MARYLAND FAMILY AND MEDICAL LEAVE INSURANCE (FAMLI) PROGRAM: PHASE II COST ANALYSIS REPORT

Submitted to
Maryland Department of Labor

Submitted by
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This report includes an actuarial report in Appendix II from Milliman, Inc.

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Executive Summary

This report is a comprehensive cost analysis of the Family and Medical Leave Insurance (FAMLI) Program established by SB 275 (2022) (CH. 48) and modified by SB 828 (2023). The focus of the analysis is on the cost of maintaining the solvency of the FAMLI Fund and paying benefits to covered individuals.

We began by estimating the expected growth of FAMLI utilization rates, drawing insights from other states' experiences in implementing similar programs. By controlling for program features and demographics, we constructed empirical models for utilization rates based on the actual claim statistics of these states. Based on these models, we recommend the following annual growth rates of utilization rates conditional on leave types.

Table 1. Suggested Growth Rate of the Utilization Rates Over Program Years for Maryland

Year	Bonding	Care	Medical
2026	10% (Relative to baseline model)	0% (Relative to baseline model)	0% (Relative to baseline model)
2027	-3.4%	5%	20%
2028	2.7%	2.7%	10%
2029	2.7%	2.7%	5%
2030	2.7%	2.7%	2.7%

Notes: "Bonding" refers to the family leaves associated with bonding with newly born babies or adopted/fostered kids. "Care" refers to the family leaves taken to care for a family member with a serious health condition. "Medical" refers to leaves taken for self-medical conditions and pregnancy-related medical complications.

We then conducted three independent and interrelated studies to make recommendations on the total rate of contribution to be set by October 1, 2024, required to establish and maintain a solvent program that will begin paying benefits on January 1, 2026. Based on the policy parameters established in SB 275 and SB 828, and relying on administrative records, assumptions on labor market and financial market trends (e.g., employment growth, inflation, etc., see Appendix Table 1), as well as data from national surveys and publicly available reports from other states with similar programs, the three studies adopted econometric modeling (Chapter 2), the DOL Worker PLUS Model and linear optimization model (Chapter 3), and an actuarial study by Milliman Inc. (Appendix II).

Each of the three studies:

1. Provided multiple scenarios for paying back the start-up funding, thus spreading out the costs and minimizing the impact on the contribution rate (e.g., payback in 1, 5, 7, 10 years).

2. Examined multiple scenarios for a range of possible start-up administrative cost scenarios based on reasonable assumptions (e.g., $40, $60, $90 million for start-up administrative expenses).
3. Analyzed multiple possible scenarios for ongoing program administrative costs expressed as a percentage of trust-fund assets collected in a year (e.g., 3%, 5%, and 8%).
4. Explored a range of possible scenarios based on a range of possible target fund levels that should be maintained in any given year, set at reasonable or recommended levels (e.g., 110%, 120%, 140% of expected annual outgo).
5. Provided recommendations on sustainably and smoothly "spending down" the trust fund assets that will be built up in 2024-2025 before any benefits are paid.

Our remarks for the impact from the above 5 varying factors can be summarized as follows:

- **Payback Scheduling.** The pay-back schedule has a minimal impact on the required contribution ratios when compared to the levels of administrative expenses and target fund ratios. The primary reason for this is that the amount of funds to be repaid is relatively small in comparison to the overall annual fund collection. This is a finding consistent across various funding levels (as shown in Chapter 2 Table 2.3 and Appendix II Table 7). Payback scheduling in 5, 7, and 10 years yields similar outcomes, while a one-year payback schedule necessitates slightly higher contribution rates. When the target fund level is at most 120%, the impact of the payback schedule on the contribution rate is minimal regardless of start-up funds and administrative cost assumptions. However, when the target fund level is 140%, there is a significant decrease in the optimal contribution rate when the required payback year is increased from 1 year to 5 years regardless of start-up funds and administrative cost percentage. **Therefore, it is advisable to set up a pay-back schedule greater than one year.**
- **Start-up Funds.** Higher levels of administrative expenses are associated with higher contribution rates needed to maintain a balanced program. However, the impact of start-up expenses on contribution rates is relatively small, as shown in Chapter 2 Table 2.4 and Appendix II Tables 2-6. The computational results in Chapter 3 show that start-up funds ranging from $40 to $90 million do not result in a noticeable difference in the optimal contribution rates when the target fund level is no greater than 120%. For target fund levels greater than 120%, the impact of start-up funds on contribution rates is still relatively small but visible. This is because the amount of start-up funds is much smaller as compared to annual contributions. It was also found that the levels of start-up funds have a more pronounced influence on the contribution rates required for a 1-year payback schedule, compared to their impact on contribution rates for 5, 7, and 10-year payback schedules.
- **Ongoing Program Administrative Expenses.** Higher levels of ongoing administrative expenses require higher levels of contribution rates to attain target fund levels. This factor

has a larger impact on the needed contribution rates, compared to payback scheduling and levels of start-up expenses, see Chapter 2 Table 2.4 and Appendix II Tables 2-6. Therefore, an accurate estimation of administrative costs is critical to predict the yearly balance and determining the optimal contribution rate.

- **Target Fund Ratio.** The target fund level is identified as the most significant factor in influencing the optimal contribution rate as it leads to the largest difference in optimal rates when the target fund level increases from 100% to 140%. Though not surprising, we did confirm that maintaining a target fund ratio throughout the projection period (2026-2030) requires a significantly higher contribution rate than simply targeting the ratio in the initial year (2026) of the benefit payment. This finding highlights the importance of smoothly "spending down" the trust fund assets that will be accumulated in 2024 and 2025 before any benefits are paid. This finding is demonstrated in the comparison of the contribution rates in Chapter 2 Tables 2.1 to 2.2.
- **"Spending-Down".** With the "spending-down" consideration, we recommend targeting only the initial year's fund ratio. That is, the contribution rate is used to target an initial fund ratio of 100%, 110%, 120%, 130%, and 140% in 2026. The initial fund ratio is calculated as the ratio of the fund balance on December 31, 2026, to the total expenditure in 2026.

Our findings on the recommended contribution rates from the three studies can be summarized as follows.

Based on the projections of different scenarios of expense levels and target fund ratios, the cost analysis in Chapter 2 suggests a contribution rate ranging from 0.42% to 0.46% for both employers and employees. The effective contribution rate, which is smaller than the total contribution rate because employers with fewer than 15 employees are not required to contribute, ranges from 0.77% to 0.86%. Our econometric findings show that when the initial target fund ratio is at a relatively high level (e.g., 130% or 140%), the fund ratio tends to stay at high levels over time. However, when the initial ratio is low (e.g., 100% or 110%), the fund ratio tends to be lower in the long run (e.g., a 100% target ratio in 2026 results in a 38% ratio in 2030). These ratios, however, tend to be more stable as the program matures. That is, the variation of the fund ratios becomes smaller in the latter years of the projection period (2028-2030). It is essential to regularly monitor and assess the fund's performance to ensure it stays on track to maintain solvency.

Table 2. Summary Table of the Recommended Projections using Econometric Modeling

PROJ. #	Scenarios	Employer contribution rate (%)	Employee contribution rate (%)	Effective contribution rate (%)
1	3% Exp; 110% Target Ratio	0.415	0.415	0.77
2	3% Exp; 120% Target Ratio	0.440	0.440	0.81
3	5% Exp; 110% Target Ratio	0.425	0.425	0.79
4	5% Exp; 120% Target Ratio	0.445	0.445	0.83
5	8% Exp; 110% Target Ratio	0.440	0.440	0.81
6	8% Exp; 120% Target Ratio	0.460	0.460	0.86

Note: Five-year payback scheduling and 60 million start-up fund are assumed in the table.

Optimization studies performed in Chapter 3 provide the minimal contribution rates under different administrative costs, start-up funding and payback schedules to meet the various initial target fund levels. Table 3 shows the optimal contribution rates for different start-up funds, administrative cost percentages, and initial target fund levels under a five-year payback schedule. The results are not sensitive to the length of the payback period.

Table 3. Summary Table of the Recommended Projections using Optimization

Admin Cost Percentage	3%			5%			8%		
Start-Up Fund (millions)	40	60	90	40	60	90	40	60	90
100% Target Ratio	0.7945	0.7906	0.7847	0.8087	0.8047	0.7987	0.8310	0.8269	0.8207
110% Target Ratio	0.8350	0.8312	0.8255	0.8507	0.8468	0.8410	0.8755	0.8715	0.8655
120% Target Ratio	0.8756	0.8719	0.8664	0.8929	0.8892	0.8836	0.9203	0.9164	0.9106
130% Target Ratio	0.9164	0.9128	0.9075	0.9354	0.9317	0.9263	0.9654	0.9617	0.9560
140% Target Ratio	0.9572	0.9538	0.9486	0.9780	0.9745	0.9692	1.0109	1.0073	1.0018

Milliman's actuarial study (Appendix II) provides five projections (Table 4 below or Appendix II Table 1) to maintain a long-run fund ratio of 35%. The contribution rate for both employers and employees ranges from 0.40% to 0.48%, resulting in an effective total contribution rate ranging from 0.74% to 0.88%. This is assuming ongoing administrative expenses at 5% for family claims and 7% for medical claims, along with start-up costs of 67 million. The study also proposes different contribution rate adjustments based on the initial target fund ratios. For a lower (higher) initial target ratio, an increase (decline) in contribution rate is recommended in later years.

Table 4. Estimated Initial FAMLI Contribution Rates from the Actuarial Analysis Baseline Assumptions

PROJ. #	Scenarios	Employer contribution rate (%)	Employee contribution rate (%)	Effective total contribution rate (%)
1	100% Target Ratio	0.40	0.40	0.74
2	110% Target Ratio	0.42	0.42	0.77
3	120% Target Ratio	0.44	0.44	0.81
4	130% Target Ratio	0.46	0.46	0.85
5	140% Target Ratio	0.48	0.48	0.88

The three independent and interrelated studies yield largely consistent results. The estimated contribution rates associated with the first-year target fund ratios of 110-140% are presented in Table 5 across all three studies. For an assumption of a medium-level administrative expenses, the total contribution rates (summing employers' and employees') is 0.83-0.85% for an initial target fund ratio of 110%,0.87-0.89% for 120%, 0.89-0.96% for 130%, and 0.93-1.01% for 140%. Table 6 presents the projected fund ratios in subsequent years, based on the estimated contribution rates for the three studies outlined in Table 5. These projections assume the adoption of a medium level of ongoing administrative expenses. To smoothly "spending down" the trust fund assets that will be built up over the first 5 quarters, we recommend an initial year target fund ratio around 110-120%.

Table 5. Total Contribution Rates from the Three Independent Studies

Study	Econometric Analysis and Simulation (Chapter 2)				DOL Worker PLUS Simulation & Optimization (Chapter 3)				Actuarial Study by Milliman's Inc. (Appendix II)			
Ongoing Admin. Expenses	**Target Fund Ratio**				**Target Fund Ratio**				**Target Fund Ratio**			
	110 %	**120 %**	**130 %**	**140 %**	**110 %**	**120 %**	**130 %**	**140 %**	**110 %**	**120 %**	**130 %**	**140 %**
Low	0.83	0.88	0.91	0.95	0.83	0.87	0.91	0.95	0.82	0.85	0.89	0.93
Medium	0.85	0.89	0.93	0.98	0.85	0.89	0.93	0.97	0.83	0.87	0.91	0.95
High	0.88	0.92	0.96	1.01	0.87	0.91	0.96	1.01	0.85	0.89	0.93	0.97

Notes:

1.. The ongoing administrative expenses are evaluated at three levels: low, medium, and high. In Chapter 2 and Chapter 3, "low", "medium" and "high" means administrative expenses at respectively 3%, 5%, and 8% of trust-fund assets collected in a year. In Appendix II, the ongoing expenses are categorized as low (expenses equal to 3% of family costs plus 5% of medical costs), medium (expenses equal to 5% of family costs plus 7% of medical costs), and high (expenses equal to 7% of family costs plus 9% of medical costs).

2. All three studies assumed 0% interest for repayment of the loan and 3% investment income (justifications are provided in Chapters 2 and Appendix II).

3. All three studies considered the potential growth of the utilization rates in the initial years of the program. These growth rates in Chapters 2 and 3 are based on our Chapter 1 estimates.

