

10-2017

Description of the Albelda Clayton-Matthews/ IWPR 2017 Paid Family and Medical Leave Simulator Model

Alan Clayton-Matthews

Northeastern University, a.clayton-matthews@neu.edu

Randy Albelda

University of Massachusetts Boston, randy.albelda@umb.edu

Follow this and additional works at: http://scholarworks.umb.edu/econ_faculty_pubs



Part of the [Economic Policy Commons](#), [Economics Commons](#), and the [Labor and Employment Law Commons](#)

Recommended Citation

Clayton-Matthews, Alan and Albelda, Randy, "Description of the Albelda Clayton-Matthews/IWPR 2017 Paid Family and Medical Leave Simulator Model" (2017). *Economics Faculty Publication Series*. 41.

http://scholarworks.umb.edu/econ_faculty_pubs/41

This Research Report is brought to you for free and open access by the Economics at ScholarWorks at UMass Boston. It has been accepted for inclusion in Economics Faculty Publication Series by an authorized administrator of ScholarWorks at UMass Boston. For more information, please contact library.uasc@umb.edu.

Description of the Albelda Clayton-Matthews/IWPR 2017 Paid Family and Medical Leave Simulator Model

Alan Clayton-Matthews and Randy Albelda

October 2017

Alan Clayton-Matthews
Associate Professor
School of Public Policy and Urban Affairs
Northeastern University
Boston, MA 02115
a.clayton-matthews@neu.edu
617-373-2909

Randy Albelda
Professor
Economics Department
University of Massachusetts Boston
Boston, MA 02125
randy.albelda@umb.edu
617-287-6963

This model was originally developed a decade ago under contract with the Institute for Women's Policy Research. It has been updated and revised as part of a workforce product funded by a grant (WB-26510-14-60-A-25) awarded to Commonwealth Corporation by the U.S. Department of Labor's Employment and Training Administration from October 2014-September 2015. Additional support for model development was provided by IMPAQ International through a grant from the U.S. Department of Labor, Chief Evaluation Office (DOLQ129633247). The product was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership. This product is copyrighted by the institution that created it. The model has been updated and revised several times since 2015. The most recent update covered by this document was September 2, 2017.

I. Introduction

The basic strategy behind our approach to estimating the cost of a paid leave program was to, as much as possible, base estimates of program costs on actual known leave-taking behavior, and where this was not possible, to estimate a range of program costs reflecting a range of reasonable assumptions about unknown aspects of behavior in the presence of a paid leave program. We wanted to be able to estimate the sensitivity of program costs estimates to these assumptions. We also wanted to be able to analyze the distribution of program benefits by demographic characteristics. Furthermore, we wanted to be able to estimate the costs of similarly structured paid leave benefit programs in other states, to be able to have some control over the assumptions about behavior that affect program cost estimates, and to be able to undertake distributional analyses.

We chose a simulation strategy as the best way to accomplish these goals. To obtain the best estimates possible about known leave-taking behavior, we use the Public Use Family and Medical Leave survey data collected by Abt Associates in 2012 for the Department Labor (referred to here as the DOL Survey) (McGarry, Klerman, Daley, and Pozniak, 2013) to estimate behavioral models of leave-taking behavior conditional on the demographic characteristics of individuals, and use the Census Bureau's American Community Survey Public Use Microdata Sample (hereinafter referred to as the ACS or ACS PUMS) to predict leave-taking behavior conditional on the demographic characteristics of individuals.

The DOL Survey is the best available source of information on leave-taking behavior. It is a representative national sample of leave-takers, leave-needers (those persons who said they needed but did not take a leave), and other workers who did not take a leave. The survey, which was conducted between February and June 2012, includes extensive information on the number and types of leaves taken, how long they were, whether and to what extent the employer provided pay while on leave, and whether or not some or additional pay while on leave would result in a decision to take a leave or to have taken a longer leave. The survey includes several demographic characteristics related to leave-taking behavior, including sex, race and ethnicity, marital status, the presence of children, education level, family income, and whether or not the respondent

was paid on an hourly basis. The survey is used to estimate several aspects of leave taking behavior, conditional on demographic characteristics and leave type. These include the probability of needing a leave, of taking a leave, of getting paid for a leave, of extending a leave if some or more pay were received, etc.

The US Census Bureau's American Community Survey (ACS) is a large national representative sample of persons. It is of sufficient size to obtain reliable estimates of paid leave program costs and of the distribution of program benefits at the state and sub-state level. The 5-year ACS PUMS (Public Use Microdata Sample) can yield reliably accurate estimates at geographic areas consisting of one or more PUMAs (a PUMA is a geographic area that consists of a population of roughly 100,000 persons). This survey also provides a rich array of demographic characteristics that closely match those on the DOL Survey, which means that the behavioral models estimated on the DOL Survey can be used to predict leave-taking behavior on the ACS.

The simulation model is a software application that "runs" each sample person from the ACS through the estimated behavioral models and sets of assumptions about leave-taking behavior. The flow of the person through the software mimics the sequence of decisions and events that a person makes and experiences in the leave process (depicted in Figures 1-5). This is an appealing aspect of simulation methodology since its structural approach helps identify what assumptions are necessary in developing program cost estimates and at the same time clarifies the impact of these assumptions on the bottom line estimates.

At several points during the simulation, such as when a person decides to take a leave of a particular type or not, a decision is made based on a logit behavioral equation. The logit equation estimates the probability of deciding "yes". This probability, which is a function of the person's demographic characteristics, is compared to a random draw from a standard uniform distribution (any point on the number line between zero and one is equally likely to be chosen), and the random draw is compared to the probability given by the behavioral equation. If the random draw is less than this probability (or less than or equal, it really does not make any difference), the decision is "yes", if not, "no". The

model flow then directs the person to the next point in the modeling sequence, depending on the result of this random draw. This is the essence of simulation.

After each person has been passed through the entire flow, the result is a history of leave-taking behavior for a one-year period. The model generates micro-data output files consisting of records for each sample person and leave taken. These files can be analyzed with standard statistical software or database applications.

Aside from errors related to the DOL survey and estimates of the behavioral equation parameters, there are two sources of statistical error related to the simulator that are important to consider. One is sampling error due to the ACS. The ACS is a sample and is subject to sampling error that affects program cost estimates. The magnitude of this error is approximately inversely proportional to the square root of sampling size, and can be reduced by concatenating successive years of the ACS together. The second source of statistical error is due to the simulation methodology itself when the dependent variable is binary (or categorical). Even if the coefficients of a behavioral equation are “correct”, individual predictions are not at the individual level. For example, suppose a logit equation predicts that the probability of taking a leave is 30 percent for a person with a certain set of demographic characteristics. For any *single* person, the simulation results in either the person taking the leave – a simulation error of 70 percent-- or the person not taking the leave – a simulation error of 30 percent. The law of large numbers assures that the error approaches zero on average as the number of persons “run” through this equation approaches infinity. The magnitude of this simulation error is inversely proportional to the square root of the number of “runs” through the equation. The incidence of some types of leave is small enough that this source of error is not negligible. This type of error can be reduced by concatenating ACS data files, but there is also another way to reduce simulation error. That way is to “clone” the sample ACS person (i.e., to create several duplicates of the same person) and to run each duplicate person through the simulation. The software allows the user to specify this option.

The larger the number of sample individuals in the ACS geography that is being studied, the smaller the simulation error, but even at the state level of analysis, simulation error may be large enough that cloning is recommended for “final” program estimates. To

estimate the size of the simulation error, a command (SEANALYSIS) is provided that enables the user to easily estimate the simulation standard error for the concept of interest, for example, total program benefits. This allows the user to calculate the cloning factor required to meet any given level of accuracy, that is, any given confidence interval for the simulation error.

The next major section of this document describes the simulation strategies. The third major section describes the modeling assumptions used by the simulation model. The fourth major section of this document describes the flow of the model and the fifth major section describes how leave lengths are dated across the calendar.

II. Simulation Model Strategies

The principal strategy behind the implementation of the model is to use econometric estimates of known leave-taking behavior when possible, and to incorporate reasonable assumptions and user-supplied options about unknown behavior. As new knowledge about behavior becomes available, the user may be able to incorporate that in model options – for example, new knowledge about take-up rates. In addition, new knowledge may be incorporated as it becomes available in future versions of the model.

Modeling Known Behavior

The best source of information on which to model several aspects of known behavior – the incidence of taking or wanting to take a leave of a particular type, the probability of receiving pay while on leave and the amount of pay received, the length of leaves taken, and the probability of meeting the eligibility requirements of a proposed paid leave program – is the Family and Medical Leave 2012 Employee Survey conducted by Abt Associates for the Department of Labor (McGarry, Klerman, Daley, and Pozniak, 2013). The population surveyed consists of adults 18 and older who had worked for pay in the last 12 months. They are asked about leaves taken or wanted during the prior 18 months for reasons of own health disability (including maternity disability); to care for a new child; for health conditions of children, spouses, parents, other relatives, and non-relatives; and for issues arising from the deployment of a military member. Due to small

sample sizes for some categories, however, we limit our analysis and modeling to the following six leave types:

1. Own health;
2. Maternity disability;
3. Care for a new child;
4. Ill child;
5. Ill spouse; and
6. Ill relative.

The sample of persons surveyed can be classified into four groups depending on whether they took a leave or wanted to take a leave or not:

1. Those who took a leave and who did take a leave they wanted to take (leave-takers only, N=1,133);
2. Those who wanted to take a leave but did not take any leaves (leave-needers only, N=219);
3. Those who did not take a leave or want to take a leave (employed only, N=1,301); and
4. Those who both took a leave and also did not take a leave that they wanted to take (dual takers/needers, N=199).

The DOL sample is weighted to the population so population rates and totals can be inferred from the sample. The survey asks about the longest and most recent leaves taken or wanted – and the reason for that leave – in the last 18 months, whether those leaves were taken or wanted in the last 12 months, and how many leaves in all were taken in the last 18 months and in the last 12 months. Leaves are counted by “reason”, so intermittent leaves for a single reason are counted as a single leave. The survey asks leave-takers about the reasons and lengths of leave for up to two leaves: the longest and the most recent (often they are the same). Leave-needers are asked about the most recent leave needed and the reasons for up to two more leaves needed. For both taker and needer leaves, respondents are asked if they saw a doctor or had a hospital stay. For the most recent leave taken or needed, additional information is asked. For leave-takers, this

includes questions about pay received while on leave; and if full pay was not received, whether they would have taken a longer leave if they had received additional pay. For leave-needers, this includes a question about why they didn't take the leave. Many respondents volunteered that they couldn't afford to take an unpaid leave. These questions about additional pay and affordability are helpful in modeling the response of leave lengths and participation in the presence of a paid leave program. Leave-takers are also asked about whether some of the pay received while on leave was part of a temporary disability insurance policy or a state paid family or medical leave program.

Respondents are also asked about their work. Particularly useful for modeling behavior and estimating program eligibility are questions about weekly hours, whether they work full year and have been continuously employed by a single employer, how many employees work at their organization within 75 miles, and whether they are paid on an hourly basis or not. Demographic information on respondents include age, sex, race/ethnicity, marital status, educational attainment, family income, and how many children are in their care.

Earlier theoretical work and statistical analysis of a prior Department of Labor family leave survey (Westat, 2001; Albelda, and Clayton-Matthews, 2010) established that the information in this survey would be useful in estimating statistical models of the probability of taking or needing a leave of a particular type, the probability of receiving partial or full pay, and the probability of meeting the eligibility requirements of the FMLA law or a proposed paid leave program. The estimation strategy involves a specification search that begins with a full set of demographic and economic variables and "tests down" to a specification that includes independent variables that are at or near statistical significance at the 5% level and that "make sense" in terms of yielding estimated coefficients of the expected sign and reasonable magnitude.

These statistical models are implemented in the simulation by applying the estimated coefficients to variables on the ACS for each sample individual worker. Most of these models estimate a probability: the probability of taking or needing a leave for a particular reason, the probability of receiving pay while on leave, the conditional probability that that pay is full pay, etc. Using the coefficients of the logit regression

model and applying them to the sample individual's independent variables yields a probability of taking or needing a leave, of receiving pay while on leave, of receiving full pay conditional on receiving any pay, etc.¹ These probabilities are compared to a random draw from a standard uniform distribution – using the model's pseudo random number generator – to determine whether an outcome happens or not. Other models – for example, for fraction category of pay received, or number of leaves taken – are estimated by an ordered logit model, and the random draw determines the category by the estimated cumulative probability distribution of outcomes. Several models – usually when sample sizes are too small to estimate probabilities conditional on observable characteristics – are simply the weighted distributions from the survey. These models are identical to statistical models that contain only a constant, and are handled by the simulator in the same manner as other models that predict probabilities of binary outcomes or ordered outcomes.

