



DO EMPLOYMENT-RELATED OUTCOMES DIFFER DEPENDING ON WHICH DATA SOURCE IS USED?

Findings from the Portland Site of the
National Evaluation of Welfare-to-Work
Strategies

Mark van Dok and Kelsey Schaberg

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OVERVIEW

INTRODUCTION

For this report, the research team had access to five different sources of employment information for individuals from the Portland site of the National Evaluation of Welfare-to-Work Strategies (NEWWS). This presented a unique and important opportunity to look at whether and to what extent the choice of an employment data source matters in studies like NEWWS.

PURPOSE

This report is part of the Long-Term Employment Outcomes project and presents findings from three sets of analyses that explore whether the outcomes and effects of the NEWWS Portland site differ over a 20-year period when estimated using different data sources. The findings in this report identify insights on the strengths and limitations of the various data sources used. They also provide the workforce and research fields with information on which data sources to prioritize in future research on employment-related interventions targeted to individuals who are poor or near poor.

KEY FINDINGS AND HIGHLIGHTS

- There are differences in the employment outcomes of NEWWS Portland depending on which data source is used to estimate employment. The employment rates are higher when estimated using survey data and when using data sources with national coverage than when estimated using administrative data that only cover employment in Oregon.
- There are also differences in the employment impacts of NEWWS Portland across data sources, though only for some years. The differences are mainly concentrated in the five to eight years following study entry. Around then, NEWWS Portland increased employment by a statistically significant amount when using administrative data only covering employment in Oregon, but not when using administrative data with national coverage.
- There is also evidence of little difference in the employment captured by (1) the Oregon state unemployment insurance data and Oregon Longitudinal Employer-Household Dynamics (LEHD) data and (2) the national LEHD data and the National Directory of New Hires data for the individuals from the NEWWS Portland site.

METHODS

The analyses presented in this report involved roughly 4,000 adults who were enrolled at the NEWWS Portland site. This sample includes around 3,500 individuals assigned to the program group and around 500 individuals assigned to the control group, who were subject to a full five-year embargo on receiving program services.

The first set of analyses compares the employment-related outcomes of individuals in the NEWWS Portland site across data sources over a 20-year period. This is done by first comparing the overall employment rates across data sources and then by comparing each individual's employment statuses according to different data sources.

The second set of analyses examines whether the employment-related impacts of NEWWS Portland differ depending on the data source used. This is done by first seeing whether the employment impacts are statistically significant in one, both, or neither data source and then by examining

whether the differences in impacts across data sources are statistically significant or not using logistic regressions.

The third analysis explores whether differences in employment outcomes vary across data sources for individuals with certain characteristics. Here, employment in one data source is used to predict employment in a second data source separately among groups of participants with distinct characteristics. Then, logistic regression is used to see whether there are differences in the likelihood of being able to predict employment in one data source based on a second data source across groups of individuals with dissimilar characteristics.

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The Authors

INTRODUCTION

Most evaluations of employment programs either collect information about participants' employment directly from the individuals in the programs (via surveys) or from an administrative records data system.¹ While it is known that some data sources capture different types of employment than others, rarely are studies able to collect employment information from more than one or two sources. It is not typically possible to do a direct comparison within a study to see whether the choice of a data source matters in determining the outcomes and effectiveness of the program being evaluated.

This report presents findings from three sets of analyses that do just that.² The research team had access to five different sources of employment information for individuals from the Portland site of the National Evaluation of Welfare-to-Work Strategies (NEWWS).³ This presented a unique and important opportunity to look at whether and to what extent the choice of an employment data source matters in studies like NEWWS.

Several prior reports and compendiums have highlighted differences in the types of employment covered by data sources based on documentation about those sources and some direct comparisons of data sources within studies.⁴ No study that the team is aware of, however, has had access to as many sources of data as is the case here. Directly comparing multiple estimates of employment for a given sample within a study adds valuable evidence to the limitations and benefits of using the included data sources.

The first set of analyses compares the employment-related outcomes of individuals in the NEWWS Portland site across data sources over a 20-year period. The second set of analyses examines whether the employment-related impacts of NEWWS Portland differ depending on the data source used.⁵ The third analysis explores whether differences in employment outcomes differ across data sources for individuals with certain characteristics.

-
1. Administrative records data systems contain data that are created and stored to enable government administration, or as a by-product of it.
 2. This report was produced as part of the [Long-Term Employment Outcomes – Portland National Evaluation of Welfare-to-Work Strategies](#) (LTEO NEWWS) project funded by the Administration for Children and Families' Office of Planning, Research and Evaluation in the U.S. Department of Health and Human Services.
 3. The Census Bureau has reviewed this data product to ensure appropriate access, use, and disclosure avoidance protection of the confidential source data used to produce this product (Data Management System (DMS) number: P-7530034, Disclosure Review Board (DRB) approval numbers: CBDRB-FY23-CES018-008 and CBDRB-FY23-CES018-010).
 4. See, for example, Czajka, Patnaik, and Negoita (2018); Holman, Pennington, Schaberg, and Rock (2020); and Mastri, Rotz, and Hanno (2018).
 5. For the first two sets of analyses, "outcomes" are measured as the employment rate among the full sample and "impacts" are measured as the difference in employment rates between the program and control groups (explained more below).

The findings overall identify insights on the strengths and limitations of the various data sources used to measure employment-related outcomes and impacts. They also provide the workforce and research fields with information on which data sources to prioritize in future research on employment-related interventions targeted to individuals who are poor or near poor.⁶

NEWS PORTLAND

NEWS was conducted from 1991 to 1999 and was designed to test the effectiveness of alternative approaches to helping welfare recipients find jobs and leave public assistance. The evaluation examined the effects of 11 mandatory welfare-to-work programs (in seven sites around the country) on outcomes for welfare recipients and their children using a randomized controlled trial design. The roughly 40,000 individuals in the study were assigned at random to either a program group that was eligible to receive the enhanced services provided through NEWS or a control group that was not eligible to receive those services. Individuals in both groups were tracked over time and their outcomes were compared to estimate the impacts of the program.

The Portland site, which enrolled around 4,000 individuals, operated an employment-focused program that initially assigned some enrollees to very short-term job-related education or training services and others (the majority) to job search assistance. In addition, individuals who received job search assistance were counseled to wait for a good job instead of taking the first job offered.⁷

Findings from the original NEWS study showed that the Portland site produced the largest, most consistent 5-year employment and earnings effects across the NEWS sites. Over 5 years, individuals in the program group worked 1.6 quarters more than individuals in the control group and their average 5-year earnings (based on Oregon state unemployment insurance (UI) wage data) were about \$5,000 higher. Portland's program also produced the largest impacts on measures of stable employment and earnings growth. The program's success may have resulted from its focus on employment, its offer of both job search and education services, and its emphasis on finding a good job.⁸ In a 10- to 15-year follow-up analysis based on data from the National Directory of New Hires (NDNH), the program's employment and earnings effects had faded.⁹ Findings from a later long-term analysis—covering a 20-year period using Oregon Longitudinal Employer-Household Dynamics (LEHD) data—showed NEWS Portland did not appear to change the overall employment

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6. All individuals in the NEWS Portland site were single-parent heads of Aid to Families with Dependent Children (AFDC) cases. Nearly two-thirds of individuals had received AFDC (on their own or on their spouse's case) for at least two years prior to entering the study.
 7. This contrasts with some other programs in NEWS that focused on connecting participants to short-term job search activities with the goal of getting them into the labor market quickly.
 8. Hamilton et al. (2001).
 9. Freedman and Smith (2008).

and earnings trajectories of individuals in the study, but it did appear to lead to a general increase in average 20-year earnings.¹⁰

DATA SOURCES

The analyses in this report draw on data from the original NEWWS evaluation, the prior long-term analysis, and data compiled by and housed at the U.S. Census Bureau. The included data sources cover background information on individuals in the study and employment data collected to track individuals' outcomes over time. The background data—such as demographic, education, and welfare history data—was collected by welfare staff members during routine interviews with individuals at the time they entered the NEWWS study. The research team used those data to fine-tune the study impact estimates and to place individuals into subgroups to learn whether any observed differences in outcomes are larger among individuals with certain characteristics.

The employment data were collected from several sources:

- Oregon state UI wage data¹¹
- Survey data (from the NEWWS Two-Year and Five-Year Surveys)¹²
- NDNH data¹³
- Oregon LEHD data¹⁴
- LEHD National Indicator of Employment (National LEHD) data¹⁵

There are several important distinctions and tradeoffs across the employment data sources (see Table 1). One main distinction is between the survey and administrative data sources.

