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Job Displacement and Sectoral Mobility in New England

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EXECUTIVE SUMMARY

Economic phenomena—such as the rise of automation or the recent COVID-19 pandemic—can result in lost jobs for long-tenured workers in New England and the United States. While reemployment in a different industry typically leads to lower earnings compared with same-sector reemployment for such displaced workers, sectoral mobility is almost certainly an attractive alternative to nonemployment and may offer additional benefits to some workers. The research in this report shows that successful sectoral mobility is further facilitated by additional general and industry-specific skills, and it is most relevant when business cycles and other factors increase the chance of nonemployment following a job loss. Policymakers interested in displaced-worker reemployment may wish to ensure that related legislation can facilitate industry changes, with consideration of skills training and differential vulnerability to nonemployment.

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This report finds that broad patterns of job displacement and sectoral mobility for long-tenured workers from 1996 through 2019 are similar in New England and the United States. The study shows that being displaced increases the probability of changing industries by 59.8 percent within 15 months. This industry-switching effect grows as the time following a job separation increases. Additionally, pre-displacement education and industry structure facilitate post-displacement sectoral mobility. This finding suggests the importance of both general and industry-specific skills. The report also examines which factors cause displaced workers to be reemployed in the same sector after a job loss rather than nonemployed. Examining those alternatives to sectoral mobility, the analysis identifies several key individual and market influences, including business cycles, a worker's age, and the presence of any children in a worker's household.

Given the existing policy landscape, the findings of this report have multiple implications for related future workforce and economic development policy in New England. For instance, policymakers should keep in mind that sectoral mobility after job loss need not be viewed negatively. Rather, such industry switching might mitigate unwanted nonemployment and may be a necessary mechanism to reemploy displaced workers following harmful economic shocks. Additionally, to facilitate sectoral mobility, policies should encourage the accumulation of general skills—especially a high school diploma or equivalent—and industry-specific skills. Targeted acquisition of the latter skills may be aided by assessing which industry-to-industry transitions are most frequent and/or which industries have the greatest overlap of occupations or tasks.

I. Introduction

From 2017 through 2019, 2.7 million workers in the United States lost jobs that they had held for at least three years.[1] Phenomena such as the onset of the COVID-19 pandemic and growth in automation can contribute to such large, involuntary employment changes.[2] This job displacement typically causes a sizable and persistent economic disruption to a household. For instance, on average, displaced workers experience an earnings reduction of about 10 percent for more than 20 years after a job loss (Carrington and Fallick 2017).

Earnings losses tend to be even larger for displaced workers who change industries upon becoming reemployed (Couch and Placzek 2010; Jacobsen, LaLonde, and Sullivan 1993; Topel 1990). Economic theory suggests various explanations for this additional fall in earnings. For instance, workers switching to a new sector may lose the ability to use and be compensated for industry knowledge that they acquired over time in their former sector. Alternatively, workers may have earned more in their former sector, because after holding various jobs in the industry, they eventually matched to a position in which they were highly productive (Kim 1998; Kletzer 1996; Neal 1995; Ong and Mar 1992).

Despite lower earnings from switching industries following a job loss, displaced workers might still benefit from being employed in a different sector.

Despite lower earnings from switching industries following a job loss, displaced workers might still benefit from being employed in a different sector. The new industry may be preferable to being nonemployed with zero earnings, may offer better earnings prospects in the long run, or may have attractive features besides earnings, such as superior benefits or job stability. Such industry switching after job displacement may occur instead of or jointly with other possible adjustments, including geographic relocation.[3] The possibility that sectoral mobility following a job loss may be advantageous to a worker suggests a need to better understand these industry changes. The resulting improvement in our understanding can help in the design of policies intended to facilitate the reemployment of displaced workers.

This report studies the relationship between job displacement and sectoral mobility for long-tenured workers in New England and the United States from 1996 through 2019. Descriptively, broad patterns of job loss and industry transitions during this period are similar across the region and nation. The share of workers displaced in New England (2.8 percent) exceeds the US analog (2.3 percent), driven entirely by the recent disparity in those rates from 2008 through 2019 (3.5 percent regionally and 2.4 percent nationally). In contrast, the share of displaced workers changing sectors (29.9 percent in New England and 29.6 percent in the United States) and the share of reemployed displaced workers changing sectors (44.8 percent in New England and 44.3 percent in the United States)—that is, excluding workers who remain nonemployed—closely align in the region and nation throughout the 1996–2019 period.

The remaining 70 percent of displaced workers in New England who do not change sectors within one to two years of job loss include 36.8 percent who stay in the same industry and are reemployed and 33.2 percent who remain nonemployed (30.3 percent unemployed and 2.9 percent out of the labor force). On net in the region, displaced workers who obtain reemployment

1 Bureau of Labor Statistics, "Worker Displacement: 2017–19," news release, August 27, 2020.

2 Acemoglu and Restrepo (2019); and Nelson D. Schwartz, Ben Casselman, and Ella Koeze, "How Bad Is Unemployment? 'Literally off the Charts,'" *New York Times*, May 8, 2020.

3 Geographic relocation is not explored in this report because information on such migrating households is not available in the analyzed data.

are drawn to the public administration, construction, and "FIRE" industries (finance, insurance, and real estate). Conversely, reemployed displaced workers in New England tend to leave the industries of mining; agriculture, forestry, and fishing; and manufacturing.

Using statistical analysis to determine a causal link between job displacement and sectoral mobility in the United States, this study finds that being displaced increases the probability of changing industries by 59.8 percent within 15 months. This effect also differs throughout the 15-month period, with the probability of industry switching increasing as the time following a job separation grows. The comparability of descriptive patterns in New England and the United States allows these causal findings for the nation to be applied to the region more readily.

Policies to reemploy displaced workers should emphasize the importance of worker skills, both general and industry specific.

Providing further policy guidance, additional analysis shows that pre-displacement education and industry structure facilitate post-displacement sectoral mobility. This result suggests the importance of both general and industry-specific skills. Analysis in Jackson (2021) that underlies this report indicates a higher risk of nonemployment following displacement compared with voluntary job separation, which may contribute to the industry-switching behavior observed. If so, then the ideal policies to reemploy displaced workers would also be informed by which factors cause such workers to be reemployed in their former sector after a job loss rather than nonemployed. When examining those alternatives to sectoral mobility, several individual and market factors are shown to matter, including business cycles, a worker's age, and the presence of any children in a worker's household.

Policies and programs regarding displaced-worker reemployment in the region and nation typically have been related to workforce development. In recent years, especially with the fallout of the COVID-19 pandemic, policies to assist displaced workers have been at the forefront of much discussion. For instance, Massachusetts recently received federal funds through the Dislocated Worker Grant program to support reemployment services for workers displaced due to company closures during the March 2020–March 2021 period. Given the additional knowledge this study provides regarding displaced-worker reemployment in new industries, which policy features help enable such displaced workers to regain employment most effectively?