This strategy “works” because both the DOL survey and the ACS are representative samples (after weighting) of the population and both contain closely similar measures of independent variables. The match of variables is not complete, however, so a few variables not available on the ACS have to be imputed. For behavioral models these involve two variables: whether or not the worker is paid on an hourly basis, and whether or not the worker is covered and eligible under the FMLA law. This eligibility criterion is significant in several behavioral relationships, and involves weeks worked, working full time continuously for a single employer in the past 12 months, and working for a firm that had at least 50 employees within 75 miles. Other eligibility requirements of proposed paid leave programs might require knowing weeks worked; and benefit rules of proposed programs usually pay benefits proportional to weekly earnings.

The ACS does not ask whether pay is received on an hourly basis; does not ask about employer size; does not ask about the number of employers that the person worked for in the last 12 months; does not ask about weekly pay; and records weeks worked in

¹ A logit equation estimation is a statistical method similar to linear regression estimations, but with logit analysis, the dependent variable is binary (0 or 1) rather than continuous.

aggregated categories. These variables are imputed on the ACS using models and distributions estimated from the March Annual Social and Economic Supplement of the Current Population Survey (CPS) – which *does* include these variables – conditional on demographic and economic variables common to both the CPS and ACS surveys. Weekly wages on the ACS are estimated as annual earnings divided by the imputed number of weeks worked.

Behavior Estimations

The estimates of program participation and costs from sample individuals on the ACS are simulated from models of behavior estimated from the DOL survey. These models estimate the probability of needing and taking a leave, the number of leaves taken, the length of leaves taken, and the amount of employer pay received while on leave. Since very few states had paid leave programs – and the few that did were not identified in the DOL data set -- these models essentially reflect what we know about leave-taking behavior in the absence of paid leave programs. The key models and the assumptions that were used in estimating them can be classified into three basic types: the universe of leavers, length of leave, and employer benefits.

1. Universe of Leavers

We assume that whether an employee will take or want to take a leave depends on a variety of factors that include:

- a. Whether the employee is eligible for and needs a leave (paid or unpaid), as indicated by the worker's own health status, the health status of family members, a new child in the household, and eligibility requirements (hospital stay, doctor's visit, employer size);
- b. The conditions of employment, proxied by whether the employee has a job-protected leave and the employment arrangement (salary or wage worker); and
- c. An employee's tastes, preferences, and constraints (work and income) measured by the employer's demographic characteristics (marital status, family income level, age, gender, education level, and race/ethnicity).

We run separate logit regressions for each of the six types of leave (own health, maternity disability, new child, ill health of spouse, ill health of child, ill health of parent).

2. Length of Leave

We assume that the number of weeks of paid or unpaid leave a person takes depends on:

- a. The presence of a family or medical leave condition (this affects the type and severity of leave);
- b. Conditions of employment (number of weeks with paid leave, how employer leave is paid, difficulty in taking leave, and whether a leave is job-protected); and
- c. The employee's tastes, preferences, and constraints, measured through demographic characteristics (marital status, family income level, age, gender, education level, and race/ethnicity).

Analysis of leaves lengths using the DOL Survey indicates that leave lengths of illness types are related to the severity of illness. However, aside from the gender of the leave-taker (for all but own-health) and severity of illness, there are no other significant predictors of leave length. Importantly, whether or not the leave-taker receives pay from his/her employer does not seem to be associated with the length of the leave. Since the ACS does not have information on individuals' illnesses, the application simulates leave length by randomly drawing from the distribution that corresponds to the type of leave and gender of the leave-taker, as estimated from the DOL survey.

3. Employer benefits

We hypothesize that the amount of employer pay a leave-taker receives (if any) is related to:

- a. The length of leave;
- b. Conditions of employment (whether the worker is covered by and eligible for FMLA); and
- c. The employee's tastes, preferences, and constraints measured through

demographic characteristics (marital status, family income level, age, gender, education level, and race/ethnicity).

The 2012 DOL survey asked about how much pay relative to total pay is received over an entire leave, but did not ask leavers with partial wage replacement about the amount of replacement pay received while on leave for each pay period. However, this was asked in the earlier 2000 DOL Survey on family and medical leaves (Westat, 2001). In the 2000 DOL Survey, leavers who indicated that they received partial pay from their employer while on leave were asked if they received at least some pay for each pay period that they were on leave (Question HA10D), and if not, was the pay for their full salary or only for a part of their salary (Question HA10E). Leavers were also asked what proportion of usual pay they received in total over the entire length of the leave (Question HA10F). The relative frequencies of the responses to these questions were tabulated separately for each leave type, and expressed as conditional probabilities (Table 1).

III. Model Parameters and Assumptions

The simulator is specifically constructed to allow a user to specify policy and behavior parameters through a set of commands. All commands available and the syntax used are include as Appendix A. The policy parameters allow the user to tailor the model to a specific set of eligibility rules (e.g. length of employment or earnings thresholds), benefit levels and caps, wage replacement rates, and program usage rules (e.g. maximum weeks allowed for each type of leave; waiting periods) provided in particular legislation or proposals. There are also commands related to the parameters around leave behavior that are largely unknown but need to be specified for the model to simulate decisions that people make. These are discussed below.

Simulating Unknown Behavior

Some information about leave-taking behavior needed for our simulation procedure cannot be estimated from the DOL 2012 survey, although some information collected there is useful in making some reasonable assumptions. The two main pieces of unknown information are whether an eligible worker will actually use a paid program or

not and whether and for how long a worker will extend a leave in the presence of a paid leave program.

As the model has been used and tested on states that have existing TDI and paid family leave programs, including California, New Jersey, and Rhode Island, parameters have been added that give the user flexibility in adjusting program participation and leave lengths. Experience from using the model to approximate program participation, leave lengths, and therefore program costs in California, New Jersey, and Rhode Island suggest a range of values for these parameters that could be used to estimate program use and cost for proposed new programs in other states or jurisdictions.

The parameter “handles” (or commands) available for the user for modeling behavior are described below. They are divided into two broad areas: 1) parameters that affect program participation; and 2) parameters that affect the length of leaves in the presence of a program. Taken together, these parameters, of course, affect program benefit costs.

1. Parameters that Affect Program Participation

If the user does not supply any parameters to affect participation in the program, the default is that:

- i. Employers do not change their behavior at all with regard to providing employer pay for their employees who take a leave, that is, they offer the same pay to employees who are on leave as they would have in the absence of the program.
- ii. Leave takers who took a leave in the absence of the program and who are eligible under the program choose to participate in the program if the weekly benefits from the program exceed the weekly pay they would have received in the absence of the program.
- iii. Leave needers who did not take a leave in the absence of a program, and who said the reason that they did not take a leave was because they could not afford to take one, take a leave in the presence of a program.

This default behavior can be changed by several parameters described below.

a. Effect of employer pay on program participation

The simple rationality of potential leave takers of strictly comparing weekly program benefits to employer pay is replaced by a more realistic comparison that the program benefit would need to exceed employer pay by an amount that compensated the potential program participant for the “cost” of applying to and participating in the program. The decision to participate in the paid leave program, given that a person is eligible, will in large part be based on the level of program benefits the worker would receive compared to the next best alternative. These alternatives consist of employer pay (if the person receives it) or nothing (if the leave is unpaid in the absence of the program). In order to compensate for the time and effort of applying to the program, program benefits would have to exceed the next best alternative by some amount. This amount may differ systematically by income and by other factors. It may also vary randomly across different individuals, and even for the same individual, at different times.

In the model, this participation decision is implemented by an arbitrary logit equation with two independent variables: the difference between weekly paid program benefits and weekly pay received while on leave, and family income. The participation probabilities it yields are given in Table 2 for several combinations of benefit/pay differentials and family income. This option is implemented by setting the BENEFITEFFECT parameter to “yes”.

b. Effect of “topping off” or substitution of program benefits for employer paid benefits

Optionally, the user can specify that employers who would pay their employees 100 percent of wages while on leave would instead require their employees to participate in the program and would “top-off” the program benefits by paying the difference between program benefits and full pay. Since not all such employers might engage in this behavior, the user can specify the percent of such employers (that is, the percent of employers who pay full wages while on leave) who do so. Also, since this behavior may be less likely for short leaves, the user can specify the minimum leave length for which employers engage in a “top-off” strategy. These options are implemented by the TOPOFFRATE1 and TOPOFFMINLENGTH commands.

c. Take-up rate parameters

The simulation model estimates the number of all eligible workers that would use a paid leave program in light of current employer benefits. This estimate assumes that everyone taking a leave knows about the program and that the program is virtually costless to use. That is, the output from the simulator assumes an 100 percent take-up rate. However, that is completely unrealistic. The degree to which eligible leavers might use a paid leave program depends on a variety of factors beyond the scope of what can be uniformly modeled or assumed. Four important ones are: general knowledge of the program by workers; administrative complexity in obtaining program benefits; workplace norms that either encourage or inhibit use; and leave-taking patterns among some leavers. Recent experiences with care and bonding leaves in California, New Jersey and Rhode Island suggest that take-up rates for these types of leave, at least for several years, will be low. A recent estimate indicated that 25-40 percent of new mothers used the six-week care leave in California, even after 10 years of implementation (Pihl and Basso). Appelbaum and Milkman (2011) found that fewer than 50 percent of California workers knew about paid family leave. The degree to which state administrators and paid family and medical leave advocates work to make the program known will positively affect take-up rates. Use of any program will require time on the part of leave-takers (and employers) to fulfill the administrative requirements of the leave. An easy-to-use program can reduce that time. Still, workers that take relatively short leaves may not bother at all. There may be other real or perceived costs to taking a program leave. If workers fear their position at their job might be threatened if they take a leave, then take-up rates will be low. For example, low-wage workers may fear being replaced altogether while high-wage employees may fear an employer might not provide them with better opportunities. Finally, researchers do not know enough about leave-taking patterns and how they interconnect with program requirements. Outside of pregnancy and some own-health leaves, the amount of time needed for a leave or the pattern of time out of work may be unpredictable or intermittent. This, of course, makes it hard to discern if applying for and using a statewide program makes sense. Some leaves may require levels of flexibility in time out of work that are not conducive to applying and using a program

largely designed for continuous use over many weeks. Further, for people taking leaves to care for an ill relative there may be care-taker substitutes that affect how leaves are taken and may reduce the likelihood of turning to a program for leave. A considerably smaller percentage of all program paid leaves are for ill relatives in California, New Jersey, and Rhode Island than found among all leavers in the 2012 DOL survey data (which in turn is reflected in the model). This suggests that there may be aspects of these leaves that result in less likelihood of using a program and requires using a very low take-up rate for these leaves on the model. Running the simulator on the programs in CA, NJ, and RI generates estimates of program usage that correspond to roughly 40-50 percent take-up rate for own-health leaves, between 90-100 percent take up rate for pregnancy-related leaves, 85- 100 percent for bonding leaves, and about 5 percent for ill-relative leaves.

The simulation model lets the user select a take-up rate based on some reasonable assumptions about the percent of eligible workers that might use a particular program in a particular state. The user can apply different take-up rates for different kinds of leaves. For example, there are reasons to believe that maternity disability leaves might have higher take-up rates than other leaves. Almost all mothers that give birth do leave work for a continuous period of time that is usually known in advance. Employers and employees typically expect new mothers to be away from work for more than a few weeks. Further, obstetricians and others in pregnant mother's networks are likely to inform them of a paid leave program so usage might be higher than other types of leaves.

The take-up rates are set by the TAKEUPRATES parameter command.

The user can optionally specify that a particular class of eligible leave takers will participate in the program with certainty, regardless of the take-up rates set for other eligible leave takers. This class is composed of those people who wanted to take a leave in the absence of paid leave program but who did not because they could not afford to. In the presence of a paid leave program, such persons might be more likely to participate than others in the presence of a paid leave program. This option is chosen by setting the NEEDERSFULLYPARTICIPATE parameter to "yes".

d. Leave-taking probability parameters

In addition to, or as an alternative to, affecting participation by the take-up rate parameters, the user can affect participation by changing the probability of taking each type of leave by factoring the probability calculated by the model up or down. This is different than using the take-up rates parameter in that it also affects the probability of taking a leave in the absence of the program. This parameter could be used if the probability of taking a leave in the jurisdiction of interest was thought to be different than the national average probability, after controlling for differences in demographic characteristics that affect the propensity to take a leave. This option is implemented by the LEAVEPROBABILITYFACTORS parameter.

2. Parameters that Affect the Length of Leaves in the Presence of a Program

The second way in which unknown behavior affects program costs is through the effect of the program in extending the lengths of leave that a person might take. It is reasonable to assume that, in the presence of a paid leave program, leave lengths would be no shorter than in the absence of a program; furthermore responses to the DOL survey indicate that 40 percent of those that did not receive full pay say they would have extended their leave if they received more pay suggest, on average, leave lengths would be longer due to the benefits received.