10. Schaberg and Jones (2022).

11. Oregon state UI wage data were collected from the state employment agency. These data are reported by employers and cover quarterly earnings for all jobs covered by the UI system.

12. Employment information from the Five-Year Survey was used, when available. If someone did not respond to the Five-Year Survey but did respond to the Two-Year Survey, their employment status from the latter survey was used. Comparisons to the survey data were made in the quarter of survey interview.

13. More information on NDNH data can be found here: <https://www.acf.hhs.gov/css/training-technical-assistance/guide-national-directory-new-hires>.

14. LEHD data are derived from state UI earnings data submitted to the U.S. Census Bureau. This is the same original source of the data as for the Oregon state UI wage data (and it was therefore expected that the two sources would capture similar employment figures). Specifically, the data used here is from the Oregon Employment History File. More information on the LEHD program can be found here: <https://lehd.ces.census.gov/>.

15. The national LEHD data file is also maintained by the U.S. Census Bureau and reports the number of states an individual was employed in during each quarter (it does not indicate which states or the amount of earnings).

Administrative data are typically available for all individuals in a sample, but prior research has shown that 10 percent of jobs or more are not covered in many of the sources and, for some sources, the records cover employment only within a given state.¹⁶ Administrative data also rely on having complete and accurate information for matching, including participants' Social Security numbers.¹⁷ Survey data are self-reported by individuals and should cover all jobs, but individuals responding to surveys sometimes do not recall the details of their employment accurately, and not all individuals in a study respond to surveys (some are not sent the survey to complete and some who are sent the survey do not respond).¹⁸

Prior research has shown important differences in using survey versus administrative data to measure employment. A review of eight studies that used both surveys and administrative data to measure labor market outcomes found that the impact estimates for earnings across the two types of data did not always align, and that in general, earnings impacts based on survey data tended to be larger and were more likely to be statistically significant than earnings impacts based on administrative data.¹⁹ This is consistent with findings from a more recent evaluation as well.²⁰ Other research has also shown that a similar pattern is evident for employment outcomes.²¹ In the case of NEWWS Portland, findings from a five-year analysis of survey respondents showed a positive difference in employment based on the survey data (meaning the employment rate among the program group was higher than among the control group), and a negative difference in employment based on administrative records (meaning the employment rate among the control group was higher than among the program group).²²

There are also important distinctions between the administrative data sources. While all of the administrative data sources included here are based on UI wage data—that is, data that are reported by employers to state employment agencies and cover quarterly earnings from

16. Kornfeld and Bloom (1999) estimate that UI wage records cover around 90 percent of jobs. A more recent estimate from Hotz and Scholz (2001) estimated that 13 percent of jobs reported in a survey may be missing from UI wage records.

17. For example, the NDNH data only includes employment for people with valid Social Security numbers. Estimates show 97 percent of records submitted to the NDNH are available for matching. Czajka, Patnaik, and Negoita (2018).

18. The Two-Year and Five-Year Surveys were fielded to a randomly selected group of individuals who entered the study between March 1993 and February 1994. The response rate for the Two-Year Survey was 80 percent, and the response rate for the Five-Year Survey was 77 percent among both the program and control groups. See Scrivener et al. (1998) and Hamilton et al. (2001).

Abraham, Haltiwanger, Sandusky, and Spletzer (2013) points to errors other than recall errors as possible additional explanations for survey respondents not to report employment when employed. These reasons may include that work is not considered a primary activity for individuals who identify as students or retirees, for example.

19. Barnow and Greenberg (2015).

20. Mastri, Rotz, and Hanno (2018).

21. Yang and Hendra (2018).

22. See Appendix Table H.3 in Hamilton et al. (2001).

TABLE 1
Employment Data Sources Used in This Report

Data Source	Time Period Covered		Geographic Coverage	Types of Employment				Level of Data
	Calendar	Relative to Study Entry		Employment Covered by the UI System	Self-Employment/Independent Contractors	Informal Work	Federal Employment	
Oregon State Unemployment Insurance (UI) Wage Data	Quarter 1, 1993 to Quarter 4, 1999	Years 1 to 5	Oregon	X				Individual
Survey (Two-Year and Five-Year) ^a	Y2: Quarter 1, 1995 to Quarter 1, 1997 Y5: Quarter 1, 1998 to Quarter 1, 2000	Around Year 2 and Year 5	National	X	X	X	X	Individual
National Directory of New Hires	Quarter 4, 2004 to Quarter 1, 2007	Between Year 10 and Year 14, depending on when enrolled	National	X			X	Aggregate
LEHD: Oregon Employment History File	Quarter 1, 1993 to Quarter 4, 2015	Years 1 to 15	Oregon	X				Individual
LEHD: National Indicator of Employment File	Quarter 1, 1993 ^b to Quarter 4, 2015	Years 1 to 15	National	X				Individual

NOTES: LEHD = Longitudinal Employer-Household Dynamics

^aThe surveys captured employment at the time of the survey interview.

^bStates began submitting data to the LEHD program in different years. The first quarter when all states were submitting was the first quarter of 2003.

all jobs covered by the UI system—there are differences in geographic coverage (which, as discussed more below, may be important for NEWWS Portland given that the program was near the Washington state border) and the types of jobs covered (for example, employment in federal jobs is covered by NDNH data, but not by state UI data).²³

Another important factor is the variation in the time periods for which outcomes are available for the included analyses across data sources. While this mainly reflects when the data were reported and collected, the differences in geographic and job-type coverage could be exacerbated based on how long after study entry the data from a given source measure employment. For example, it is probably the case that more individuals moved out of Oregon over time. Thus, there will likely be smaller differences in outcomes across data sources that only cover Oregon versus data sources with national coverage in the years immediately after individuals entered NEWWS compared to later years.

Finally, it is important to consider that some data sources may better cover the types of jobs obtained by individuals who are poor or near poor, like the individuals in NEWWS, than others. There is evidence that some data sources may do a better job of capturing the employment of individuals with higher incomes relative to individuals with lower incomes.²⁴ A data source that does a bad job of recording the types of jobs participants obtain offers a less useful metric of the program’s success and could lead to false conclusions about the program.

DO THE EMPLOYMENT-RELATED OUTCOMES OF INDIVIDUALS IN THE NEWWS PORTLAND SITE DIFFER ACROSS DATA SOURCES?

The first set of analyses focuses on assessing the extent to which calculations of employment differ when using different data sources. To make these assessments, the report is looking at the consistency of one estimate of employment in comparison to that of another for the roughly 4,000 individuals who enrolled at the NEWWS Portland site (it combines individuals in the program and control groups).²⁵ This is done by first comparing

23. Federal employment includes jobs in the military. This might be especially relevant for target populations who are of the age to be more likely to serve in the military. In the case of NEWWS Portland, this may be less relevant as over 93 percent of individuals in the sample were female and females have historically held a small proportion of military jobs.

An additional distinction across the included administrative data sources is the timeliness and ease of gaining access to the data source. This may have implications for which data source(s) a study team decides to pursue. See Czajka, Patnaik, and Negoita (2018) and Holman, Pennington, Schaberg, and Rock (2020) for more information.

24. This is the case of state UI wage records. See Hotz and Scholz (2001).

25. For more information on the included sample, see the Technical Appendix.

the overall employment rates across data sources and then by comparing individual employment statuses according to different data sources.

While it is already known that some data sources capture more types of employment than others, the extent to which individuals in the NEWWS Portland study—and possibly in other studies with similar target populations—have employment that is not captured by some of the included data sources is not clear. For example, based on prior NEWWS analyses it is unclear how many individuals obtained jobs outside of Oregon after they enrolled in NEWWS and who therefore are only counted in employment estimates based on data sources with national coverage (for example, the national LEHD data).²⁶ Similarly, some individuals likely got informal jobs and as such are only covered by employment estimates based on the surveys, but there is little evidence from prior analyses on the number of such jobs. There is also no evidence on whether the numbers of individuals who worked outside of Oregon or in informal jobs changed over time. The included analyses provide evidence into how many individuals from the NEWWS Portland site have employment that is only captured by some data sources.

Do the Overall Employment Rates Vary by Data Source?

