

The Use of Linked Employer-Employee UI Wage Data: Illustrative Uses in Texas Policy Analysis

by

Christopher T. King and Deanna T. Schexnayder*
The University of Texas at Austin

I. Introduction

Researchers at the University of Texas at Austin's Center for the Study of Human Resources began actively using employment and earnings data drawn from Unemployment Insurance (UI) wage and other records to address both policy research and evaluation questions for Texas in the mid-1980s. They found that such data, while having certain disadvantages, offered compelling advantages which allowed them to address policy research issues in ways which were not feasible otherwise.

This paper briefly examines the advantages and disadvantages of linked employer-employee administrative data drawn from UI wage and other records, based in part on experience with using them for state policy research. It then offers several illustrative uses to which Center researchers have put these data to inform Texas policymakers. It concludes with a series of observations and thoughts on future directions for using these data.

II. Advantages and Disadvantages of Linked Data

UI Wage and Employer Data Elements

To gauge the advantages and disadvantages of linked employee-employer data, one must first examine the data elements each contains. Key elements that are typically part of the UI wage record for all individuals working in UI-covered employment in their state include:¹

- Employee name;

* Director and Associate Director, respectively, of the Center for the Study of Human Resources, the Lyndon B. Johnson School of Public Affairs, The University of Texas at Austin. The authors wish to acknowledge the assistance of Center colleagues Alicia Betsinger, Leslie Lawson, Jerry Olson and Daniel Schroeder, as well as Marc Anderberg of the Texas State Occupational Information Coordinating Committee.

- Employee Social Security Number (SSN);
- Employee name and address (city, state and zip code);
- Employer ID number (both state and federal); and
- Total earnings paid, listed separately by each employer, for all such employers in the quarter.

Note that the Standard Industrial Classification (SIC) variable, while often mentioned as part of the UI wage record, is actually appended from the employer file using the employer ID number, thus linking the two. Moreover, employer SIC codes are often established when the company is first established and may be less accurate than those found in the current employer file unless concerted efforts are made to update them from time to time.²

The Employer Master File, which supports the ES202 “establishment” reporting series, typically features the following variables of interest to researchers and policymakers:³

- Employer ID number;
- Employer firm name;
- Doing-business-as (DBA) name;
- Address for both of the above (including street address, City, State and Zip + 4);
- Employer size, in terms of number of employees (monthly);
- Primary SIC code; and
- Secondary SIC code.

¹ See King (1989) for more detail. In Texas, more than 98 percent of wage and salary employment is covered by UI, although the usual gaps in coverage exist, i.e., the self-employed, employees of religious organizations, railroads and small farms.

² We are grateful to Marc Anderberg of the Texas SOICC to pointing this out. Updating will tend to be a function of both the UI claims process and determining the arcane UI financing arrangements which vary from state to state, as well as periodic revisions to the SIC manual.

³ There are many more variables in the ES202 data—e.g., numbers of the accounts from which checks are paid—yet few are of interest here. Cohen (1989) offers a brief overview of employer-based data elements.

Advantages of Linked Data

Among the many advantages associated with the use of linked employer-employee records are that such records:⁴

- are inexpensive relative to survey data.
- feature broad coverage of employment, except for classes of employment not covered by UI, and allow using either samples or the universe in analysis, supporting substate analyses not feasible in other sample-based data sources.
- constitute an objective data source, avoiding employee/employer recall and other problems.
- where archived (as in many states), support longitudinal mobility studies, evaluations, and related analyses.
- enable researchers to determine the size class and industry of the establishments that have hired the research subjects being studied (e.g., former trainees or students, workers).
- enable researchers to determine the share of employees in an industry that are research subjects. Aggregation of this information by industry and employer size class shows which kinds of employers are the most likely to employ research subjects (i.e., absorption studies).
- if obtained for multiple time periods, enable researchers to determine whether the companies that have hired research subjects are growing or shrinking over time.
- by comparing employer company growth rates to aggregate industrial growth rates in the same industries statewide and nationwide, enable researchers to determine whether the employing companies are increasing or decreasing in market share over time.

⁴ Advantages of such data have been described in part by Cohen (1989), Hanna (1989), King (1989), and Lane, Shi and Stevens (1998), among others.

- by comparing a individual's wages to the employer's average wages over time, enable researchers to establish whether the wages of research subjects are increasing or decreasing relative to the employer's other employees.