The findings of this report suggest three main implications for future legislation in New England concerning the reemployment of displaced workers. First, such policies should consider the prevalence of industry switching as a mechanism that is likely necessary for such reemployment. This sectoral mobility could serve as a way to mitigate nonemployment and therefore may be advantageous to displaced workers. Second, policies to reemploy displaced workers should emphasize the importance of worker skills, both general (at least a high school diploma or equivalent) and industry specific. Additionally, acquisition of the relevant industry-specific skills may be helped by assessing which industry-to-industry transitions are most prevalent and/or which industries have the greatest overlap of occupations or tasks. Lastly, policymakers should note that individual and market factors (such as a worker's age, the presence of any children in a worker's household, and business cycles) affect a worker's susceptibility to nonemployment rather than same-sector reemployment following a job loss. Legislation might therefore benefit from differential strategies to account for such factors and thus improve the effectiveness of policy related to displaced-worker reemployment.

DATA SOURCE AND SAMPLE CREATION

Data Source

This report (and related analysis in Jackson 2021) uses statistics on the labor force from the Current Population Survey (CPS) from 1996 through 2019 (Flood et al. 2020).[a] These data are sponsored jointly by the US Census Bureau and the US Bureau of Labor Force Statistics. The Basic Monthly Survey (BMS) component of the CPS uses a rotating sample of 60,000 households. A household is in the CPS for four consecutive months, out for eight months, and then back in for four months before leaving the sample permanently. This 4-8-4 survey design allows the BMS to be used as a longitudinal survey, although it is usually used as a pooled cross section. An additional supplement to the BMS is the biannual Displaced Worker Survey (DWS). For the years analyzed in this report, the DWS collects data from workers age 20 or older who lost a job in the preceding three years in order to learn more about the causes and consequences of displacement (Flood et al. 2020; United States Census Bureau 2006).

Sample Creation

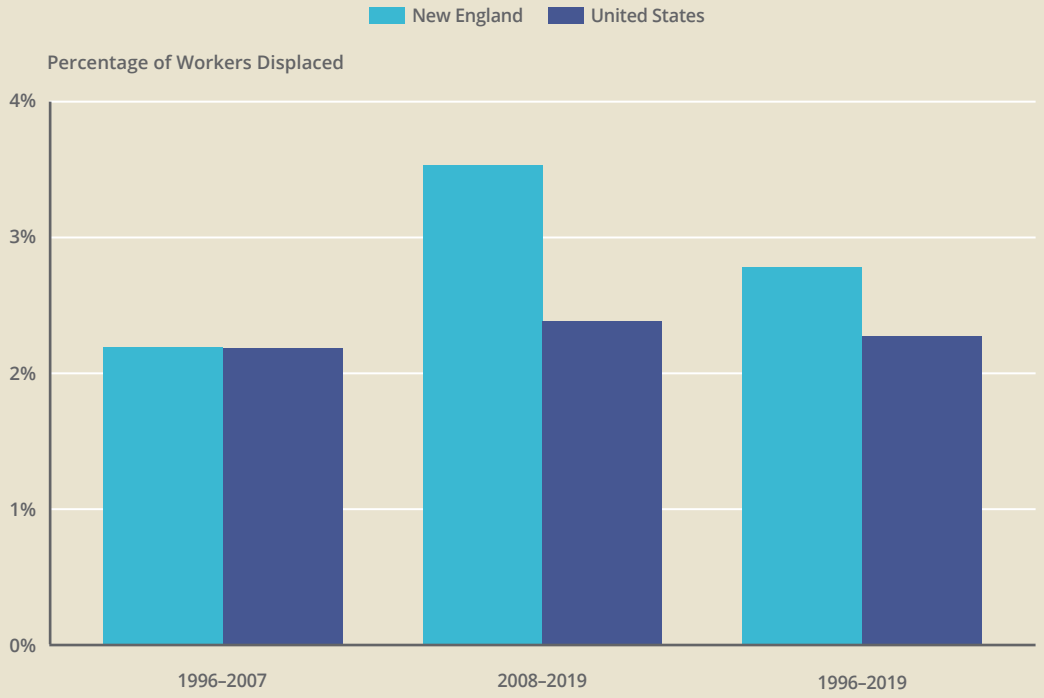
After imposing initial sample restrictions for data quality, this study creates a joint DWS-BMS longitudinal data set (primarily for causal analysis). The DWS-BMS data focus on workers with at least three years of tenure who are full-time employed in their first month-in-sample (MIS) of the BMS. For workers displaced over the subsequent 15 months spanning CPS participation, these data are constructed to align the DWS reference job lost with the BMS job held in MIS1. The DWS-BMS uses concurrent BMS information to determine the timing of worker reemployment and sectoral mobility if applicable, limiting reliance on retrospective DWS information. DWS-BMS sample restrictions also allow the inclusion of non-displaced workers who voluntarily left their job or who are continuously employed, which is crucial for descriptive and causal analysis. A pooled DWS cross-sectional data set with sample restrictions similar to those of the DWS-BMS data is also constructed (solely for descriptive analysis).[b]

Descriptive sample weights are created and applied so that resulting statistics reflect the full populations of interest. For unweighted counts, the DWS pooled cross-sectional data contain 8,212 displaced workers, of which 5,492 are reemployed displaced workers and a further subset of 2,474 are reemployed displaced workers who switch industries. The DWS-BMS longitudinal data contain 50,907 workers, including 750 displaced workers, of which 503 are reemployed displaced workers and a further subset of 154 are reemployed displaced workers who switch industries.

a The 1996–2019 period was chosen due to changes in survey methods and data collected in 1994, data linking problems in 1994 and 1995 (Drew, Flood, and Warren 2014), and prohibitively small sample counts after 2019.
b See Jackson (2021) for additional details on sample restrictions.

Figure 1

Job Displacement over Time
New England and United States, 1996–2019



Source(s): 1996–2019 Current Population Survey data and author's calculations.
Note(s): Analysis uses DWS-BMS data set. See the box on page 6 for details on the data set.

II. Sectoral Mobility Patterns of Displaced Workers

This report examines the sectoral mobility patterns of displaced workers in the United States and New England.[4] The descriptive analysis is conducted using data on US labor force statistics, including a supplement that collects information from workers who have experienced job loss. As described in the box on page 6, these data components allow for the creation of two main samples for analysis. One sample, used primarily for causal analysis, is a "longitudinal" data set in which each worker can be followed for eight months-in-sample spanning 16 calendar months. The second main analysis sample, used solely for descriptive analysis, is a larger "pooled cross-sectional" data set that combines multiple periods of one-year information snapshots.[5] Statistics estimated with each data set reflect the full populations of interest given the use of constructed sample weights.