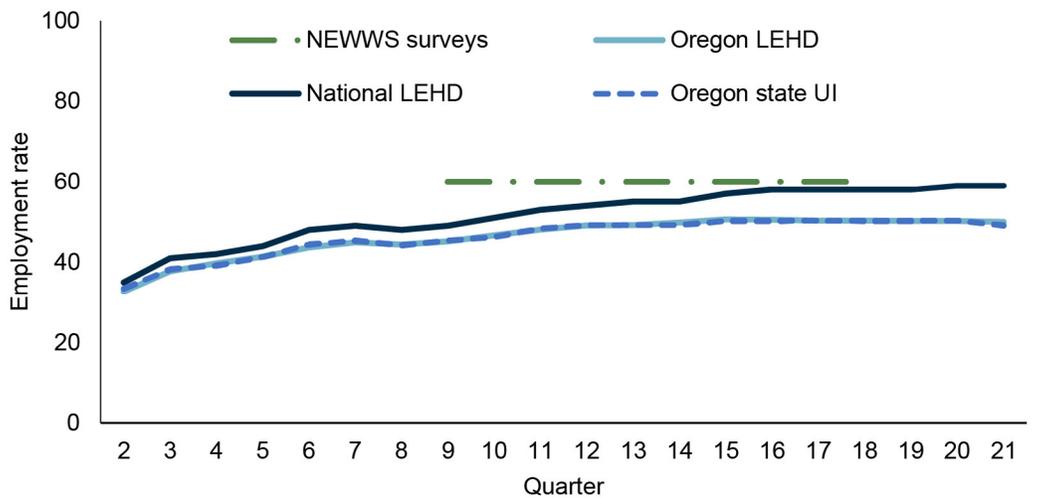
Figures 1 and 2 show what the estimated employment rates are for individuals from the NEWWS Portland site as estimated by the NEWWS surveys, Oregon state UI data, Oregon LEHD data, national LEHD data, and NDNH data. Data from the first four sources are available within the five years post-study entry and are shown as quarterly employment rates (in Figure 1). Longer-term data—up to a 20-year period—is available from the Oregon LEHD data, national LEHD data, and NDNH data—and are shown as annual employment rates (in Figure 2).

- **Overall and as expected, the employment rates differ depending on the data source used. Employment rates that are based on survey data are higher than those that are based on administrative data. Employment rates based on administrative data that have national coverage are higher than those that are based on administrative data that only cover Oregon.**

The employment rate estimated using participants' self-reported employment in the survey interviews is higher than the employment rates estimated using administrative data. This is likely due to the surveys capturing employment in jobs not covered by the UI system (including informal jobs, self-employment and independent contract work, and military and federal jobs), which is the source for the administrative data. Additionally, the employment rates for sources that have national coverage (the surveys, national LEHD, and NDNH) are higher than sources capturing only in-Oregon employment (the Oregon state UI and Oregon

26. This was explored in Freedman and Smith (2008), but that analysis only covers a 9-quarter period roughly 10 to 15 years following study entry.

FIGURE 1
**Quarterly Employment Rates for the Portland NEWWS Site,
 by Data Source**



SOURCES: MDRC calculations from NEWWS Two-Year and Five-Year survey data, Oregon LEHD data, Oregon state UI data, and national LEHD data.

NOTES: NEWWS = National Evaluation of Welfare-to-Work Strategies; LEHD = Longitudinal Employer-Household Dynamics; UI = unemployment insurance.

All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY23-CES018-008. The employment rate from the NEWWS surveys is based on the quarter when individuals responded to the survey interview. The exact quarter differed depending on when the person entered the study and when they were interviewed, but occurred sometime between Year 2 and Year 5. The employment rates as estimated by the Oregon LEHD and Oregon state UI data are very similar. Thus, there is little difference between those two lines for those data sources in the figure.

LEHD). This is again expected given that in-Oregon employment is a subset of national employment. The difference between these employment rates also increases over time.

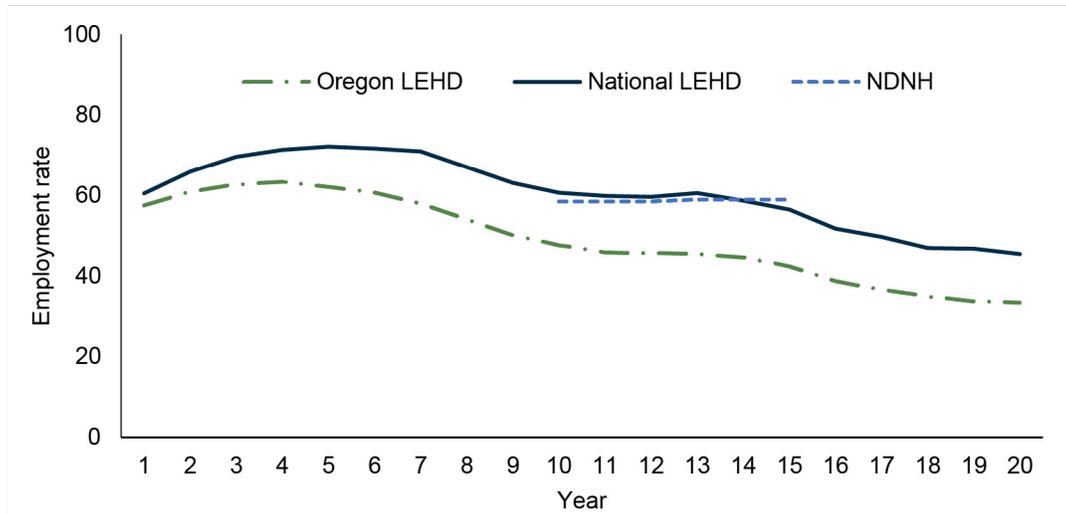
The two administrative sources of in-Oregon employment (the Oregon state UI and Oregon LEHD) estimate similar levels of employment, as do the two administrative sources of national employment (the national LEHD and NDNH). These data are all based on employment reported by employers to state UI agencies and, therefore, should capture similar types of jobs within the geographies they cover.²⁷

These findings confirm that the choice of data source can matter when estimating employment levels. They provide evidence on how much employment is missing when a given data source is used (as shown by the gaps between the lines in Figures 1 and 2). Studies that rely on administrative data only, or that use administrative data that only

27. One difference between the national LEHD and NDNH data is that the NDNH data capture federal employment. Based on the similar employment rates, it appears that not many individuals at the NEWWS study worked in federal jobs.

FIGURE 2

Annual Employment Rates for the Portland NEWWS Site, by Data



SOURCES: MDRC calculations from Oregon LEHD data, NDNH data, and national LEHD data.

NOTES: NEWWS = National Evaluation of Welfare-to-Work Strategies; LEHD = Longitudinal Employer-Household Dynamics; NDNH = National Directory of New Hires.

All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY23-CES018-008.

The employment rates from the NDNH are based the employment rates in the fourth quarter of 2004 to the third quarter of 2005 and in the fourth quarter of 2005 to the third quarter of 2006. These quarters corresponds to somewhere between 10 and 15 years after individuals entered the study.

captures employment in one state, will likely underestimate the actual employment (and, therefore, earnings) levels for groups of individuals.

Do Individuals Have the Same Employment Status Across Data Sources?

To unpack the employment rate differences more, the research team did a head-to-head comparison of everyone’s employment status based on two data sources. This allowed for a more nuanced analysis of employment by data source (as opposed to a comparison of the overall level of employment captured by the data sources, as discussed above). For example, it is possible that the overall employment rates could be similar across two data sources, while having a low level of consistency between the two sources, if the same percentage of individuals only had reported employment in the first source and in the second source. For each comparison, there are four possible outcomes: (1) employed according to both data sources, (2) not employed according to both data sources, (3)

employed according to the first data source but not employed according to the second, and (4) employed according to the second data source but not employed according to the first.

The overall rate of people who are either employed in both sources or not employed in both sources gives a sense of how much overlap there is across the data sources. This metric is referred to here as the “consistency” in employment statuses across the two data sources. The higher the rate of people with the same employment status in both data sources, the higher the consistency.

Figure 3 shows the consistency between the Oregon LEHD data and national LEHD data (over a 20-year follow-up period), as well as between the Oregon LEHD data and the NEWS surveys (in the quarter in which the individual responded to the survey²⁸). (Given the very high level of consistency between the Oregon state UI data and Oregon LEHD data, comparisons between the Oregon state UI data and other data sources are not shown, as they are very similar to the comparisons between the Oregon LEHD data and those sources.²⁹ Comparisons with NDNH data were not possible, as individual-level NDNH data were not available.)

Figures 4 and 5 show all the possible outcomes, including consistencies and inconsistencies, of the two data source comparisons. There, the rates of people who are employed based on one data source but not the other source provide a sense of whether employment or non-employment in one source is driving most of the difference when it is compared to the other source.