Table 6. Fund Ratios in Subsequent Years

Study	Econometric Analysis and Simulation (Chapter 2)				DOL Worker PLUS Simulation & Optimization (Chapter 3)				Actuarial Study by Milliman's Inc. (Appendix II)			
Fund Ratios in Subsequent Years	**Target Fund Ratio (%)**				**Target Fund Ratio (%)**				**Target Fund Ratio (%)**			
	110	**120**	**130**	**140**	**110**	**120**	**130**	**140**	**110**	**120**	**130**	**140**
2027	103	117	130	147	100	115	129	144	116	132	147	162
2028	91	108	125	146	91	110	129	147	108	127	145	159
2029	78	99	119	145	80	103	126	149	99	121	141	155
2030	67	84	107	135	68	96	124	151	89	115	137	150

Note: This table presents future fund ratios based on estimated contribution rates from three studies (Table 5), assuming medium ongoing administrative expenses, for various initial fund ratios.

In conclusion, this comprehensive project delivers strategic policy recommendations for the Maryland FAMLI program, in line with the delineated project scope. It underscores the intricate process of determining sustainable contribution rates and stresses the importance of an integrated approach for reaching the solvency of the FAMLI program. The findings drawn from the current data and assumptions highlight the necessity for continual evaluation and adjustments, as changes in market conditions and other factors can affect the outcome. Therefore, it's crucial to persistently monitor and adapt to these changes to ensure the successful administration and maintained solvency of the FAMLI program.

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Chapter 1
Estimating Growth of The Program Utilization Rates

1.1 Empirical Methodology and Data

A critical parameter needed to assess the solvency of any Family and Medical Leave Insurance (FAMLI) program is its expected utilization rate.[1] While simulation analyses in Chapters 2-3 of our report can generate a "baseline" utilization rate for the first year of program implementation, they cannot project the growth of utilization rates over time. This issue forms the crux of our analysis in this section.

Our analysis begins with the understanding that program utilization is influenced by factors such as program features (such as maximum duration of leave, wage replacement rate, maximum weekly benefit, job protection provision, extent of public outreach, etc.) and state demographics (such as birth rate, morbidity and mortality rates, etc.). While this understanding is also shared by many other actuarial studies, our approach differs by relying on actual claims data as reported by states that have already implemented their FAMLI programs. We aim to construct an empirical model of utilization rates based on this data and predict the growth of the Maryland FAMLI program's utilization rates, factoring in its specific features and the state's demographics.

To serve this purpose, we conducted an exhaustive search for state FAMLI acts and periodic reports on program features and claim statistics.[2] We focus on approved claims as these directly relate to anticipated benefit payments. However, whenever available, we also incorporate data on submitted claims to enrich our analysis. As our primary interest lies in estimating the utilization

[1]States do not have a uniform definition for the utilization rate. In our study, we define the *utilization rate* as the number of approved claims divided by the total number of employed workers in the state. In contrast, we define the *claim incidence rate* as the number of approved claims divided by the total number of *eligible* workers in the state, where eligibility is determined by different criteria in various states, such as the number of hours worked during a given time period. Since the claim statistics, as reported by states, typically do not include data on the number of eligible workers, the calculation of the utilization rate is easier than that of the incidence rate. This is the primary reason for our adoption of the utilization rate as the main variable to measure the degree of program utilizations in a given state.

[2]A non-exhaustive list of the data sources conditional on states include: California: https://edd.ca.gov/siteassets/files/pdf_pub_ctr/de2530.pdf; https://www.cga.ct.gov/2020/rpt/pdf/2020-R-0055.pdf; https://data.edd.ca.gov/browse?category=Disability+Insurance&utf8=%E2%9C%93. New Jersey: https://nj.gov/labor/myleavebenefits/about/stats/; https://www.state.nj.us/labor/forms_pdfs/tdi/ANNUAL_FLI-TDI_REPORT_FOR_2010.pdf; https://www.nj.gov/labor/forms_pdfs/tdi/ANNUAL_FLI-TDI_REPORT%202011.pdf; https://www.nj.gov/labor/forms_pdfs/tdi/FLI%20and%20TDI%20Annual%20Report%202012.pdf. Rhode Island: https://dlt.ri.gov/labor-market-information/data-center/unemployment-insurance-ui-temporary-disability-insurance-tdi. New York: https://www.dfs.ny.gov/reports_and_publications/pfl. WA: https://esd.wa.gov/labormarketinfo/paidleave/claims-data. DC: https://dcpaidfamilyleave.dc.gov/downloads/reports/#; https://cfo.dc.gov/page/annual-financial-reports; https://d3n8a8pro7vhmx.cloudfront.net/silverman/pages/1520/attachments/original/1611203520/January_2021_DOES_PFL_Written_Responses_-_Attachments.pdf. MA: https://www.mass.gov/lists/dfml-annual-reports. CT: https://www.cbia.com/wp-content/uploads/2022/07/CTPL-Annual-Report.pdf.

rates of the Maryland program at the onset of its implementation, data from other states during comparable stages of their programs are most useful. It is worth noting, however, that states with a relatively long history of medical leaves initiated these programs as far back as in the 1940s.[3]As a result, the number of data points pertaining to medical leaves is limited.

Table 1.1 summarizes the starting dates and frequencies of the data on approved claims for each state. As most of the data for the potential determinants of program utilization rates to be discussed in Section 1.3 are available annually, we also aggregate the non-annually available data into annual terms. Table 1.1 reports the number of annual data points by leave type and states. Note that "Bonding" refers to the family leave type associated with bonding with newly born babies or adopted/fostered kids. "Care" refers to the family leave type that concerns caring for a family member with a serious health condition. "Medical" refers to leave types both due to self-medical conditions and pregnancy-related medical complications. Family leaves associated with military exigencies or caring for a service member in the family are not included in our analysis, primarily due to the scarcity of claim data and their generally minor influence on the solvency of the FAMLI program.

Table 1.1. Summary of Data Collection

State	Start Date/Year		Data Frequency	Number of Annual Data Points		
	Family	Medical		Bonding	Care	Medical
CA	7/1/2004	1946	Monthly	18	18	
NJ*	7/1/2009	1948	Annual	13	13	
RI	1/1/2014	1942	Monthly	8	8	
NY	1/1/2018	1949	Annual	4	4	
WA	1/1/2020	1/1/2020	Monthly			2
DC*	7/1/2020	7/1/2020	Quarterly	1	1	1
MA*	1/1/2021	1/1/2021	Annual	2	1	2
CT*	1/1/2022	1/1/2022	Monthly	1	1	1
Total				**47**	**46**	**6**

**First year's annual data are estimated by scaling the non-annually reported data.*

Data pertaining to state demographics are from the five-year American Community Survey (ACS) (2017-2021), which is arguably the most comprehensive source of demographic data.

1.2 Graphic Analysis of Growth of Family Leave Utilizations

We first plot the utilization rates against the program years—the number of years since the initiation of the FAMLI program in a given state. This is to better understand the dynamics of the growth rates of utilization, which may guide our regression analyses in the subsequent section. Due to the limited observations of the utilization rates for medical leaves, we only plot the utilization rates for family leaves. These plots can be found in Figures 1.1 to 1.4, which

[3]These states include Rhode Island, California, New Jersey, and New York.

respectively depict the time trend of the utilization rates for bonding and care leaves, as well as the growth rates of the utilization rates for these two types of leaves.

Several observations can be made based on these figures:

1. A constant program utilization rate, as presumed in some actuarial studies (e.g., Strunk, Brown and Gamm 2020), is not supported by the data.
2. A constant growth of the utilization rates throughout the program years, particularly for bonding leaves as assumed by some studies (e.g., AMI Risk Consultants 2019; New Mexico Paid Family and Medical Leave Taskforce 2022), is also not supported by the data. Utilization rates, especially for bonding leaves during the early years of the program implementations, can significantly deviate from their long-term growth patterns. For instance, Figures 1.1 to 1.4 demonstrate that the growth of program utilization rates in most states (CA, NJ, RI, and NY) fluctuated over time, albeit generally trending downwards at varying speeds.
3. Assumptions and Inferences based solely on data from a single state or a limited number of states can often lead to biases (e.g, Legislative Reference Bureau 2019). Figures 1.1 to 1.4 clearly illustrate that different states often exhibit distinct starting utilization rates and varying rates of growth over time. Therefore, drawing conclusions based solely on the data from one or a few states can potentially introduce biases.
4. Directly calculating the arithmetic or weighted average of the utilization rates or their growth rates across different states as practiced in some studies (e.g., Gassman-Pines and Ananat 2019; Legislative Reference Bureau 2019), may also be susceptible to biases. The broad variations of these rates across states imply the potential presence of state-specific program features and demographic factors that could influence their distinct utilization rates and growth patterns. Without accounting for these factors in the model, the simple averaging of utilization rates across states could result in biased outcomes.

In the next section, we intend to address these limitations identified in previous studies and seek to integrate the different states' experiences in modeling the utilization rate through our regression analysis.

The dramatic increase in the utilization rates of care leaves in Rhode Island (RI) and New Jersey (NJ) in the penultimate program year (which both correspond to 2020), as illustrated in Figures 1.2 and 1.4, may be plausibly explained by the impact of Covid-19. In fact, since RI provides monthly data, we observed that the most substantial increase in care leaves for the state occurred in March 2020, the very month the pandemic began. In the case of NJ, the significant increase in care leaves in 2020 may also be attributed to the state's enhancement of the family leave program benefits, which included doubling the maximum leave length from six to 12 weeks, and significantly increasing the maximum weekly benefit from $667 to $881 in the latter half of the year (New Jersey Department of Labor and Workforce Development 2021).

Figure 1-1. Utilization Rates of Bonding Leaves Over Program Years

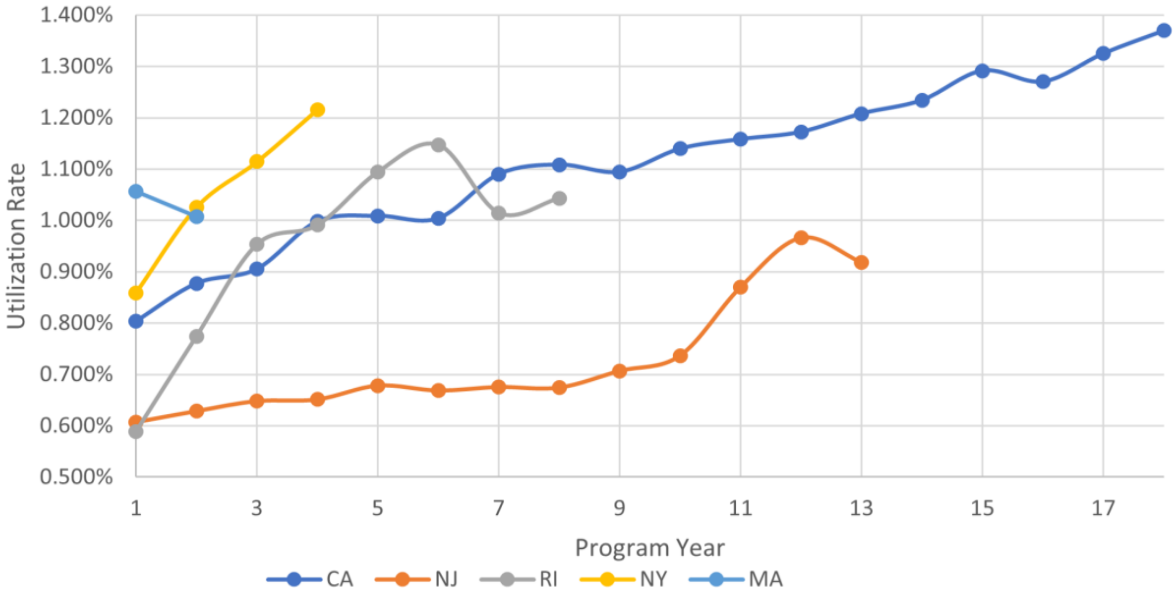


Figure 1-2. Utilization Rates of Care Leaves Over Program Years

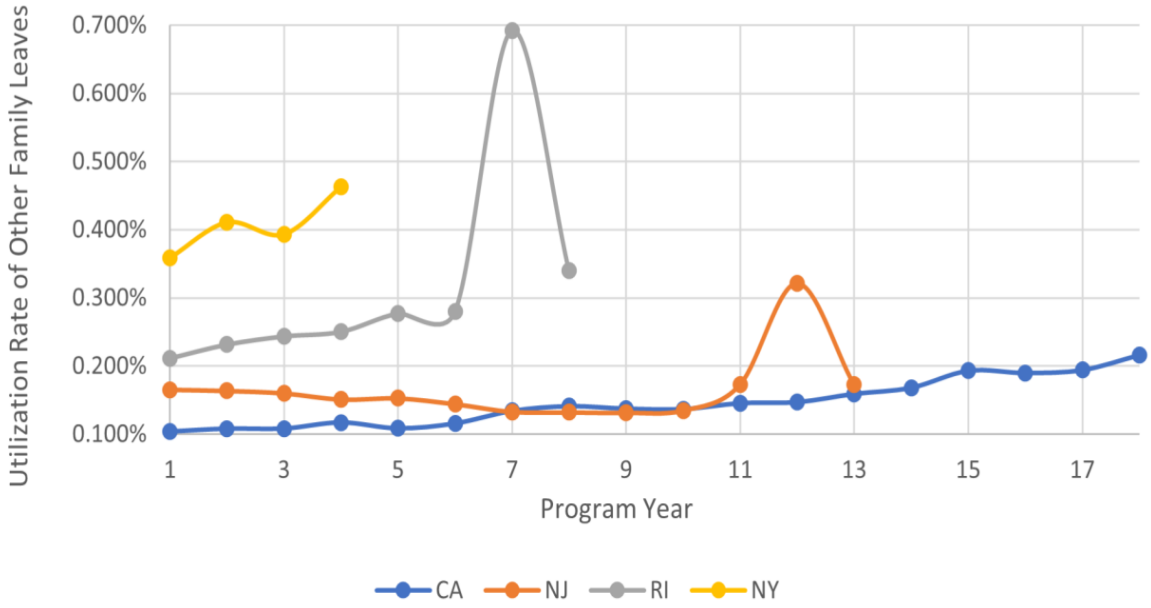


Figure 1-3. Growth Rates of Utilization Rates of Bonding Leaves Over Program Years