Figure 1 portrays the share of workers in New England and the United States from 1996 through 2019 who have three years or more of tenure in an initial, full-time position and who are then displaced sometime over the subsequent 15 months.[6] This five-quarter displacement rate is 2.8 percent in the region over the 1996–2019 period, exceeding the corresponding 2.3 percent rate in the nation. The observed disparity in the job loss rates between New England and the United

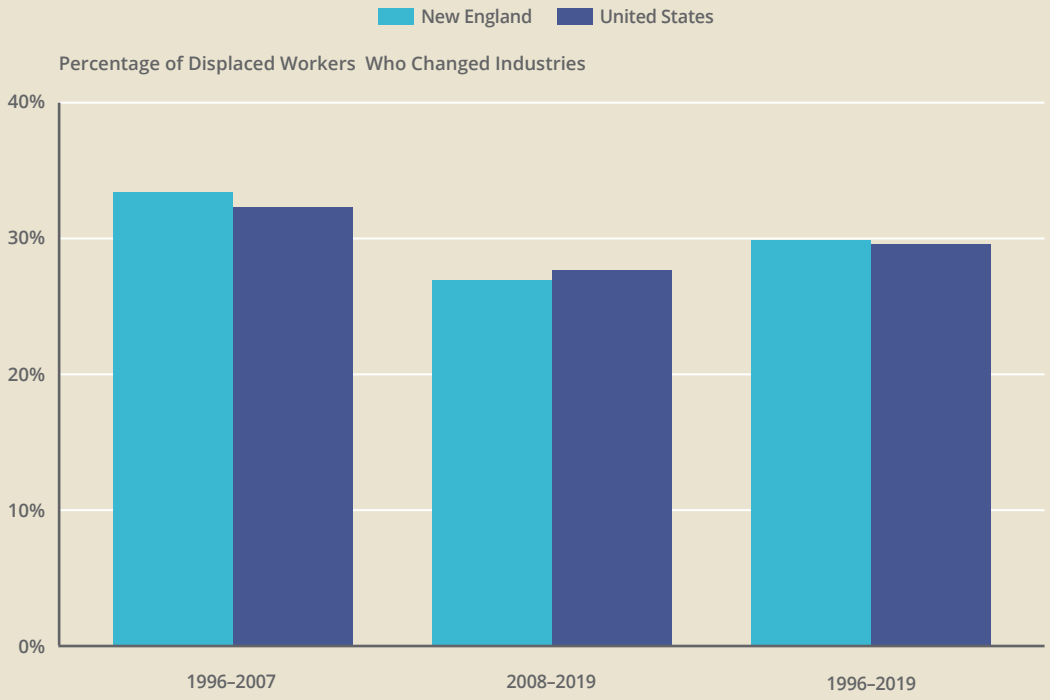
4 This study defines a worker as "displaced" if the reason for job loss is the plant or company closed down or moved, insufficient work, or the position or shift was abolished. Jackson (2021) shows that results are similar if "displaced" reflects only the plant or company closing down.

5 For Figure 7, a secondary analysis sample is based on pooled cross-sectional information from the Basic Monthly Survey component of the Current Population Survey.

6 As noted in the box on page 6, additional sample restrictions apply and are detailed in Jackson (2021).

Figure 2

Sectoral Mobility over Time
New England and United States, 1996–2019



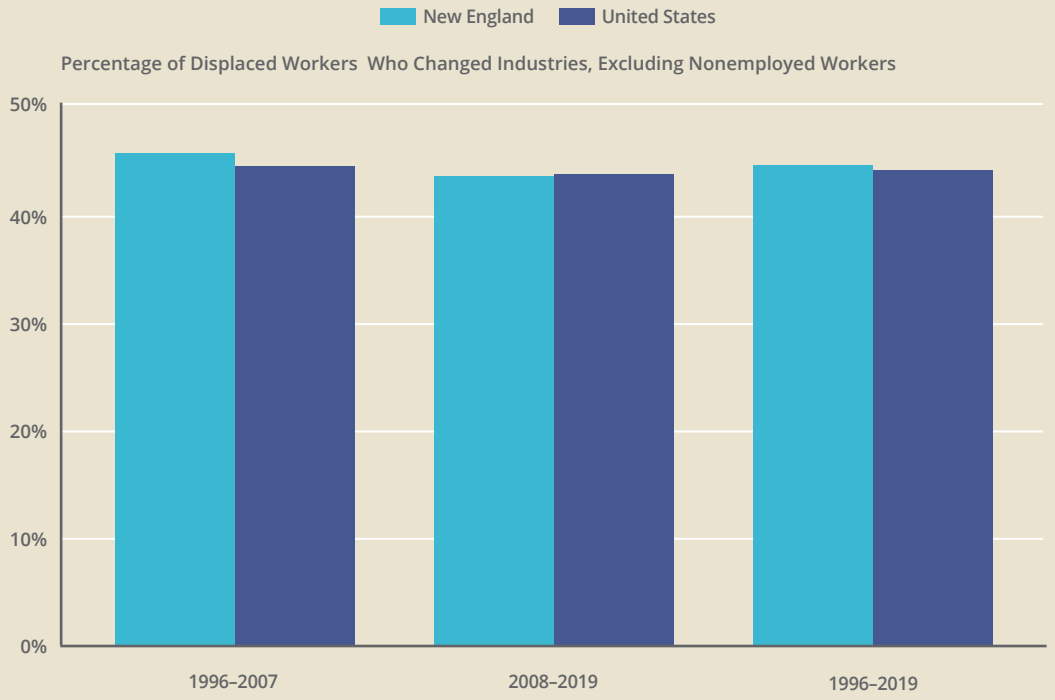
Source(s): 1996–2019 Current Population Survey data and author's calculations.
Note(s): Analysis uses pooled DWS data set. See the box on page 6 for details on the data set.

States is due to the 2008–2019 difference in those statistics (3.5 percent regionally and 2.4 percent nationally), as the two rates over the 1996–2007 period are identical, at 2.2 percent. The elevated displacement rates from 2008 through 2019 are likely driven at least partly by the Great Recession, from December 2007 through June 2009. This suggests the labor market effects of that downturn were larger in New England than in the United States as a whole.

Figure 2 shows that sectoral mobility rates within one to two years of displacement align even more closely than displacement rates for New England and the country. The 1996–2019 share of displaced workers who change sectors in the region (29.9 percent) is only slightly larger than the national rate (29.6 percent). This pattern is due to the sectoral mobility rates in the 1996–2007 period (33.5 percent in New England and 32.4 percent in the United States), as industry switching from 2008 through 2019 is more prevalent in the country (27.7 percent) than the region (27.0 percent). In contrast to displacement rates, which increase over the 2008–2019 period, during the Great Recession and subsequent recovery, sectoral mobility rates move in the opposite direction and decrease. Thus, these two measures exhibit a negative relationship with each other.

Figure 3

Reemployed Sectoral Mobility over Time
New England and United States, 1996–2019



Source(s): 1996–2019 Current Population Survey data and author's calculations.
Note(s): Analysis uses pooled DWS data set. See the box on page 6 for details on the data set.

Focusing on reemployed displaced workers by excluding those who remain nonemployed, Figure 3 illustrates that these sectoral mobility rates are quite stable over time in both the region and nation. In New England, the 1996–2019 share of reemployed displaced workers who change sectors (44.8 percent) is slightly higher from 1996 through 2007 (45.9 percent) than from 2008 through 2019 (43.8 percent). In the United States, the analogous 1996–2019 sectoral mobility share is a bit lower than in the region (44.3 percent). This US mobility rate likewise declines modestly over time, slightly exceeding the New England rate over the 2008–2019 period (44.7 percent from 1996 through 2007 and 43.9 percent from 2008 through 2019). Thus, sectoral mobility trends in Figure 2 exhibit more cyclicality than those in Figure 3. This result suggests that in downturns, displaced workers are more likely to remain nonemployed, and this increased nonemployment lowers both same-sector and different-sector reemployment rates.