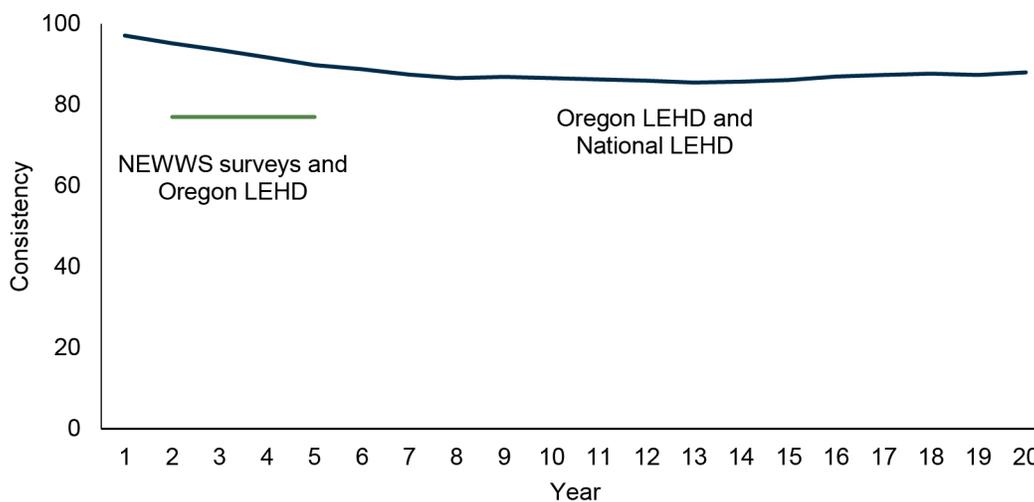
- **The employment captured by the Oregon LEHD data is fairly consistent with the employment captured by the national LEHD data. The consistency decreases over time due to increasing levels of national LEHD employment not captured in the Oregon LEHD data.**

The consistency between the Oregon LEHD data and national LEHD data exceeds 85 percent in every year. It is of note, however, that the consistency of these two sources decreases over time, from 97 percent in Year 1 to 88 percent in Year 20 (Figure 3). Most of the difference in employment statuses is driven by people only being employed according to the national LEHD data (between 3 percent and 15 percent, Figure 5). The decrease in consistency over time is likely driven by more individuals moving out of (or at least

28. The line for this comparison in Figure 3 spans Year 2 to Year 5 since individuals responded to the surveys in different quarters.

29. The consistency between the Oregon state UI data and Oregon LEHD data exceeds 99 percent in the first 21 quarters following study enrollment (not shown). An additional analysis looked at the consistency between the two data sources in terms of earnings. Individuals who were employed were split into three groups based on their earnings in each quarter—those earning between \$1 and \$999, those earning between \$1,000 and \$2,999, and those earning \$3,000 or more. The rate of individuals employed with earnings within each group was then calculated and compared across sources. The consistency for each comparison exceeded 99 percent in all of the first 21 quarters following study enrollment, providing further evidence that there is no difference in who is covered by the two sources (not shown).

FIGURE 3
Consistency of Employment Statuses Across Data Sources



SOURCES: MDRC calculations from NEWWS Two-Year and Five-Year survey data, Oregon LEHD data, and national LEHD data.

NOTES: LEHD = Longitudinal Employer-Household Dynamics; NEWWS = National Evaluation of Welfare-to-Work Strategies.

All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY23-CES018-008.

Consistency is calculated as the sum of the percentage of individuals who were employed based on both data sources and the percentage of individuals who were not employed based on both data sources.

Consistency between the NEWWS surveys and Oregon LEHD was calculated in the quarter when individuals responded to the survey interview. The exact quarter differed depending on when the person entered the study and when they were interviewed, but occurred sometime between Year 2 and Year 5.

working in a state other than) Oregon over time. These findings suggest that in the years immediately following a program or intervention, it may be okay to use a data source that only has in-state coverage. But as more time passes, data sources with national coverage are likely preferred, as more individuals begin to move to and work in other states.

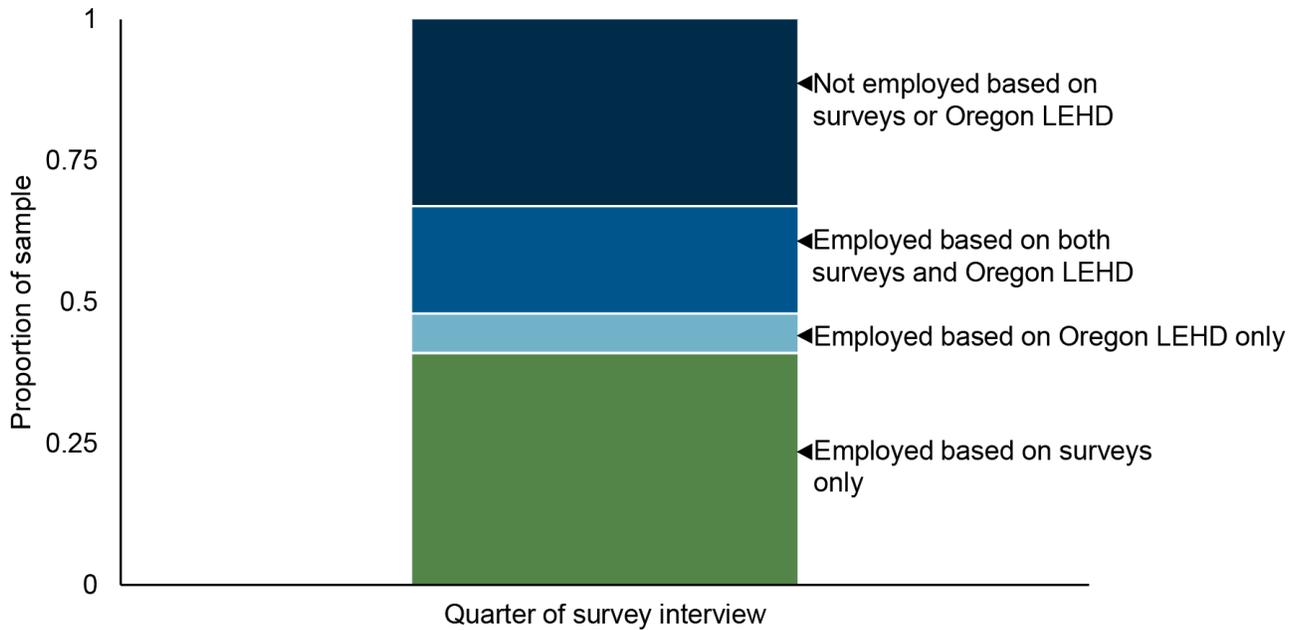
- **Survey-reported employment is less consistent with employment in the Oregon LEHD data, most of which is due to survey-reported employment not being captured by the Oregon LEHD data.**

The comparison of employment statuses between the NEWWS surveys and the Oregon LEHD data reveals more inconsistency. Only around 77 percent of people had the same employment status in the quarter they responded to the survey according to both data sources (41 percent of people were employed according to both data sources and 36 percent were not employed according to both data sources, Figure 4).³⁰ Among individuals who had different employment statuses across the two data sources, it was more likely

30. The quarter of the survey interview differs depending on when an individual entered the study and when they completed the survey. See the Technical Appendix for more information.

FIGURE 4

Comparisons of Employment Statuses in Quarter of Survey Interview



SOURCES: MDRC calculations from NEWWS Two-Year and Five-Year survey data and Oregon LEHD data.

NOTES: LEHD = Longitudinal Employer-Household Dynamics; NEWWS = National Evaluation of Welfare-to-Work Strategies.