Disadvantages of Linked Data

Of course, there are also disadvantages associated with using linked employer-employee data. The major ones are that:⁵

- because of ambiguities in what the employer ID number signifies, within given states it may be difficult to distinguish between cases when an employee changes employers (whether voluntarily or involuntarily) and those when a company's ownership changes. Both could lead to quarterly wages being reported under a different federal employer account number.
- similar difficulties afflict the SIC code, which may be listed as one classification in one field and something else in another. It may not be clear which SIC code to use when performing mobility studies in characterizing an employee's industry of origin when there are more than one.
- in multi-state studies, accessing linked employer-employee records may be more difficult because of the need to obtain files from a number of different states.

On balance, however, linking employer-employee records works out well for policy researchers and policymakers, supporting both research as well as evaluation uses— so long as the limitations of such linked files are recognized and addressed up front. *All* data sets have their warts; some are simply more noticeable or possibly more egregious than others.

III. Illustrative Uses for Texas Policy Analysis

Center researchers first began utilizing UI wage and associated employer data in support of various policy research and evaluation initiatives in 1986 for some of the very reasons listed above. UI wage data tended to be quite inexpensive; remarkably complete in their coverage of Texas wage and salary employment; relatively objective,

⁵ For more on their disadvantages see the papers in the preceding footnote.

consistent and reliable; and, at least for researchers based at a state university, readily accessible. Relative to most other possible sources of employment and earnings data, UI wage data was by far the preferred data source.

The Center's Administrative Records Research

A team of Center researchers quickly developed a widely recognized niche which involved linking numerous state databases related to human resources development, not just employer and employee data. What followed were a series of research and evaluation efforts, funded by a wide array of federal and state entities, as well as private foundations.

- Welfare dynamics and welfare-to-work program research (1986-present), in which researchers linked public assistance and related welfare-to-work administrative data, using caretaker SSNs, to longer-term employment and earnings (UI wage) data (King and Schexnayder 1988; Gula and King 1991; Schexnayder et al. 1992; King et al. 1994). These efforts continue as researchers at the Center perform the experimental evaluation of the *Achieving Change for Texans* Welfare Reform Waiver Demonstration between now and 2002.
- Workforce policy/program research (1989-present), in which job training, vocational education and similar administrative records were linked with UI wage data to examine postprogram employment and earnings outcomes (McLane, King and Schexnayder 1989; Gula and King 1989; and Schexnayder, King and Lawson 1994) and to document longer-term “success stories” from these efforts (King et al. 1995; King 1998).
- Texas JOBS program evaluation (1991-1995), in which a team of Center researchers, using a quasi-experimental design, evaluated the net impact of JOBS participation on welfare recidivism, as well as postprogram employment and earnings based on UI wage data (King et al. 1994; Schexnayder and Olson 1995).⁶

⁶ The evaluation also featured a process/implementation study, a longitudinal participant analysis and a benefit/cost analysis.

- Texas (and Hawaii) Food Stamp Employment and Training/JOBs Program Conformance Demonstration evaluation (1993-1997), in which Center researchers evaluated the results of the conformance efforts in both Texas and Hawaii, as part of a five-state demonstration funded by the U.S. Department of Agriculture's Food and Nutrition Service and coordinated by Social Policy Research Associates (e.g., Schexnayder and Olson 1997a, 1997b).

Many of these projects have yielded significant policy and program contributions as a few examples suggest. First, the Center's work on welfare dynamics (especially Schexnayder, King and Olson 1991) and its evaluation of the state's JOBS program (King et al. 1994; Schexnayder and Olson 1995) helped convince the Texas Legislature in 1995 that Texas' welfare time limits (as reflected in House Bill 1863) should be "tiered" such that caretakers with less education and work experience should be allowed more time to acquire basic and occupational skills in order to attain economic self-sufficiency when ultimately forced off welfare. Second, legislatively mandated research on welfare-employment program coordination and its effects conducted by the Center (e.g., King and Schexnayder 1992) provided an empirical basis for Texas' efforts to reform welfare and consolidate most workforce development programs at the state and local level.⁷

However, the above research primarily utilized employment and earnings data from the usual employee UI wage records. Only rarely did it actively link employee with employer files. Several Center projects, however, have made extensive use of linked files. Two of these efforts are reviewed below to illustrate some of the analytical potential these files hold.

Workers' Compensation Return-to-Work Patterns Analysis

⁷ Texas, along with Michigan, Wisconsin and a handful other states, has been in the forefront of workforce development reform of the type emphasizing consolidated or integrated state and local services. Senate Bill 642, the Texas Workforce and Economic Competitiveness Act of 1993, was the first major effort to effect these changes legislatively. The effort was perceived as less than successful, and in the next session, the Texas Legislature took more dramatic steps in House Bill 1863, a bill which was equal parts welfare and workforce reform. More detail on these changes can be found in King and McPherson (1997).