Figure 4

Displaced Worker Alternatives to Sectoral Mobility over Time

New England and United States, 1996–2019

Source(s): 1996–2019 Current Population Survey data and author's calculations.

Note(s): Analysis uses pooled DWS data set. See the box on page 6 for details on the data set.

Examining the alternatives to sectoral mobility for displaced workers one to two years after job loss, Figure 4 confirms the cyclical pattern that emerges from Figures 2 and 3. In New England from 1996 through 2019, 36.8 percent of displaced workers stay in the same industry and 33.2 percent of these workers remain nonemployed (30.3 percent unemployed and 2.9 percent out of the labor force). The nonemployed share increases over time from 27.0 percent over the 1996–2007 period (26.2 percent unemployed and 0.8 percent out of the labor force) to 38.4 percent over the 2008–2019 period (33.7 percent unemployed and 4.7 percent out of the labor force). This increase in nonemployment over time reduces both the rate of same-sector reemployment (39.5 percent from 1996 through 2007 and 34.6 percent from 2008 through 2019) and different-sector reemployment (as indicated in Figure 2). National patterns are very similar to those in the region, both overall and over time.[7]

Also focusing on reemployed displaced workers in the region, Table 1 displays a matrix of sector-to-sector transitions for nine industries in New England from 1996 through 2019. Section A of the table depicts mobility to each industry as a share of total employment for reemployed displaced workers. Diagonal entries reflect same-sector reemployment and are usually the largest

7 In the United States from 1996 through 2019, 37.3 percent of displaced workers stay in the same industry and 33.1 percent of these workers remain nonemployed (31.3 percent unemployed and 1.8 percent out of the labor force). The nonemployed share rises over time from 27.7 percent over the 1996–2007 period (26.0 percent unemployed and 1.7 percent out of the labor force) to 37.0 percent over the 2008–2019 period (35.2 percent unemployed and 1.8 percent out of the labor force). This increase in nonemployment over time diminishes both the rate of same-sector reemployment (40.0 percent from 1996 through 2007 and 35.3 percent from 2008 through 2019) and different-sector reemployment (see Figure 2).

share of displaced workers in each industry. Exceptions to that pattern are agriculture, forestry, and fishing; mining; and public administration. For instance, in public administration, 0.2 percent of all reemployed displaced workers in New England remain in the industry, but 0.4 percent of reemployed displaced workers switch to the various services sector. However, agriculture, forestry, and fishing; public administration; and mining are also the three smallest sectors in Table 1 based on former-industry employment (2.8 percent, 0.7 percent, and 0.1 percent of reemployed displaced workers in the region). Thus, the relatively low estimates regarding the same-sector reemployment of displaced workers in these industries may be partly due to the small samples of workers from which those estimates are made.

In Section A of Table 1, the largest off-diagonal entries, which reflect different-sector reemployment, correspond to movements from manufacturing to various services, and from various services to "FIRE" (finance, insurance, and real estate) and trade (respectively, 6.4 percent, 4.3 percent, and 3.4 percent of reemployed displaced workers in the region). However, these patterns are partly due to industry size. Various services, manufacturing, trade, and FIRE are the four largest sectors based on former-industry employment (respectively, 30.2 percent, 26.5 percent, 16.9 percent, and 10.5 percent of reemployed displaced workers in New England). Appendix Table A1 rescales mobility to each industry as a share of former-industry employment, thus adjusting for industry size. Those results show that persistence in regional sector employment is highest for construction and various services (respectively, 85.1 percent and 63.5 percent of displaced workers remain in those industries once reemployed) and lowest for mining and agriculture, forestry, and fishing (respectively, 0 percent and 25.8 percent of displaced workers remain in those industries once reemployed). The largest off-diagonal element reflects movements from public administration to various services, which correspond to 58.8 percent of pre-displacement public administration employment.

On net, reemployed displaced workers in New England are drawn to the public administration, construction, and finance, insurance, and real estates industries.

Lastly, Section B of Table 1 portrays net mobility to each industry. On net, reemployed displaced workers in New England are drawn to the public administration, construction, and FIRE industries. In terms of reemployed displaced workers, post-displacement employment growth in those three sectors is 120.6 percent, 43.9 percent, and 32.4 percent, respectively. Conversely, reemployed displaced workers in the region tend to exit the industries of mining; agriculture, forestry, and fishing; and manufacturing. Once again based only on reemployed displaced workers, post-displacement employment in those industries falls by 100.0 percent, 48.8 percent, and 28.1 percent, respectively. These net movements might reflect general market trends in these sectors from 1996 through 2019 in New England. However, other factors could contribute to the trends as well. For instance, the public administration employment finding may signal worker preferences regarding job stability. That said, the relatively large gross outflow of workers from this industry following displacement (mostly to various services, as stated) indicates that workers may also revise their perceptions about public sector job security after losing a job in the sector and seek employment in other industries.

Table 1

Sector-to-Sector Mobility among Reemployed Displaced Workers

New England, 1996–2019

Section A: Mobility to each industry as a share of total employment

	New Industry									
Former Industry	Agriculture, Forestry, & Fishing	Mining	Construction	Manufacturing	Transportation, Communication, & Other Utilities	Wholesale & Retail Trade	Finance, Insurance, & Real Estate	Various Services	Public Administration	TOTAL
Agriculture, Forestry, & Fishing	**0.0072**	0	0.0120	0.0036	0	0.0051	0	0	0	0.0279
Mining	0	**0**	0	0	0.0005	0	0	0	0	0.0005
Construction	0	0	**0.0558**	0	0.0059	0.0022	0	0.0017	0	0.0656
Manufacturing	0.0041	0	0.0065	**0.1403**	0.0071	0.0267	0.0130	0.0635	0.0032	0.2645
Transportation, Communication, & Other Utilities	0	0	0.0008	0.0018	**0.0277**	0.0033	0.0059	0.0195	0	0.0590
Wholesale & Retail Trade	0	0	0.0112	0.0136	0.0134	**0.0729**	0.0226	0.0304	0.0050	0.1690
Finance, Insurance, & Real Estate	0	0	0.0018	0.0102	0.0064	0.0080	**0.0543**	0.0220	0.0025	0.1051
Various Services	0.0024	0	0.0064	0.0206	0.0019	0.0336	0.0430	**0.1915**	0.0024	0.3017
Public Administration	0.0005	0	0	0	0	0	0.0003	0.0040	**0.0019**	0.0068
TOTAL	0.0143	0	0.0944	0.1901	0.0628	0.1518	0.1391	0.3326	0.0150	**1.0000**

Section B: Net mobility to each industry, change in share of total employment

	Industry									
	Agriculture, Forestry, & Fishing	Mining	Construction	Manufacturing	Transportation, Communication, & Other Utilities	Wholesale & Retail Trade	Finance, Insurance, & Real Estate	Various Services	Public Administration	TOTAL
Net Mobility to Industry	-0.0136	-0.0005	0.0288	-0.0744	0.0038	-0.0172	0.0340	0.0309	0.0082	0
Net Mobility to Industry, Share	-0.4875	-1.0000	0.4390	-0.2813	0.0644	-0.1018	0.3235	0.1024	1.2059	0

Source(s): 1996–2019 Current Population Survey data and author's calculations.
Note(s): Analysis uses pooled DWS data set. See the box on page 6 for details on the data set. In Section B, "Share" in the second row of statistics reflects the share of former-industry employment.