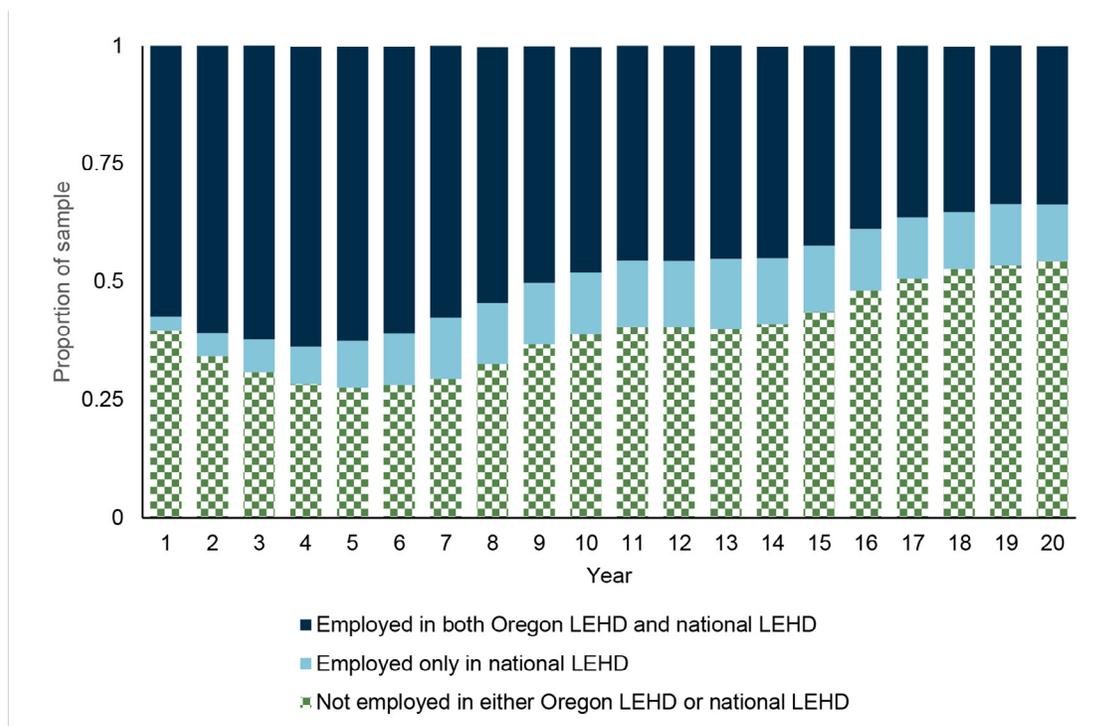
All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY23-CES018-008. The employment rate from the NEWWS surveys is based on the quarter when individuals responded to the survey interview. The exact quarter differed depending on when the person entered the study and when they were interviewed, but occurred sometime between Year 2 and Year 5.

that they would only be employed according to the NEWWS surveys, suggesting that the surveys captured more employment than the Oregon LEHD data. A minority of study participants (7 percent), however, are employed based on the Oregon LEHD data but not based on the surveys. This could in part be due to the timing of the data collection. It is possible for a person to not be employed at the time of the survey interview, but to be employed earlier or later in that quarter—in these cases, the person would be counted as employed in the Oregon LEHD data but not in the survey data.

DO THE IMPACTS OF NEWWS PORTLAND DIFFER ACROSS DATA SOURCES?

The second set of analyses explores whether there are differences in the impacts of NEWWS Portland on employment and earnings across data sources. The analyses include

FIGURE 5
Comparisons of Employment Statuses by Year



SOURCES: MDRC calculations from Oregon LEHD data and national LEHD data.

NOTES: LEHD = Longitudinal Employer-Household Dynamics.

All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY23-CES018-008.

the same sample as the prior analyses and the same data sources (except for the Oregon state UI data³¹).

In random assignment evaluations such as NEWWS, it could be argued that it should not matter if an employment data source is incomplete because it should be equally incomplete for individuals in both the program and control groups. But this is not necessarily always true.³² In the case of NEWWS, there is already some prior evidence that data sources with

31. Given the very high level of consistency between the Oregon state UI and Oregon LEHD data described in the previous section, the research team decided to only present comparisons of impacts between the Oregon LEHD data and other data sources. The findings of comparisons between the Oregon state UI data and the other data sources were very similar.

32. For example, programs that focus on a specific employment sector that is more or less likely to be covered by a data source could easily result in biased measurements of impacts. Yang and Hendra (2018).

in-state coverage (of Oregon) versus national coverage may show different results. The prior NEWWS long-term follow-up analysis—completed between 10 to 15 years after study entry—found more than 20 percent of individuals worked outside of Oregon at some point over a 30-month period, and that a higher percentage of individuals in the control group than in the program group worked outside of Oregon. The average earnings from out-of-Oregon employment is also higher for individuals in the control group than in the program group.³³ Therefore, data sources with national coverage (for example, NDNH data) or data sources that are not constrained by geography (for example, survey data) may result in different findings about the effectiveness of NEWWS on both employment and earnings than data sources with only Oregon coverage (for example, state LEHD data). This may be due to Portland being on the border of Washington state. If the program helped individuals in the program group into jobs located in Oregon, they may have been more likely to stay employed in the state (and thus, be captured by the in-state data) than individuals in the control group, who did not receive help to find jobs in Oregon (and thus, may have moved to Washington to find employment, which would only be covered by data sources with national coverage). This finding is explored more in this section.

Are the Employment-Related Impacts of NEWWS Portland Consistent Across Data Sources?

Table 2 shows whether NEWWS Portland produced a statistically significant impact on employment in different time periods as estimated with the included data sources (Appendix Table 1 shows impacts on additional outcomes).

- **For the most part, the employment impacts in a given time period are either statistically significant as estimated by all data sources or not statistically significant as estimated by all data sources. Most of the differences that emerged occur on outcomes estimated five to eight years after study entry.**

NEWWS Portland did not generate a statistically significant impact on employment in the quarter of the survey interview as measured by the surveys and the Oregon LEHD data. This suggests that the impact of NEWWS Portland on employment in the quarter of the survey interview is not dependent on which of these data sources is used. Consistent with prior research, the difference in employment rates across research groups as estimated by the surveys is larger than as estimated by the administrative data (5 percentage points versus 4 percentage points, Table 2).

There are differences, however, in whether the effects of NEWWS Portland are statistically significant when estimated using the Oregon LEHD and national LEHD in the years midway through the 20-year follow-up period. In Years 5, 6, 8, and 15, NEWWS Portland led to a statistically significant impact on employment based on the Oregon LEHD data, but

33. Freedman and Smith (2008).

TABLE 2
Select Impacts on Employment in Different Time Periods, by Data Source

Data Source	Employment Outcome			P-Value
	Program Group	Control Group	Difference (Impact)	
Quarter of survey interview				
NEWWS surveys	61.0	56.0	5.0	0.680
Oregon LEHD	48.0	44.0	4.0	0.350
Sample size	350	250		
Quarter 4, 2004 to Quarter 3, 2005				
Oregon LEHD	45.6	45.0	0.6	0.916
National LEHD	59.6	61.0	-1.4	0.682
NDNH	58.4	59.4	-1.1	0.645
Quarter 4, 2005 to Quarter 3, 2006				
Oregon LEHD	45.7	46.0	-0.3	0.831
National LEHD	59.9	62.0	-2.1	0.228
NDNH	58.7	61.1	-2.4	0.302
Year 1				
Oregon LEHD	58.6	50.0	8.6***	<.001
National LEHD	61.4	53.0	8.4***	<.001
Year 5				
Oregon LEHD	62.8	58.0	4.8*	0.055
National LEHD	72.8	70.0	2.8	0.131
Year 10				
Oregon LEHD	48.0	46.0	2.0	0.333
National LEHD	60.9	63.0	-2.1	0.485
Year 15				
Oregon LEHD	43.0	39.0	4.0*	0.099
National LEHD	56.6	55.0	1.6	0.533
Year 20				
Oregon LEHD	33.9	31.0	2.9	0.149
National LEHD	45.8	44.0	1.8	0.482
Sample size	3,500	500		

SOURCES: MDRC calculations from NEWWS Two-Year and Five-Year survey data, Oregon LEHD data, NDNH data, and national LEHD data.

NOTES: LEHD = Longitudinal Employer-Household Dynamics; NDNH = National Directory of New Hires; NEWWS = National Evaluation of Welfare-to-Work Strategies.

All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY23-CES018-008.

Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

not based on the national LEHD data (Table 2 and Appendix Table A.1). It appears these differences (at least in part) are due to more individuals in the control group than individuals in the program group working out-of-state (consistent with the findings from the prior long-term follow-up analysis using NDNH data). This again suggests that using data with national coverage is more important in longer-term follow-up studies. If a study had used a data source with only in-Oregon coverage, it would have determined that NEWWS Portland had an impact on employment in that time period, but that estimate would have been missing part of the story. If it had used a data source with national coverage, it would have determined that NEWWS Portland did not have an impact on employment.

Earnings measures tell a somewhat different story. For earnings measures, it is possible that using a source with only in-Oregon coverage missed earnings for some individuals entirely and partial earnings for other individuals (if, for example, someone worked a job both in and out of Oregon). Table 3 shows the impact of NEWWS Portland on having average annual earnings of \$10,000 or more roughly 10 to 15 years after entering the study according to the Oregon LEHD data and the NDNH data.³⁴

TABLE 3
Earnings Impacts, by Data Source

Employed	Program Group	Control Group	Difference (Impact)	P-Value
Average annual earnings of at least \$10,000^a				
Oregon LEHD	29.5	30.0	-0.5	0.951
NDNH	37.4	38.4	-1.0	0.665
Sample size	3,500	500		

SOURCES: MDRC calculations from Oregon LEHD data and NDNH data.