The Texas Legislature overhauled the state's workers' compensation system in 1989 after years of criticism from all sectors. In doing so, it restructured workers' compensation benefits, introduced the concept of "maximum medical improvement" (MMI), reduced the likelihood of litigation, streamlined the income benefits determination process and strengthened the division dealing with worker health and safety. It also established an independent agency, the Texas Workers' Compensation Research Center, "to conduct factual, fair and unbiased research to produce information relevant to workers' compensation issues and to share that information with all concerned persons." The first issue which the newly created research center chose to explore in 1992 concerned postinjury return-to-work (RTW) patterns of Texas workers covered by workers' compensation and who were injured on the job sometime during the 1988-1991 period;⁸ this period spanned three years of experience under provisions of the old law (i.e., 1988-1990), as well as one year under the new (1991).

Data Sources and Methods. Using claimant SSNs, Center researchers linked three separate data sources for the RTW patterns analysis: Texas Workers' Compensation Commission (TWCC) old- and new-law claims data containing the universe of claimants with injuries occurring in the 1988-1991 period, with such variables as gender, age, injury nature/body part, occupation, location and claim amount; UI wage records information on claimants' quarterly employment and earnings information from 1988:I (i.e., the first quarter of 1988) through 1992:II, with variables including employee SSN and quarterly earnings, as well as employer federal tax ID and UI account number, SIC code and monthly work force (drawn from employer master files); and supplementary Texas Department of Insurance (TDI) information on new-law claims with significant benefit amounts.

The researchers conducted extensive descriptive analysis of these data, offering exploratory answers to questions concerning differences and similarities in RTW patterns of injured Texas workers under the old and new law by worker demographics, occupation, industry, employer size and injury-type, among other factors. Both single-

⁸ As described in King, Pavone and Marshall (1993), there were other issues examined by the research as well, including the prevalence of RTW programs among Texas employers. The issues highlighted in the text are those amenable to analysis via linked employer-employee administrative data.

and multiple-claim cases were analyzed; greater emphasis was given to larger indemnity claims in the analysis for obvious reasons. Subsequent analyses of these data, reported in King (1995), addressed related questions on RTW patterns, as well as time intervals between the beginning of lost (work) time and MMI, for workers reaching MMI under the new law.

Selected RTW Findings. The research yielded the following findings, among others:

- Looking at larger, single-claim cases, there was a considerable increase in the likelihood of postinjury employment under the new law: while under the old law (1989 injury dates) the most common pattern was three quarters of nonemployment,⁹ under the new law injured workers were more likely to be employed in all postinjury quarters.
- Both under the old and the new law, there were significant shares of injured workers (18-19 percent) for whom early return to work may not have been productive: their initial return to work was followed by quarters of nonemployment.
- Under the new law, injured workers with larger, single-claims experienced smaller initial postinjury earnings declines in the immediate postinjury quarter—in both constant dollars and the percentage of preinjury earnings—and more complete recovery of preinjury earnings.

The analysis of RTW patterns for those reaching MMI under the new law found that:

- Under the new law, the most common RTW pattern was steady employment in all postinjury quarters (44 percent), even though a substantial number of workers did not maintain steady employment following injury. At least 55 percent of those enjoying steady employment in all postinjury quarters returned to work before reaching MMI.

⁹ Quarters without reported UI-covered employment are referred to as quarters of “nonemployment.” It is unclear whether such quarters actually reflect unemployed status or merely employment in work not covered by UI.

- Employees who returned to work with the same employer or even in the same industry experienced much steadier employment postinjury than those who did not: 61 percent of those returning to work with their preinjury employer were steadily employed, compared to only 27 percent who found work with other employers.
- As expected, factors associated with increased postinjury employment were age, and returning to work with the same employer and in the same industry. Negative associations were found with severity of injury and permanent impairment rating.

The Center's initial RTW analyses offered an array of recommendations for state policymakers (King and Hadley 1994) and ultimately raised at least as many questions as it answered. Repeated attempts to convince the TWC Research Center and its board to support a more complete multivariate analysis of these data proved unsuccessful.¹⁰ Then, for unrelated reasons having more to do with politics than policy research concerns, the Legislature eliminated the TWC Research Center altogether in 1995, folding its functions either into TWCC or a legislative committee. The TWC Research Center enjoyed a short but productive existence and built a reputation for producing and disseminating high-quality research. The Legislature has "stayed the course" of workers' compensation reform, maintaining the 1989 law essentially unchanged. Texas has neither expanded state RTW program funding nor encouraged employers to adopt enhanced early RTW policies as a result of the Center's RTW analysis.