If the user does not supply any parameters to affect leave lengths in the program, the default is that leave-takers would take leaves of the same length in the presence of the program as in the absence of the program, except for own-health leaves. For own-health leaves, the distribution of leave lengths for leave-takers in the DOL survey who reported that they received some part of their pay while on leave from state programs was longer than for others. Therefore, the model implemented this known behavior by two distributions of leave lengths for own-health leaves: 1) In the absence of a program, leave lengths were taken from the DOL's distribution of leave lengths for those leave-takers who did not report that some pay was received from state programs; and 2) in the presence of a program, leave lengths were taken from the DOL's distribution of leave lengths for those leave-takers who reported that some pay was received from state programs. For other types of leaves, the sample sizes from the DOL survey were too

small to discern statistically different leave length distributions for those who reported that some pay was received from state programs.

a. Ad-hoc, limited leave extensions

Early versions of the model included an option to extend leave lengths in the presence of a program that took an ad-hoc approach to leave length extensions. The option implements different ad-hoc assumptions for each of three mutually-exclusive and exhaustive groups of eligible participants:

i. For workers who have leave lengths in the absence of a program that are less than the waiting period for the program: The probability of taking a longer leave is simulated using a logit regression estimated from the response to the DOL survey question, “Would you take a longer leave if you received some/additional pay?” If the model simulates an extension, the leave is extended for 1 week into the program.

ii. For workers who do not receive any employer pay or who exhaust their employer pay and then go on the program: The probability of extending a leave using program benefits is set to 25 percent; and for those who do extend their leave, the extension is equal to 25 percent of their length in the absences of a program, not to exceed the maximum length of the program.

iii. For workers who exhaust program benefits and then receive employer pay: In this case the simulator assigns a 50 percent probability of taking an extended leave until their employer pay is exhausted.

This option for extended leave lengths is implemented by the EXTENDLEAVES and EXTENDOLD parameters. These options are not applied to own-health leaves that are longer than the waiting period, as those leaves are already extended in the presence of the program by the longer leave length distribution estimated from the DOL survey. Leave length extensions may also be constrained so the leave does not go beyond 12 weeks if the FMLAPROTECTIONCONSTRAINT is in effect (see below).

b. Flexible parameters for extension of leaves

Experience with testing the model on California, New Jersey, and Rhode Island suggests that the option described above results in leave extensions that are too short on average. Therefore, to give the user more flexibility and control in setting leave extension behavior, an alternative set of leave extension parameters are available. These parameters are designed to allow for a set of leave extension options that could be adjusted to approximate leave lengths in existing TDI and paid family leave programs. The values of the parameters that “hit” these targets would then be reasonable values for simulating leave lengths of proposed new programs. The user sets the probability that an eligible worker would extend their leave beyond the length they would have taken in the absence of a program. These probability parameters are set in the EXTENDPROB option. For those whose leaves are extended, the length of the leave extension is given by two other parameters that set the extension as a linear function of the leave length in the absence of the program. These linear function parameters are set in the EXTENDDAYS and EXTENDPROPORTION options. The parameters allow for different probabilities and linear functions for each leave type.

For example, if the original length in the absence of a program is “x” days, the value of the EXTENDDAYS parameter is “a”, and the value of the EXTENDPROPORTION parameter is “b”, and the leave is extended (by “passing” the probability sieve), then the leave is extended by “a + bx” days, and the length in the presence of the program is “a + (1+b)x” days. This length may be subject to certain limits, depending on the maximum allowable program leave length and whether the FMLAPROTECTIONCONSTRAINT is in effect.

c. FMLA protection constraint on lengths of leaves

The Family and Medical Leave Act guarantees job protection for up to 12 weeks of leave for most workers. In the absence of specific job protection guarantees for proposed programs, leave takers might limit their leave lengths to the 12-week standard set by the FMLA. The user can implement this behavior with the FMLAPROTECTIONCONSTRAINT option. If this parameter is set to “yes”, leave

extensions for those whose leave lengths in the absence of a program were less than 12 weeks will not extend their leave in the presence of the program to more than 12 weeks.

A note on own-health pregnancy leaves and leaves for a new born

The public use file of the 2012 DOL survey allows for a single leave-type response from women that took a leave to give birth to a child. The respondent could indicate if she took an own-health pregnancy related leave (which may have also included bonding time) or a leave to bond with a new child, but not both. We believe this underestimates both type of leaves for women giving birth. Using very high take-up rates for pregnancy and new child leaves helps adjust for this, even though it may overestimates the degree to which men take bonding leaves.

IV. What the Model Does: The Flow of the Model

This section describes what the simulation does by following the flow through the model's software. For the most part, this flow corresponds to the timing of decisions and modeling of behavior individuals make and exhibit in the process of taking a leave for personal or family-related medical reasons. Again, the way in which this simulator models the leave process, including the simulated behavior and personal decisions, are highly influenced and constrained by information from and the structure of the DOL survey.

The Main Program Loop

The application reads the ACS input file household by household, and within each household, passes each person through the simulator.

First, it is determined whether or not the person is an adult civilian who worked last year and passed through the rest of the simulator. One user option is to exclude persons that are self employed or government workers in case these workers are not in the universe of possible program leave-takers.

Some necessary information is not directly available on the ACS, and therefore is estimated or simulated. These include weeks worked (imputed from the categorical

weeks worked variable), weekly wage (annual earnings divided by weeks worked), paid hourly or not, employer size, and worked for a single employer last year or not.

Based on these imputations, the simulator next determines the work and employer-size eligibility requirements for FMLA and for the paid leave program, using information on the person's work history. To approximate the work requirement under FMLA, the person had to have worked at least 1250 hours last year, and only have had one major employer last year. In addition, for eligibility coverage under FMLA, the size of the establishment must be at least 50 employees. This concept of FMLA eligibility under the work and employer size requirements is used as an independent variable in several of the behavioral equations in the model, because it influences the person's ability and willingness to take a leave, and also is correlated with other personal and job characteristics that are not measured by other independent variables. Worker eligibility and employer coverage under the proposed program is calculated according to user-supplied eligibility requirements.

The person then enters the main software program loop illustrated in Figure 1. Each person is run through two branches illustrated in the figure. The person might be a leave-taker, a leave-needer, or both in a given year. On the left branch, the probability of a person's most recent leave being each of the six possible leave types is estimated conditional on the person's characteristics. These probabilities are compared to a draw from a standard uniform probability distribution. (Think of a "Wheel of Fortune", where the size of each slice on the wheel is proportional to the probability of a particular leave type, with the remaining large slice representing no leave.) Note: except where noted in Figure 1, each arrow represents a positive outcome. A negative outcome results in the person "dropping out" from taking a leave.

If one of the leave types is chosen, the possibility of more than one leave is simulated; and if so, the number of leaves greater than one is simulated as a random draw from the probability distribution of 2 through 6 possible leaves. The types of these additional leaves, if any, is simulated from an estimate of the conditional probability distribution of a second leave (conditional on a first leave). This conditional probability distribution was estimated from those sample persons in the DOL survey who reported on

the type of leave for both their longest and most recent leave, when these were different leaves. The survey implied that the probability of taking a second ill child leave or a second ill parent leave was higher than the unconditional probability of each, and the probability of taking a second maternity disability or new child leave in a given year was effectively zero.

The leave length is simulated as a random draw from the estimated distribution of each type of leave length given by the DOL survey. Except for own health leaves, these differed by sex, with women tending to take longer leaves than men. For own health leaves, leave lengths were longer for those who stated that they received some pay from a TDI or state paid leave program, so two leave length distributions were used: in the absence of a program, the distribution of leave lengths for persons who did not report receiving these payments was used; in the presence of program, the distribution of leave lengths for persons who did report receiving these payments was used.

Leave lengths are counted in five-day weeks, so a leave of two weeks, for example, is ten days. At this point in the program flow, the leave lengths represent those in the absence of a paid leave program, except for those persons who would not have taken a leave in the absence of such a program. Later in the flow, in the presence of the paid leave program, the person may choose to extend their leave.

Up to this point, the simulation on the right branch, for leave-needers, is similar, except that simulated leave lengths represent leave lengths *if* they were to take a leave.

For leave-takers, their weekly payments while on leave in the absence of a program is simulated in stages. First, whether or not they receive any pay while on leave. Next, conditional on receiving pay, was it full pay; and if not, what fraction of pay was received.

For those who were partially paid, the 2000 DOL Survey asked if the respondent received some pay for each pay period that they were on leave; and if not, in the pay periods for which they *did* receive pay, was it for their full salary? As described earlier and illustrated in Table 1, the 2000 DOL survey was used to estimate these conditional probability distributions for each leave type and payment group (less than half pay, about half pay, more than half pay). If a person's leave was partially paid, their payment

schedule was randomly selected from the corresponding conditional probability distribution for their leave type.

At this point, the application has determined if a person received some pay each week; and if not, if that person received full pay for some weeks; and if, over the course of their leave, a person received less than half of full pay, about half of full pay, or more than half of full pay (see Figure 2). The weekly pay schedule is then filled out using arbitrary rules subject to these payment schedule and amounts constraints. For example, those persons who received some pay for each week of their leave, but who received less than one quarter pay in total, were assigned 12.5 percent of their weekly pay in each week of their leave, while those persons who received some pay each week, and more than three-quarters but less than full pay, were assigned 87.5 percent of their weekly pay in each week of their leave.

For leave-needers, the model simulates whether they would take a leave if there were a paid leave program based on their reason for not taking a leave being that it was not affordable. If not, they are classified as an ultimate leave-needer. If they do take a leave, they then follow the same remaining path as leave-takers.

At this point, the leave-taker's (or potential leave-taker, if originally a needer), eligibility is determined. The work and employer eligibility conditions have already been determined by this point, so here it is determined whether or not they saw a doctor or went to a hospital (or whether the person they took a leave to care for saw a doctor or went to the hospital). These are computed by comparing the probability of a logit behavioral equation for each condition (i.e., seeing a doctor and going to the hospital) to a corresponding random number. The doctor and hospital requirements vary somewhat depending on the leave type. Essentially, to be eligible for an FMLA-defined leave (except for new child) requires either seeing a doctor or going to the hospital, and it is presumed that if the person or the person they were caring for went to the hospital, they also saw a doctor.

After it has been determined what leaves, if any, the person takes, and their lengths, the leaves are then distributed across a calendar where their leave either finishes in a 12-month period beginning April 16, 2011 and ending April 15, 2012, or they are

still on leave on April 15, 2012. The dates for the beginning and ending of the 12-month period are not critical. This period was chosen simply because the survey was conducted between February and June of 2012, so April 15 was approximately in the middle of this period. But, this assumes that leave-taking is not seasonal. Although the model simulates leave-ending dates that are uniformly distributed throughout the year, it does not guarantee that for any simulated person, the dates “make sense” in that it is possible that two simulated leaves overlap in time. However, what it *does* achieve is a reasonable estimate for the extent to which some leaves which take place during a given year “spill” outside the yearly time period, either because they began before the year began or ended after the year ended.

Employer pay, program benefits, and leave length in the presence of a paid leave program

The next step in the model is to simulate employer pay, program benefits, and possible extensions of leave length in the presence of a paid leave program. The application simulates the sequence of events and choices that a leaver would reasonably experience, given their weekly leave history and weekly schedule of employer payments simulated up to this point, in the absence of a paid leave program. Three important, and reasonable, assumptions are embodied in this part of the simulation:

1. Not all eligible recipients participate in the program, due to lack of information, the hassle of applying, or other reasons. The proportion of eligible paid program leave-takers who *do* participate is called the “take-up rate”, and is one of the program parameters set by the user. The user can specify a different take-up rate for each leave type. Eligibles who “pass” through this sieve then begin on one of two paths. If they received some employer pay in the absence of a program, they begin an employer-paid leave (Figure 3, state [0]). If they did not receive any employer pay in the absence of a program, they begin an unpaid (without any pay from the employer) leave (Figure 3, state [3]).
2. The decision to participate in the paid leave program, given that the person is eligible, is also based on the level of program benefits he/she would receive

compared to the next best alternative, which is employer pay if the person received it, or nothing, if the leave was unpaid in the absence of the program. In order to compensate for the time and effort of applying to the program, program benefits would have to exceed the next best alternative by some amount, and furthermore, this amount may differ systematically by income and by other factors. It may also vary randomly across different individuals, and even for the same individual, at different times. This participation decision is implemented by an arbitrary logit equation that has the difference between weekly paid program benefits and weekly pay received while on leave, and family income as independent variables. The participation probabilities it yields are given in Table 2 for several combinations of benefit/pay differentials and family income. The larger the difference and the lower the person's family income, the higher the probability of participating in a program. This decision occurs in several places in the possible paths through the model. The user can turn off this participation module if they wish, and rely solely on the take-up rate parameter instead.