NOTES: LEHD = Longitudinal Employer-Household Dynamics; NDNH = National Directory of New Hires.

All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY23-CES018-008.

^aThis measure captures average annual earnings between the fourth quarter of 2004 and the first quarter of 2007. Earnings amounts were adjusted for inflation to 2006 dollars.

- **The impact of NEWWS Portland on a measure of high earnings roughly 10 to 15 years after study enrollment is not statistically significant as estimated by the Oregon LEHD data or the NDNH data.**

34. Average annual earnings from the Oregon LEHD data were estimated between the fourth quarter of 2004 and the first quarter of 2007, as was done with the NDNH data in Freedman and Smith (2008). This measure was chosen based on the availability of data from the prior NDNH analysis.

The rate of individuals having earnings of at least \$10,000 in both the program and control groups does differ across data sources (it is higher when estimated with the NDNH data) but is expected given the differences in geographic coverage. The lack of a difference in this earnings impact suggests that the choice of a data source with in-Oregon versus national coverage did not matter as much for assessing the effectiveness of NEWWS Portland on having high earnings in this time period. It is unclear whether this finding would hold in shorter- or longer-term follow-up periods, however, especially given the employment findings discussed above.

Are the Differences in Employment Impacts Across Data Sources Statistically Significant?

It is also important to consider how much of a difference in employment impacts matters, beyond just making an assessment of whether the impacts in both data sources are statistically significant or not. One way to make this determination is to calculate the difference in impacts when using different data sources to estimate employment and assess whether the observed difference in impacts is due to chance.

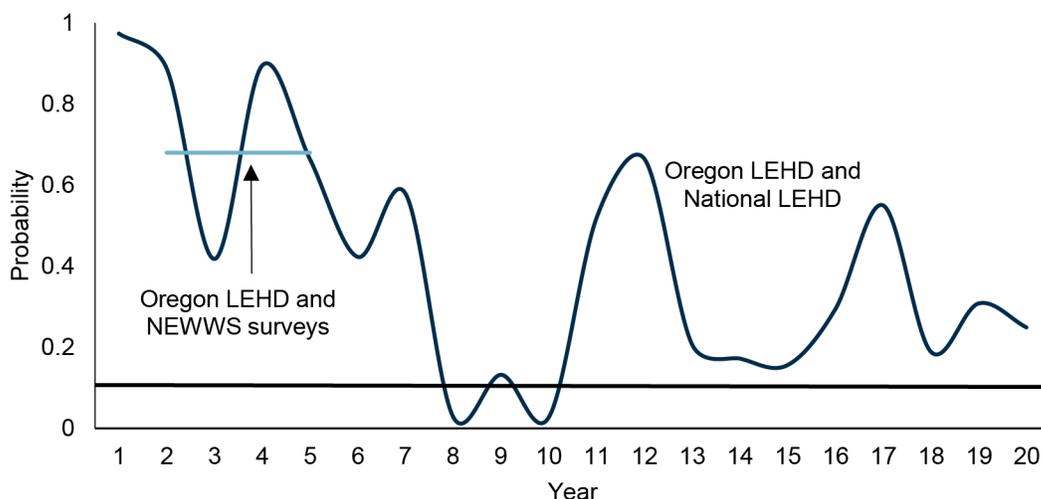
This analysis estimates the difference in employment rates between the average individual in the program group and the average individual in the control group in the first data source, minus the difference in employment rates between the average individual in the program group and the average individual in the control group in the second data source—or, in other words, it looks at whether there is a difference in impacts across the two data sources.³⁵ The research team expected that the chance of detecting differences in impacts would increase as the consistency across sources decreased.

Figure 6 plots the probabilities (or the p-values) that the estimated differences in employment impacts between the Oregon LEHD data and the NEWWS surveys and between the Oregon LEHD data and the national LEHD data vary (as in the analysis above, it was not possible to directly compare every data source given non-overlapping coverage periods). The horizontal black line shows a probability, or a p-value, of 0.1, which is a threshold commonly used to decide if a difference in impacts is statistically significant—meaning that the estimated difference is likely due to a real difference in the employment impacts across the data sources and not due to chance.³⁶ Points on the dark blue line that drop below the horizontal black line indicate that the difference in impacts is statistically significant—for example, the difference in Year 8 impacts as estimated by the Oregon LEHD data versus the national LEHD data.

35. This is akin to a difference-in-difference analysis. See the Appendix for more information.

36. How much risk is too much for impacts to differ—seen with employment rates that use different data—is not just a statistical question. Other thresholds might be valid as well.

FIGURE 6
Probabilities of the Differences in Employment Impacts
Across Data Sources



SOURCES: MDRC calculations from NEWWS Two-Year and Five-Year survey data, Oregon LEHD data, and national LEHD data.

NOTES: LEHD = Longitudinal Employer-Household Dynamics; NEWWS = National Evaluation of Welfare-to-Work Strategies.

All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY23-CES018-008.

The black line shows a probability, or p-value, of 0.1.

The comparison of impacts between the NEWWS surveys and the Oregon LEHD data was made in the quarter when individuals responded to the survey interview. The exact quarter differed depending on when the person entered the study and when they were interviewed, but occurred sometime between Year 2 and Year 5.

- **The difference in employment impacts across data sources is statistically significant in only a handful of time periods across the data source comparisons. The likelihood of the impacts to differ increases over time (as measured by the p-value) as more participants work out of state.**

Figure 6 shows that only two of the differences in impacts across data sources are statistically significant—in Year 8 and in Year 10.³⁷ In both cases, the impact difference is larger—by 4 percentage points or more—when estimated using the Oregon LEHD data than when using the national LEHD data. This is relatively consistent with the above assessment looking at whether the statistical significance of the impacts differs between the data sources. It also provides further evidence that the choice of a data source, at least in

37. These are the only two years in which the differences exceed 4 percentage points. This can be inferred from Appendix Table A.1 by subtracting the impact estimate based on the national LEHD data from the impact estimate based on the Oregon LEHD data.

the case of employment outcomes in NEWWS Portland, matters in some but not all time periods.³⁸

For one of the differences in impacts that is statistically significant—the Year 10 difference in impacts based on the Oregon LEHD and national LEHD data—the impacts were not statistically significant based on either data source but the sign differed (Appendix Table A.1). In this case, the same overall story would have been told about NEWWS Portland’s lack of an impact on employment.³⁹ So even though the impacts differ by a statistically significant amount, the difference may not be considered meaningful to a policymaker or practitioner when considering a program’s effects.

ARE THE DIFFERENCES IN EMPLOYMENT OUTCOMES ACROSS DATA SOURCES DIFFERENT FOR SPECIFIC GROUPS OF PARTICIPANTS?

The analyses above revealed some differences in employment outcomes as estimated by different data sources. One logical question to ask next is whether those differences apply to the full study sample, or whether the employment differences are larger for some groups of participants compared to other groups of participants.

For this third analysis, the research team hypothesized that some groups of people were more likely to be mobile and move or obtain out-of-state jobs than other people. It is possible, for example, that people who had recent employment experience might be less likely to be mobile (due to having some employment ties to draw on) than people without recent employment experience. This would mean that people with recent employment experience (or other characteristics associated with mobility) would be more likely to only be captured by data with national coverage, while those without recent employment experience (or other characteristics associated with not being mobile) would be more likely to be captured by data with both in-state and national coverage.

In this analysis, employment in one data source was used to predict employment in a second data source separately among groups of participants with different

38. An additional analysis looked at whether there were differences in impacts on being employed at a given earnings threshold in the first 21 quarters following study entry when estimated using the Oregon state UI data and the Oregon LEHD data. Three thresholds were used (earning between \$1 and \$999, earning between \$1,000 and \$2,999, and earning \$3,000 or more). Overall, the differences in impacts between data sources were statistically significant in some quarters, but there was no consistent pattern and, in all cases, the impacts according to both sources were either both statistically significant or not statistically significant (not shown). This suggests the overall story would have been the same no matter which data source was used.