III. Impact of Job Displacement on Sectoral Mobility

Having examined patterns of job displacement and sectoral mobility from 1996 through 2019, this report now considers how the occurrence of displacement affects such mobility.[8] It uses the statistical technique of regression analysis to conduct this causal investigation. More specifically, most of the analysis (Figures 5 and 7) is accomplished using the statistical method known as difference-in-differences. In this study, the method compares the prevalence of sectoral mobility for displaced and non-displaced workers (continuously employed and voluntarily separated from their jobs) following job separation over a period that spans 15 calendar months. Seven of those 15 months are observed in the data due to an intervening eight-month period when workers are not surveyed (see the box on page 6).[9]

Generally, larger probabilities of industry switching due to displacement occur as the time following a job separation grows.

The validity of the difference-in-differences approach relies on displaced and non-displaced workers following similar sectoral mobility trends in the absence of a job separation, thus allowing any post-separation dissimilarity in the mobility patterns of the two types of workers to be attributed to the displacement event. However, since sectoral mobility cannot occur without a job separation, this validity assumption is operationalized by analyzing displaced and non-displaced workers who are comparable before displacement based on other relevant factors besides mobility (Jackson 2021). The difference-in-differences analysis also accounts for these other factors—for instance, a worker's educational attainment and the period in which they are separated from the initial job—in order to help enable a causal interpretation of the resulting estimates.[10] Additional, complementary analysis in Figure 8 examines how these factors affect the probability that a displaced worker is reemployed in the same sector versus remaining nonemployed. [11]

8 Although this analysis is conducted on a national sample, the comparability of the descriptive patterns in New England and the United States allows the causal findings for the nation to be applied to the region more readily.

9 Each worker also has one additional baseline month-in-sample before a potential job separation. In total, each worker is observed for eight months-in-sample spanning 16 calendar months.

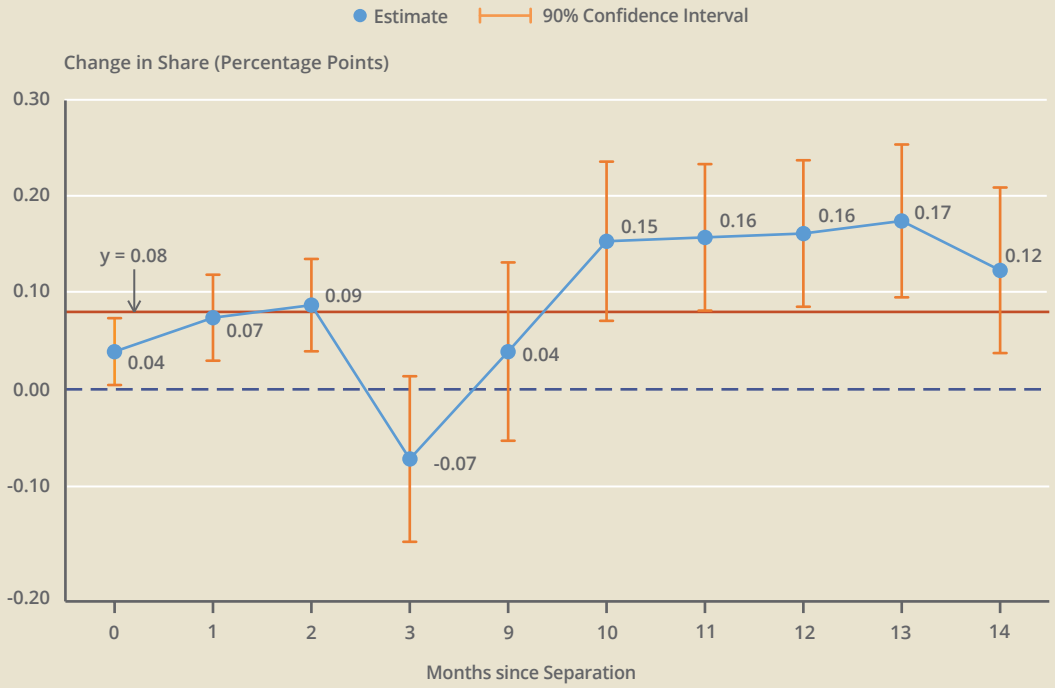
10 Specifically, the control variables included in the estimation to account for the "other relevant factors" are indicators for gender, being married, presence of any children and young children in the household, age, education, period of job separation or "pseudo-separation" (the first month-in-sample for continuously employed workers), race/ethnicity, industry, occupation, and region, as well as continuous month-year measures for the log of region-industry employment, the region-industry unemployment rate, and a region-specific industry similarity index based on the overlap of occupations (acting as proxies for skills). Fixed effects for worker and month-in-sample are also included, and standard errors are clustered at the worker level in case of serial correlation. Separated workers are excluded unless reemployed (Jackson 2021).

11 This analysis uses a cross section of displaced workers who are either same-sector reemployed or remain nonemployed. Examined factors are measured in the month-in-sample before displacement, and standard errors are heteroskedasticity-robust.

Figure 5

The Overall and Dynamic Impact of Job Displacement on Sectoral Mobility

United States, 1996–2019



Source(s): 1996–2019 Current Population Survey data and author's calculations.

Note(s): Analysis uses the DWS-BMS data set. See the box on page 6 for details on the data set. Results based on regression analysis of observations at the worker-month level. Each estimate represents the impact of being a displaced worker on the average change in the share of employed or reemployed workers who have switched industries. The horizontal line at y = 0.08 represents the overall effect across all analyzed months since separation. The 90 percent confidence interval displays the set of values that one can be 90 percent confident includes the true estimate.

Figure 5 examines the overall and dynamic impact of job displacement on sectoral mobility. The horizontal line at y = 0.08 of the chart represents the overall effect. Specifically, the probability of sectoral mobility is found to increase following a job loss by 13.2 percentage points on a pre-separation base of 0 (Jackson 2021). Displacement further raises the 15-month sectoral mobility rate by an additional 7.9 percentage points (7.9/13.2 × 100 = 59.8 percent), as Figure 5 indicates.