3. The part of the simulation flow that establishes employer pay, program benefits, and possible extensions of leave length in the presence of a paid leave program is illustrated in Figures 3 through 5. The software models the process as a sequence of states (i.e. section of source code with at least one path of entry or exit), represented as circles in the diagrams. Some of these states are "decision" states, in which the leaver must make a decision to participate in the program, or to extend their leave beyond its "original" length, the length simulated prior to this point. The transition from state to state, represented by arrows, is the result of events or decisions, such as the end of receipt of employer pay, the original length of leave being reached, the decision to participate or extend a leave, etc. Diamonds represent predetermined conditions or conditions over which the person has no control, such as whether the person is eligible or receives employer pay. Numbers in brackets correspond to the state number. The flow from state to state traces a "path".

In order to illustrate how this part of the simulator works, let's follow one of the many possible paths that a leaver might experience. Suppose that the person originally took a partially paid leave of 3 weeks from her employer, got paid 30 percent of her full time pay for the first two weeks of leave, and is eligible for the paid leave program. This person might take the following path.

The person begins in state number 0, "Begin employer leave, eligible for paid leave program". After the waiting period of a week, the person decides whether or not to participate in the program, and is in state number 8, "Participate in paid leave program?". The weekly benefit from the paid leave program substantially exceeds the person's partial pay from her employer, so that the probability of participation in the program is high. In fact, suppose that the probability is greater than the random number drawn, so that the person participates. The person is then in state number 2, "Begin paid leave program".

After being on the program for two weeks, the original leave length is reached, and the person then decides whether or not to extend her leave. The person is in state number 12, "Extend?". The simulation sets the probability of extending the leave to 25 percent. Suppose the random number drawn is less than .25, so the person extends her leave. The leave is then extended by 3 days, or 25 percent of the original leave length of 15 days.

The person is then in state number 7, "Begin/continue paid leave program". The person remains in this state for three days, and then ends her leave, entering state number 20, "End leave".

The "End leave" state in the simulator performs some accounting and cleanup tasks. Among other tasks, a number is assigned to a variable called "path" that uniquely identifies this path that the person traversed. The "path" variable is calculated as the sum of a number of terms, where each term is the number two raised to the power given by the state number. The "End leave" state is omitted from this calculation since every leave ends in the "End leave" state. The value of "path" calculated for this particular path is 4485.

The processing for each person ends with outputting nearly all the information from the simulation to several files. Information from each leave is output to the "leaves" file,

which contains the path traversed for each leave, along with summary information on program benefits received, employer pay received, the type of leave, its length in days, and other information. A record of the traverse through each state is also output to the “state” file, and the weekly record of program benefits and employer payments are written to three “weekly” files. The “main” file outputs information at the person level, including a summary of the leaves the person took, if any, and demographic information from the ACS so that the distribution of program benefits can be analyzed.

V. Distributing Leaves Across the Calendar

There are several aspects of timing of leave-taking that need to be modeled to estimate length of leaves with a program and program costs. Length of leaves that are extended because of the program as well as those that were in process during the DOL survey (making their truncated because of the survey) must be accounted for by assigning beginning and end dates of leaves across the calendar. Further we need to account for the fact that program costs take place over a calendar or fiscal year (12 month period we refer to as the program year), but some leaves start before the program year, while others will end later.

Beginning and Ending Dates of Leaves

The simulator distributes leaves in time consistent with certain observed distributions from the DOL survey. The leaves are assigned beginning and ending dates in the absence of a paid leave program. Below we will simply use the term “program” for “paid leave program”; and will refer to the beginning and ending dates of leaves as “pre-program” dates in the absence of a program, and “post-program” dates in the presence of a program. In the presence of a program, program participants may choose to extend the length of their leave. These extensions affect the ending date – but not the beginning date – of the simulated leaves. That is, the post-program ending date of a leave may be later than the pre-program ending date, but the post-program and pre-program beginning dates of a leave are always the same.

The DOL survey reports leaves in days, as five-day weeks. We record the length of a leave as the number of weekdays between the beginning and ending dates, including the beginning and ending date. For example, a week that begins on a Wednesday and

ends on the following Tuesday is 5 days long; Saturdays and Sundays are not counted. The number of weeks in a leave is the length of the leave divided by 5. Beginning and ending dates of leaves always fall during a weekday – Monday through Friday – and holidays that fall on a weekday are counted as leave days.

The Procedure for Assigning Pre-Program Beginning and Ending Dates

Two aspects of the survey are reflected in the procedure for how the model distributes these leaves in time:

1. The survey asks about leaves taken in the last 18 months and in the last year. The tabulations of how many months ago the leave began (variables A13_1_CAT and A13_2_CAT from the DOL survey) suggest that respondents considered leaves that were ongoing during these time periods, which means that they included leaves that began before 18/12 months prior as long as they were still on leave during the target period. The simulator is based on the 12-month target period, and so distributes leaves so that their pre-program ending dates fall in a 12-month calendar, called the “program year”.
2. Respondents were asked (variable A3 from the DOL survey) if they were currently on their most recent leave. These truncated leaves account for approximately 15% of leaves that took place in the last 12 months. Like the survey, the lengths of these leaves given by the simulator reflect the lengths as reported at the time of the survey. They are not “completed” or “full” lengths, but are “truncated” lengths. The simulator assigns the pre-program ending dates of these truncated leaves to end on the last weekday of the program year.

The types and lengths of leaves for each worker, if any, are determined in the simulation model prior to assigning the pre-program beginning and ending dates. The leaves for each worker are then assigned pre-program beginning and ending dates. First, it is determined if any of the person’s leave is truncated, based on a logit model giving the probability of a leave being truncated conditional on its observed length. If one of the person’s leaves is truncated, it is assigned a pre-program ending date of the last weekday of the program year.

For leaves that are not truncated, the pre-program ending date for each of the person's remaining leaves, if any, are assigned with uniform probability over the weekdays of the program year. This feature of the simulation model is important because it yields a theoretically correct distribution of leaves that begin prior to the program year. This in turn is important for correctly estimating annual benefit costs and other program year measures, which should not include costs that occur either prior to or after the program year.

In the case of multiple leaves, the procedure tries to assign the leaves so they do not overlap in time, so as to make the person's simulated record look realistic, but this feature is not important for the estimation objectives of the simulator. In contrast, the uniform distribution of pre-program ending dates across all persons *is* important, and so the uniform objective was given priority over the non-overlap objective in the design of the simulator. Even if a person's pre-program leaves do not overlap, their post-program leaves might if any leaves are extended.

Program Year Concepts

The simulator provides two sets of variables for pre-program and post-program dates, leave lengths, benefit payments, employer wage payments, lost product, days receiving benefits, days receiving employer pay, and days without any benefits or compensation. One set consists of variables that measure the entire leave, and the other restricts the measures to the activities that occur within the program year. These two sets may differ for leaves that "spill" out of the program year, either because they began before the program year began or ended after the program year ended. For leaves that began and ended during the program year, the two sets of variables are the same.

VI. Conclusion

The application provides a sophisticated estimation of family and medical leaves. The program includes considerable flexibility for the user in terms of possible paid leave program specifications and behavioral responses to a paid program. The application is a powerful estimation tool that can be used at the national, state, or even the metro area or city level. It not only estimates the amount that a paid leave program might cost, it also

estimates the amount of employer benefits paid (in the absence and presence of a paid leave program) as well as employee uncompensated wages due to any portion of earnings that are unpaid during a leave. Further, because the simulator outputs add the simulated variables onto the ACS, it is possible to look at the beneficiaries of paid leave programs by gender, race and ethnicity, marital status, and income level.

References

Albelda, Randy, and Alan Clayton-Matthews, 2010. *The Institute for Women's Policy Research and Labor Resource Center Paid Family and Medical Leave Simulation Model*. IWPR #A143. Institute for Women's Policy Research, Washington, D.C. (<http://www.iwpr.org/publications/pubs/the-institute-for-women2019s-policy-research-and-labor-resource-center-paid-family-and-medical-leave-simulation-model/>)

Appelbaum, Eileen and Ruth Milkman. 2011. Leaves That Pay: Employer and Worker Experiences with Paid Family Leave in California, Center for Economic and Policy Research (<https://cepr.net/documents/publications/paid-family-leave-1-2011.pdf>).

Klerman, Jacob Alex, Kelly Daley, and Alyssa Pozniak, 2014. *Family and Medical Leave in 2012: Technical Report* (September 7, 2012; revised April 18, 2014). Abt Associates, Inc., Cambridge, MA. (<http://www.dol.gov/asp/evaluation/fmla/FMLA-2012-Technical-Report.pdf>)

McGarry, Nancy, Jacob Alex Klerman, Kelly Daley, and Alyssa Pozniak, 2013. *Family and Medical Leave in 2012: Revised Public Use File Documentation* (August 23, 2013). Abt Associates, Inc., Cambridge, MA. (<http://www.dol.gov/asp/evaluation/fmla/FMLA-2012-Rev-Public-Use-File-Documentation.pdf>)

Pihl, Ariel and Gaetano Basso. Not dated. Paid Family Leave, Job Protection and Low Take-up Rate among Low-wage Workers, Policy Brief, Center for Poverty Research, University of California, Davis. Volume 3, No. 12. (<http://poverty.ucdavis.edu/policy-brief/paid-family-leave-job-protection-and-low-take-among-low-wage-workers>).

Westat, 2001. Family and Medical Leave 2000 Survey of Employees Codebook. (<http://www.dol.gov/whd/Fmla2007Report.htm>)

Table 1

For those who receive partial pay, how much and when was it received for those with own-health leaves

About how much of your usual pay did you receive in total?		Did you receive some pay for each pay period that you were on leave?	If not, when you did receive pay, was it for your full salary?
	Less than half	0.6329781	0.3273122
	About half	0.8209731	0.3963387
	More than half	0.9358463	0.3633615

Notes: Cells are proportions of respondents.
From variables HA10D, HA10E, HA10F of the DOL 2000 Survey

Table 2

Probability of Participating for Selected Values of Benefit/Wage Differential and Family Income

		Difference Between Weekly Program Benefit Amount and Next Best Alternative		
		\$ 25	\$ 50	\$ 125
Family Income	\$ 10,000	0.12	0.59	1.00
	\$ 20,000	0.08	0.48	1.00
	\$ 30,000	0.05	0.38	1.00
	\$ 40,000	0.04	0.28	1.00
	\$ 50,000	0.02	0.21	1.00
	\$ 60,000	0.02	0.15	1.00
	\$ 70,000	0.01	0.10	0.99
	\$ 80,000	0.01	0.07	0.99
	\$ 90,000	0.00	0.05	0.98
	\$100,000	0.00	0.03	0.98

These probabilities are based on a logit equation where the independent variables are the difference between the weekly program benefit and the next best alternative, and family income. The "next best alternative" is either the weekly pay received from the employer while on leave, or zero if the leaver receives no pay while on leave.

