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Abstract

The Unemployment Compensation Amendments of 1993, Public Law 103-152, require each state employment security agency to implement a Worker Profiling and Reemployment Services (WPRS) system. WPRS systems are intended to identify unemployment insurance beneficiaries who are most likely to exhaust their regular benefits, and refer them quickly to reemployment services to speed the transition to new employment. This brief paper was prepared for a national colloquium on WPRS held June 11-14, 1996 in Atlanta. The paper summarizes work done by the W.E. Upjohn Institute for Employment Research for the State of Michigan to design and implement a UI profiling model, and to design an evaluation of the WPRS system effectiveness.

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1. BACKGROUND

Public Law 103-152 requires state employment security agencies to establish and utilize a system of profiling all new claimants for regular unemployment compensation. The purpose of profiling is to identify unemployment insurance claimants who are most likely to exhaust their regular benefits, so they may be provided reemployment services to make a faster transition to new employment—the Worker Profiling and Reemployment Services (WPRS) system.

Profiling entails a two-stage process. First, unemployment insurance recipients who are expecting recall or who are members of a union hall are dropped from the pool. These groups are excluded because they are not expected to undertake an active independent job search. Second, the remaining unemployment insurance recipients are ranked by their likelihood of exhausting regular unemployment insurance benefits. Beneficiaries are then referred to reemployment services in order of their ranking until the capacity of local agencies to serve them is exhausted.

In late November 1994, the Michigan Employment Security Commission (MESC) began profiling new unemployment benefit claimants to identify those who may face long-term unemployment. To do this, MESC adopted a statistical methodology that ranks dislocated workers according to their likelihood of exhausting unemployment insurance benefits. MESC developed the methodology with technical assistance from the W.E. Upjohn Institute for Employment Research. In January 1995, the first cohort of profiled unemployment insurance recipients were referred to employment services. During the first half of 1995 nearly 14,000 workers were served by the WPRS system in Michigan.

2. THE PROFILING PROCEDURE IN MICHIGAN

The Michigan Employment Security Commission (MESC) has adopted the following steps to identify and rank unemployment insurance (UI) claimants according to their probability of exhausting regular UI benefits and to enroll eligible UI recipients in reemployment services.

a. Unemployed workers issued a first payment within 5 weeks of filing a claim are eligible for profiling. However, beneficiaries expecting recall and union hiring hall members are excluded. Personal charac-teristics of the remaining UI benefit recipients are collected, and these data are used to profile eligible claimants.

b. Selected local labor market information is entered into the computer database and matched to those recipients eligible for profiling who live in the corresponding geographical area.

c. Based on an individual's personal characteristics and local labor market conditions, the probability of exhausting UI benefits is estimated for each UI recipient. Profiling is done weekly and probabilities are generated on a statewide basis.

d. Each local office draws from the statewide ranking of profiled UI claimants who live in their jurisdiction. For each local office, the selected individuals are arrayed from highest to lowest probability of UI benefit exhaustion.

e. Each service provider (or coordinating organization) determines the maximum number of claimants who can be served in a given period, based on the funds that office receives to do WPRS.

f. Profiled UI claimants are referred to service providers based on their probability of benefit exhaustion and the referral agreement.

g. After assessing the referred claimant's needs, the service provider offers a set of reemployment services best suited to the individual claimant.

The MESC has adopted a statistical methodology that assigns a probability of exhaustion to each UI recipient who is eligible for profiling. The probability is derived from a statistical model, which is based on recent administrative records of UI recipients statewide. The model includes UI claimants' personal characteristics: educational attainment, industry and occupation of last job held, and tenure on their last job. The model also contains variables that reflect local labor market conditions and thus conditions that would affect the likelihood of reemployment in the various local labor markets within the state. Service Delivery Areas (SDAs), defined for administering Job Training Partnership Act (JTPA) programs, are used to identify local labor markets in the statistical model. In essence, the probability assigned to each eligible UI recipient is a weighted average of the effects of each of these characteristics on the likelihood an individual exhausts UI benefits.

For purposes of the WPRS in Michigan all individuals who receive first payments within the same week are considered as one group. UI recipients within this group are ranked according to their predicted probability of exhausting. Those estimated to be most likely to exhaust are placed at the head of the queue for reemployment services.