Welfare-to-Work Transitions Research

Center researchers are also engaged in a collaborative research initiative with university-based teams conducting research on four other states (Florida, Georgia, Maryland and Missouri) in addition to Texas to determine welfare-to-work transition patterns in one of the largest urban areas in each of those states, namely Ft. Lauderdale, Atlanta, Baltimore, Kansas City and Houston.¹¹ The Jacob France Center

¹⁰ There are systematic differences between some of the subgroups analyzed, including those returning to work with the same or different employers, as evidenced in their preinjury earnings levels. Multivariate analysis is clearly needed.

¹¹ This research, which builds on earlier work at the Center as well as by Lane, Shi and Stevens (1998), is being funded by the U.S. Department of Labor's Employment and Training Administration, in part as an

at the University of Baltimore (Dr. David W. Stevens) is leading this effort. This research may serve as a prototype for similar work in the future, as analysts in state universities employ common methodologies and databases to address WtW and other issues to inform policymakers and program administrators at all levels in a system reflective of more devolved policy and program responsibilities.

Data Sources and Methods. For this research, Center researchers are linking the following Texas data sets: AFDC (and TANF) records, including recipient demographics, as well as monthly benefit and spell data for the period September 1992 through December 1997 from the Texas Department of Human Services; UI wage and selected employer records from the Texas Workforce Commission; JTPA, JOBS and related program participation records, also from the Texas Workforce Commission; noncustodial parent and child support award data from the Texas Office of the Attorney General (for some ancillary analysis); and the usual local economic and population data. Linking employer-employee records is at the heart of this project. This research will describe transition patterns both from the welfare recipient's perspective as well as the employer's, before and after the shift from AFDC to TANF.

Common purposes of this effort across the participating states are:

- To describe and analyze urban welfare-to-work transition flows in the 1990s, addressing the sensitivity of these patterns to differences in economic structure and other factors;
- To provide baseline information concerning these flows before and after TANF, concentrating on state-specific differences in state welfare laws, regulations and other features; and
- To advance what is known about the strengths and weaknesses of using administrative records for this type of longitudinal research, as well as evaluation and program management support.

urban baseline for patterns of welfare and work under the Welfare-to-Work (WtW) Grants program currently being implemented.

Expected Results. The research has just begun, so it's premature to discuss findings. However, it is appropriate to offer thoughts on expected results. In their analysis of longitudinal (1990-1996) welfare-to-work data for Baltimore County (Maryland), Lane, Shi and Stevens (1998) observed four primary stylized patterns of welfare and work in these data—job only; welfare only; job and welfare; and neither job nor welfare—along with one overlapping pattern and a residual category. Only a little more than half of those initially applying for welfare in Baltimore County found UI-covered employment subsequently, and many of held several such jobs over the period. In addition, they found that successful outcomes (e.g., holding steady jobs, leaving welfare) were more likely if the recipients found jobs in public administration, health services or social services. Similarly, being hired by an expanding firm also improved individual's chances of succeeding, though size of firm (number of employees) appeared to make no difference.

The structure of welfare is quite different in Texas, where maximum cash assistance (AFDC/TANF) benefits for a 3-person family are only \$188 per month, compared to around \$400 per month in Maryland. Employment mix and prevailing wage levels may differ as well. All of these differences are likely to affect the observed welfare-to-work transitions and the factors which contribute to successes. For example, fully three-fifths of Texas caretakers worked in UI-covered jobs in the year immediately prior to going on welfare, and considerably greater cycling between welfare and work has been observed here. Of course, given such low benefits, now coupled with time limits on welfare, far fewer stay on welfare continuously in Texas. As King (1998) and King et al. (1995) have observed, success for economically disadvantaged adults and out-of-school youth, when pegged at even higher levels than used in the Maryland study, is strongly associated with a programmatic emphasis on occupational skills training and pursuit of work paying family-supporting wages in demand-industries and occupations.

IV. Future Directions

Linking employer and employee records holds great promise both for policy research as well as for performance management and evaluation uses. Realizing this

promise requires further administrative data linkages as well. As indicated above, researchers at the Center for the Study of Human Resources have pioneered linkages with a broad array of administrative records in Texas, including JTPA, JOBS, Food Stamp E&T, AFDC/TANF, vocational education, child support (including noncustodial parents), workers' compensation and others. They have used this approach successfully for policy research as well as for performance management and evaluation purposes.