Figure 1
Paid Leave Simulation Flow

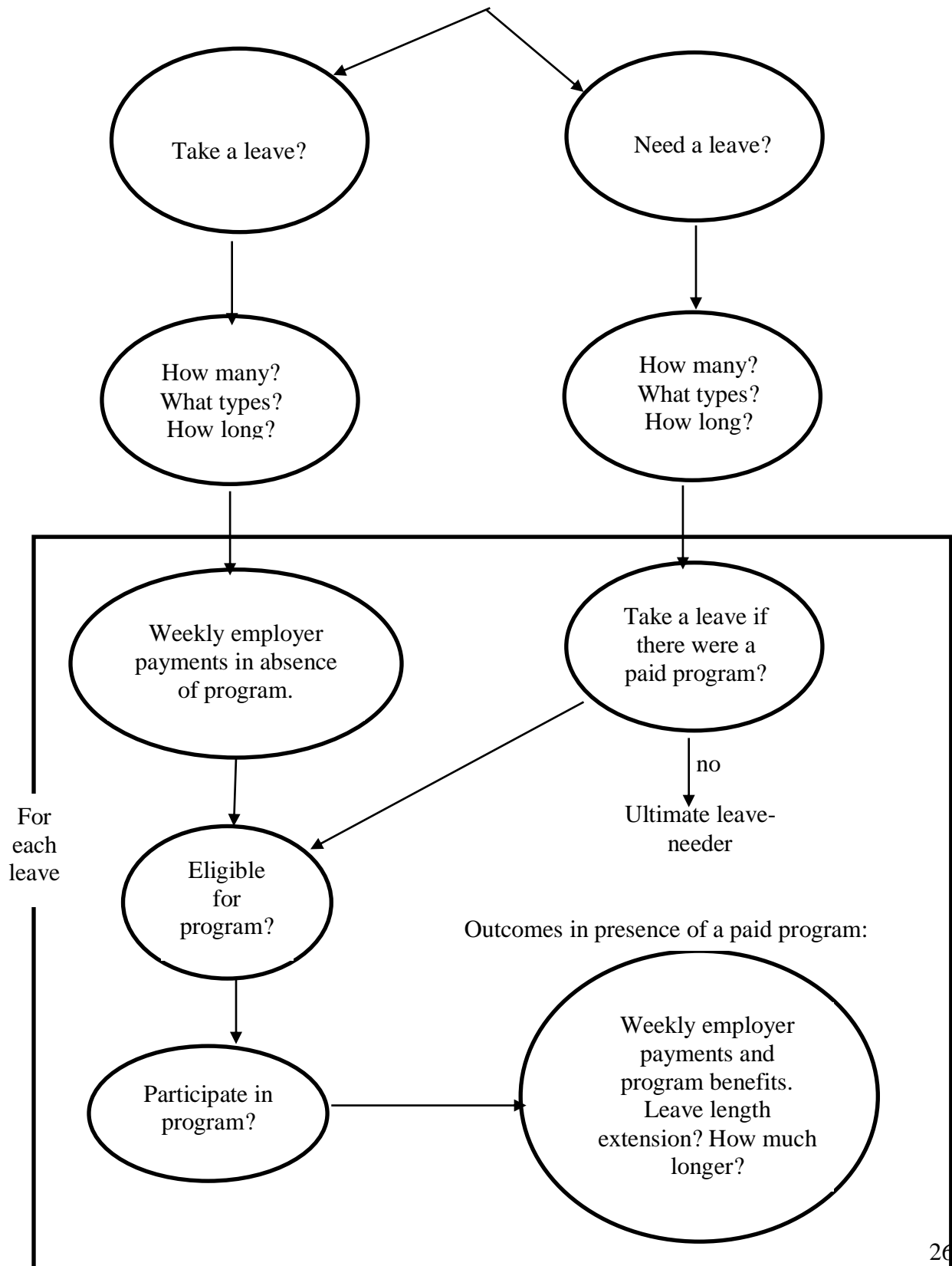


Figure 2
Weekly employer payments for leave in absence of a paid leave program

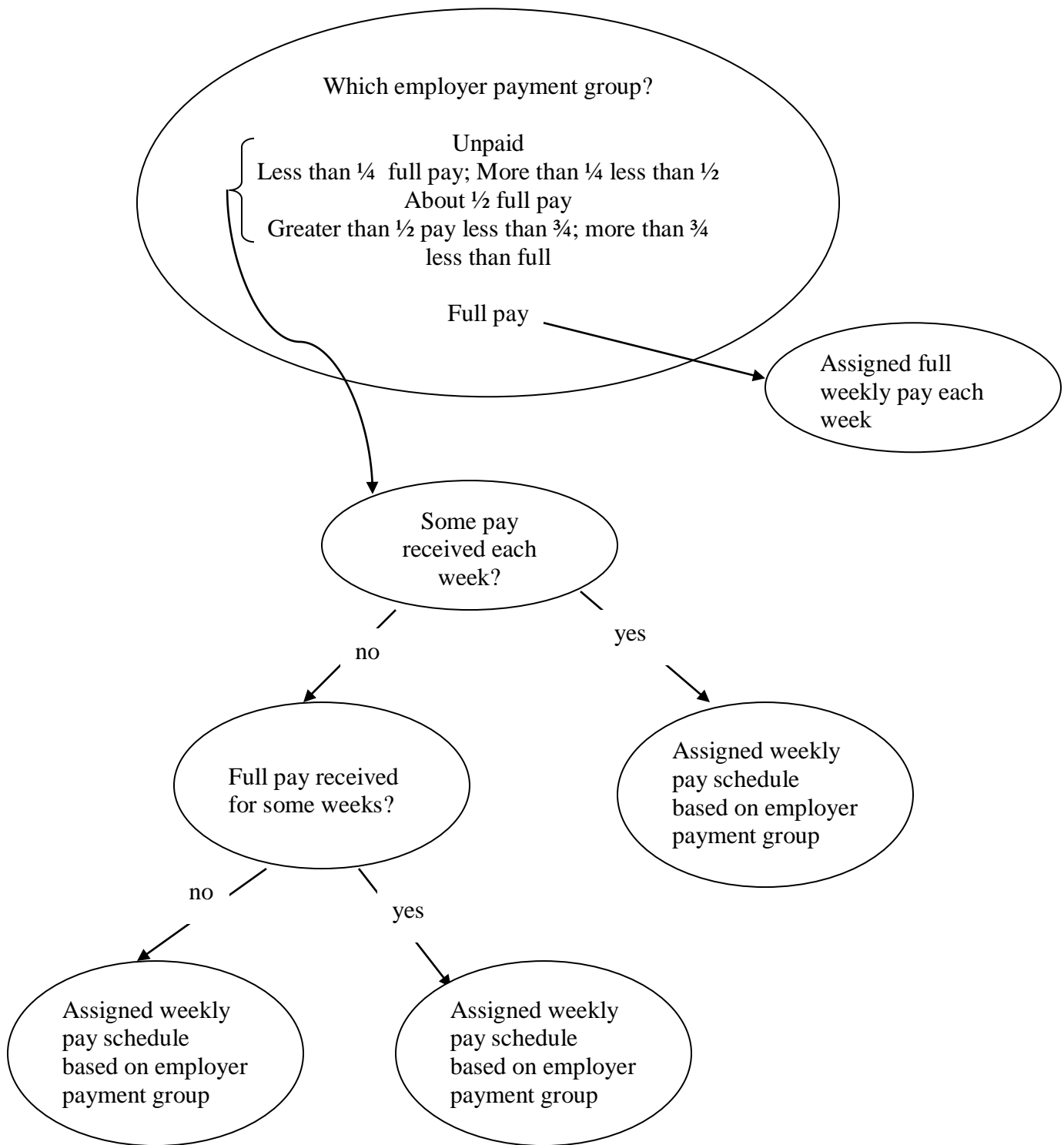
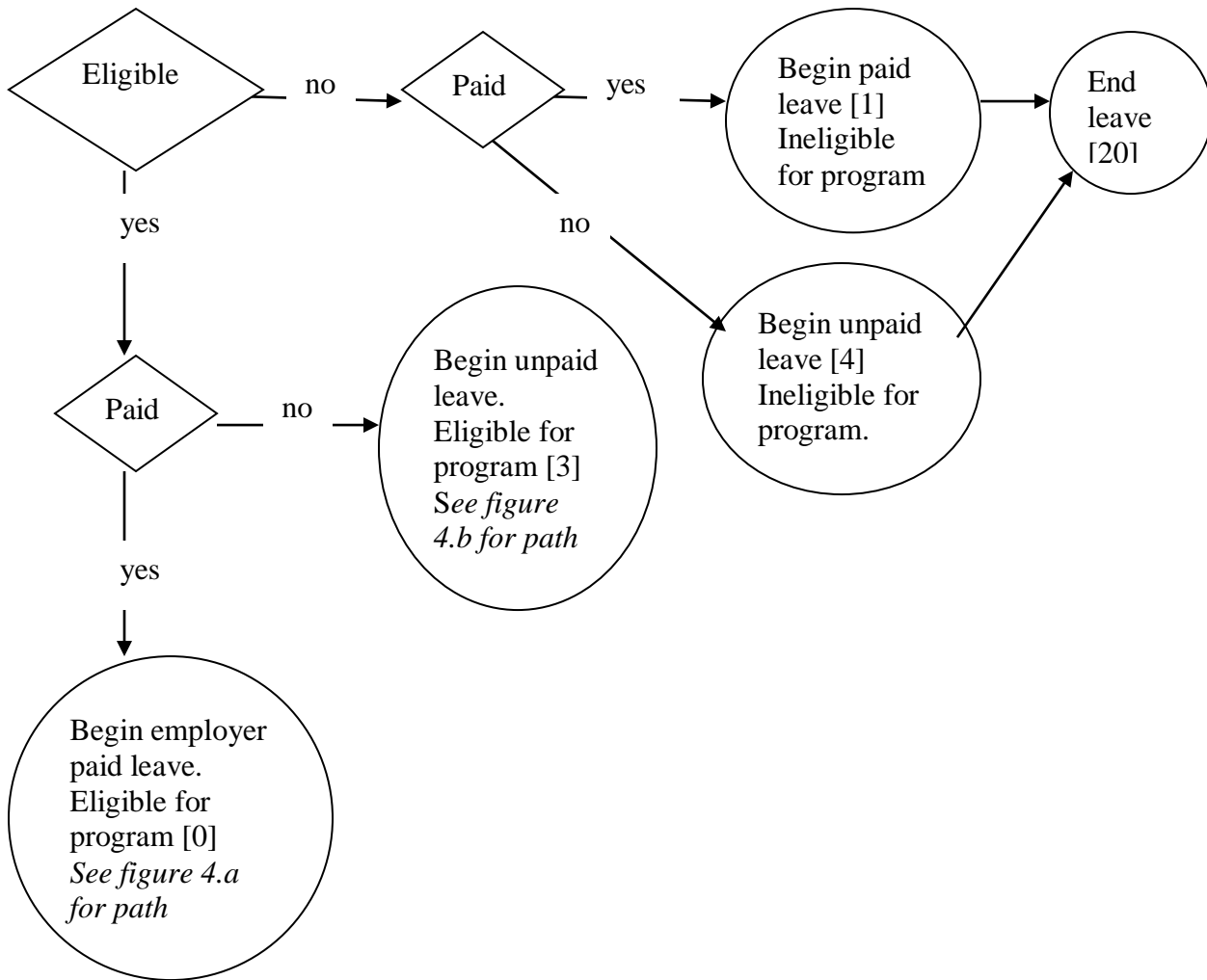


Figure 3
 Simulating Weekly employer pay and leave program benefits in presence of paid leave program



Note: Numbers in brackets in figures 3-5 correspond the state number.

Figure 4.a
 Simulating Use of Paid Leave Program and Employer Benefits for
 Employees with Some Employer Paid Leave

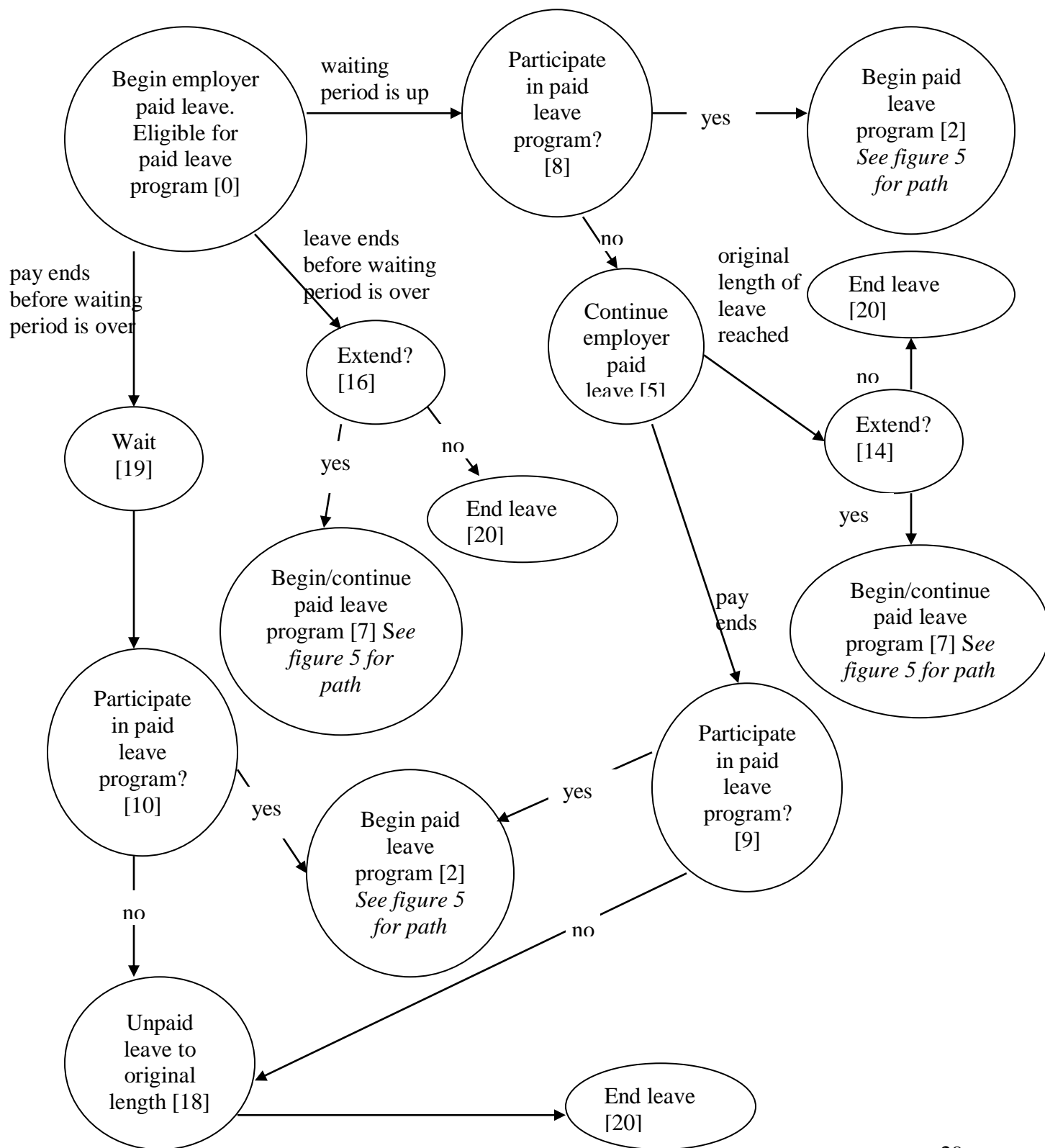


Figure 4.b
Simulating Use of Paid Leave Program for Employees with no employer
paid leave