Once a week, each local MESC office receives a list of profiled and ranked eligible UI recipients who are beneficiaries through that office. The list includes the name, social security number, and estimated probability of exhausting UI benefits for each profiled beneficiary. The ranking of eligible UI recipients on the list is derived from the statewide estimation of the probability of exhausting UI benefits. The local beneficiary with the highest state ranking is placed first on the list followed by the beneficiary with the next highest state ranking and so forth.

The number of UI recipients actually referred to reemployment services at any specific local office depends upon the amount of resources received by that office to provide WPRS. Since funding to local offices is largely based on labor market conditions, one would expect that those local offices with the greatest need should be able to serve a larger proportion of their UI claimants. UI recipients from local offices with tight labor markets or with industries experiencing few layoffs will have statewide rankings much lower than those from local offices with high unemployment rates, and they will serve a smaller proportion of beneficiaries through the WPRS.

3. REEMPLOYMENT SERVICES IN MICHIGAN

Participants in the Michigan WPRS program have access to a wide range of services to aid them in gaining reemployment. Each participant is expected to pursue an individualized job search. WPRS are designed to assist participants in their job search.

The particular reemployment services offered vary across local offices, but frequently include orientation to the reemployment services, training in job search and interviewing skills, work skills assessment, resume writing, personal appearance tips, teamwork skills, conflict resolu-tion methods, and an overview of resources available at Employment Service (ES) locations. While participants conduct their own search, agency staff assist by reviewing local and regional job openings and making appropriate referrals.

UI claimants not in the profiling program may receive reemployment services that are similar if not identical to those provided beneficiaries in the program. This can occur in two ways. First, local offices may have the capacity to offer reemployment services under the profiling program to all claimants during weeks when the number of UI claimants are relatively few. Second, the ES traditionally offers an array of reemployment services which are open to UI claimants regardless of whether they are in the profiling program. Consequently, some UI recipients not participating in the profiling program may attend programs and receive assistance similar to those who are participating in the program.

4. DESIGN OF THE MICHIGAN EVALUATION

To examine the effectiveness of Michigan's profiling effort, the evaluation will assess how local offices implement profiling, the types and extent of services offered by local offices, and the effectiveness of these reemployment services in reducing the duration of insured unemployment and the benefits paid to claimants. The evaluation will also assess the accuracy of the identification and ranking methodology.

4.1 Implementation and Process Analysis

The referral of UI recipients to reemployment services will be evaluated on the basis of the following criteria:

a. The promptness with which recipients are referred to reemployment services, after being ranked;

b. The propensity of referred clients to participate in the reemployment service; and

c. The types of services used by the claimants.

The data for this evaluation will be provided by local Michigan Employment Security Commission (MESC) offices either through interviews or through data they have collected to track and monitor the profiling program.

4.2 The Effectiveness of Reemployment Services

The effectiveness of reemployment services will be measured by:

a. The number of UI benefit weeks in the benefit year;

b. The amount of UI benefits paid in the benefit year; and

c. The UI benefit exhaustion rate.

Differences in these outcomes between a WPRS participant group and a comparison group form the basis for the evaluation. Measures of these outcomes can be obtained from MESC UI administrative data bases.

We will also evaluate the effectiveness of the various combinations of reemployment services by linking the bundle of services provided by local offices (obtained in the process analysis) with the data files prepared for the impact analysis.

4.3 Accuracy of the Identification and Ranking Methodology

The accuracy of the identification and ranking methodology for WPRS used in Michigan will also be evaluated. The profiling methodology assigns a probability of exhausting UI benefits to each beneficiary. We will compare the predicted probability of exhaustion with the actual experience. This evaluation is important for three reasons:

a. It provides an assessment of the accuracy with which the probability model predicts whether or not a UI claimant exhausts benefits;

b. It provides an update of the composition of UI claimants who are assigned high probability estimates and who are referred to the reemployment services under profiling;

c. It offers an opportunity to examine whether the weights produced by the profiling model should be re-estimated to reflect changing conditions in local labor markets.

This evaluation will be conducted using admini-strative data routinely collected and maintained by MESC. These data will be derived from an updated version of the same data base, that was originally used to estimate the parameters of the statistical profiling model for Michigan.

4.4 Anticipated Extensions of the Evaluation

It would help the administration of profiling and the selection of appropriate reemployment services to know more about final reemployment outcomes. This cannot be investigated using administrative data only. It requires a comparison of the pre-UI job with the post-UI job for both the participant and comparison groups. Such a comparison should examine employment, weekly hours, wage rates, occupation, and industry. We have encouraged the MESC to consider collecting such information.