39. For the other difference—in Year 8 between the Oregon LEHD data and national LEHD data—the impact was statistically significant based on the former but not the latter. Given this only occurred for one outcome among all of those examined, it does not appear to be a consistent pattern.

characteristics—individuals who were and were not employed in the year prior to entering the study; individuals who did and did not receive food stamps in the year prior to study entry; individuals who did and did not receive Aid to Families with Dependent Children in the quarter prior to study entry; and individuals ages 35–59 and not ages 35–59. Only outcomes that had statistically significant differences in impacts across data sources (discussed in the section above) were examined: employment in Years 8 and 10, as estimated by the Oregon LEHD data and the national LEHD data. For these outcomes, there does not appear to be a difference in whether employment in the national LEHD data is able to predict employment in the Oregon LEHD data among individuals with the different characteristics examined (see Appendix Table A.2).

CONCLUSION

The findings in this report show that there are differences in the employment outcomes of NEWWS Portland depending on which data source is used to estimate employment. There are also differences in the employment impacts of NEWWS Portland across data sources, but they are mainly concentrated partway through the 20-year follow-up period. Most differences in impacts are seen five to eight years after individuals entered the study. Around then, NEWWS Portland increased employment when estimated using the Oregon LEHD data, but not when using the national LEHD data. This appears to be driven by individuals in the control group being more likely to work outside of Oregon than individuals in the program group. In most later follow-up periods, there are no employment impacts according to either data source, suggesting that individuals in the program group started to work outside of Oregon at a more similar rate). There do not appear to be big differences in the employment captured by these two data sources for individuals with the different characteristics examined.

This pattern of findings implies that the choice of a data source has implications for both the employment outcomes and employment impacts that are reported for a study. Those implications are larger for estimates of employment in longer-term follow-up periods.

Implications for Researchers and Policymakers

Going into this study, it was already known that one main driver of differences in employment outcomes across data sources is simply the difference in coverage across data sources (as was also discussed throughout the report). Some of the known differences are likely more relevant than others in a study such as NEWWS Portland, however. Although the findings here are specific to NEWWS Portland, they point to the benefits and tradeoffs of using different data sources that should be considered by researchers and policymakers looking to evaluate similar programs targeted to similar populations.

- One main distinction is between data sources with in-Oregon versus national coverage. This distinction appears to be especially crucial for outcomes and impacts estimated

further from the time of study entry. Studies conducting longer-term follow-up (more than 2–3 years post study entry) should consider using a data source with national coverage, as more individuals are likely to move out of state over time and more employment will be missed otherwise. This may be especially important for studies of programs taking place near state borders or in areas where people are likely to work in other states (such as New York City). There may also be important differences in how likely individuals in the program group are to move or work out of state compared to individuals in the control group, which has implications for estimating both employment and earnings impacts.

- Another main distinction is between survey and administrative data. The findings showed the NEWWS surveys captured more employment than the administrative data sources, but the impact on employment did not differ between the surveys and administrative data. This is consistent with some prior research—including an analysis of NEWWS Portland employment effects in Years 1 to 5⁴⁰—and while not surprising, provides further evidence of the benefits of using both surveys and administrative data in program and policy evaluation. Studies should consider using both data sources, if resources permit, to get a more complete picture of employment. This is particularly important for studies with target populations that are more likely to get jobs that are informal and not covered by the UI system.
- There is also evidence of little difference in the employment captured by (1) the Oregon state UI data and Oregon LEHD data and (2) the national LEHD data and the NDNH data for the individuals from the NEWWS Portland site. This suggests that researchers can consider pursuing either data source within each pair, and the decision can also be based on factors like cost and prior experience working with a given source (rather than solely on one source being better suited for analysis).

It should be acknowledged that some studies may not have a choice of which data source or sources are pursued. Gaining access to administrative data can be a lengthy process and involve many challenges. Fielding surveys can be prohibitively expensive, especially when a certain response rate is needed. Studies often have resource and time constraints that they must work within, and study teams must grapple with human subjects' considerations before doing any data collection, so while a study may prefer to use one data source over another, it may not always be possible. In these cases, study teams can acknowledge the limitations of the data source that is used so policymakers and others in the field can have more information when considering the findings.

Overall, the findings in this report suggest that researchers should carefully consider their choice of a data source to measure employment. Knowing the benefits and limitations can help study teams make informed decisions about that choice and about how to interpret the study findings. In cases where it is possible, using multiple sources can help validate or give new insights into employment outcomes and effects.

40. See Appendix Table H.2 in Hamilton et al. (2001).

APPENDIX

A

Technical Appendix

This appendix provides more detail on the analytical methods described in the report and used as part of the Long-Term Employment Outcomes (LTEO): Portland National Evaluation of Welfare-to-Work Strategies (NEWWS) project. The analyses follow the study's pre-registered analysis plan.¹

STUDY DESIGN AND SAMPLE

The report describes a comparison of employment data sources used as part of NEWWS, an employment-focused program offered to individuals applying for and receiving welfare. It was conducted from 1991 to 1996 and was designed to test the effects of alternative approaches to helping welfare recipients find jobs and leave public assistance. The original study used a randomized controlled trial design. Individuals were assigned at random to either a program group that was eligible for program services and subject to participation requirements, or to a control group that was not eligible for program services and not subject to participation requirements (although they could participate in other services in the community).²

Between February 1993 and December 1994, 5,547 individuals applying for or receiving welfare enrolled in the Portland site of NEWWS. Individuals in the control group were embargoed from the NEWWS program for three years, and a randomly selected 25 percent of those individuals were embargoed for five years. Subsequent analysis conducted for the NEWWS five-year impact report suggested that the lifting of the embargo after Year 3 did affect the employment and earnings for individuals in the control group, compared with those who were embargoed for five years. That report used the five-year embargoed control group, which consisted of around 500 individuals.³

The same sample is used for this report—approximately 500 individuals in the control group and 3,500 individuals in the program group for an overall sample of about 4,000 individuals.

METHODS

Several different analysis methods were used to explore the research questions. The methods used depended on both the granularity of the data included in each comparison (individual- versus aggregate-level) and the question being explored.

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1. For the study's pre-registered analysis plan, see <https://osf.io/sz8g5/>.
 2. Hamilton et al. (2001).
 3. Hamilton et al. (2001).

Consistency of Employment Statuses

For the comparisons of employment statuses across sources, the research team calculated the consistency of the statuses (shown in Figure 3). This was calculated by summing (1) the number of people who were reported as employed in both sources and (2) the number of people who were reported as not employed in both sources, and then dividing that number by the total number of people in the sample.

Differences in Employment Impacts

Impact estimates were regression-adjusted using the sample's background characteristics (as was done in the original NEWWS study). These impacts are shown in Table 2 and Appendix Table 1. For impacts on outcomes, regression models of the following form were estimated, using ordinary least squares:

$$Y_i = \alpha + \beta P_i + \delta X_i + \varepsilon_i$$

where Y_i = the outcome measure for sample member i ;

P_i = an indicator variable equal to "1" for program group members and equal to "0" for control group members;

X_i = a set of background characteristics for sample member i ;

ε_i = a random error term for sample member i ;

β = the estimate of the impact of NEWWS on the average value of the outcome;

α = the intercept of the regression; and

δ = the set of regression coefficients for the background characteristics.

The following covariates from the original NEWWS study were used:

- Single parent, ever married
- Has two children
- Has three or more children
- Has any children 0–5 years old
- Black

- Not Black or White
- Age at random assignment
- Female
- Has a high school diploma or GED
- Employed in the year prior to random assignment
- Employed in the quarter prior to random assignment
- Earnings in the year prior to random assignment
- Earnings in the year prior to random assignment squared
- Earnings in the quarter relative to random assignment
- Received Aid to Families with Dependent Children (AFDC) in the quarter before random assignment
- Received AFDC in the year prior to random assignment
- Average monthly AFDC amount received in the year prior to random assignment
- Number of months receiving AFDC in the year prior to random assignment
- Received food stamps in the year prior to random assignment
- Average monthly food stamp amount received in the year prior to random assignment
- Number of months receiving food stamps in the year prior to random assignment

The impact estimates were then compared across data sources. The following logistic regression model was used to estimate employment based on Oregon Longitudinal Employer-Household Dynamics (Oregon LEHD) and national LEHD data while taking into account the employment rate change for program group members by data source compared to the employment rate change for control group members by data source. Each sample member is included in the sample twice in order to measure the difference in impacts across the two samples:

$$Y_i = \beta_0 + \beta_1 D_i + \beta_2 P_i + \beta_3 D_i * P_i + \varepsilon_i$$

where Y_i = the employment outcome measure for sample member i who is included in the dataset twice;

D_i = a data source indicator variable equal to “1” for estimates using the national LEHD data as input and “0” for estimates using the Oregon LEHD data for sample member i ;

P_i = an indicator variable equal to “1” for program group members and “0” for control group members for sample member i ;

$D_i * P_i$ = an interaction indicator variable equal to “1” for estimates using the national LEHD data and the program group as inputs and “0” for estimates that do not use the national LEHD data and the program group as input for sample member i ;

ε_i = a random error term for sample member i , adjusted for the presence of repeat sample members;

β_0 = the estimated probability of the control group to be employed based on the Oregon LEHD data;

β_1 = the estimated change in probability for the control group to be employed based on the national LEHD data relative to the Oregon LEHD data;

β_2 = the estimated change in probability for the program group to be employed based on the Oregon LEHD data relative to the control group; and

β_3 = the estimated change in probability for the program group to be employed based on the national LEHD data, relative to the Oregon LEHD, minus the estimated change in probability for the control group to be employed based on the national LEHD (also relative to the Oregon LEHD). This is the key parameter of interest in this part of the analysis.