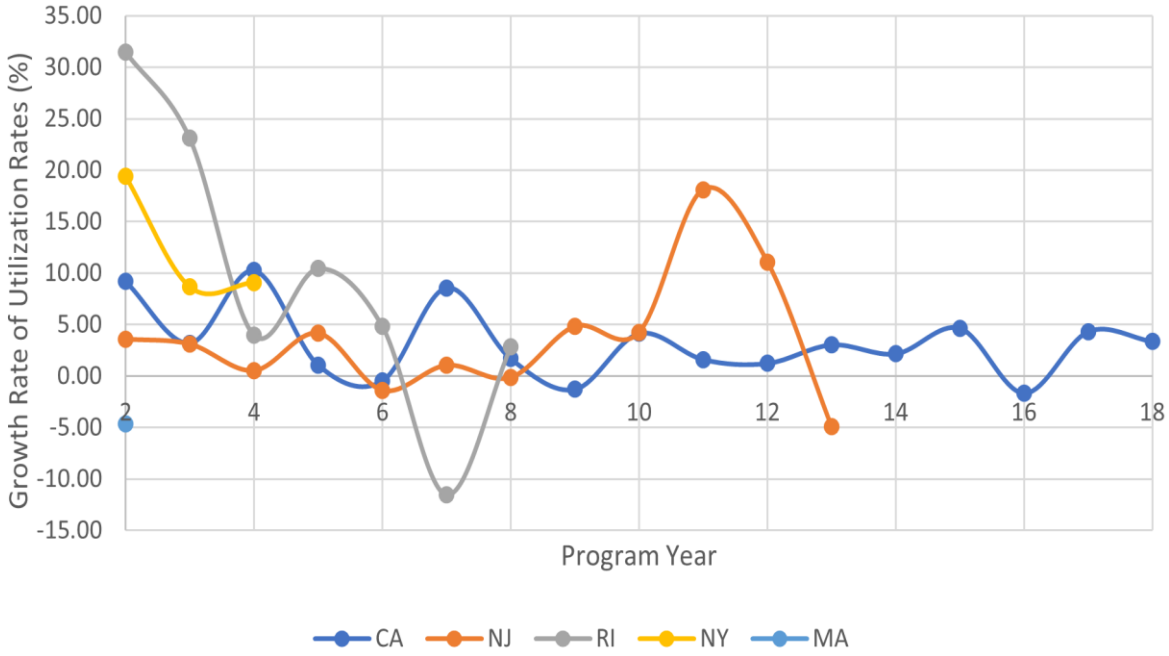
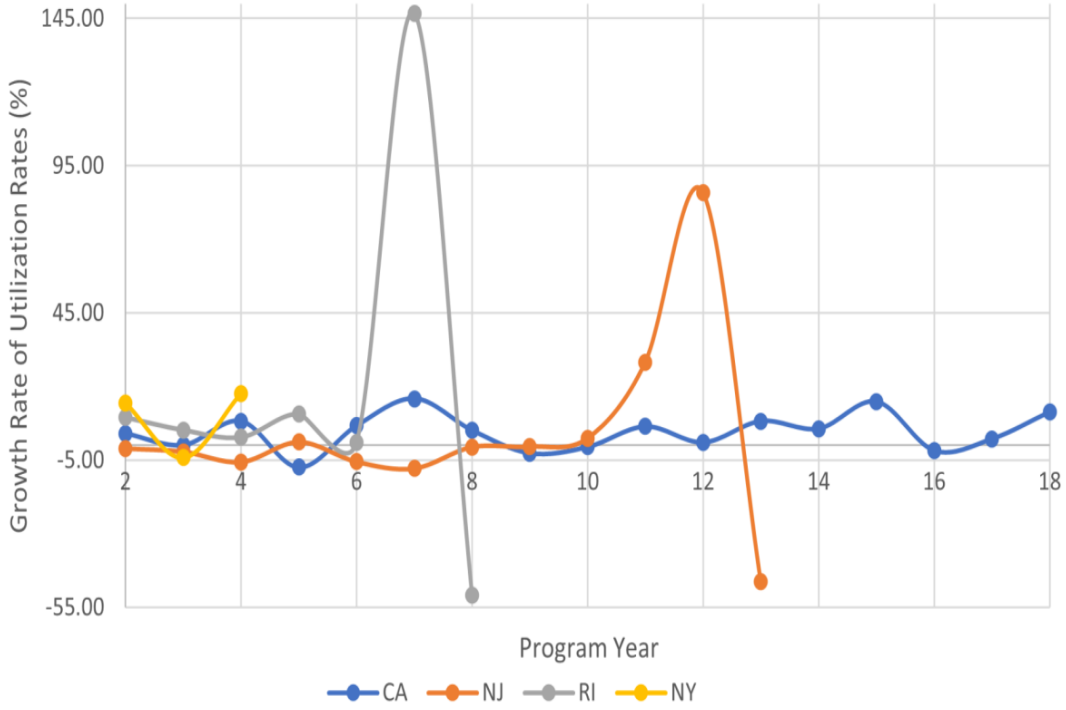


Figure 1-4. Growth Rates of Utilization Rates of Care Leaves Over Program Years



1.3 Regression Analysis of Growth of Family Leave Utilizations

As mentioned in Section 1.1, we assume that the utilization rate of the FAMLI program in a given state is determined by many factors, particularly the specific features of the program and the demographics of the state. Given our purpose to infer the growth rates of the utilization rates over the program years and the observation in the last section that the first year's utilization rate, especially for bonding leaves, often deviates from the long-term average, we also include two additional variables into our regression models. These include a count variable representing the number of years since the program's initiation (Program year) and a categorical variable signifying whether it is the inaugural year of the program (First year).

Based on previous studies but constrained by data availability, the program features we include in our model include wage replacement rate, (inflation-adjusted) maximum weekly benefit, and a dichotomous variable indicating whether or not the FAMLI program includes job protection provisions (L&M Policy Research 2016). In addition, we rely on intuition to include two more program features that were not considered in earlier studies, the maximum duration/length of leave and the *reserve length,* which we define as the interval between the commencement dates for premium collections and claim filings.

The maximum length of a leave could potentially influence the motivation of an eligible worker to file a claim. If the permitted leave length is too short, it may dissuade the individual from opting for the leave, particularly if it does not align with their anticipated requirements.

On the other hand, reserve length may positively affect the awareness of the program. Given that a lack of awareness is an important barrier to utilizing FAMLI programs (Eileen and Ruth 2011; Houser and White 2012; Silver, Mederer and Djurdjevic 2016), a longer reserve length is expected to result in a higher volume of claims, particularly in the inaugural year of the program. This effect may be amplified by a potential backlog of bonding claims from parents of babies born, or children adopted or fostered in the previous year, who are also eligible to make claims.

If the increase in program awareness and the enhancement of other claim-friendly policies (such as a more extensive public outreach efforts) cannot compensate for the loss of these backlogs in the second year, the number of bonding claims may decrease in that year. These discussions suggest that the growth of the utilization rate in the second year may depend on the reserve length which, in the context of our regression model, translates into a potential interaction between the reserve length and the first year dichotomous variable in affecting the utilization rate. Interestingly, the patterns of the growth rate of bonding claims in the second year, as depicted in Figure 1.3, are consistent with these arguments.

To understand this, we first list the reserve lengths of different states in Table 1.2. It is evident that the three states with relatively short reserve periods (CA, NJ, and NY) all saw an increase in

the utilization rates of their bonding leaves in the second year relative to the first. Conversely, MA, a state with a long reserve length comparable to that of Maryland, experienced a decline in the utilization rate of bonding leaves in the second year. This suggests a "spike" in bonding claims during the first year, followed by a reversion to a more 'normal' level of this type of leave in the second year.

Table 1.2. Reserve Lengths by States

State	Start Date		Reserve Length (yrs)
	Contribution	Claim	
CA	1/1/2004	7/1/2004	0.5
NJ	1/1/2009	7/1/2009	0.5
RI*		1/1/2014	
NY	6/1/2017	1/1/2018	0.59
WA	1/1/2019	1/1/2020	1
DC	7/1/2019	7/1/2020	1
MA	10/1/2019	1/1/2021	1.25
CT	1/1/2021	1/1/2022	1
MD	10/1/2024	1/1/2026	1.25

*We cannot find information on the starting date of contributions for this state.

For state demographics, we consider the proportion of female workers in a state who gave birth in the previous year as a potential determinant of the utilization rate for bonding claims. Because care leave is health-related, it would presumably be influenced by a state's morbidity rate. However, data on morbidity rates are often difficult to obtain. Since morbidity and mortality tend to be closely associated and the data on mortality rate is typically easier to collect, we include a state's mortality rate as a potential determinant of the utilization rate for family care leave.

Summarizing our discussions above, we estimate the following empirical models on the utilization rates of bonding and care leaves, respectively:

$$Bonding\ utilization\ rate_{it} = \beta_{b1} \times First\ year_{it}\ (+\beta_{b2} \times Reserve\ length_i + \beta_{b3} \times Reserve\ length_i \times First\ year_{it}) + \beta_{b4} \times Program\ year_{it} + \beta_{b5} \times Wage\ replacement\ rate_{it} + \beta_{b6} \times Max\ weekly\ benefit_{it} + \beta_{b7} \times Job\ protection_i + \beta_{b8} \times Bonding\ max\ leave\ length_{it} + \beta_{b9} \times Female\ worker\ gave\ birth\ rate_{it-1} + \mu_i + \theta_t + \varepsilon_{it} \quad (1.1)$$

$$Care\ utilizationrate_{it} = \beta_{c1} \times Program\ year_{it} + \beta_{c2} * Wage\ replacement\ rate_{it} + \beta_{c3} * Max\ weekly\ benefit_{it} + \beta_{c4} * Job\ protection_i + \beta_{c5} * Care\ max\ leave\ length_{it} + \beta_{c6} * Mortality\ rate_{it} + \mu_i + \theta_t + \varepsilon_{it} \quad (1.2)$$

where i and t indicate state and time, respectively. μ_i and θ_t are state and time fixed effects, respectively. ε_{it} is an error term. Note that we include reserve length and its interaction with the first year dummy variable as optional variables in light of the further loss of observations as a

result of the lack of reserve length data for RI, which may exacerbate the small sample issues associated with our study. Our strategy is to examine the model without the terms in parentheses first, and retain only the variables that are statistically significant in order to reduce the number of parameters in the model. Subsequently, we introduce the terms in parentheses.

Note also that we consider the possibly different maximum lengths for bonding leaves relative to care leaves for some states (such as DC), by including two variables of maximum leave lengths in Equations (1.1) and (1.2), respectively.