We have proposed that a brief follow-up survey be administered to both profiling participants and a randomly selected comparison group of non-participants. A compar-ison between the participant and comparison groups on employment outcomes would provide a better understanding of the effects of the profiling program. We hope to work with state and local employment security offices to help design the follow-up survey so that it includes the minimal information needed to evaluate reemployment success. The national evaluation of the profiling program, contracted by the Employment and Training Administration of the U.S. Department of Labor, includes a follow-up survey of participants and non-participants. If such a survey could be done in Michigan, it would provide a useful complement to the national study.

APPENDIX A

The Michigan UI Profiling Model: Technical Details

To predict the probability that a new beneficiary will exhaust his or her unemployment insurance (UI) entitlement, Michigan has implemented a logit statistical model which ensures that the predicted probability of benefit exhaustion for any particular UI claimant will be in the reasonable range of zero to one. In the Michigan model the probability of benefit exhaustion depends on claimant characteristics and local labor market conditions. The parameters of the model were estimated using state-level administrative data on 13,000 recent UI beneficiaries and binary indicator variables for local labor market conditions.

The UI profiling model includes variables for the following personal characteristics: the level of educational attainment, years of employment, and the occupation and industry of employment prior to filing for UI benefits. Sample means of these variables are listed in Table A-1. Previous studies have found these variables to be strongly correlated with the duration of unemployment. A significant correlation has also been found between the duration of unemployment and age, sex, and race. However, the U.S. Department of Labor directive on profiling prohibits the use of these variables. Measures of the complexity of the previous job were also included in the model. These measures, based on categories listed in the Dictionary of Occupational Titles (DOT), rank job characteristics related to people and things from simplest (1) to most complex (9).

In Michigan the Worker Profiling and Reemploy-ment Services (WPRS) system is administered at the level of the Job Training Partnership Act (JTPA) Service Delivery Area (SDA). Therefore, a useful model for estimating the probability of UI benefit exhaustion should allow for differentiation between individuals within an SDA, while taking into account important factors, such as local labor market conditions, which are common to beneficiaries served by the same SDA. To account for differences among local labor markets, binary indicator variables for each Michigan SDA were used in the profiling model.

The SDA indicator variables provide a simple, indirect method of modeling local labor market conditions. This approach was chosen over the alternative of entering variables that directly measure local labor market conditions, such as the local unemployment rate, for two main reasons. First, it eliminates the need to collect additional data which may be difficult to obtain or inaccurate; and second, other factors particular to the region may affect exhaustions in ways which are difficult to measure or even recognize. By including a full set of SDA indicator variables, two individuals with the same observed personal characteristics will each have a different predicted probability of exhaustion if they reside in different SDAs.

The parameters of the UI profiling model used in Michigan are given in Table A-2 together with sampling errors. From the model parameters we see that Michigan UI recipients are more likely to exhaust regular benefits if they have more education, more job experience,

work at less complex tasks, work in clerical and sales occupations, and work in the industries of retail trade, wholesale trade, financial services, insurance, or real estate. Also, the likelihood of exhausting benefits varies substantially across SDAs, reflecting diverse local labor market conditions.

It should be noted that the probability of UI benefit exhaustion and the probability of losing a job are influenced differently by several factors. Characteristics like education and job tenure, which are positively correlated with UI benefit exhaustion, are typically negatively related to the condition of being unemployed. It should also be noted that the estimated parameters of the model may depend on the particular phase of the business cycle. Workers from cyclical industries, such as automobiles, are likely to have greater difficulty gaining reemployment during an economic downturn than an expansion. Therefore, UI profiling models should be reestimated periodically to account for cyclical factors.

For individuals in a second sample of 13,000 used to validate the Michigan UI profiling model, predicted probabilities of UI benefit exhaustion ranged from 8 percent to 79 percent. Given that 28 percent of beneficiaries in the sample actually exhausted UI, the probability that an individual randomly drawn from the sample would exhaust benefits is 28 percent. Therefore, use of the logit model in Michigan improves the efficiency of targeting reemployment services more than three fold over simple random assignment.