One of the more interesting recent uses of such data has been in developing an evaluation framework for the Texas workforce development system. In March 1997, Texas officially adopted an Evaluation Action Plan which established two key measures of system performance, postprogram employment and earnings, both of which are measured based on UI wage records data.¹² That plan calls for developing measures of performance which tie to employers as well, as "first among equal" of the two customers of the system, residents and employers. Measures now being considered include: employer participation or utilization rates; employer/market penetration rates; and payment for services received, among others. If an employer penetration measure is established, there is every reason to think it will be based on linked employee-employer data as described above.

There are any number of possible directions for using such data in the future. These are grouped here into performance management/evaluation and policy research applications.

Performance Management/Evaluation. As mentioned above, policymakers are increasingly recognizing the need to offer services and respond to the needs of employers as one of their major customers. Doing so in an era of enhanced accountability implies more effective tracking of who is being served (e.g., industry affiliation, size), where they are located (e.g., urban, suburban), what types of wages

¹² Center researchers developed the Action Plan under contract to the Texas Council on Workforce and Economic Competitiveness, the state's human resource investment council. More detail on the Texas workforce system, including efforts to measure and evaluate its performance, are contained in King and McPherson (1997).

they pay, whether they have been served before and how well, and so on. Linked data can help address these important questions.¹³

In addition, if states and localities are to more effectively design and target their workforce resources (ranging from JTPA and welfare-to-work to community and technical college program offerings and various trade-related efforts), they must begin to analyze more intensively where former participants and students are finding jobs—especially jobs offering wages which pay enough to allow families to attain economic self-sufficiency—and whether those jobs are being offered by large or small firms, rapidly growing employers or those simply replacing workers retiring or leaving for other reasons, etc.¹⁴ Such efforts also can turn to linked employer-employee records. The Welfare-to-Work Transitions research described above is an example of such research. The Texas SOICC (1997) and groups in other states (e.g., Florida) have related initiatives underway.

Policy Research. There are also several strands of more basic policy research to consider in this regard. Insights can also be found in Stevens (1994) and a soon-to-be-released report on the potential uses of administrative records for research (Hotz et al. 1998). First, with all of the workforce research emanating from longitudinal panel survey and other data at present, efforts should be made to verify findings to the extent possible by drawing on linked employment data from a substantial number of states across the nation. It should be possible to obtain representative samples from states which have demonstrated their interest and capacity in the area of administrative data research to accomplish this. An added benefit of basing the research on these data is that, where significant substate results are desired, the universe (or at least very large samples) can often be utilized from administrative data in order to support them, something which is infeasible with panel surveys.

Second, there are many indications that the world of work is changing far more rapidly and dramatically than most surveys are able to reflect. It should be possible to devise mechanisms based primarily on linked employer-employee data to monitor some

¹³ Trott and Baj (1996) offer an overview of workforce performance measurement system issues.

¹⁴ As forthcoming work from the Center on welfare dynamics and child support suggest, these statements may apply equally well to efforts to bolster state child support enforcement.

of these changes. For example, the “temporary” or “contingent worker” phenomenon still appears to be spreading in many different sectors, encompassing the entire range from government to health care. Using these data, it should be possible to track developments by industry sector and to assist state employment security agencies in dealing with UI and other policy and program issues which relate to them.

Third, as King and Lawson (1996) have pointed out, despite considerable rhetoric on the topic, very little is known with any certainty about “entry-level” jobs in this country. We simply do not have existing data to inform us about current occupational developments or mobility in the labor market generally, much less related to entry-level jobs. National and state labor market information groups have considered adding an occupational identifier of some type or at least establishing links from their personnel systems to data already being reported by employers as part of the ES202 and UI reporting systems. Adding such identifiers would allow policy researchers and labor market analysts to augment knowledge of the training and preparation required for entry jobs, career pathways and occupational earnings progression in the labor market.¹⁵ Such knowledge is altogether lacking at present.

In closing, linked employer-employee records have much to offer. Some of their potential is being mined right now in states including Texas, Maryland and Florida, both in terms of performance management/evaluation as well as policy research. As workforce and welfare programs become increasingly devolved from the federal government, there appears to be growing national interest in supporting the use of such data sources as well, if only to ensure that basic knowledge of events in the 50-plus jurisdictions is maintained.

¹⁵ There are a number of other enhancements which should be considered in support of improved research and evaluation, most of which involve employers reporting (or accessing) existing variables from elsewhere in their information systems; for example, hours worked and hourly wage rates.

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