In practice, instead of regressing the raw utilization rates on program features and state demographics variables, we take the logs of the utilization rates. This makes it easier to interpret the coefficients on the independent variables, since the coefficient on a variable in this case is approximately equal to the growth rate of utilization rates for one unit of increase in that variable. To reduce the number of variables, we also control for a Covid dummy variable that is equal to one if the years are after 2019 and zero otherwise, instead of controlling for year dummies.

The regression results are reported in Table 1.3. Model 1 shows the results based on Equation (1.1). Among the program features and state demographics variables, only wage replacement rate is significant. The sign on this variable also accords with our expectations. Interestingly, program year is positive and significant, suggesting that on average the utilization of bonding leaves grows over time, which is consistent with the assumptions in many studies (e.g., AMI Risk Consultants 2019; New Mexico Paid Family and Medical Leave Task Force 2022), and our observations in Figures 1.1 and 1.3. It is also notable that the first-year dummy is not significant. Later we show that this is a result of not controlling for the influence of reserve length on the first year's utilization rate. In addition, the Covid time dummy is also not significant, suggesting that the utilization rates do not significantly differ in the post-pandemic period as compared to the pre-pandemic years.

In Model 2, we include only the significant program features and state demographics variables from Model 1, namely, the wage replacement rate, along with the first year and program year variables. The significance of the variables is similar to Model 1. Note that because we dropped many control variables the sample size increases from 42 to 47 observations. Model 3 retains the same set of variables but excludes the observations from RI to examine the robustness of the results. As mentioned previously, we do this because we aim to assess the impact of reserve length on the first year's utilization rate, and data regarding reserve length is missing for RI. Despite dropping 8 observations, the significance of the two variables - program year and wage replacement rate - remains intact.

In Model 4 we include reserve length and its interaction with the first-year dummy. Interestingly, the interaction term, Reserve length * First year, is positive and significant. First year dummy

variable is also weakly significant at the 11% level but with the opposite sign. These results, coupled with the magnitudes of the coefficients, provide an explanation for the overall insignificant effect of the "first year" dummy on bonding leave utilizations - whether the utilization rate in the first year is higher or lower than that in the second year depends crucially on the reserve length. For states with relatively short reserve lengths like CA, NJ, and NY (all with a reserve length of around half a year), the net effect of the "first year" dummy variable on utilization rate is negative (= 0.5*0.175-0.157 = -0.070). Because the "program year" variable is positive and significant, this implies that the utilization rate in the second year will exceed that in the first year. This is consistent with our observations in Figures 1.1 & 1.3. However, for states with relatively long reserve lengths, such as MA with a reserve length of 1.25 years, the net impact of the "first year" dummy variable on the utilization rate becomes positive (= 1.25*0.175-0.157 =0.062). As the coefficient on "program year", 0.027, is smaller than this value, it indicates that the second year's utilization rate of bonding leaves will be *lower* than that of the first year. Again, this aligns with our observations in Figures 1.1 & 1.3. Because Maryland has the same reserve length as the state of MA, it is expected to follow a similar pattern for the dynamics of bonding claims. Specifically, because wage replacement rate is not expected to change over time, the growth of the bonding utilization rates is completely determined by the other variables, which are straightforward to calculate. The decrease in the second year's utilization rate compared to the first year is consistent with a "spike" in filing the bonding claims in the first year. This spike could be attributed to increased awareness of the FAMLI program due to a prolonged reserve length and a backlog of bonding claims for babies born or children adopted/fostered in the previous year.

However, estimating the specific magnitude of this potential spike is outside the scope of the model in this study. Given that in our studies in Chapters 2 & 3 we have already considered the impact of many unrealized but potential claims, we apply a relatively minor adjustment of 10% above the "baseline" utilization rates as estimated by simulations in these parts. This is the only adjustment made outside our model.

From the second year onwards, the growth rates for each subsequent year's utilization rates of bonding leaves can be estimated from Model 4 of Table 1.3, assuming that Maryland is an average state. Therefore, our recommendations for the growth rates of bonding utilization rates are detailed in column one of Table 1.4.

Table 1.3. Regression Analysis on the Growth of Utilization Rates of Family Leaves

Model	(1)	(2)	(3)	(4)	(5)
Dependent variable	Log(Bonding utilization rate)	Log(Bonding utilization rate)	Log(Bonding utilization rate)	Log(Bonding utilization rate)	Log(Care utilization rate)
First year	-0.128 (-0.998)	-0.125 (-1.317)	-0.041 (-0.895)	-0.157 (-1.934)	
Reserve length * First year				0.175* (2.516)	
Reserve length				2.340*** (10.977)	
Program year	0.033*** (4.686)	0.029*** (9.625)	0.028*** (15.639)	0.027*** (14.539)	0.022 (0.890)
Wage replacement rate	1.327*** (5.163)	0.786** (3.646)	0.954** (3.191)	0.921** (3.572)	-0.423 (-0.136)
Max weekly benefit	-0.000 (-0.717)				0.000 (0.069)
Job protection	-0.024 (-0.948)				0.613* (2.205)
Bonding max leave length	-0.023 (-1.292)				
Female worker gave birth rate	9.071 (1.710)				
Care max leave length					-0.037 (-0.269)
Mortality rate					0.001 (0.691)
Covid	0.006 (0.188)	-0.019 (-1.081)	-0.015 (-0.573)	-0.011 (-0.436)	0.253 (1.024)
Observations	42	47	39	39	40
Adjusted R^2	0.88	0.87	0.93	0.93	0.82

Table 1.4. Suggested Growth Rates of the Utilization Rates Over Program Years for Maryland

Year	Bonding	Care	Medical
2026	10% (relative to baseline model)	0% (relative to baseline model)	0% (relative to baseline model)
2027	-3.4%	5%	20%
2028	2.7%	2.7%	10%
2029	2.7%	2.7%	5%
2030	2.7%	2.7%	2.7%

In Model 5 of Table 1.3 we examine the determinants of the utilization rates of care leaves, following Equation 1.2. It is notable that the only variable that is weakly significant is whether a state includes job protection provisions in their FAMLI programs or not. In particular, even though the "program year" variable has a positive coefficient, it is not statistically significant. To be on the conservative side, however, we still apply the same long-run growth rate of the utilization rates of bonding leaves (2.7%). We presume that this growth rate is capturing the annual increase in awareness of the program. We also apply a 5% growth in the second year to consider a possibly more dramatic increase in the awareness of the program at the start of its implementation, as the "spike" in the utilization rate of the bonding leaves in the first year may also imply. The estimated growth rates of care leaves over time are listed in the second column of Table 1.4.

1.4 Estimating Growth of Medical Leave Utilizations

We cannot employ regression models to estimate the growth of the utilization rates of medical leaves since, as shown in Table 1.1, there are too few observations for this type of leave. Therefore, we directly analyze the utilization rates in the few cases where such data are available, to infer the growth of the utilization of medical leaves in Maryland.

We first list the utilization rates of the three states (WA, MA, and DC) during the first two years of their program implementations in Table 1.5. For MA we also estimate the third year's medical utilization rate by assuming that the employment in 2022 is the same as in the previous year. In the case of DC, *submitted* rather than approved claims are used due to the availability of only this type of claim statistics.

An immediate observation that can be made from the statistics in Table 1.5 is that, regardless of the state, the growth of utilization rates is very significant. Actually, in the first two years of program implementations a growth rate of around 40% occurred across the board. This is much higher than most of the concurrent growth rates for family leaves as we observed in Figures 1.1 to 1.4. One might be tempted to attribute this significant growth in medical leaves during this period to Covid-19. However, a closer examination of the starting dates of the FAMLI programs in the three states indicates that almost all of the medical claims occurred after the onset of Covid-19, suggesting that the dramatic growth of medical leaves cannot be explained by a significant increase in medical claims during the post-Covid period compared to the pre-Covid period.

This does not suggest that Covid-19 had no effect on the growth of medical leaves. The discussions above merely suggest that a "simplistic" explanation based on a spike of medical leaves post-Covid relative to pre-Covid might not hold true. However, it is still possible that the number of medical leaves in the second year of Covid-19 exceeded those of the first year, which

could explain, at least in part, the spike in the utilization of medical leaves in the second year compared to the first year.

To provide some benchmark to gauge the impact of Covid-19, we also list the utilization rates of three other states with available medical leave data, NJ, RI, and CA, which have implemented their paid medical leave programs quite a while ago. In this respect, these three states may serve as examples of states with relatively mature medical leave programs. By comparing the potentially different growths of the utilization rates of the medical leaves during the same time period between these two groups of states, we may be able to gain some insight into the possible growth of medical leaves during the start of a program.
In contrast to the three states which only initiated their medical leave programs during Covid-19, the three states with relatively mature programs experienced a much smaller growth in medical leave utilizations. Actually, two states, NJ and RI, even experienced a decline in the utilization rates of their medical leaves. To gauge the impact of Covid-19, we also list the mortality rates of these states during this time period, and calculate their growth rates. Interestingly, the statistics in Table 1.5 show that the growth of the medical leave utilizations was indeed affected by Covid-19 – an increase/decrease in the growth of the mortality rates of a state is associated with an increase/decrease in the growth of its medical leaves, though with varying sensitivities across the states. If we assume that the average sensitivities of the growth of utilization rates to the growth of mortality rates in the three mature states is a reasonable estimate for the sensitivity of the growth of medical leave utilizations to the growth of mortality rates for a "mature" medical leave program, we could easily estimate the growth of the utilization rates net of this presumed "mature" transmission of Covid-19 effect into medical leaves, which represents the medical utilization growth as a new program without the influence of the pandemic.

Specifically, as the calculations in the bottom right corner of Table 1.5 demonstrate, the average sensitivity of the growth of utilization rates to the growth of mortality rates among the three "mature" states is 2.23. We then multiply this "mature transmission factor" to the growth of the mortality rates in the state of WA, 11.71%, and subtract this product from the growth rate of the utilization rates, 39.97%. The resulting net growth rate (=39.97% - 11.71%*2.23), 13.86%, is an estimate of the growth rate of the utilization rates of medical leaves in the second year of the program implementation net of the influence of the pandemic. An implicit assumption behind this inference is that the utilization rate for a mature medical leave program, such as those in the three states (CA, NJ, and RI), would have stabilized after a long period of implementation. Hence, any significant change in utilization rate can be attributed to temporary, disruptive factors like Covid-19.

Note that we did the above calculations only for WA, both because the data for WA are presumably more accurate (as they are approved and non-scaled unlike the data for the other two

states (DC and MA) which are either submitted or scaled), and because the other two states only have one year's mortality data available.

To provide further evidence supporting the idea that the medical leaves of new FAMLI programs, such as that of WA, cannot be fully explained by the heightened demand for medical leaves due to some unexpected events such as Covid-19, we also examine the growth of medical leave utilizations in WA in the third year of program implementation. The lack of mortality data for this year prevents us from making a direct comparison. However, since mortality and emergency care should be correlated, we extracted data on the numbers of hospitalizations due to emergency and urgent care from 2020 to 2022[4]. The data are reported in the last two columns of Table 1.5. As the data demonstrate, from 2020 to 2021, the number of hospitalizations grew by 5.07%. Though this is smaller than the growth of mortality rate, 11.71%, they are not too far apart. More importantly, the growth of hospitalizations was much smaller in 2022, which should translate into a smaller growth of mortality rates during the same time period. Nonetheless, during this period, medical leaves still grew by a very significant amount, 24.17%, suggesting that utilization of this type of leave for a new program may increase significantly during the early years of a program's implementation, regardless of the existence of significant health events such as Covid-19.

Lastly, the annual reports from Washington's FAMLI program indicate that the state underestimated the volume of claims for three consecutive years. This observation could serve as a valuable caveat for other states in the early stages of implementing their own FAMLI programs.

Although our earlier discussion led us to an estimate of 13.86% for the growth rate of medical leave utilizations in the second year of program implementation, we conservatively apply a 20% growth rate. This adjustment takes into account the uncertainties tied to limited data availability, and the fact that we're unable to control for factors that may influence the medical utilization rate in the same manner as we did for bonding leave utilization rates. Moreover, we assume a decreasing growth rate of program utilizations over time, following a pattern similar to that of bonding claims, which eventually stabilizes at the long-term growth rate of 2.7%. The specific growth rates for each forecast year for Maryland are provided in the last column of Table 1.4.

[4] The online source of our data extraction is: https://doh.wa.gov/data-statistical-reports/healthcare-washington/hospital-and-patient-data/hospital-discharge-data-chars.

