**Issue Brief Outline: Comparing the Results of ACM/IMPAQ models**

1. Introduction
   1. Project Overview

Access to and use of paid and unpaid leave are critical to an individual’s financial security and quality of life (Winston, 2017). The United States remains an outlier when it comes to paid leave. Nearly every other developed country provides paid maternity leave, and most advanced industrial countries offer extended paid medical and parental leaves. In the US, there is no federal requirement for paid leave or sick days, which leaves many individuals, especially low-income workers, facing difficult tradeoffs. In 2016, only 14 percent of all US workers have access to paid family leave through their employers, and 68 percent have paid sick leave (BLS, 2016).

However, in recent years, paid family and medical leave programs have received considerable support from both sides of the political aisle. Some states and municipalities have moved forward on paid family leave. California enacted paid family leave legislation in 2002, New Jersey in 2008, Rhode Island in 2013, New York in 2016 (effective January 2018), District of Columbia in 2017 (effective July 2020), and Washington in 2017 (effective January 2020). Several states and municipalities using government funds have examined the feasibility of instituting paid leave polices in their constituency. However the sophistication and reliability of these methods are inconsistent. In order to support different state’s quantitative evaluation of proposed paid leave policy, we are creating a ***Leave Simulation Model*** along with the **US Department of Labor**. This model will offer a convenient and rigorous way for any state or municipality to test different scenarios of paid-leave programs and to estimate the implications on costs in benefits paid out as well as assess the costs of administering a program.

The IMPAQ model is designed to be similar in purpose to the original simulation model built by IWPR, Randy Abelda, and Alan Clayton-Matthews (the ACM model). However, the original ACM model was built in proprietary programming languages and requires advanced programming knowledge to use. The IMPAQ model is built in open-source programming languages and designed to be more accessible and usable to a broader audience.

1. Purpose of comparing ACM/IMPAQ models

This issue brief is intended to provide a benchmark comparison between the two models against real-world leave program statistics to demonstrate the reliability of both the original and new versions at modeling real-world leave taking.

The IMPAQ model is not a pure replication of the ACM model. While similar in general purpose, the IMPAQ development team has made several changes for ease of use and generalizability of the model. While the intent is to keep the estimates close to ACM estimates and empirically observed leave taking data, these adjustments have slight impacts on program estimates. The purpose of this issue brief is to show how the ACM and the new IMPAQ simulation model estimates differ and how both models compare to real-world program statistics. We then discuss the differences in results and how differences in the model structure could explain them.

We do this by comparing actual statistics reported by three states with leave programs with appreciable historical data to observe: California, New Jersey, and Rhode Island. Corresponding with the timeframes of the 2012-2016 ACS 5-year survey data set we use in the simulation model, we generally compare the 5 year averages of these states from 2012-2016. Rhode Island has only been active from 2014-2016, and so averages from only those years are used for Rhode Island.

1. Methodology

As We perform two different types of model tests.

***Comparing simulated and published program costs.*** The ability to closely predict total program cost is arguably the most important feature of a good microsimulation model. There are three states with sufficient historical data on benefit outlays to perform this test on: California, New Jersey, and Rhode Island. For each state, we specified the model parameters so that they can approximate the eligibility rules and benefit payout schedules as closely as possible to the actual rules of the programs. Upon completion of simulation under a given simulation method for a given state, we compute the weighted sum of benefits received by each ACS worker in that state, with weight being the population represented by the worker (i.e. the ACS variable *PWGTP*). This weighted sum is our simulated total program cost and is then compared against the published program outlays of the same state.

***Comparing simulated and observed population level statistics.*** We recognize that the robustness of a microsimulation model cannot be fully verified if we can only confirm that the model can produce good estimates for the final program cost. In addition, we need to validate the model’s capability to approximate the real-world mechanisms by examining a series of key intermediate outputs. In our case, we consider the following intermediate outputs at the population level:

* Total number of workers eligible for the program
* Total number of leave takers receiving benefits
* Total number of leave needers receiving benefits

All of these population level statistics can be computed directly based on the respective variables observed for each worker in the FMLA data, allowing the comparison with the simulated counterparts for model testing purpose.