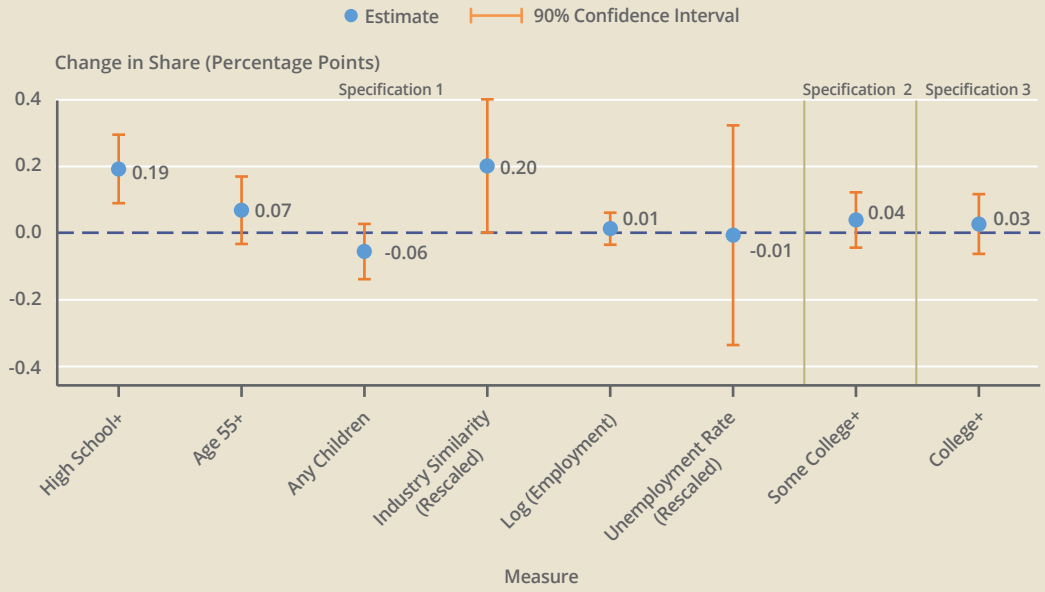
The figure also displays how the overall displacement-mobility effect changes throughout the five-quarter period. Generally, larger probabilities of industry switching due to displacement occur as the time following a job separation grows. For instance, in the month of separation, the displacement-mobility effect is 3.9 percent. This industry-switching probability peaks 13 months later at 17.4 percent and falls to 12.3 percent in the final period, 14 months after separation. The observed differences over time could be due to post-separation changes in the probability of reemployment, changes in a worker's preference for switching industries, or both.

Because of the intervening eight months out of the survey for each worker, effects for periods four to eight months after job separation cannot be determined. Similarly, the disparate dynamic estimates for three months after separation and nine months after separation should be interpreted with much caution because the estimates are subject to a greater amount of error. Specifically, these two estimates rely solely on job separations or sectoral mobility outcomes that include the intervening eight-month period. Unobserved worker activity during that intervening period may explain the resulting deviations in the two estimates.

Figure 6

The Heterogeneous Impact of Job Displacement on Sectoral Mobility

United States, 1996–2019



Source(s): 1996–2019 Current Population Survey data and author's calculations.

Note(s): Analysis uses the DWS-BMS data set. See the box on page 6 for details on the data set. Results based on regression analysis of observations at the worker-month level. Each estimate represents the differential impact of the indicated measure on the "displacement-mobility" effect. The "displacement-mobility" effect is the impact of being a displaced worker on the average change in the share of employed or reemployed workers who have switched industries. Measures reflect values in the month before job separation (or the month of "pseudo-separation" for continuously employed workers, which is the first month-in-sample). The five non-education measures listed for specification 1 are included in specifications 2 and 3 but not reported. The 90 percent confidence interval displays the set of values that one can be 90 percent confident includes the true estimate.

IV. Policy-related Additional Findings

Differential Effects

Earlier descriptive analysis in this study and additional causal analysis (Jackson 2021) suggest that job displacement increases the probability of nonemployment. Thus, the observed impact of displacement on sectoral mobility may partly reflect workers trying to mitigate the extent of nonemployment. Given such potential benefits to industry switching, it is of policy interest to further explore which pre-displacement individual and market characteristics facilitate this mobility.

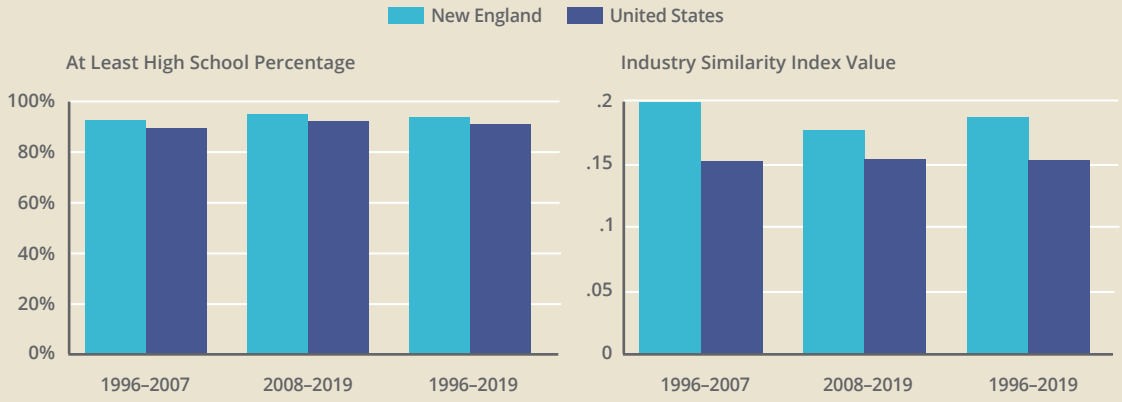
Figure 6 examines differential displacement-mobility effects across six pre-displacement measures plus two alternative measures from different regression specifications. The three individual-level measures of interest in specification 1 indicate having at least a high school diploma or equivalent, being at least 55 years old, and having any children in the household. The three market-level factors of interest in specification 1 (with a market defined as a region) are a market industry similarity index measuring the amount of occupational overlap across sectors in a market, the natural logarithm of market-industry employment, and the market-industry unemployment rate.[12] For comparability with the other measures, the estimates displayed for the market industry similarity index and market-industry unemployment rate are rescaled using the

12 Mathematically transforming the market-industry employment measure to its natural logarithm is intended to improve distributional properties of the data. For the industry similarity index, occupations act as proxies for skills.

Figure 7

Education and Industry Similarity

New England and United States, 1996–2019



Source(s): 1996–2019 Current Population Survey data and author's calculations.

Note(s): Analysis uses the pooled worker-month data set of full-time employed workers age 20 and older with known industry, occupation, and state.

maximum values of those measures for displaced workers in the analysis sample.[13] The figure shows that the displacement-mobility effect is strongly and positively related to a worker having at least a high school diploma before displacement. As specifications 2 and 3 of the figure show, no differential impact of education is statistically detectable when either of the following alternative indicators is examined: (1) having at least some college education (including an associate degree), or (2) having at least a bachelor's degree. The displacement-mobility effect is also positively affected by the industry similarity index. The size of the rescaled industry similarity differential effect is comparable to the high school diploma differential effect. If the industry similarity index is interpreted broadly to reflect industry-specific skills, these findings suggest that there may be analogous effects on sectoral mobility of both general and industry training.