Table 1.5. Estimating Growth Rate of Utilization Rates of Medical Leaves

State	Program Year	Program Year Start Date	Utilization Rate	Growth of Utilization Rate	Mortality Rate	Growth of Mortality Rate	Net Growth of Utilization Rate	Hospitalization Records (Emergency + Urgent)	Growth of Hospitalization Records
WA	1	1/1/2020	1.48%		713		13.86% (=39.97%-11.71%*2.230)	454825	
	2	1/1/2021	2.07%	39.97%	796	11.71%	13.86%	477881	5.07%
	3	1/1/2022	2.57%***	24.17%				473411	-0.94%
MA*	1	1/1/2021	1.35%						
	2	7/1/2021	1.95%	44.70%					
DC*,**	1	7/1/2020	0.34%						
	2	1/1/2021	0.49%	45.85%			Sensitivity of growth of utilization rate to the growth of mortality rate		
NJ	12	1/1/2020	1.984%		834				
NJ	13	1/1/2021	1.909%	-3.78%	731	-12.32%	0.31		
RI	7	1/1/2020	6.341%		807				
RI	8	1/1/2021	5.257%	-17.10%	781	-3.15%	5.43		
CA	16	1/1/2020	3.406%		603				
CA	17	1/1/2021	3.951%	15.98%	705	16.92%	0.94		
						Average	2.23		

*First year's data scaled based on non-annually reported data

**Based on submitted claims

***Estimated by assuming the same level of employment as in the previous year

Chapter 2

Cost Analysis: Estimating Costs, Taxable Income, and Contribution Rates for Solvency of FAMLI Fund Using Econometric Modeling

2.1 Introduction

The following cost analysis examines the financial implications of the FAMLI (Family and Medical Leave Insurance) program, as established by SB 275 (2022) (CH. 48) and modified by SB 828 (2023). The primary focus of this analysis is to assess the costs associated with maintaining the solvency of the FAMLI Fund. By evaluating these factors, we aim to gain a comprehensive understanding of the financial sustainability and effectiveness of the program.

The total revenue of the program includes the start-up funds, tax revenue from employers' and employees' contributions to the program excluding the contributions of employers with fewer than 15 employees since their employer contribution is not mandatory, and potential interest income earned on the balance in the fund. The expenses of the program include the expenditures to set up the FAMLI program (program management, IT implementation, planning staff, outreach, etc.), the expected benefit payment to eligible participants, the administrative expenses to run the program, and the payback of the start-up funds.

This cost analysis aims to estimate the contribution rates required to establish and maintain the solvency of the FAMLI Fund under different scenarios. We explore a range of possible scenarios based on reasonable assumptions including:

- multiple scenarios for paying back the start-up funding so as to spread out the costs and have minimal impact on the contribution rate (e.g., pay back in 1, 5,7,10 years)
- multiple scenarios for a range of possible start-up administrative cost scenarios based on reasonable assumptions (e.g., $40, $60, $90 million for start-up administrative expenses)
- multiple scenarios for ongoing program administrative costs expressed as a percent of trust-fund assets collected in a year (e.g., 3%, 5%, and 8%)
- multiple scenarios for a range of possible target fund levels that should be maintained at reasonable or recommended levels (e.g., 110%, 120%, 140% of expected annual outgo) in any given year

Additionally, we provide recommendations on sustainably and smoothly "spending down" the trust fund assets that will be built up in 2024 and 2025 before any benefits are paid.

The estimation is based on the following policy parameters:

- Changes introduced by SB 828 (2023) include the following:
    - Contribution starts on October 1, 2024, and benefit payments start on January 1, 2026. Our estimation takes into account the accumulation of collections over a period of five quarters, starting from calendar quarter four of 2024 and continuing

through quarter four of 2025. This buildup of collections occurs before any benefits are disbursed.
    - Our analysis takes into account the Social Security Wage Base (SSWB) when considering taxable wages. The SSWB sets a cap on wages subject to taxation. To account for this factor, we compare the estimated wages with the projected SSWB in future years. Furthermore, our analysis incorporates inflation to ensure the accuracy and relevance of the estimates. By considering inflation, we account for the potential changes in wage levels and the SSWB over time. This allows us to provide a more comprehensive and realistic assessment of the financial implications and sustainability of the FAMLI program.
    - Contribution rate cap at 1.2%. Our analysis shows rates that are needed to reach program solvency are all below 1.2% for various scenarios of fund levels and administrative expenses.
- As per the provisions outlined in SB 275 (Ch. 48), Section 8.3, it is required that each employer with 15 or more employees contributes to the FAMLI fund. To reflect this requirement accurately, we adjust this contribution portion by considering the proportion of taxable earnings in 2022 contributed by employers with 15 or more employees. Based on our analysis, this percentage of taxable earnings amounts to 86.0%. This adjustment allows us to estimate the appropriate contribution from employers with 15 or more employees, ensuring compliance with the legislation and maintaining the integrity of the cost analysis.
- Working hours. To be eligible for the benefits, individuals must work at least 680 hours per year. Our analysis utilizes the American Community Survey (ACS) data from 2017 to 2021. However, it's important to note that prior to 2019, the ACS did not include a variable capturing the number of weeks worked per year. Therefore, our estimation related to this variable is based on the ACS data from 2019 to 2021. Our analysis shows that the number of employees who work more than 680 hours accounts for 87.1% of the total employment in Maryland. We then apply this estimate when predicting the number of employees who are likely to be eligible for FAMLI benefits.

In addition, we apply the following assumptions in the subsequent cost analysis and projections.

- The individual weekly average wages, state average weekly wage, maximum weekly benefit, and Social Security Wage Base are adjusted by inflation[5].
- Each year's take-up rate is adjusted based on an analysis of other states' experience. Specifically, we conducted an empirical study on the actual utilization rates of the FAMLI programs in other states, and projected the growth rates of the utilization rates, conditional on leave types, for each year within the projection period. The annual growth rates of the utilization rates are reported in Table 1.4 of this report.

[5] CPI is based on the Social Security Trustee Report 2023, page 104-105, and Table V.B.1. Wage adjustment is based on Trustee Report 2023, page 110. https://www.ssa.gov/OACT/TR/2023/tr2023.pdf

- Employment size[6] is adjusted based on the short-term (2021-2023) and long-term (2021-2031) occupational projections in Maryland (Maryland Department of Labor, 2022).
- Payback is assumed to require no interest. This is consistent with other states' experience.
- We assumed a 3.0% interest rate for fund investment returns. This assumption is based on current market conditions and the information provided in the OASDI Board of Trustees 2023 Report[7].

These assumptions are summarized in Appendix – Table 1. The following subsections provide detailed information: data and methodology, econometric analysis and results, and recommendations.

2.2 Data and Methodology

2.2.1 Data

Two datasets were employed for the analysis: FMLA (2018) survey data and the five-year American Community Survey (2017-2021) data. FMLA survey collected information on workers' leaving-taking behaviors in the 12 months prior to the survey. ACS five-year survey data is employed because the five-year estimates for an area tend to have larger samples and smaller margins of error than the one-year estimates (census.gov., 2022). 2017-2021 is the most recent data that is available[8]. In addition, the administrative record is used for data on the number of employed individuals by size of employers (>=15 employees or not) and is used in estimating the contribution income and benefit expenses.

The aim of the study is to estimate the cost, tax income as well as an appropriate contribution rate that would satisfy the program's solvency by estimating the probability of an individual taking a leave, the expected length of the leave, and considering the effect of inflation on the revenue/expense balance. We first employ the FMLA Survey data to generate leave-taking behavioral models, and then apply the models to project individuals' leave-taking behavior using the MD sample in the ACS data (2017-2021). The simulation further considers the specific and updated provisions in SB 275 and SB 828 when predicting the benefit payments, administrative expenses, and other potential costs under the MD FAMLI program.

2.2.2 Methodology

To estimate the expected benefit payments, we begin by developing a model of leave-taking behavior that takes into account various attributes of individuals and their employers. These attributes include demographic factors (such as sex, age, race, and marital status), educational

[6]The employment data by business employment size classes are from the calculated administrative records.

[7]According to the report (https://www.ssa.gov/OACT/TR/2023/tr2023.pdf), the bond purchased on June 30, 2022, has an interest rate of 3.0 percent. The report also estimates an intermediate nominal annual interest rate above 3% from 2024 onwards for subsequent decades (pages 117-118).

[8] The ACS Maryland data is employed for analysis, including all individuals whose workplaces were in Maryland.

attainments, employment sectors (government, private, and non-profit), as well as occupations and industries.

The leave-taking behaviors recorded in the FMLA survey are categorized into six groups: leaves due to personal illness, leaves for the birth or adoption of a new child, leaves for a child's health issues, leaves for the care of a spouse's health concerns, leave for the care of parent(s)' health issues, and leaves associated with a military family member. These categories correspond to the various individual needs as stipulated in SB275. By considering these attributes and leave-taking categories, we can model and analyze the factors influencing leave-taking behavior, which, in turn, informs our estimation of expected benefit payments under the FAMLI program. Specifically, the following logit model was developed to estimate the probability of taking a leave in this category using the FMLA survey data.

$$Probability(Y_i = 1) = \frac{exp\,(\alpha_0 + \beta_1 Demog_i + \beta_2 Edu_i + \beta_3 Employment_{it} + \beta_4 Occupation_i + \beta_4 Industry_i)}{1 + exp\,(\alpha_0 + \beta_1 Demog_i + \beta_2 Edu_i + \beta_3 Employment_{it} + \beta_4 Occupation_i + \beta_4 Industry_i)} \qquad (2.1)$$

In Equation (2.1), the dependent variable is binary, taking a value of one if individual *i* takes a leave at time *t*, and zero otherwise. As mentioned earlier, the outcome variable is hypothesized to be influenced by a combination of factors, including demographics ($Demog_i$, e.g. marital status, age, gender), education attainments (Edu_i), employment characteristics ($Employment_i$), occupation ($Occupation_i$) and industry ($Industry_i$)[9].

Once we have estimated the probability of a covered individual taking a leave, our analysis proceeds to estimate the duration of the leave. Similar attributes as those considered in Equation (2.1) for the probability of taking a leave are utilized to determine the duration. In the FMLA Survey data, there is a variable that provides leave length ranges in working days. To approximate the length of the leaves, we utilize the midpoint within each range. This allows us to estimate the average duration of the leaves taken by covered individuals. By incorporating this information, we gain insights into the expected duration of leaves under the FAMLI program. It is important to note that the FMLA survey captures information on the types of leaves that were most recently taken, rather than all leaves taken within the previous 12 months. To account for this distinction, we also consider the number of leaves taken and incorporate it as an adjustment factor in our analysis.

Based on the behavioral models of an individual taking a specific type of leave and the expected length of the leave, we then simulate individuals' leave-taking behavior in the presence of the MD FAMLI program using the ACS data. Through the simulation, we generate estimates for

[9] Only variables that exist in both datasets (FMLA and ACS) can be retained in the model for estimating the leave-taking behaviors since behavioral models developed using FMLA survey data are used to predict leave-taking behaviors in Maryland using the ACS data.

various outcomes, including the number of days that covered individuals would take leave, the total benefits distributed by different types of leave, and the contributions made by covered employees and employers to the FAMLI fund. Additionally, we take into account individuals' wages relative to the benefit levels provided by the program. This consideration allows us to estimate the benefit payments, taking into consideration an individual's relative weekly wages in the state. By incorporating this information, we can assess the solvency of the FAMLI program.

Please note that our modeling also takes into consideration changes in the utilization rates. We account for the fact that as the program gains more popularity, an increasing number of eligible workers may apply for benefits. This could potentially result in a greater number of claims during the initial years of the program. However, we anticipate that over time, the utilization rates will stabilize as the program becomes more established. This consideration of changing utilization rates helps us provide a more accurate estimation of the contribution rates required to sustain the program. The total tax revenue of the FAMLI program is the tax collected from both employers and employees except for those employers with fewer than 15 employees. The estimates are generated based on the ACS data with consideration of the employment status (i.e., at least working 680 hours annually).

2.3 Scenarios and Estimated Contribution Rates

2.3.1 Overall Estimates

We calculated the FAMLI contribution rates by targeting a fund balance at a minimum of 100% to 140% throughout 2026-2030. The estimated contribution rates are provided in Table 2.1. In this table, we present the necessary contribution rates to achieve target fund ratios over the period from 2026 to 2030. These rates are estimated under the assumptions that start-up costs equal to 60 million, ongoing administrative expenses at 5% of trust-fund assets collected in a year, and paying back the initially provided fund in 5 years. This serves as the baseline model in our analysis[10].

[10] This baseline model corresponds to Scenario 5 in Table 2.4.