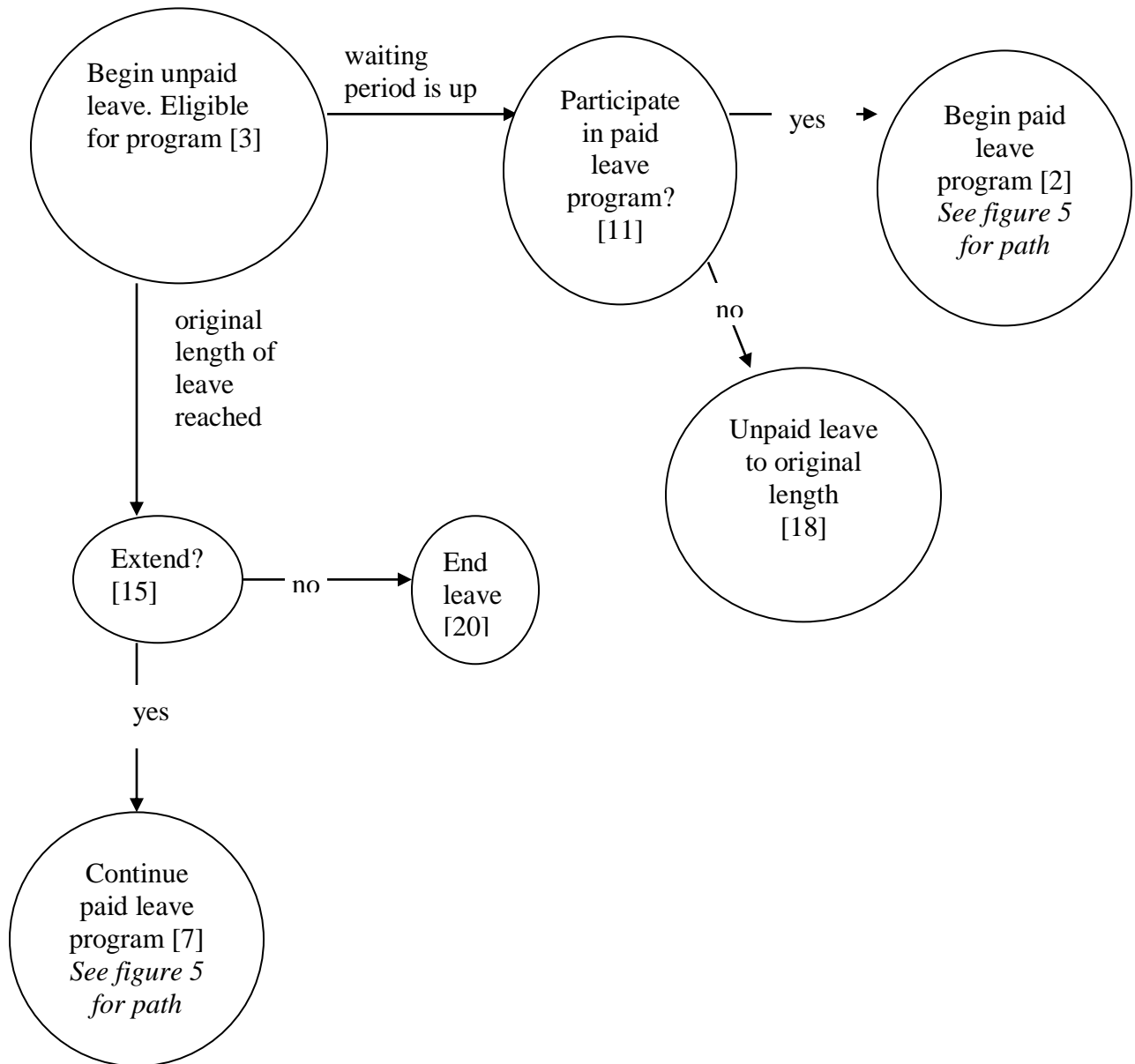
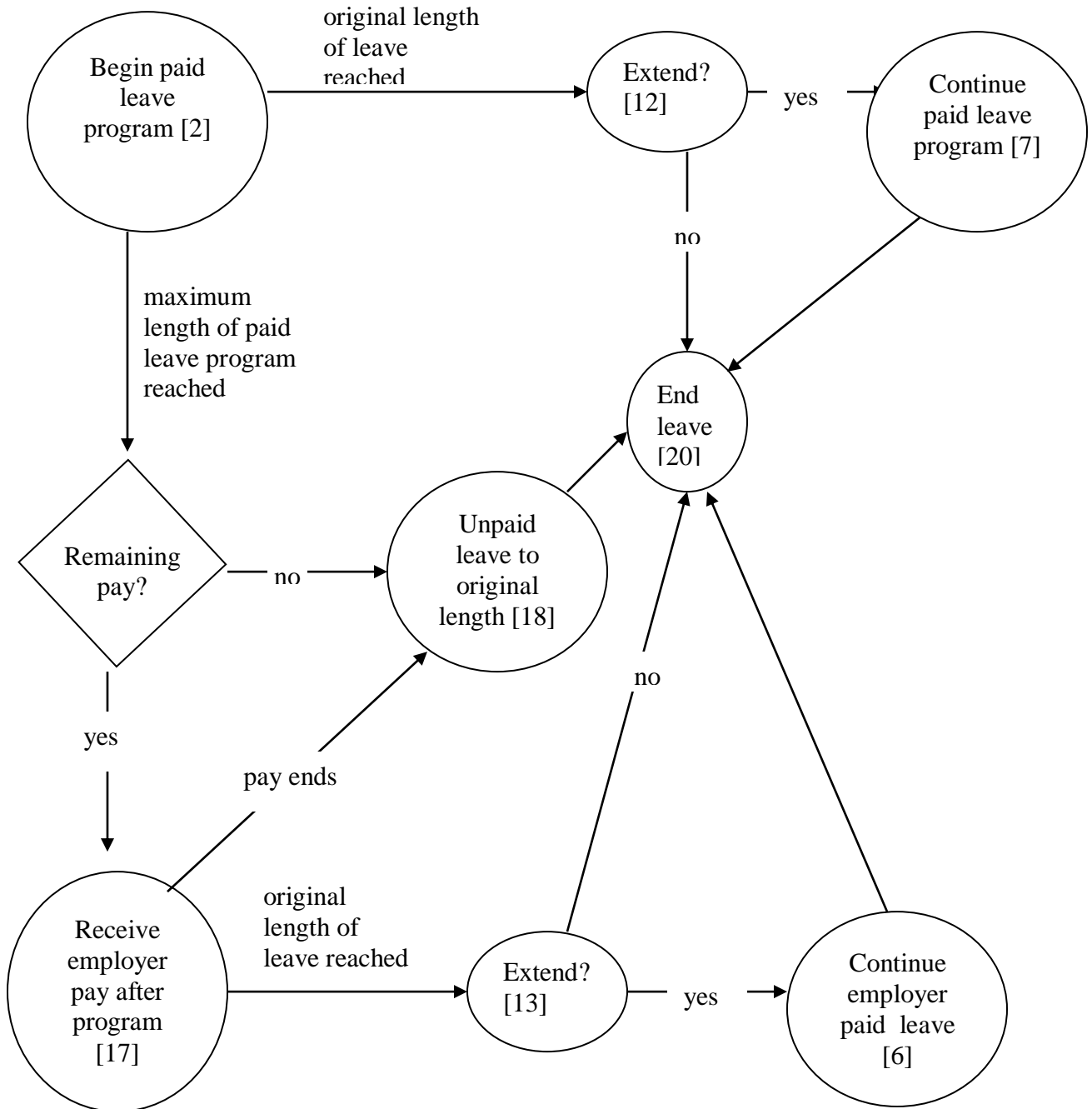


Figure 5
Simulating Use of Paid Leave Program Once it Begins



Appendix 1: Commands and Command Syntax

The following notation is used to describe the syntax of the commands.

ABC	All items in uppercase are required. The spelling, but not the case, must match exactly.
<i>abc</i>	Italics represent a generic value that you replace with a specific value.
[abc]	The item <i>abc</i> is optional.
{abc}	The item <i>abc</i> may be repeated one or more times.
"abc"	The characters <i>abc</i> are required.
a b c	One of <i>a</i> , <i>b</i> , or <i>c</i> may be specified.
a::=b	The item <i>a</i> is defined in terms of <i>b</i> .

Notes:

- 1) Commands begin with a command name and end with a semicolon. The only exception is a comment, which is not really a command. Commands may use more than one line; each line of a multi-line comment must have an asterisk in the first column of the line.
- 2) The FILE, ELIGIBILITYRULES, MAXWEEKS, and TAKEUPRATES commands consist of one or more fields. These fields may appear in any order.
- 3) Commands are not case sensitive.
- 4) The commands may appear in any order; however, it is recommended that the FILE command that specifies the log file be the first command in the command file. Otherwise, you might have to inspect the *logtemp.txt* file for any error messages that were sent before the log file was opened. See the FILE command below.
- 5) The commands should be entered in a single text file and placed in the Input folder. When you launch the simulator, it will prompt you for the name of this file. It is recommended that you give the file the extension of ".txt"; and the extension is required when responding to the prompt from the simulator.

COMMENT

“*” *comment*

comment ::= any sequence of characters on a single line.

Example:

```
* This is a comment
```

Notes:

- 1) The “*” must appear in the first column of a line. The entire line is a comment.
- 2) Comments can appear anywhere in the command file.

FILE command

FILE { LOG | PUMSH | PUMSP | DEBUG | MAIN | LEAVES | WEEKLY | STATES | BENEFIT | EMPPAY | DOC | [INCLUDE] “=” *filespecification* } “;”

filespecification ::= a valid Windows file name, optionally in quotes, including a filename, and optional extension. If the specification includes spaces, it must be enclosed in quotation marks. Do not include the path to the filename (drive letters and/or folder paths).

Examples:

```
file log=log.txt pumsh=us_short_h.txt pumsp=us_short_p.txt
debug=debug.txt main=main.csv leaves=leaves.csv weekly=weekly.csv
states=states.csv benefit=weekb.csv emppay=weeke.csv doc=doc.txt
include=include.txt;
```

```
file log="my new log.txt";
```

Notes:

- 1) This command specifies the output and input files of the model. It is recommended that the first command in the command file specify the log file, which is where error messages will appear. Before a log file is specified, all messages to be logged go to a file named “*logtemp.txt*”, which will be created in the Output folder.
- 2) If the file name includes spaces, the file name must be enclosed in double quotes, as in the second example.
- 3) All files are required except for the INCLUDE file, which is optional.
- 4) The LOG, DEBUG, MAIN, LEAVES, WEEKLY, STATES, BENEFIT, EMPPAY, and DOC files are output files and will be created in the Output folder. If a file of the same name already exists in the Output folder, it will be overwritten by the newer file.
- 5) The PUMSH, PUMSP, and INCLUDE files are input files and must be placed in the Input folder. Since these are text files it is recommended that they have extensions of “.txt”.