Applying the estimated coefficients from the UI profiling model given in Table A-2 to the characteristics associated with each UI recipient yields predicted probabilities of exhausting benefits for each individual. Consequently, each UI recipient can be ranked according to this estimated probability. Table A-3 illustrates how the estimated coefficients are combined with an individual's specific characteristics to generate a predicted probability of exhaustion. Note that most of the explanatory variables are binary, that is, the value of one is recorded when the characteristic describes the recipient and zero otherwise.

Three examples applying the Michigan UI profiling model are given in Table A-3. The example, described in column 2, considers a high school graduate, who held the previous job for five years, worked in machine trades and in the manufacturing industry (the omitted industry variable), and resides in SDA6. Multiplying the values in column 2 with the coefficients in column 3 and summing the products results in a 6.88 percent probability of exhausting benefits. The second example assumes the same charac-teristics as the first except that residence is in SDA10 instead of SDA6. This difference increases the probability of exhausting benefits to 18.19 percent. The third example assumes that residence is in SDA6, but that the hypothetical beneficiary is a college graduate, has eight years of job tenure in a professional or managerial occupation (omitted occupation category) with the highest level of people and things complexity, and works in the finance, insurance, and real estate industry. The predicted probability of exhaustion for this case is 75.35 percent.

Table A-1: Variables in the Michigan UI Profiling Model:

Categories of Variables	Variable Description	Variable Mean	Name
Exhausted Benefits	Yes	0.28	
Education	Less than high school (0,1)	0.177	LTHS
	High school graduate (0,1)	0.572	HSGRAD
	Some college (0,1)	0.173	SOMECOLL
	College graduate (0,1)	0.078	COLLEGE
Job Tenure	Years	4.71	TENURE
	Years squared	68.96	TENURE2
Occupation	Prof, tech, mgr (0,1)	0.165	PROFTECH
	Clerical and Sales (0,1)	0.135	CLERSALE
	Service	0.060	SERVICE
	Structural Work	0.264	STRUCT
	Ag, forestry, fishery	0.019	AGRIC
	Processing	0.023	PROCESS
	Machine trades	0.124	MACHINE
	Bench work	0.052	BENCH
	Miscellaneous	0.155	MISC
Industry	Ag, forestry, fishing (0,1)	0.024	AGFF
	Mining	0.004	MINING
	Manufacturing	0.396	MANU
	Construction	0.137	CONST
	Trans, com., utilities	0.035	TRANCOM
	Wholesale Trade	0.052	WHSLTRDE
	Retail Trade	0.111	RETLTRDE
	FIRE	0.021	FIRE
	Service	0.195	SERVE
	Public Adm.	0.016	PUBLIC
	Non Classifiable	0.002	NONCLASS
Complexity Categories	People (0,1,2,3-9)	0.068	PEOPLE0
		0.040	PEOPLE1
		0.010	PEOPLE2
		0.882	PEOPLE39
	Things (0,1,2,3-9)	0.116	THINGS0
		0.163	THINGS1
		0.098	THINGS2
		0.882	THINGS39
SDA	(0,1) variable for each SDA. The two SDAs in Wayne County, City of Detroit and Balance of Wayne were combined; and the two SDAs in Oakland County, GPAC and Balance of Oaklnd two County were combined		

Table A-2: Estimates of the Michigan Logit Model for UI Profiling

Variable Name	Parameter Estimate	Standard Error	Variable Name	Parameter Estimate	Standard Error
INTERCPT	-2.49840**	0.16980	SDA1	-0.82790**	0.14060
HSGRAD	0.00586	0.06040	SDA2	-0.84960**	0.21080
SOMECOLL	0.09890	0.07330	SDA3	-0.72390**	0.16650
COLLEGE	0.30250**	0.09230	SDA4	-0.45420**	0.12570
TENURE	0.07540**	0.00805	SDA5	-0.72260**	0.15490
TENURE2	-0.00176**	0.00028	SDA6	-1.02000**	0.19050
CLERSALE	0.03910	0.08650	SDA8	-0.17170	0.18150
SERVICE	-0.32610**	0.09880	SDA9	-0.81310**	0.25780
AGRIC	-1.26470**	0.23730	SDA10	0.08260	0.08910
PROCESS	-0.66230**	0.15810	SDA11	-0.70630**	0.16060
MACHINE	-0.48900**	0.09180	SDA12	-0.44710**	0.12950
BENCH	-0.74050**	0.11640	SDA13	-0.67480**	0.13280
STRUCT	-0.83390**	0.07560	SDA14	-0.19410	0.15930
MISC	-1.11310**	0.08820	SDA15	-0.40700**	0.10270
PEOPLE1	0.69470**	0.20010	SDA16	-0.80990**	0.19520
PEOPLE2	1.15920**	0.25450	SDA17	-0.48060**	0.12280
PEOPLE39	1.55000**	0.16820	SDA19	-0.20890**	0.07590
THINGS1	0.36800**	0.11510	SDA20	-0.57380**	0.13850
THINGS2	0.39650**	0.13040	SDA21	-0.87890**	0.19700
THINGS39	0.43420**	0.10910	SDA22	-0.74920**	0.13650
AGFF	-0.54690**	0.20980	SDA2324	-0.02160	0.07490
MINING	-0.13150	0.40320	SDA26	-0.80820**	0.30860
CONST	-0.15180*	0.07830	SDA29	-0.26360	0.20330
TRANCOMM	0.43880**	0.11360	SDA30	-0.33620**	0.16270
WHSLTRDE	0.62670**	0.09260			
RETLTRDE	0.37930**	0.07330			
FIRE	0.75600*	0.13440			
SERVE	0.15530**	0.06370			
PUBLIC	-0.08990	0.17770			
NONCLASS	-0.17720	0.53250			