Table 2.1 Estimated Contribution Rates – Baseline Model & Using Target Fund Ratios in 2026-2030

Target Fund Ratio(2026-30)	Total Contribution Rate	Employee	Employer	Effective Contribution Rate
100%	0.92	0.460	0.460	0.86
110%	0.94	0.470	0.470	0.87
120%	0.95	0.475	0.475	0.88
130%	0.97	0.485	0.485	0.90
140%	0.99	0.495	0.495	0.92

Notes:
1. The effective contribution rate is lower than the contribution rate because employers with fewer than 15 employees are not required to contribute to the program.
2. The total contribution rate uses two decimal places for practical purposes. However, to ensure accuracy for the 50%/50% employer/employee share, we retain three decimal places for both the employee and employer contributions.

We examined target fund ratios in two distinct conditions: firstly, target fund ratios that are satisfied consistently throughout the years of 2026 to 2030, the results of which are shown in Table 2.1; and secondly, target fund ratios for the year when benefit payments begin, which we refer to as "initial target fund ratio. Our analysis shows that the latter approach, which allows for "spending down" of trust fund assets, predicts lower contribution rates compared to the former approach that requires maintaining target fund levels over the period of 2026 and 2030. To illustrate this, Table 2.2 displays the required contribution rates for the corresponding initial funding levels in 2026. Furthermore, the table includes the resulting funding levels for the years 2029 and 2030, showcasing the long-term outcomes. Projections based on this approach show that when the initial target fund ratio is relatively high (e.g., 130% or 140%), the fund ratios remain high over the subsequent years (e.g., over 100% in 2029 and 2030). However, when the initial ratio is low (such as 100% or 110%), the fund ratio declines over the long term (e.g., a 100% target ratio in 2026 results in a 38% fund ratio in 2030). These ratios, however, tend to get stable as the program gets mature. Please note that the actual fund ratio will depend on various factors, including economic conditions, expenditure patterns, and other financial considerations. It's essential to regularly monitor and assess the fund's performance to ensure it stays on track to achieve its target ratio.

Additionally, it is worth noting that states that have years of operations of their FAMLI programs tend to adopt a lower target fund ratio. For instance, the adequacy rate (i.e., target fund ratio) used by the Disability Insurance (DI) and Paid Family Leave (PFL) program in California is

between 25% - 50%[11]. The fund ratio was 32.2% in 2021, with an estimated ratio of 29.8% in 2023[12].

Table 2.2 Estimated Contribution Rates—Baseline Model & Using Target Fund Ratio in 2026

Target Fund Ratio in 2026	Total Rate	Employee	Employer	Effective Rate	Fund Ratio 2029	Fund Ratio 2030
100%	0.81	0.405	0.405	0.76	58%	38%
110%	0.85	0.425	0.425	0.80	78%	61%
120%	0.89	0.445	0.445	0.84	99%	84%
130%	0.93	0.465	0.465	0.87	114%	100%
140%	0.98	0.490	0.490	0.92	137%	126%

Notes:
1. Total rate estimates show the sum of the employer and employer contribution rates that are required to attain the target fund ratios of 100-140% in 2026, respectively.
2. The table includes the resulting funding levels for the years 2029 and 2030, Based on the assumption that the same contribution rate is maintained.
3. The effective contribution rate is lower than the contribution rate because employers with fewer than 15 employees are not required to contribute to the program.
4. The total contribution rate is maintained with two decimal places for practical purpose. However, to ensure accuracy for the 50%/50% employer/employee share, we retain three decimal places for both the employee and employer contributions.

2.3.2 Scenarios-Based Estimates

In our analysis, we considered the following scenarios of the payback schedule, ongoing administrative costs, and start-up expenses. We provided multiple scenarios reflecting various combinations of these three dimensions:

1. Pay back in 1, 5, 7 or 10 years. The start of paying back is 2026.
2. Ongoing administrative costs (3%, 5% or 8% of trust-fund assets collected in a year)
3. Start-up expense level at $40, $60 or $90 million.

We also develop financial projections for the Maryland FAMLI program from October 2024 to December 2030, based on the policy parameters, estimated leave taking behaviors, and labor market projections laid out in the introduction section.

Based on our comprehensive analysis, we have observed that the pay-back schedule has a minimal impact on the required contribution rates when compared to the levels of ongoing administrative expenses and target fund ratios. The primary reason for this is that the amount of

[11]"Overview of California's Paid Family Leave Program" https://edd.ca.gov/siteassets/files/pdf_pub_ctr/de2530.pdf
[12]"October 2022 Disability Insurance (DI) Fund Forecast"
https://edd.ca.gov/siteassets/files/about_edd/pdf/edddiforecastoct22.pdf

funds to be repaid is relatively small in comparison to the overall annual fund collection. For instance, let's consider a scenario with a start-up expense of $60 million and an administrative expense ratio of 5%. Across various funding levels, we have observed that different pay-back schedules, including 5, 7, and 10 years, show negligible differences in the required contribution rates. This finding is consistent for each of the mentioned pay-back schedules. To provide a clear comparison, we have summarized the results in Table 2.3 for your reference.

These findings indicate that, in the context of the analyzed scenarios, focusing on the target fund ratios and expense levels holds more significance in determining the required contribution rates rather than the specific pay-back schedule. Please keep in mind that this analysis is based on the assumptions and data available at present, and any changes in market conditions or other relevant factors may impact the outcomes in the future. Therefore, continuous monitoring and assessment are essential for maintaining accurate projections.

Table 2.3 Contribution Rate Estimates for Different Payback Schedules

Payback Schedule	100%	110%	120%	130%	140%
1 Year	0.83	0.88	0.92	0.96	1.00
5 Years	0.81	0.85	0.89	0.93	0.98
7 Years	0.81	0.85	0.89	0.93	0.98
10 Years	0.81	0.85	0.89	0.93	0.98

Notes:
1. Initial year target ratio is used in this table; using target ratio for all years yields a similar pattern, that is, similar estimates for pay schedules in 5, 7, and 10 years.
2. The estimates shown in these tables pertain to the total contribution rates from both employers and employees. To illustrate, a 0.88 estimated contribution rate implies that both employers and employees each contribute 0.44 towards the FAMLI program.

In the subsequent sections exploring different target fund ratios, start-up costs, and ongoing administrative expenses, our estimates will be based on a five-year payback schedule. This choice is made because payback schedules of 5, 7, and 10 years yield similar results. It's essential to note that if a payback is required within one year, the estimated contribution rates would be approximately 0.02 to 0.03 higher. By using a five-year payback schedule, we aim to provide practical and feasible estimates while still considering alternative scenarios with shorter payback periods for comprehensive analysis.

In Table 2.4, we have compiled our estimates of the contribution rates required to achieve various target funding levels. For each funding level and scenario, we present the necessary contribution rates for both the "all-year target fund ratio," which requires target fund ratios to be satisfied throughout the year of 2026 and 2030, and the "initial year target ratio," which

evaluates target fund ratios based on the initial year of 2026.To facilitate easy comparison, we have included the projected long-range fund ratios for the years 2029 and 2030 in the table. These projections give an insight into the fund's anticipated financial standing over the specified period, helping to gauge its performance and sustainability.

By providing both sets of estimates, we aim to offer a comprehensive view of the funding requirements and the potential growth of the fund over time. It is crucial to utilize these estimates as part of an ongoing evaluation process, allowing for adjustments and adaptations as needed to ensure the fund's successful management and attainment of its long-term financial goals.

Table 2.4. Contribution Rate Estimates to Achieve Target Fund Ratios in Various Scenarios.

Scenarios			Panel A. Target Fund Ratio (Evaluated for 2026-2030)				Panel B. Target Fund Ratio (Evaluated for 2026)											
#	Start-up Costs	Exp.	110%.	120%	130%	140%	110%			120%			130%			140%		
			Contr. rates	Contr. rates	Contr. rates	Contr. rates	Contr. rates	2029 Ratio	2030 Ratio	Contr. rates	2029 Ratio	2030 Ratio	Contr. rates	2029 Ratio	2030 Ratio	Contr. rates	2029 Ratio	2030 Ratio
1	$40	3%	0.92	0.94	0.96	0.97	0.83	77%	57%	0.87	99%	80%	0.91	120%	103%	0.95	141%	126%
2	$60	3%	0.93	0.94	0.96	0.98	0.83	76%	56%	0.87	98%	79%	0.91	119%	102%	0.95	140%	125%
3	$90	3%	0.93	0.94	0.98	0.98	0.84	80%	60%	0.88	101%	83%	0.92	123%	107%	0.96	144%	129%
4	$40	5%	0.93	0.95	0.97	0.99	0.84	74%	56%	0.89	100%	85%	0.93	120%	108%	0.97	141%	130%
5	$60	5%	0.94	0.95	0.97	0.99	0.85	78%	61%	0.89	99%	84%	0.93	119%	107%	0.98	145%	135%
6	$90	5%	0.94	0.96	0.97	0.99	0.86	82%	65%	0.90	102%	88%	0.94	123%	111%	0.99	148%	139%
7	$40	8%	0.96	0.97	0.99	1.01	0.87	77%	63%	0.91	96%	86%	0.96	120%	113%	1.01	144%	141%
8	$60	8%	0.96	0.97	0.99	1.01	0.87	76%	62%	0.92	100%	90%	0.96	119%	112%	1.01	143%	140%
9	$90	8%	0.96	0.98	0.99	1.02	0.88	79%	66%	0.93	103%	94%	0.97	122%	116%	1.02	146%	144%

Notes:

1. The contribution rates displayed under "Target Fund Ratio (Evaluated for 2026-2030)" represent the contribution rates required to achieve the specified fund ratio in each respective year between 2026 and 2030. In other words, when these contribution rates are applied and contributions are made accordingly, the minimum fund ratio in 2026-2030 will reach the predetermined fund level.
2. The contribution rates displayed under "Target Fund Ratio (Evaluated for 2026)" indicate the contribution rates required to achieve the specified fund ratio specifically in the year 2026. For instance, to attain a target fund ratio of 110% in 2026, a total contribution rate of 0.85 of the wage bases is necessary. It is important to note that each estimated contribution rate for different fund levels in 2026 is associated with subsequent fund levels in later years. As a result, the fund levels in 2029 and 2030 are presented in the table, considering the impact of the chosen contribution rates and their effect on the fund's growth over time.
3. All the estimated contribution rates in the table represent the combined contribution rates for employers and employees. This means that for employers and employees separately (cost-share between employers and employees at 50/50), the contribution rates will be half of the contribution rates shown in the table. For instance, a total contribution rate of 0.85 means that employers (with 15 or more employees) are responsible for contributing 0.425% of the wage base, and employees are also required to contribute an equal amount of 0.425% of the wage base.
4. The effective contribution rate is lower than the contribution rates, considering that employers with fewer than 15 employees are not required to contribute. The effective rates are illustrated in Table 2.1 and will be shown in recommended scenarios in sections followed.
5. The estimation is based on the assumption that the utilization of the program spikes in the 1st and 2nd year after payment starts, and then gradually increase in 2028-2023. See Table 1.4 for specific assumptions on the growth of take-up rates.

2.3.3 Recommendations and Discussions

The analysis conducted indicates that higher levels of administrative expenses require higher contribution rates to maintain solvency of the FAMLI fund. However, the impact of start-up expenses on contribution rates is relatively small, typically within a 0.01 percentage point range, when assumptions regarding administrative expenses and target ratios remain consistent. In contrast, ongoing administrative expenses have a more substantial impact on the required contribution rates for ensuring the long-term financial sustainability of the program. This holds true for all target ratios, regardless of whether they are evaluated over a five-year period from 2026 to 2030 or solely for the initial year.

Another significant finding is that when estimating the required contribution rates based on target fund ratios, specifically aiming for 110% to 140% in the initial year of benefit payments, the contribution rates needed are considerably lower than if we maintain the respective fund target ratios for all years from 2026 to 2030. This finding highlights the importance of effectively "spending down" the trust fund assets that will be accumulated between 2024 and 2025 before any benefits are disbursed.

It is worth noting that if a contribution rate is set to meet the target ratio of 100-110% in the initial year, it may result in a lower fund ratio in 2029 and 2030. When interpreting this finding, it is important to consider our assumption that the utilization of the program will experience take-up rate growth in the first several years before reaching stability.