- 6) The LOG, DEBUG, and DOC files are also text files and so it is recommended that they be given extensions of “.txt”.
- 7) The MAIN, LEAVES, WEEKLY, STATES, BENEFIT, and EMPPAY files are comma separated files, and so it is recommended that they be given extensions of “.csv”.
- 8) The LOG file contains messages useful for fixing errors in the command file, and also contains some messages about the status and successful or unsuccessful conclusion of the simulation run.
- 9) The INCLUDE file contains a list of variable names from the American Community Survey PUMS input files that you want included in the output MAIN file. Spell the names exactly as they appear in the ACS documentation, except that you must use lowercase.
- 10) The PUMSH and PUMSP files contain the names of the household and person PUMS comma-separated data files, as released by the Census Bureau. These should have “.csv” extensions. Since the content and variable order of these files changes from year to year, make sure you are using the appropriate version of the simulator. This version uses the 5-year U.S. PUMS files, 2009-2013. The contents of the PUMSH and PUMSP files for this Census ACS PUMS is given below. You may create extracts of these files and use them as input files if you wish, but if you want the extracts to sum to population totals, use the WEIGHTFACTOR command. Extracts must consist of entire rows of the PUMS files, which means that you can only extract sample households and the persons in them, not extracts consisting of a subsample of variables. The first example LOG command above uses a small extract of this 5-year ACS PUMS.

Contents of PUMSH=us_h.txt

ss13husa.csv
ss13husb.csv
ss13husc.csv
ss13husd.csv

Contents of PUMSP=us_p.txt

ss13pusa.csv
ss13pusb.csv
ss13pusc.csv
ss13pusd.csv

BENEFITEFFECT command

BENEFITEFFECT YES|NO “;”

Example:

```
benefiteffect Yes;
```

Notes:

- 1) Indicates whether the benefit amount affects participation in the program. If the command is not included, the default of “No” is applied, that is, that the benefit amount does not affect participation.

CALIBRATE command

CALIBRATE YES|NO “;”

Example:

```
calibrate no;
```

Notes:

- 1) Indicates whether or not the calibration add-factors are used in the equations giving the probability of taking or needing leaves. These calibration factors adjust the simulated probabilities of taking or needing the most recent leave to equal those in the *Family and Medical Leave in 2012: Revised Public Use File Documentation* (McGarry et al, Abt Associates, 2013).
- 2) If this command is omitted, the default value of YES is implied, and the calibration add-factors are used.

CLONEFACTOR command

CLONEFACTOR *positive_integer* “;”

positive_integer ::= a positive integer.

Example:

```
clonefactor 10;
```

Notes:

- 1) Specifies how many times each sample person will be “run” through the simulator. If the command is not specified, the default of “1” – that is, no cloning – is applied.
- 2) In order for the weights to add to the population, the weight on each clone is divided by the clone factor. Since clones of a person that do not take any leaves are identical, these are combined together in the “main” file as a single record with the appropriate weight. For example, if a clone factor of 10 is used, and 7 of a person’s clones do not take a leave, the weight on this combined record is

seven-tenths of the person's original weight. The value of the "iclone" variable on these combined records is set to zero. This is done to limit the size of the "main" output file.

- 3) Increasing the clone factor lowers the variance of the simulator error, that is, the variance of outcome measures due to the stochastic contingencies of the simulator.
- 4) The clone factor can be used in conjunction with the SEANALYSIS command to facilitate the calculation of standard errors or confidence intervals for the simulator error. See the SEANALYSIS command. If the SEANALYSIS command is used, clones of a person that do not take any leaves are *not* combined together. Each such clone has their own record in the "main" file and each clone is identified with its own "iclone" value.

DEPENDENTALLOWANCE command

DEPENDENTALLOWANCE *real_number* ";;"

real_number ::= a non-negative real number. Scientific notation (exponential notation) is not allowed.

Example:

```
dependentallowance 25;
```

Notes:

- 1) This command sets the allowance for dependent children in dollars per week. If the command is not included, the default of "0" – no dependent allowance – is applied.

DETAIL command

DETAIL *positive_integer* ";;"

Example:

```
detail 8;
```

Notes:

- 1) This command sets the level of detail – the number of variables – present in the output files. The level of detail can range from "1" – minimum detail, to "8" – full detail. If the command is not included, the default of "8" – full detail – is applied. This means, for example, that all variables from the ACS PUMS files will appear in the main output file. To restrict the list of variables from the PUMS files, choose a lower level of detail and use the INCLUDE file option in the FILE command to specify the ACS PUMS variables that you *do* want to appear in the main output file.

ELIGIBILITYRULES command

ELIGIBILITYRULES [TYPE "=" FMLA | MA_UIB] | [[A_EARNINGS "=" *real_number*] [B_WEEKS "=" *positive_integer*] [C_ANNHOURS "=" *positive_integer*] [D_EMPSIZE "=" *positive_integer*] [RULE "=" ALL | *logical_expression*]] ","

logical_expression ::= A logical expression using the prefixes of the eligibility requirements used in the command (A,B,C,D) and the logical operators "&" and "|" for logical "and" and "or".

Examples:

```
eligibilityrules type=fmla;
eligibilityrules a_earnings=3000 c_annhours=1000 d_empsize=50
    rule=all;
eligibilityrules a_earnings=3000 c_annhours=1000 d_empsize=50;
eligibilityrules a_earnings=3000 b_weeks=40 c_annhours=1000
    d_empsize=50 rule="A & (B|C) & D";
eligibilityrules a_earnings=3000 b_weeks=40 c_annhours=1000
    d_empsize=50 rule=A&(B|C)&D;
```

Notes:

- 1) This command specifies the eligibility requirements for the paid leave program. You have the choice of using a built-in set of requirements – currently there are two: the eligibility requirements of the federal FMLA law or the Massachusetts UIB program – or a custom set of requirements based on earnings, weeks, hours, and/or employer size conditions.
- 2) If you choose a custom set of requirements, they represent: A) earnings (in dollars) in the last 12 months; B) weeks worked in the last 12 months; C) total number of hours worked in the last 12 months; and D) number of employees that work for the person's employer, counting all locations where the employer operates.
- 3) In a customized set of requirements, the requirement can be that all specified conditions must be met, as in the second and third examples above; or that some other logical combination of conditions must be met, as in the fourth and fifth conditions above.
- 4) The second and third examples are identical, since if the RULE field is omitted, ALL is assumed.
- 5) If the logical expression contains spaces, it must be enclosed in double quotes, as in the fourth example above.
- 6) The fourth and fifth examples are identical. They require that, in order for a person to be eligible for the paid leave program, the person must have earned at least \$3,000 in the last 12 months; have either worked at least 40 weeks or at least 1,000 hours in the last 12 months; and must have worked for an employer who has at least 50 employees.
- 7) If this command is omitted, all workers are eligible for the paid leave program.

EXTENDDAYS command

EXTENDDAYS [OH “=” *non-negative_integer*] [MD “=” *non-negative_integer*] [NC “=” *non-negative_integer*] [IC “=” *non-negative_integer*] [IS “=” *non-negative_integer*] [IP “=” *non-negative_integer*] [DEFAULT “=” *non-negative_integer*] “;”

non-negative_integer ::= An integer that is greater than or equal to zero.

Examples:

```
extenddays OH=5 MD=10 NC=7 IC=0 IS=0 IP=0;
extenddays OH=5 MD=10 NC=7 default=0;
```

Notes:

- 1) This command works in conjunction with the EXTENDPROPORTION command and the EXTENDPROB command to increase leave lengths in the presence of a paid leave program. For leaves that get extended, this command adds a fixed number of days. The fixed amount can differ by leave type.
- 2) The types of leave are: OH (own health); MD (maternity disability); NC (new child); IC (ill child); IS (ill spouse); and IP (ill parent).
- 3) If the EXTENDLEAVES command is “yes”, and the EXTENDOLD command is “no” or is not supplied, then this command – and also the EXTENDPROB and EXTENDPROPORTION commands – must be supplied. There are no default values.
- 4) The parameters are in days, so must take an integer value. Zero is allowed.
- 5) The two example commands are equivalent.
- 6) For leaves that get extended, the EXTENDDAYS and EXTENDPROPORTION commands shift the distribution in a linear fashion. For a particular leave type, if the original length in the absence of a program is “x” days, the value of the EXTENDDAYS parameter is “a”, and the value of the EXTENDPROPORTION parameter is “b”, and the leave is extended (by “passing” the probability sieve), then the leave is extended by “a + bx” days, and the length in the presence of the program is “a + (1+b)x” days. This length may be subject to certain limits, depending on the maximum allowable program leave length and whether the FMLAPROTECTIONCONSTRAINT is in effect.

EXTENDPROPORTION command

EXTENDPROPORTION [OH “=” *non-negative_real_number*] [MD “=” *non-negative_real_number*] [NC “=” *non-negative_real_number*] [IC “=” *non-negative_real_number*] [IS “=” *non-negative_real_number*] [IP “=” *non-negative_real_number*] [DEFAULT “=” *non-negative_real_number*] “;”
non-negative_real_number ::= A real number that is greater than or equal to zero.

Examples:

```
extendproportion OH=.75 MD=.75 NC=.5 IC=.25 IS=.25 IP=.25;
extendproportion OH=.75 MD=.75 NC=.5 default=.25;
```

Notes:

- 1) This command works in conjunction with the EXTENDDDAYS command and the EXTENDPROB command to increase leave lengths in the presence of a paid leave program. For leaves that get extended, this command increases the length proportionately.
- 2) The types of leave are: OH (own health); MD (maternity disability); NC (new child); IC (ill child); IS (ill spouse); and IP (ill parent).
- 3) If the EXTENDLEAVES command is “yes”, and the EXTENDOLD command is “no” or is not supplied, then this command – and also the EXTENDPROB and EXTENDDDAYS commands – must be supplied. There are no default values.
- 4) The parameters are proportions, not percents. For example, if you wanted to increase the leave length by 50%, use “.5”, not “50”. Zero is allowed.
- 5) The two example commands are equivalent.
- 6) For leaves that get extended, the EXTENDDDAYS and EXTENDPROPORTION commands shift the distribution in a linear fashion. For a particular leave type, if the original length in the absence of a program is “x” days, the value of the EXTENDDDAYS parameter is “a”, and the value of the EXTENDPROPORTION parameter is “b”, and the leave is extended (by “passing” the probability sieve), then the leave is extended by “a + bx” days, and the length in the presence of the program is “a + (1+b)x” days. This length may be subject to certain limits, depending on the maximum allowable program leave length and whether the FMLAPROTECTIONCONSTRAINT is in effect.

EXTENDLEAVES command

EXTENDLEAVES YES|NO “,”

Example:

```
extendleaves Yes;
```

Notes:

- 1) Specifies whether the presence of the paid leave program will, on average, lengthen leaves. If this command is not included, the default of “no” will be in effect, meaning that the average leave length (conditional on a person’s demographic characteristics) will not be affected by the program (although the propensity to take a leave might be affected).

EXTENDOLD command

EXTENDOLD YES|NO “,”

Example:

```
extendold yes;
```

Notes:

- 1) Specifies whether the old (prior to 7/17/2016) version of the leave extension code should be used. “YES” indicates that the old version should be used; “NO” indicates that the newer version that uses the parameters EXTENDPROB, EXTENDDDAYS, and EXTENDPROPORTION should be used.
- 2) If this command is not included, the default of “NO” is in effect.

EXTENDPROB command

EXTENDPROB [OH “=” *real_number*] [MD “=” *real_number*] [NC “=” *real_number*] [IC “=” *real_number*] [IS “=” *real_number*] [IP “=” *real_number*] [DEFAULT “=” *real_number*] “,”

Examples:

```
extendprob OH=1 MD=.9 NC=.75 IC=.25 IS=.25 IP=.25;
```

```
extendprob OH=1 MD=.9 NC=.75 default=.25;
```

Notes:

- 1) This command sets the probability that, in the presence of a paid leave program, a leave would be extended. The probability can differ by leave type.
- 2) The types of leave are: OH (own health); MD (maternity disability); NC (new child); IC (ill child); IS (ill spouse); and IP (ill parent).
- 3) If the EXTENDLEAVES command is “yes”, and the EXTENDOLD command is “no” or is not supplied, then this command – and also the EXTENDDDAYS and

EXTENDPROPORTION commands – must be supplied. There are no default values.

- 4) The parameters are probabilities, so must lie between zero and one (zero and one are valid numbers).
- 5) The two example commands are equivalent.

FMLAPROTECTIONCONSTRAINT command

FMLAPROTECTIONCONSTRAINT YES|NO “;”

Example:

```
fmlaprotectionconstraint yes;
```

Notes:

- 1) Indicates whether or not leaves that are extended in the presence of a program that originally were less than 12 weeks in length are constrained to be no longer than 12 weeks in the presence of the program.
- 2) If this command is not present the default value of NO is applied.

