and reporting requirements" (Occupational Safety and Health Administration, U.S. Department of Labor), <https://www.osha.gov/recordkeeping/>.

³ For more information on the kinds of injuries and illnesses that must be reported, see "OSHA Injury and Illness Recordkeeping and Reporting Requirements" (Occupational Safety and Health Administration, U.S. Department of Labor), <https://www.osha.gov/recordkeeping/>.

⁴ See "Survey of Occupational Injuries and Illnesses data quality research," selected articles and research, *Injuries, Illnesses, and Fatalities* (U.S. Bureau of Labor Statistics, June 28, 2019), <https://www.bls.gov/iif/data-quality.htm>.

⁵ See "Data quality research," *Injuries, Illnesses, and Fatalities* (U.S. Bureau of Labor Statistics, April 5, 2019), <https://www.bls.gov/iif/soii-bibliography.htm#matching>.

⁶ See John W. Ruser, "Allegations of undercounting in the BLS Survey of Occupational Injuries and Illnesses" (U.S. Bureau of Labor Statistics, Office of Survey Methods Research, October 2010), <https://www.bls.gov/osmr/research-papers/2010/st100170.htm>; Sara Wuellner, Dave Bonauto, and Darrin Adams, "SOII undercount research: Washington SOII-WC record linkage, 2000–2011," final report (Washington State Department of Labor and Industries, August 30, 2014), https://www.bls.gov/iif/wa_workercomp.pdf; and Nicole Nestoriak and Brooks Pierce, "Comparing injury data from administrative and survey sources: methodological issues" (U.S.

Bureau of Labor Statistics, Office of Survey Methods Research, October 2012), <https://www.bls.gov/osmr/research-papers/2012/pdf/st120130.pdf>.

⁷ See Polly Phipps and Danna Moore, “Employer interviews: exploring differences in reporting work injuries and illnesses in the Survey of Occupational Injuries and Illnesses and state workers’ compensation claims” (U.S. Bureau of Labor Statistics, Office of Survey Methods Research, 2010), <https://www.bls.gov/osmr/research-papers/2010/pdf/st100210.pdf>; and Sara Wuellner and Dave Bonauto, “Exploring the relationship between employer recordkeeping and underreporting in the BLS Survey of Occupational Injuries and Illnesses,” *American Journal of Industrial Medicine*, vol. 57, no. 10, October 2014, pp. 1133–1143, <https://onlinelibrary.wiley.com/doi/full/10.1002/ajim.22350>.

⁸ See the following reports for Minnesota, New York, Oregon, and Washington, respectively: William Boyer and Brian Zaidman, “SOII undercount project: Minnesota interviews with SOII respondents” (Minnesota Department of Labor and Industry, September 2014), https://www.bls.gov/iif/mn_interviews.pdf; Karen Cummings, “SOII undercount research: Employee interview project New York State” (New York State Department of Health, Bureau of Occupational Health and Injury Prevention, September 2014), https://www.bls.gov/iif/ny_interviews.pdf; Nathan Johnson, Karen Howard, and Ronni Rachele, “Bureau of Labor Statistics SOII undercount research: Oregon employer survey,” final report (Oregon Department of Consumer and Business Services, September 2014), https://www.bls.gov/iif/or_interviews.pdf; and Sara Wuellner, Dave Bonauto, Christine Rappin, and Wendy Lu, “SOII undercount research: telephone interviews with SOII respondents, Washington,” final report (Washington State Department of Labor and Industries, Safety and Health Assessment and Research for Prevention Program, September 2014), https://www.bls.gov/iif/wa_interviews.pdf.

⁹ See Sara Wuellner and Polly Phipps, “Employer-based work injury recordkeeping: data from four states,” ASA/NSF/BLS fellowship final report (Washington State Department of Labor and Industries Safety and Health Assessment and Research for Prevention Program, March, 2017), <https://www.bls.gov/iif/four-state-data-report.pdf>.

¹⁰ For details of the Westat study, see James Greenless, Hanna Popick, Margaret Pacious, and Meghan Martin, *BLS Task Order 19: SOII Respondent Follow-Up Survey Final Report* (Rockville, MD: Westat, February 29, 2016), <https://www.bls.gov/iif/westat-soii-national-recontact-survey-final-report.pdf>.

¹¹ For more information, see the Federal Railroad Administration web page (U.S. Department of Transportation), <https://railroads.dot.gov/>; and the Mine Safety and Health Administration web page (U.S. Department of Labor), <https://www.msha.gov/>. For more information on the different federal agencies responsible for collecting these data, see Harvey J. Hilaski, “Understanding statistics on occupational illnesses,” *Monthly Labor Review*, March 1981, pp. 25–29, <https://www.bls.gov/opub/mlr/1981/03/art3full.pdf>.

¹² For a list of the partially exempt industries, see “Non-mandatory appendix A to subpart B—partially exempt industries” (Occupational Safety and Health Administration, U.S. Department of Labor, September 2014), <https://www.osha.gov/laws-regs/regulations/standardnumber/1904/1904SubpartBAppA>.

¹³ Some establishments in the retail trade and transportation and warehousing sectors are exempt regardless of size.

¹⁴ Respondents could select multiple responses to this question; percentages do not total to 100.

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