With the "spending-down" consideration, we recommend utilizing the initial year's fund ratios as target ratios (corresponding to Panel B in Table 2.4) when forming recommendations based on the scenario analysis. Specifically, we suggest the following six projections, corresponding to Scenarios #2B (110%; 120%), #5B (110%; 120%), #8B (110%; 120%) in Table 2.4. Detailed information regarding these projections is provided at the end of this section.

Projection 1: In this projection, we have assumed a low level of ongoing expenses (3%) alongside a medium level of start-up expenses (60M). To achieve a target fund ratio of 110% in 2026, a contribution rate of 0.83% will be necessary, that is, 0.415% for both employers and employees, with an effective contribution rate at 0.78% considering that employers with fewer than 15 employees are not required to contribute. The projected fund levels are estimated to be at 103% in 2027, 91% in 2028, 78% in 2029, and 57% in 2030. The decrease in the fund level is attributed to the assumption that as more people become aware of the program, there will be higher utilization rates, resulting in increased demand for program benefits. It is worth noting that a fund level of 57% in 2030 is deemed sufficient based on the experience of other states, such as California, which maintains fund levels in the range of 25-50% in the long run.

Projection 2: In this projection, we have assumed a low level of ongoing expenses (3%) alongside a medium level of start-up expenses (60M). To achieve a target fund ratio of 120% in 2026, a contribution rate of 0.87% will be necessary. That is, 0.435% for employers and 0.435% for employees, with an effective contribution rate at 0.81% considering that employers with fewer than 15 employees are not required to contribute. The projected fund levels are estimated to be at 117% in 2027, 109% in 2028, 100% in 2029, and 81% in 2030.

Projection 3: In this projection, we have assumed a medium level of ongoing expenses (5%) alongside a medium level of start-up expenses (60M). To achieve a target fund ratio of 110% in 2026, a contribution rate of 0.85% will be necessary. That is, 0.425% for employers and 0.425% for employees, with an effective contribution rate at 0.79% considering that employers with fewer than 15 employees are not required to contribute. The projected fund levels are estimated to be at 113% in 2027, 91% in 2028, 78% in 2029, and 60% in 2030.

Projection 4: In this projection, we have assumed a medium level of ongoing expenses (5%) alongside a medium level of start-up expenses (60M). To achieve a target fund ratio of 120% in 2026, a contribution rate of 0.89% will be necessary. That is, 0.445% for employers and 0.445% for employees, with an effective contribution rate at 0.83% considering that employers with fewer than 15 employees are not required to contribute. The projected fund levels are estimated to be at 117% in 2027, 109% in 2028, 100% in 2029, and 85% in 2030.

Projection 5: In this projection, we have assumed a high level of ongoing expenses (8%) alongside a medium level of start-up expenses (60M). To achieve a target fund ratio of 110% in 2026, a contribution rate of 0.88% will be necessary. That is, 0.440% for employers and 0.440% for employees, with an effective contribution rate at 0.81% considering that employers with fewer than 15 employees are not required to contribute. The projected fund levels are estimated to be at 103% in 2027, 91% in 2028, 78% in 2029, and 65% in 2030.

Projection 6: In this projection, we have assumed a high level of ongoing expenses (8%) alongside a medium level of start-up expenses (60M). To achieve a target fund ratio of 120% in 2026, a contribution rate of 0.92% will be necessary. That is, 0.460% for employers and 0.460% for employees, with an effective contribution rate of 0.86% considering that employers with fewer than 15 employees are not required to contribute. The projected fund levels are estimated to be 117% in 2027, 109% in 2028, 100% in 2029, and 91% in 2030.

A summary of the projections is presented in Table 2.5, followed by details for Projections 1-6. Based on the projections in Table 2.5 and considering different scenarios of ongoing administrative costs and target fund ratios, we suggest a recommended contribution rate ranging from 0.42% to 0.46% for both employers and employees. The effective contribution rate, which represents the combined contribution from both parties, ranges from 0.77% to 0.86%.

Table 2.5. A Summary Table of the Recommended Projections

PROJ. #	Scenarios	Employer Contribution Rate (%)	Employee Contribution Rate (%)	Effective Contribution Rate (%)
1	3% Admin Costs; 110% Target Ratio	0.415	0.415	0.77
2	3% Admin Costs; 120% Target Ratio	0.440	0.440	0.81
3	5% Admin Costs; 110% Target Ratio	0.425	0.425	0.79
4	5% Admin Costs; 120% Target Ratio	0.445	0.445	0.83
5	8% Admin Costs; 110% Target Ratio	0.440	0.440	0.81
6	8% Admin Costs; 120% Target Ratio	0.460	0.460	0.86

Notes:
1. The effective contribution rate is smaller than the total contribution rate of employers and employees because employers with fewer than 15 employees are not required to contribute.
2. The total contribution rate is maintained with two decimal places for practical purpose. However, to ensure accuracy for the 50%/50% employer/employee share, we retain three decimal places for both the employee and employer contributions.

In conclusion, closely monitoring projections and reassessing assumptions is paramount to ensuring the program's financial stability and sustainable growth. Incorporating insights from various sources, such as experiences, employment trends, claims data, and investment markets, enables informed decision-making and the establishment of a well-managed program. By implementing the recommended measures, including a dedicated monitoring team, flexible frameworks, and transparent communication, the program can adapt to changing circumstances and thrive over the long term, benefiting all participants and ensuring its continued success.

Projection 1. Pay back in 5 Year; Administrative Expense = 3%; Start-up Expense = 60M; Target Fund Ratio = 110%

	2024	2025	2026	2027	2028	2029	2030
Fund Balance - Beginning of Year ($ millions)	$60.0	$421.1	$1,947.4	$1,909.5	$1,872.8	$1,779.2	$1,636.0
Investment Income	$1.8	$12.6	$58.4	$57.3	$56.2	$53.4	$49.1
Taxable Wages ($ millions)	$44,580.7	$187,476.3	$196,852.7	$206,875.9	$217,281.8	$228,239.3	$239,644.1
Tax Revenue	$371.3	$1,561.6	$1,639.7	$1,723.2	$1,809.9	$1,901.1	$1,996.1
Total Revenue	**$373.1**	**$1,574.2**	**$1,698.1**	**$1,780.5**	**$1,866.1**	**$1,954.5**	**$2,045.2**
Benefit Payment ($ millions)	$0.0	$0.0	$1,674.8	$1,753.5	$1,893.4	$2,028.6	$2,165.7
Administrative Expenses	$12.0	$48.0	$49.2	$51.7	$54.3	$57.0	$159.7
Payback (in 5 years)			$12.0	$12.0	$12.0	$12.0	$12.0
Total Expenditure	**$12.0**	**$48.0**	**$1,736.0**	**$1,817.2**	**$1,959.7**	**$2,097.7**	**$2,337.4**
Fund Balance - End of Year	**$421.1**	**$1,947.4**	**$1,909.5**	**$1,872.8**	**$1,779.2**	**$1,636.0**	**$1,343.8**
Fund Ratio			**110%**	**103%**	**91%**	**78%**	**57%**

Notes:

1. Investment income is estimated as 3% of the fund balance at the beginning of the year. Total revenue includes the tax revenue collected each year and the investment income. Fund balance at the end of year = fund balance at the beginning of the year + total revenue in the current year – total expenditure.
2. Administrative expenses include the start-up expenses and the ongoing expenses. The start-up expense in this scenario is assumed at 60 million in 2024 and 2025. Ongoing administrative expense = 3% * fund collected in a year; the payback schedule = 5 years
3. The target ratio assessed in 2026 = 110%.
4. The estimated total contribution rate = 0.83; the effective contribution rate = 0.77. The effective contribution rate is smaller than the total contribution rate of employers and employees because employers with fewer than 15 employees are not required to contribute.

Projection 2. Pay back in 5 Year; Administrative Expense = 3%; Start-up Expense = 60M; Target Fund Ratio = 120%

	2024	2025	2026	2027	2028	2029	2030
Fund Balance - Beginning of Year ($ millions)	$60.0	$439.4	$2,042.8	$2,085.8	$2,136.4	$2,136.8	$2,094.9
Investment Income	$1.8	$13.2	$61.3	$62.6	$64.1	$64.1	$62.8
Taxable Wages ($ millions)	$44,580.7	$187,476.3	$196,852.7	$206,875.9	$217,281.8	$228,239.3	$239,644.1
Tax Revenue	$389.6	$1,638.2	$1,720.2	$1,807.7	$1,898.7	$1,994.4	$2,094.1
Total Revenue	**$391.4**	**$1,651.4**	**$1,781.4**	**$1,870.3**	**$1,962.8**	**$2,058.5**	**$2,156.9**
Benefit Payment ($ millions)	$0.0	$0.0	$1,674.8	$1,753.5	$1,893.4	$2,028.6	$2,165.7
Administrative Expenses	$12.0	$48.0	$51.6	$54.2	$57.0	$59.8	$167.5
Payback (in 5 years)			$12.0	$12.0	$12.0	$12.0	$12.0
Total Expenditure	**$12.0**	**$48.0**	**$1,738.4**	**$1,819.8**	**$1,962.3**	**$2,100.5**	**$2,345.3**
Fund Balance - End of Year	**$439.4**	**$2,042.8**	**$2,085.8**	**$2,136.4**	**$2,136.8**	**$2,094.9**	**$1,906.6**
Fund Ratio			**120%**	**117%**	**109%**	**100%**	**81%**

Notes:

1. Investment income is estimated as 3% of the fund balance at the beginning of the year. Total revenue includes the tax revenue collected each year and the investment income. Fund balance at the end of year = fund balance at the beginning of the year + total revenue in the current year – total expenditure.
2. Administrative expenses include the start-up expenses and the ongoing expenses. The start-up expense in this scenario is assumed at 60 million in 2024 and 2025. Ongoing administrative expense = 3% * fund collected in a year; the payback schedule = 5 years.
3. The target ratio assessed in 2026 = 120%.
4. The estimated total contribution rate = 0.88; the effective contribution rate = 0.81. The effective contribution rate is smaller than the total contribution rate of employers and employees because employers with fewer than 15 employees are not required to contribute.

Projection 3. Pay back in 5 Years; Administrative Expense = 5%; Start-up Expense = 60M; Target Fund Ratio = 110%

	2024	2025	2026	2027	2028	2029	2030
Fund Balance - Beginning of Year ($ millions)	$60.0	$428.3	$1,985.1	$1,945.9	$1,907.5	$1,812.1	$1,667.0
Investment Income	$1.8	$12.9	$59.6	$58.4	$57.2	$54.4	$50.0
Taxable Wages ($ millions)	$44,580.7	$187,476.3	$196,852.7	$206,875.9	$217,281.8	$228,239.3	$239,644.1
Tax Revenue	$378.5	$1,591.9	$1,671.5	$1,756.6	$1,845.0	$1,938.0	$2,034.9
Total Revenue	**$380.3**	**$1,604.8**	**$1,731.1**	**$1,815.0**	**$1,902.2**	**$1,992.4**	**$2,084.9**
Benefit Payment ($ millions)	$0.0	$0.0	$1,674.8	$1,753.5	$1,893.4	$2,028.6	$2,165.7
Administrative Expenses	$12.0	$48.0	$83.6	$87.8	$92.3	$96.9	$162.8
Payback (in 5 years)			$12.0	$12.0	$12.0	$12.0	$12.0
Total Expenditure	**$12.0**	**$48.0**	**$1,770.3**	**$1,853.4**	**$1,997.6**	**$2,137.5**	**$2,340.5**
Fund Balance - End of Year	**$428.3**	**$1,985.1**	**$1,945.9**	**$1,907.5**	**$1,812.1**	**$1,667.0**	**$1,411.4**
Fund Ratio			**110%**	**103%**	**91%**	**78%**	**60%**

Notes:

1. Investment income is estimated as 3% of the fund balance at the beginning of the year. Total revenue includes the tax revenue collected each year and the investment income. Fund balance at the end of year = fund balance at the beginning of the year + total revenue in the current year – total expenditure.
2. Administrative expenses include the start-up expenses and the ongoing expenses. The start-up expense in this scenario is assumed at 60 million in 2024 and 2025. Ongoing administrative expense = 5% * fund collected in a year; the payback schedule = 5 years.
3. The target ratio assessed in 2026 = 110%.
4. The estimated total contribution rate = 0.85; the effective contribution rate = 0.79. The effective contribution rate is smaller than the total contribution rate of employers and employees because employers with fewer than 15 employees are not required to contribute.