* Statistically significant at the 90% confidence level; ** Statistically significant at the 95% confidence level.

For estimation one variable from each group of binary categorical variables must be excluded from the profiling model. The variables excluded from the logit UI profiling model were:

LTHS - Less than high school--from the education group.

PROFTECH - Professional, technical, or managerial--from the occupation group.

PEOPLE0 - Low--from the previous job people skills requirement group.

THINGS0 - Low--from the previous job things skills requirement group

MANU - Manufacturing--from the industry group.

SDA725 - Wayne county--from the SDA group.

Table A-3: Examples of the Michigan UI Profiling Model

Variable	Estimated Parameter	Example 1 (1)*(2)		Example 2 (1)*(4)		Example 3 (1)*(6)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	-2.498	1	-2.498	1	-2.498	1	-2.498
HSGRAD	0.006	1	0.006	1	0.006	0	0.000
SOMECOLL	0.099	0	0.000	0	0.000	0	0.000
COLLEGE	0.303	0	0.000	0	0.000	1	0.303
TENURE	0.075	5	0.377	5	0.377	8	0.603
TENURE2	-0.002	25	-0.044	25	-0.044	64	-0.113
CLERSALE	0.039	0	0.000	0	0.000	0	0.000
SERVICE	-0.326	0	0.000	0	0.000	0	0.000
AGRIC	-1.265	0	0.000	0	0.000	0	0.000
PROCESS	-0.662	0	0.000	0	0.000	0	0.000
MACHINE	-0.489	1	-0.489	1	-0.489	0	0.000
BENCH	-0.741	0	0.000	0	0.000	0	0.000
STRUCT	-0.834	0	0.000	0	0.000	0	0.000
MISC	-1.113	0	0.000	0	0.000	0	0.000
PEOPLE1	0.695	1	0.695	1	0.695	0	0.000
PEOPLE2	1.159	0	0.000	0	0.000	0	0.000
PEOPLE39	1.550	0	0.000	0	0.000	1	1.550
THINGS1	0.368	1	0.368	1	0.368	0	0.000
THINGS2	0.397	0	0.000	0	0.000	0	0.000
THINGS39	0.434	0	0.000	0	0.000	1	0.434
AGFF	-0.547	0	0.000	0	0.000	0	0.000
MINING	-0.132	0	0.000	0	0.000	0	0.000
CONST	-0.152	0	0.000	0	0.000	0	0.000
TRANCOMM	0.439	0	0.000	0	0.000	0	0.000
WHSLTRDE	0.627	0	0.000	0	0.000	0	0.000
RETLTRDE	0.379	0	0.000	0	0.000	0	0.000
FIRE	0.756	0	0.000	0	0.000	1	0.756
SERVE	0.155	0	0.000	0	0.000	0	0.000
PUBLIC	-0.090	0	0.000	0	0.000	0	0.000
NONCLASS	-0.177	0	0.000	0	0.000	0	0.000
SDAA6	-1.020	1	-1.020	0	0.000	0	0.000
SDA10	0.083	0	0.000	1	0.083	1	0.083
Sum			-2.606		-1.503		1.117
Predicted Exhaustion Probability			6.880		18.190		75.350