1. Results
   1. Compare R, Python, ACM models:
      1. Population leave needing/taking estimates
      2. Length of leave estimates
      3. Number of eligible workers for program
      4. Program cost estimates
   2. Discuss results
2. Conclusion
   1. Summary of findings
   2. Explanations for differences
   3. Next steps

**Mock Graphs for Results Section**

Bibliography

Winston, P. (2017). Exploring the Relationship between Paid Family Leave and the Well-being of Low-Income

Families: Lessons from California. Washington, DC: U.S. Department of Health and Human Services, Office of the

Assistant Secretary for Planning and Evaluation, Office of Human Services Policy.

Bureau of Labor Statistics (2016). Table 32. Leave benefits: Access, Civilian Workers, National Compensation Survey, March 2016. Retrieved from https://www.bls.gov/ncs/ebs/benefits/2016/ownership/civilian/table32a.htm.

Appendix

**ACM Parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter** | **CA** | **NJ** | **RI** |
| DEPENDENTALLOWANCE | 10 | 10 | 10 |
| ELIGIBILITYRULES | a\_earnings=300 | a\_earnings=8400 | a\_earnings=3840 |
| EXTENDLEAVES | yes | Yes | yes |
| GOVERNMENT | No | No | no |
| MAXWEEKS | OH=52, MD=52, NC=6, IC=6, IS=6, IP=6 | OH=26, MD=26, NC=6, IC=6, IS=6, IP=6 | OH=30, MD=30, NC=4, IC=4, IS=4, IP=4 |
| REPLACEMENTRATIO | 0.55 | 0.66 | 0.6 |
| STATEOFWORK | CA | NJ | RI |
| TAKEUPRATES | default=1 | default=1 | default=1 |
| WAITINGPERIOD | 1 | 1 | 1 |

**IMPAQ Parameters**

| **Parameter** | **California** | **New Jersey** | **Rhode Island** |
| --- | --- | --- | --- |
| ann\_hours | NULL | NULL | NULL |
| bene\_effect | FALSE | FALSE | FALSE |
| bene\_level | 0.55 | 0.66 | 0.6 |
| bond\_uptake | 1 | 1 | 1 |
| dependent\_allow | 10 | 10 | 10 |
| dual\_receiver | 0 | 0 | 0 |
| Earnings | 300 | 8400 | 3840 |
| ext\_base\_effect | TRUE | TRUE | TRUE |
| extend\_days | 0 | 0 | 0 |
| extend\_prob | 0 | 0 | 0 |
| extend\_prop | 0 | 0 | 0 |
| fmla\_protect | FALSE | FALSE | FALSE |
| full\_particip\_needer | FALSE | FALSE | FALSE |
| GOVERNMENT | FALSE | FALSE | FALSE |
| illchild\_uptake | 1 | 1 | 1 |
| illparent\_uptake | 1 | 1 | 1 |
| illspouse\_uptake | 1 | 1 | 1 |
| impute\_method | Logit | logit | logit |
| matdis\_uptake | 1 | 1 | 1 |
| maxlen\_bond | 30 | 30 | 20 |
| maxlen\_DI | 260 | 130 | 150 |
| maxlen\_illchild | 30 | 30 | 20 |
| maxlen\_illparent | 30 | 30 | 20 |
| maxlen\_illspouse | 30 | 30 | 20 |
| maxlen\_matdis | 260 | 130 | 150 |
| maxlen\_own | 260 | 130 | 150 |
| maxlen\_PFL | 30 | 30 | 20 |
| maxlen\_total | 260 | 130 | 150 |
| minsize | NULL | NULL | NULL |
| own\_uptake | 1 | 1 | 1 |
| sens\_var | unaffordable | unaffordable | unaffordable |
| SELFEMP | FALSE | FALSE | FALSE |
| topoff\_min\_length | 0 | 0 | 0 |
| topoff\_rate | 0 | 0 | 0 |
| waiting\_period | 5 | 5 | 5 |
| week\_bene\_cap | 1216 | 594 | 795 |
| week\_bene\_cap\_prop | NULL | NULL | NULL |
| week\_bene\_min | 50 |  | 89 |
| weeks | NULL | NULL | NULL |