Subgroup Analysis

Other research has found that data coverage varies by subgroups.⁴ The study team explored whether any differences in employment outcomes across the Oregon LEHD and national LEHD data were larger or smaller for subgroups of individuals in Years 8 and 10.⁵ The subgroups that were analyzed include age, employment history, welfare receipt history, education level, race/ethnicity, housing status, and marital status.⁶ Findings for select subgroups—those based on being ages 35 to 59 at baseline, receipt of AFDC in the quarter prior to random assignment, receipt of food stamps in the year prior to random assignment, and having state unemployment insurance-covered (UI) employment in the

4. Hotz and Scholz (2001).

5. The focus of the subgroup analysis on these time periods and data sources were determined based on the analysis of where the differences in employment outcomes by data source led to differences in estimated impacts.

6. The sample is predominately female (over 93 percent), so the research team did not think a gender-based subgroup was a key subgroup to explore.

year prior to random assignment—are shown in Appendix Table A.2. The findings for the other subgroups examined were consistent with those shown in that table.

The probability of the national LEHD indicator to predict employment based on Oregon LEHD was estimated for each subgroup ($= 1$ or $= 0$) as follows:

$$Y_i = \beta_0 + \beta_1 D_i + \varepsilon_i$$

where Y_i = the employment outcome measured with Oregon LEHD data for sample member i ;

D_i = an indicator of employment for sample member i based on the national LEHD data where “1” indicates the person is employed and “0” indicates that the person is not employed;

ε_i = a random error term for sample member i ;

β_0 = the average probability for employment according to Oregon LEHD while not being employed according to the national LEHD; and

β_1 = the average change in probability of sample member i to be employed according to Oregon LEHD while also being employed according to the national LEHD.

The subgroup difference in the probability of a sample member to be employed according to Oregon LEHD based on the national LEHD is estimated as follows:

$$Y_i = \beta_0 + \beta_1 D_i + \beta_2 S_i + \beta_3 D_i * S_i + \varepsilon_i$$

where Y_i = the employment outcome measure with Oregon LEHD data for sample member i ;

D_i = an indicator of employment based on the national LEHD data where “1” indicates the person is employed and “0” indicates that the person is not employed;

S_i = the subgroup indicator where “1” indicates the person is in the subgroup (for example, age 35 to 59 at baseline) and “0” indicates that the person is not in the subgroup;

$D_i * S_i$ = is an interaction term where “1” indicates the person is employed according to the national LEHD and in the subgroup (for example, age 35 to 59 at baseline) and “0” indicates that the person is not employed according to the national LEHD and in the subgroup;

ε_i = a random error term for sample member i ;

β_0 = the probability of employment according to the Oregon LEHD data but not according to the national LEHD for individuals not in the subgroup ($= 0$) of interest;

β_1 = the change in probability of employment according to the national LEHD relative to the Oregon LEHD for those not in the subgroup (= 0);

β_2 = the change in probability of employment for the subgroup of interest, relative to those not in the subgroup, based on Oregon LEHD data; and

β_3 = the added effect on employment of the national LEHD relative to the Oregon LEHD for the subgroup of interest, relative to the effect for those not in the subgroup of interest. This is the key parameter of interest in this part of the analysis.

OUTCOMES

Because the data sources used for the analyses differed in the granularity of the available data (for example, being available at the individual level versus aggregated across individuals), the time unit in which outcomes are captured (for example, quarters versus point in time), the time period they covered, and the individuals they covered, the research team had to do some restructuring of the outcomes in order to make comparisons across data sources:

- The Two-Year and Five-Year Surveys captured employment at the time of the survey interview. To make comparisons to the state UI and Oregon LEHD data, those data were used to create measures of ‘employed in the quarter of survey interview.’ For individuals who responded to the Five-Year Survey, their employment status at the time of that survey interview was used. For individuals who responded to the Two-Year Survey but not the Five-Year Survey, their employment status at the time of the Two-Year Survey interview was used. Individuals who did not respond to either survey were excluded from this comparison.
- The outcomes based on the National Directory of New Hires (NDNH) were only available at the aggregate level and were taken directly out of the memo describing those findings.⁷ The average annual earnings outcome was recreated using the Oregon LEHD data following the same steps described in that memo: summing earnings across all ten quarters of available data (from the fourth quarter of 2004 to the first quarter of 2007), dividing by the number of quarters of available data (ten quarters), and then multiplying that amount by four.
- For the outcome of ‘employed with high earnings’—earning amounts in the Oregon LEHD were first adjusted to 2006 dollars, as this was also done with the NDNH data in the prior long-term follow-up analysis.
- To compare earnings levels between the Oregon state UI and Oregon LEHD data, quarterly outcomes capturing individuals who were employed and had earnings within

7. Freedman and Smith (2008).

different ranges were created—earnings between \$1 and \$999, earnings between \$1,000 and \$2,999, and earnings of \$3,000 or more. Individuals who did not have reported earnings in either of these sources in a given quarter were not included in the comparison for that quarter.

APPENDIX TABLE A.1
Employment Impacts,
by Data Source

Employed	Oregon LEHD	National LEHD
Year 1	8.6***	8.4***
Year 2	11.4***	11.1***
Year 3	12.2***	11.8***
Year 4	8.5***	7.6***
Year 5	4.8*	2.8
Year 6	5.4**	3.3
Year 7	3.4	1.8
Year 8	4.6*	0.5
Year 9	1.3	-0.9
Year 10	2.0	-2.1
Year 11	2.1	0.6
Year 12	0.8	-0.3
Year 13	0.7	-2.1
Year 14	3.1	1.1
Year 15	4.0*	1.6
Year 16	-0.2	-2.4
Year 17	1.8	0.4
Year 18	3.3	1.4
Year 19	3.3	1.7
Year 20	2.9	1.8

SOURCES: MDRC calculations from Oregon LEHD data and national LEHD data.

NOTES: LEHD = Longitudinal Employer-Household Dynamics.

All results were approved for release by the U.S. Census. Bureau, authorization number CBDRB-FY23-CES018-008.

Statistical significance levels are indicated as follows:
*** = 1 percent; ** = 5 percent; * = 10 percent.

APPENDIX TABLE A.2

Probabilities of Employment in the National LEHD Data to Predict Employment in the Oregon LEHD Data, by Subgroup

Subgroup	Year 8		Year 10		Sample size
	Probability	P-value	Probability	P-value	
AFDC receipt					
Received AFDC in the quarter before study entry	0.817	0.949	0.796	0.945	3,100
Did not receive AFDC in the quarter before study entry	0.760	0.963	0.740	0.973	900
Subgroup difference		0.999		0.999	
Age					
Age 35-59	0.825	0.969	0.803	0.966	1,000
Not age 35-59	0.794	0.953	0.774	0.949	3,000
Subgroup difference		0.999		0.999	
SNAP receipt					
Received SNAP in the year prior to study entry	0.813	0.947	0.792	0.943	3,500
Did not receive SNAP in the year prior to study entry	0.740	0.980	0.710	0.980	550
Subgroup difference		0.999		0.999	
Employment history					
Employed in the year prior to study entry	0.818	0.966	0.798	0.963	1,700
Not employed in the year prior to study entry	0.788	0.955	0.766	0.952	2,300
Subgroup difference		0.999		0.999	

SOURCES: MDRC calculations from Oregon LEHD data and national LEHD data.

NOTES: LEHD = Longitudinal Employer-Household Dynamics; AFDC = Aid to Families with Dependent Children; SNAP = Supplemental Nutrition Assistance Program.

All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY23-CES018-010.

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