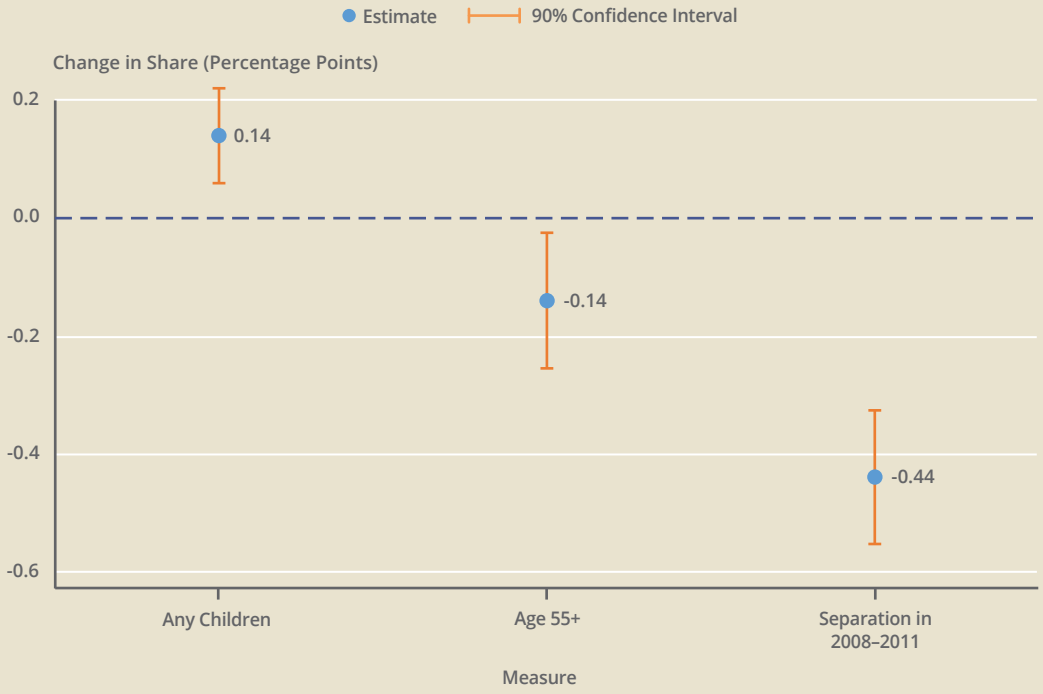
To guide public policy further, it is helpful to examine regional and national data on the extent of high school completion and industry similarity. The first subplot of Figure 7 shows that the 1996–2019 share of workers with at least a high school diploma or equivalent is higher in New England (94.4 percent) than the United States (91.5 percent). This education rate also rises somewhat from the 1996–2007 period (93.1 percent in the region and 90.2 percent in the nation) to the 2008–2019 period (95.7 percent in the region and 92.7 percent in the nation). The second subplot of Figure 7 illustrates that industries are more similar in New England than they are in the nation. The industry similarity index, which hypothetically ranges from 0 to 1 and reflects the extent of occupational overlap across sectors for full-time workers, indicates 18.7 percent overlap in the region and 15.4 percent overlap in the country from 1996 through 2019. Industry similarity declines in New England from the 1996–2007 period to the 2008–2019 period (19.9 percent

13 The maximum value of the market industry similarity index for displaced workers in the analysis sample is 0.175. Thus, the rescaled differential effect is 1.136 (original estimate) × 0.175 = 0.199 (displayed estimate in Figure 6, rounded). The maximum value of the market-industry unemployment rate for displaced workers in the analysis sample is 0.197 (19.7 percent). Thus, the rescaled differential effect is –0.037 (original estimate) × 0.197 = –0.007 (displayed estimate in Figure 6, rounded).

Figure 8

The Impact of Various Factors on Sectoral Mobility Alternatives

United States, 1996–2019



Source(s): 1996–2019 Current Population Survey data and author's calculations.

Note(s): Analysis uses the DWS-BMS data set. See the box on page 6 for details on the data set. Results based on regression analysis of observations at the worker level. Each estimate represents the impact of the indicated measure on the average change in the share of displaced workers who are reemployed in the same industry versus remaining nonemployed. The 90 percent confidence interval displays the set of values that one can be 90 percent confident includes the true estimate.

to 17.8 percent) and minimally rises in the United States during the same time (15.3 percent to 15.4 percent). Thus, all else being equal, the greater prevalence of these factors in New England compared with the United States would be conducive to larger related differential effects on sectoral mobility for displaced workers in the region than in the nation.

Determinants of Sectoral Mobility Alternatives

As discussed, one of the possible advantages of sectoral mobility may depend on which alternative to such mobility is most likely: same-sector reemployment or nonemployment. Public policy would therefore benefit from information on which individual and market characteristics tend to affect the probability of reemployment in the same industry rather than nonemployment. All of the measures reflecting "other relevant factors" in the difference-in-differences analysis are examined in this complementary analysis.

Figure 8 reports results for three such factors with statistically detectable effects.[14] A worker being at least 55 years old or displaced during the 2008–2011 period (which largely reflects the Great Recession) each decreases the probability of same-sector reemployment versus nonemployment. In contrast, the presence of any children in a worker's household increases the probability of same-sector reemployment versus nonemployment. Thus, both individual and market factors matter for a displaced worker's vulnerability to nonemployment.

14 See Jackson (2021) for the complete findings.

V. Policy Implications

Overview

Public policy to assist displaced workers in the United States has typically been directly or indirectly related to "workforce development." Such development covers a broad range of activities, programs, and policies intended to help sustain a viable labor force for the current and future economy.[15] This legislation has an extensive history, including early legislation such as the New Deal during the Great Depression and more recent legislation such as the 1982 Job Training Partnership Act and the 1998 Workforce Investment Act. The current analog of those federal policies is the 2014 Workforce Innovation and Opportunity Act (WIOA).[16]

Along with additional federal legislation and programs beyond the aforementioned key policies, numerous state policies and programs also exist throughout New England. Some of these policies implement federal legislation through funding and related guidelines. For instance, in July 2021, Massachusetts received $800,000 from the US Department of Labor through the National Dislocated Worker Grants program authorized by the WIOA. These funds were awarded to support reemployment services for approximately 675 state workers displaced by the closure of three Essex County manufacturing companies during the March 2020–March 2021 period.[17] Other policies and programs in the region originate at the state level, such as Maine's Competitive Skills Scholarship Program. This program is designed for eligible Maine residents to access post-secondary education, training for industry credentials, and support to help find jobs with an expected high demand for labor.[18]

Given the extensive assortment of such legislation and programs in New England, a comprehensive background is beyond the scope of this study. Rather, a focused discussion of the report's legislative implications, with references to related policy examples in the region, is more appropriate. This study's findings have three main implications for future policy in New England. First, policymakers should keep in mind that sectoral mobility may be a helpful and necessary mechanism for reemployment following job loss. Second, to facilitate sectoral mobility, policies should encourage the accumulation of general skills—especially a high school diploma or equivalent—and industry-specific skills. Lastly, policies should consider individual and market factors that affect susceptibility to nonemployment following a job loss.

Policy Implication 1

Policymakers should keep in mind that sectoral mobility may be a helpful and necessary mechanism for reemployment following job loss.