FORMULA command

FORMULA YES|NO “;”

Example:

```
formula yes;
```

Notes:

- 1) Indicates whether or not the wage replacement formula for a proposed Massachusetts program should be used instead of using the REPLACEMENTRATIO command. The formula sets the wage replacement ratio as a function of the ratio of the worker’s weekly wage to the statewide average weekly wage of \$1181.29. This function is:

Ratio of Worker’s Wage to \$1181.29	Replacement Ratio
Less than .3	.95
.3 to .5	.90
.5 to .8	.80
Greater than .8	.66

- 2) If the FORMULA command is not present, the default of NO is implied.
- 3) If the FORMULA command is YES, it overrides the REPLACEMENTRATIO command if present, and it overrides the REPLACEMENT ratio default of 1.0 if not present.

- 4) If the FORMULA command is NO, the REPLACEMENTRATIO command or its default is in force.

FORMULA2 command

FORMULA2 {RATE “=” *real_number* TOP “=” *real_number*} RATE “=” *real_number*
“,”
“,”

Example:

```
formula2 rate=.90 top=300 rate=.75 top=750 rate=.50;
```

Notes:

- 1) This command specifies a schedule of weekly benefits that vary with the level of the weekly wage. Rates vary by wage bracket. In the example above, weekly benefits would amount to 90% of the first \$300 of weekly wages, 75% of weekly wages between \$300 and \$750, and 50% of weekly wages in excess of \$750. For example, an eligible person with weekly wages of \$1,000 would receive \$732.50 in benefits (= .90x300 + .75x(750-300) + .50x(1000-750).
- 2) The schedule is specified by pairs of rates and corresponding tops of brackets in increasing order of bracket tops. The last rate applies to all income exceeding the previous bracket and so has no top. If there is a limit on the amount of benefits that are allowed, this limit is given by the WEEKLYBENCAP command.
- 3) There must be at least two rates. If there is only a single rate, use the REPLACEMENTRATIO command instead.
- 4) Pairs must be increasing in bracket tops, for example “rate=.5 top=750 rate=.33 top=500” is not allowed.
- 5) If this command is present, there can be no “FORMULA YES” command present, although “FORMULA NO” would be O.K.
- 6) This command overrides the REPLACEMENTRATIO command if both are present.

GOVERNMENT command

GOVERNMENT YES|NO “,”

Example:

```
Government yes;
```

Notes:

- 1) Indicates whether or not government workers are included in the analysis.
- 2) If the command is not present, the default of YES is implied, meaning that government workers are included in the analysis of leaves.

LEAVEPROBABILITYFACTORS command

LEAVEPROBABILITYFACTORS [OH “=” *real_number*] [MD “=” *real_number*] [NC “=” *real_number*] [IC “=” *real_number*] [IS “=” *real_number*] [IP “=” *real_number*] [DEFAULT “=” *real_number*] “;”

Examples:

```
leaveprobabilityfactors OH=.9 MD=1.2 NC=1.2 IP=.6 default=.8;
leaveprobabilityfactors default=1;
```

Notes:

- 1) This command factors the probability of needing or taking a leave for each type of leave. Factors greater than one increase the probability of a leave above that calculated by the model’s behavioral equations, while factors less than one decrease the probability. In the first example above, the probability of needing or taking an “own-health” leave is decreased by 10 percent, while the probability of needing or taking a maternity disability leave is increased by 20 percent. The factors must be non-negative numbers.
- 2) If this command is omitted, the probability factors are effectively set to one for each type of leave. The second example is equivalent to not having the command present at all.
- 3) The types of leave are: OH (own health); MD (maternity disability); NC (new child); IC (ill child); IS (ill spouse); and IP (ill parent).
- 4) The default option sets the probability factors for the types of leaves that are not specified directly in this command. The default option is mandatory if not all six leave types are specified directly.

MAXWEEKS command

MAXWEEKS [OH “=” *positive_integer*] [MD “=” *positive_integer*] [NC “=” *positive_integer*] [IC “=” *positive_integer*] [IS “=” *positive_integer*] [IP “=” *positive_integer*] [DEFAULT “=” *positive_integer*] “;”

Examples:

```
maxweeks OH=12 MD=6 NC=24 IC=7 IS=10 IP=20;
maxweeks default=12;
maxweeks MD=6 NC=24 IC=7 IS=10 default=12;
```

Notes:

- 1) This command sets the maximum number of paid weeks for each type of leave.
- 2) The types of leave are: OH (own health); MD (maternity disability); NC (new child); IC (ill child); IS (ill spouse); and IP (ill parent).
- 3) The default option sets the maximum number of paid weeks for the types of leave that are not specified in the MAXWEEKS command.
- 4) This command must be supplied. There are no default values.

MISSINGVALUE command

MISSINGVALUE *value* “.”

value ::= Any numeric or character value enclosed in double quotes.

Example:

```
missingvalue " .";
```

Notes:

- 1) This value will be used in output files when there is no value for that variable. For example, it would be used to indicate the leave length for a person who did not take a leave.
- 2) If this command is not supplied, a value of “.” (period) will be used. This is the default missing value in Stata for a numeric variable.

NEEDERSFULLYPARTICIPATE command

NEEDERSFULLYPARTICIPATE YES|NO “.”

Example:

```
needersfullyparticipate no;
```

Notes:

- 1) Indicates the participation behavior of leave needers who said they did not take a leave because it was unaffordable (in the absence of a program). (Leave needers who did not say that they did not take a leave because it was unaffordable are called “ultimate” leave needers. They do not participate in the program.) If “yes” is specified, all needers who said they did not take a leave because it was unaffordable and whose leave would be longer than the waiting period will participate in the program. If “no” is specified, needers who said they did not take a leave because it was unaffordable will participate according to the same parameters that apply to leave takers. Whether or not “yes” or “no” is specified, if a needer’s leave length would have been equal to or shorter than the waiting period, then they would not take a leave and would remain an “ultimate” leave needer.
- 2) If the command is not present, the default of NO is implied, meaning that leave needers’ participation behavior will be the same as leave takers.

RANDOMSEED command

RANDOMSEED YES|NO “;”

Example:

```
randomseed yes;
```

Notes:

- 1) Indicates whether or not the seed for the random number wheel will be randomly set. If “yes” is specified, the seed will be randomly chosen based on the computer’s clock. This will result in different outcomes each time the model is run with the same command file. If “no” is specified, the standard seed will be used, and different runs with the same command file will result in identical outcomes.
- 2) If the command is not present, the default of NO is implied, meaning that the standard seed will be used.

REPLACEMENTRATIO command

REPLACEMENTRATIO *real_number* “;”

Example:

```
replacementratio .5;
```

Notes:

- 1) This command specifies the weekly benefit amount as a proportion of weekly pay.
- 2) If the command is not included, a default of 1.0 is applied, that is, the benefit is full pay.

SEANALYSIS command

SEANALYSIS YES|NO “;”

Example:

```
seanalysis yes;
```

Notes:

- 1) When used in conjunction with the CLONEFACTOR command, indicates if the weights should not be adjusted by dividing by the clone factor. This facilitates the calculation of standard errors and confidence intervals for the simulator error. When the CLONEFACTOR and SEANALYSIS commands are used together, the output files contain the output for several independent simulator runs. The number of independent runs is given by the clone factor, and each is identified by the “iclone” variable. These runs can be conveniently processed by statistical software to separately calculate, for each run, summary statistics such as number

of leaves taken, program benefit costs, and so on; for example, by the “collapse” command in Stata. Summary statistics on the collapsed file can then be used to easily calculate simulator standard errors or confidence intervals.

- 2) If the command is not present, the default of “no” is applied.
- 3) In order to limit the size of the “main” output file, the command suppresses the output of ACS variables as long as the DETAIL command is set to 7 or less. If some – but not all – ACS variables are desired to be output to the “main” output file, the variable names should be placed in the “include” file (see the FILE command) and the DETAIL command should be set at 7 or less.

SELFEMPLOYED command

SELFEMPLOYED YES|NO “,”

Example:

```
selfemployed yes;
```

Notes:

- 1) Indicates whether or not self-employed workers are included in the analysis.
- 2) If the command is not present, the default of NO is implied, meaning that self-employed workers are not included in the analysis of leaves.

STATEOFWORK command

STATEOFWORK *positive_integer* “,”

positive_integer ::= a positive integer.

Example:

```
stateofwork 11;
```

Notes:

- 1) If the analysis is to be done for persons who *work* in particular state – rather than for *residents* of a particular state or region, use this command to supply the FIPS code for that state. In this example, the command is specifying an analysis for persons who work in the District of Columbia. In this case, include ACS state files for the surrounding states that include workers who commute to the target state in the Input folder, and include the names of these ACS files in the PUMSH and PUMSP input files.
- 2) If this command is not supplied, the analysis is performed for worker residents of the region implied by the ACS input file/s.

TAKEUPRATES command

TAKEUPRATES [OH "=" *real_number*] [MD "=" *real_number*] [NC "=" *real_number*] [IC "=" *real_number*] [IS "=" *real_number*] [IP "=" *real_number*] [DEFAULT "=" *real_number*] ";"

Examples:

```
takeuprates OH=.8 MD=.9 NC=.85 IC=.7 IS=.6 IP=.6;
takeuprates default=.667;
takeuprates MD=.9 NC=.85 IC=.7 IS=.6 default=.667;
```

Notes:

- 5) This command sets the take-up rate for each type of leave, that is, the proportion of eligible leave takers who decide to use the program.
- 6) The take-up rates set by this command may be decreased by the BENEFITEFFECT command.
- 7) The types of leave are: OH (own health); MD (maternity disability); NC (new child); IC (ill child); IS (ill spouse); and IP (ill parent).
- 8) The default option sets the take-up rate for the types of leave that are not specified in the TAKEUPRATES command.
- 9) This command must be supplied. There are no default values.

TOPOFFMINLENGTH command

TOPOFFMINLENGTH *ineger* ";"

Example:

```
topoffminlength 20;
```

Notes:

- 1) This command works with the TOPOFFRATE1 command by limiting the top-off behavior to leaves with a certain minimum length in days given by this command. In this example, employers will not top-off benefits for leaves less than 20 days or 4 weeks in length. For these short leaves, employers who pay 100 percent of wages will continue to pay full wage replacement instead of topping-off benefits. For leaves 20 days or longer, the top-off rate given by the TOPOFFRATE1 command will apply.
- 2) If this command is missing, the default length of zero is applied, and the TOPOFFRATE1 command is not constrained by a minimum leave length.

TOPOFFRATE1 command

TOPOFFRATE1 *real_number* “;”

Example:

```
Topoffrate1 .5;
```

Notes:

- 3) This command sets the proportion of employers who pay 100 percent of wages in the absence of a program who “top-off” benefits up to full pay in the presence of a program. For example, if benefits replace 75 percent of the weekly wage, an employer who tops-off benefits pays the difference between 75 percent of wages and 100 percent of wages in the weeks the employee is on the program.
- 4) If this command is missing, the default rate of zero is applied.

WAITINGPERIOD command

WAITINGPERIOD [OH “=” *integer*] [MD “=” *integer*] [NC “=” *integer*] [IC “=” *integer*] [IS “=” *integer*] [IP “=” *integer*] [DEFAULT “=” *integer*] “;”

integer ::= an non-negative integer.

Examples:

```
waitingperiod OH=1 MD=0 NC=0 IC=1 IS=1 IP=1;
waitingperiod default=0;
waitingperiod MD=0 NC=0 IC=7 default=1;
```

Notes:

- 1) The waiting period, in weeks, before paid benefits begin.
- 2) The types of leave are: OH (own health); MD (maternity disability); NC (new child); IC (ill child); IS (ill spouse); and IP (ill parent).
- 3) The DEFAULT optional field sets the waiting period for the types of leaves that are not specified in the WAITINGPERIOD command.
- 4) This command must be supplied. There are no default values.

WEEKLYBENCAP command

WEEKLYBENCAP *real_number* “;”

Example:

```
weeklybencap 500;
```

Notes:

- 1) This command sets the maximum weekly benefit paid by the program.
- 2) If this command is not included, the default of \$1,000,000 is applied, effectively meaning that there is no cap.

WEIGHTFACTOR command

WEIGHTFACTOR real_number “,”

Example:

```
weightfactor 1;
```

Notes:

- 1) This command multiplies the person weight on the ACS PUMS record.
- 2) Use this if you concatenate PUMS files together (the factor would be less than one) or if you subsample the PUMS file (the factor would be greater than one).
- 3) The final weight used in the simulator is the person weight on the ACS PUMS times this weighting factor, divided by the CLONEFACTOR value.
- 4) Do not use this if you are using a 2-, 3-, or 5-year PUMS product, since the Census Bureau has already applied a weighting factor to these files.
- 5) If you do not include this command, the default of “1” is applied.