While some public policy is geared toward the prevention of displacement itself (for instance, incentives to dissuade firms from relocating), the high likelihood of unanticipated shocks in an economy suggests the importance of mechanisms to respond to these phenomena. Industry switching could mitigate nonemployment following job loss, thereby serving as one such mechanism. Thus, sectoral mobility may be beneficial to displaced workers and necessary to consider directly in policies. For instance, the Dislocated Worker Program offered by the New Hampshire Employment Security state agency lists "unlikely to return to previous industry or

15 Lyn E. Haralson, "What Is Workforce Development?" Federal Reserve Bank of St. Louis, April 1, 2010.
16 PA Workforce Development Association website, "The History of Workforce Development," accessed September 2021.
17 US Department of Labor Employment and Training Administration, "US Department of Labor Awards $800K in Funding for Reemployment Services for Massachusetts Workers Displaced by Three Essex County Closures," news release, July 23, 2021.
18 Maine CareerCenter website, "Competitive Skills Scholarship Program," accessed September 2021.

occupation" as one of the criteria to qualify for dislocated-worker services provided by a statewide network of American Job Centers.[19] Such recognition of the importance and prevalence of sectoral mobility as a method for reemployment—whether through eligibility restrictions or other approaches—is likely helpful for the effectiveness of this type of policy.

Policy Implication 2

To facilitate sectoral mobility, policies should encourage the accumulation of general skills—especially a high school diploma or equivalent—and industry-specific skills.

Many regional policies and programs regarding displaced-worker reemployment focus on education at the college level, which does not yield statistically detectable effects on sectoral mobility in this report's analysis. However, some programs do emphasize the acquisition of a high school diploma or equivalent. For example, the national Job Corps program—in operation since 1964, with centers throughout the region and country, and supported by the WIOA—helps individuals aged 16 to 24 complete their high school education.[20] More broadly applicable across ages is Rhode Island's offer of fee waivers for the $30 (test center) or $36 (online) cost per module of a GED test reflecting high school-level academic skills. The waiver is potentially available for those who can prove a financial hardship (as might result from job displacement) and obtain a "likely to pass" score on a practice test.[21]

Targeted acquisition of industry-specific skills may be aided by assessing which industry-to-industry transitions are most frequent and/or which industries have the greatest overlap of occupations or tasks. Table 1 and Appendix Table A1 of this report can assist with the former evaluation. Finger and Kreinin (1979) can help with the latter evaluation, as that research provides the approach that this study applies to the calculation of the industry similarity index. Such targeting of industries based, at least in part, on observed patterns may be advantageous compared with methods that rely solely on worker preferences or uncertain predictions of future labor demand. Numerous existing policies and programs facilitate the acquisition of industry-specific skills. For example, acknowledging the increased time spent at home by many individuals due to the pandemic, the Connecticut government has partnered with Metrix Learning and 180 Skills to offer free online classes to state residents. This curriculum includes courses that yield industry-recognized certificates. The state government also provides a guide to pursuing a career "in the trades" in order to help those affected by the pandemic "obtain stable and lasting employment."[22] Nationally, the US Department of Labor provides various workforce tools including "mySkills myFuture," a website where individuals can input a previous occupation of theirs and see which types of careers their skills and experience will transfer to most reasonably.[23]

19 "Dislocated Worker Program," New Hampshire Employment Security website, accessed September 2021.
20 "What Is Job Corps?" US Department of Labor Employment and Training Administration website, accessed September 2021.
21 "Rhode Island: Price & Payment," GED Testing Service website, accessed September 2021.
22 "CT Jobs and Resources: Free Training," CT.gov Business website, accessed September 2021.
23 "Skills Assessment," CareerOneStop website, accessed September 2021.

Policy Implication 3

Policies should consider individual and market factors that affect susceptibility to nonemployment following a job loss.

Such consideration may warrant differential strategies in order to improve policy effectiveness regarding displaced-worker reemployment. Referring back to the three measures focused on in Figure 8, resources allocated to displaced workers appear to exhibit at least some countercyclicality, as illustrated by the response to the COVID-19 pandemic. However, older and/or more experienced workers do not seem to be a heavily targeted group across various reemployment policies and thus might benefit from further consideration in such legislation.

Additionally, although the presence of any children in a worker's household increases the chance of same-sector reemployment (and might also decrease the likelihood of sectoral mobility, according to suggestive evidence in Jackson 2021), this finding could be due to reasons that are not ideal for the worker. For instance, the explanation for the result could be constraints regarding income or job search. Thus, policymakers may also wish to ensure that related legislation—for example, pertaining to childcare—allows displaced workers to pursue their preferred sector of reemployment. For instance, the Individual Career Advancement Network program in Vermont offers eligible individuals employment assistance with items such as skills training and job search that is combined with available support for childcare and other needs.[24]

In summary, it is encouraging that across New England there are legislative examples consistent with policy that this study's findings advise. However, current and future legislation may still benefit from further inclusion of this report's policy guidance. Such incorporation could help improve the ability of such legislation to support the reemployment of displaced workers in New England, thereby strengthening the local workforce.

24 The Individual Career Advancement Network is operated by the Vermont Department for Children and Families and funded by the US Department of Agriculture's Food and Nutrition Service.

Appendix Table A1

Sector-to-Sector Mobility among Reemployed Displaced Workers (Rescaled)

New England, 1996–2019

Mobility to each industry as a share of former industry employment

	New Industry									
Former Industry	Agriculture, Forestry, & Fishing	Mining	Construction	Manufacturing	Transportation, Communication, & Other Utilities	Wholesale & Retail Trade	Finance, Insurance, & Real Estate	Various Services	Public Administration	TOTAL
Agriculture, Forestry, & Fishing	**0.2581**	0	0.4301	0.1290	0	0.1828	0	0	0	1.0000
Mining	0	**0**	0	0	1.0000	0	0	0	0	1.0000
Construction	0	0	**0.8506**	0	0.0899	0.0335	0	0.0259	0	1.0000
Manufacturing	0.0155	0	0.0246	**0.5304**	0.0268	0.1009	0.0491	0.2401	0.0121	1.0000
Transportation, Communication, & Other Utilities	0	0	0.0136	0.0305	**0.4695**	0.0559	0.1000	0.3305	0	1.0000
Wholesale & Retail Trade	0	0	0.0663	0.0805	0.0793	**0.4314**	0.1337	0.1799	0.0296	1.0000
Finance, Insurance, & Real Estate	0	0	0.0171	0.0971	0.0609	0.0761	**0.5167**	0.2093	0.0238	1.0000
Various Services	0.0080	0	0.0212	0.0683	0.0063	0.1114	0.1425	**0.6347**	0.0080	1.0000
Public Administration	0.0735	0	0	0	0	0	0.0441	0.5882	**0.2794**	1.0000
TOTAL	0.0143	0	0.0944	0.1901	0.0628	0.1518	0.1391	0.3326	0.0150	**1.0000**

Source(s): 1996–2019 Current Population Survey data and author's calculations.
Note(s): Analysis uses pooled DWS data set. See the box on page 6 for details on the data set.

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Osborne Jackson is a senior economist with the New England Public Policy Center. Jackson's research focuses on labor economics and urban and regional economics, with particular interest in immigration, discrimination, education, and crime. His work has covered topics such as the impact of immigration on native college enrollment and how discrimination might operate on the supply side of the labor market. Jackson has also given presentations at various academic meetings, including annual conferences of the American Economic Association and the Society of Labor Economists. Before joining the Federal Reserve Bank of Boston in 2015, he was an assistant professor of economics at Northeastern University. Jackson earned his AB in economics from Harvard University and his MA and PhD in economics from the University of Michigan.

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