Projection 4. Pay back in 5 Years; Administrative Expense = 5%; Start-up Expense =60M; Target Fund Ratio = 120%

	2024	2025	2026	2027	2028	2029	2030
Fund Balance - Beginning of Year ($ millions)	$60.0	$447.5	$2,085.2	$2,129.1	$2,180.5	$2,181.9	$2,140.8
Investment Income	$1.8	$13.4	$62.6	$63.9	$65.4	$65.5	$64.2
Taxable Wages ($ millions)	$44,580.7	$187,476.3	$196,852.7	$206,875.9	$217,281.8	$228,239.3	$239,644.1
Tax Revenue	$397.7	$1,672.3	$1,755.9	$1,845.3	$1,938.2	$2,035.9	$2,137.6
Total Revenue	**$399.5**	**$1,685.7**	**$1,818.5**	**$1,909.2**	**$2,003.6**	**$2,101.4**	**$2,201.9**
Benefit Payment ($ millions)	$0.0	$0.0	$1,674.8	$1,753.5	$1,893.4	$2,028.6	$2,165.7
Administrative Expenses	$12.0	$48.0	$87.8	$92.3	$96.9	$101.8	$171.0
Payback (in 5 years)			$12.0	$12.0	$12.0	$12.0	$12.0
Total Expenditure	**$12.0**	**$48.0**	**$1,774.6**	**$1,857.8**	**$2,002.3**	**$2,142.4**	**$2,348.7**
Fund Balance - End of Year	**$447.5**	**$2,085.2**	**$2,129.1**	**$2,180.5**	**$2,181.9**	**$2,140.8**	**$1,993.9**
Fund Levels			**120%**	**117%**	**109%**	**100%**	**85%**

Notes:

1. Investment income is estimated as 3% of the fund balance at the beginning of the year. Total revenue includes the tax revenue collected each year and the investment income. Fund balance at the end of year = fund balance at the beginning of the year + total revenue in the current year – total expenditure.
2. Administrative expenses include the start-up expenses and the ongoing expenses. The start-up expense in this scenario is assumed at 60 million in 2024 and 2025. Ongoing administrative expense = 5% * fund collected in a year; the payback schedule = 5 years.
3. The target ratio assessed in 2026 = 120%.
4. The estimated total contribution rate = 0.89; the effective contribution rate = 0.83. The effective contribution rate is smaller than the total contribution rate of employers and employees because employers with fewer than 15 employees are not required to contribute.

Projection 5. Pay back in 5 Years; Administrative Expense = 8%; Start-up Expense =60M; Target Fund Ratio = 110%

	2024	2025	2026	2027	2028	2029	2030
Fund Balance - Beginning of Year ($ millions)	$60.0	$440.1	$2,046.7	$2,007.0	$1,968.0	$1,871.8	$1,725.8
Investment Income	$1.8	$13.2	$61.4	$60.2	$59.0	$56.2	$51.8
Taxable Wages ($ millions)	$44,580.7	$187,476.3	$196,852.7	$206,875.9	$217,281.8	$228,239.3	$239,644.1
Tax Revenue	$390.3	$1,641.4	$1,723.5	$1,811.2	$1,902.4	$1,998.3	$2,098.1
Total Revenue	**$392.1**	**$1,654.6**	**$1,784.9**	**$1,871.5**	**$1,961.4**	**$2,054.4**	**$2,149.9**
Benefit Payment ($ millions)	$0.0	$0.0	$1,674.8	$1,753.5	$1,893.4	$2,028.6	$2,165.7
Administrative Expenses	$12.0	$48.0	$137.9	$144.9	$152.2	$159.9	$167.9
Payback (in 5 years)			$12.0	$12.0	$12.0	$12.0	$12.0
Total Expenditure	**$12.0**	**$48.0**	**$1,824.6**	**$1,910.4**	**$2,057.5**	**$2,200.5**	**$2,345.6**
Fund Balance - End of Year	**$440.1**	**$2,046.7**	**$2,007.0**	**$1,968.0**	**$1,871.8**	**$1,725.8**	**$1,530.1**
Fund Ratio			**110%**	**103%**	**91%**	**78%**	**65%**

Notes:

1. Investment income is estimated as 3% of the fund balance at the beginning of the year. Total revenue includes the tax revenue collected each year and the investment income. Fund balance at the end of year = fund balance at the beginning of the year + total revenue in the current year – total expenditure.
2. Administrative expenses include the start-up expenses and the ongoing expenses. The start-up expense in this scenario is assumed at 60 million in 2024 and 2025. Ongoing administrative expense = 8% * fund collected in a year; the payback schedule = 5 years.
3. The target ratio assessed in 2026 = 110%.
4. The estimated total contribution rate = 0.88; the effective contribution rate = 0.81. The effective contribution rate is smaller than the total contribution rate of employers and employees because employers with fewer than 15 employees are not required to contribute.

Projection 6. Pay back in 5 Years; Administrative Expense = 8%; Start-up Expense =60M; Target Ratio = 120%

	2024	2025	2026	2027	2028	2029	2030
Fund Balance - Beginning of Year ($ millions)	$60.0	$460.3	$2,152.2	$2,197.5	$2,250.3	$2,253.0	$2,213.3
Investment Income	$1.8	$13.8	$64.6	$65.9	$67.5	$67.6	$66.4
Taxable Wages ($ millions)	$44,580.7	$187,476.3	$196,852.7	$206,875.9	$217,281.8	$228,239.3	$239,644.1
Tax Revenue	$410.5	$1,726.2	$1,812.5	$1,904.8	$2,000.6	$2,101.5	$2,206.5
Total Revenue	**$412.3**	**$1,740.0**	**$1,877.1**	**$1,970.7**	**$2,068.1**	**$2,169.1**	**$2,272.9**
Benefit Payment ($ millions)	$0.0	$0.0	$1,674.8	$1,753.5	$1,893.4	$2,028.6	$2,165.7
Administrative Expenses	$12.0	$48.0	$145.0	$152.4	$160.0	$168.1	$176.5
Payback (in 5 years)			$12.0	$12.0	$12.0	$12.0	$12.0
Total Expenditure	**$12.0**	**$48.0**	**$1,831.8**	**$1,917.9**	**$2,065.4**	**$2,208.8**	**$2,354.2**
Fund Balance - End of Year	**$460.3**	**$2,152.2**	**$2,197.5**	**$2,250.3**	**$2,253.0**	**$2,213.3**	**$2,132.0**
Fund Ratio			**120%**	**117%**	**109%**	**100%**	**91%**

Notes:

1. Investment income is estimated as 3% of the fund balance at the beginning of the year. Total revenue includes the tax revenue collected each year and the investment income. Fund balance at the end of year = fund balance at the beginning of the year + total revenue in the current year – total expenditure.
2. Administrative expenses include the start-up expenses and the ongoing expenses. The start-up expense in this scenario is assumed at 60 million in 2024 and 2025. Ongoing administrative expense = 8% * fund collected in a year; the payback schedule = 5 years.
3. The target ratio assessed in 2026 = 120%.
4. The estimated total contribution rate = 0.92; the effective contribution rate = 0.86. The effective contribution rate is smaller than the total contribution rate of employers and employees because employers with fewer than 15 employees are not required to contribute.

Chapter 3

Cost Simulation Using Dol Worker Plus Model and Contribution Rate Optimization Using Linear Optimization Model

3.1 Introduction

The goal of the study is to conduct a comprehensive cost analysis of the FAMLI (Family and Medical Leave Insurance) program to identify the most appropriate contribution rate to establish and maintain the solvent program. The major challenge of this study is the presence of numerous uncertain factors that need to be considered. For example, the percentage of administrative costs out of trust-fund assets is unpredictable, the start-up funding and its pay back schedule is unknown, and the target fund level as well as contribution tax rate is still to be determined. To guarantee the solvency and long-term sustainability of the FAMLI program, various scenarios involving uncertain parameters are taken into account, including start-up funding, administrative cost expressed as a percent of trust-fund assets, pay-back schedule, and target fund levels. Our study is to determine the optimal contribution rate for the following potential scenarios:

- **Multiple scenarios for a range of possible start-up funding during 2024 and 2025 in the unit of million dollars**: 40, 60, and 90.
- **Multiple scenarios for a range of possible administrative costs expressed as a percent of trust-fund assets collected in a year**: 3%, 5%, and 8%.
- **Multiple scenarios for a range of possible years to pay back the start-up funding**: 1 year, 5 years, 7 years, and 10 years.
- **Multiple scenarios for a range of possible target fund levels that should be maintained in each year**: 100%, 110%, 120%, 130%, and 140% of expected annual outgo.

The considered scenarios above will lead to $3 \times 3 \times 4 \times 5 = 180$ possible combinations of stochastic parameters. This results in a large number of scenarios to consider, making it computationally challenging to use traditional simulation methods to find the optimal contribution tax rates for all potential scenarios. To address this challenge, we choose to use optimization modeling and algorithm to find the minimum contribution tax rates that satisfy all the constraints and requirements such as target fund levels. Therefore, our cost analysis comprises two steps. Initially, we utilize an existing simulation model to generate tax revenue and program expenses which serve as inputs for our optimization model. Subsequently, we develop an optimization model to seek for the optimal contribution rate for each possible scenario while ensuring the satisfaction of the target fund level. Our optimization approach encompasses two separate models, one model with target fund levels required for all years from 2024 to 2030, one model with target fund level only mandatory for the year 2026 to smoothly "spend-down" the trust fund assets accumulated during the initial 5 quarters of the program's implementation.

3.2 Cost Simulation using DOL Worker PLUS Model

3.2.1 Simulation Model

In our simulation study, we use the existing Worker Paid Leave Usage Simulation (Worker PLUS) model – a publicly available microsimulation tool developed by the Chief Evaluation Office at the U.S. Department of Labor (DOL) (U.S. Department of Labor, 2021) as the base model. This model is built on public microdata and predictive modeling and is to derive program cost estimates from actual observed leave-taking behaviors whenever possible. However, in cases where direct data was lacking, a range of program cost estimates was calculated based on reasonable assumptions about uncertain aspects of a paid leave program (Matthews, A. C. and Alberlda, R., 2017). To adapt the base model to align with Maryland's Family and Medical Leave Insurance Program (FAMLI), we made necessary modifications. The model was trained using the DOL Family and Medical Leave Act (FMLA) Employee Survey public microdata to develop models for individual-level leave requirements and behaviors. We then simulated leave-taking behaviors of individual workers in Maryland, utilizing data from the 2017-2021 five-year American Community Survey (ACS) Public Use Microdata Sample (PUMS).

During the simulation process, each sampled individual from the ACS dataset was run through the estimated behavioral models, incorporating various assumptions about leave-taking behaviors. Decisions such as whether an individual decides to take a leave of a type of not were determined using a logistic regression equation. The probability of opting for leave was estimated through logistic regression, considering the person's demographic characteristics, and compared with a random draw from a standard uniform distribution to make the final decision. Once all individuals have been processed through the model, a simulated history of leave-taking behaviors is generated.

The input parameters of the simulation model are obtained from Family and Medical Leave Insurance Program (FAMLI):

- **Contribution rules:**
    - Contribution starts from October 1, 2024 and benefits start from January 1, 2026.
    - Contribution rate cap set at 1.2%.
    - Social Security Wage Base (SSWB) as a cap on the amount of taxable wages.
    - Cost-share between employers and employees is set at 50/50.
- **Eligibility rules**:
    - **Minimum work hours:** at least 680 work hours over the 12-month application year.
    - **Employer type:** private employees and government employees with size of 15 or more.
    - **Qualifying leave:** own illness, maternity, new child, ill child, ill spouse, ill parent.
- **Maximum number of weeks**: 12 weeks in an application year, except the employee may receive an additional 12 weeks for care of a newborn child, adoption, foster care, etc., or if a serious health condition arises.

- **Weekly benefit cap**: Muston the wage be at least $50 and cannot exceed $1000.
- **Wage replacement structure**:
    - If weekly wage is 65% or less of state average, then 90% of weekly wage.
    - If weekly wage is greater than 65% of state average, then 90% of weekly wage up to 65% of state average and 50% of the weekly wage that is greater than 65% of state average.

Our data and assumptions are consistent with Chapter 2: Cost Analysis: Estimating Costs, Taxable Income, and Tax Rates for Solvency of FAMLI Fund Using Econometric Modeling, as summarized in Appendix I – Table 1, including state average weekly wage, maximum weekly benefit, and Social Security Wage Base adjusted by inflation, take up rate adjusted each year, employment size adjusted each year. We also assume zero interest rate for payback and 3% interest rate for fund investment returns.

3.2.2 Simulation Results

In order to find the optimal contribution rate to establish and maintain a solvent program, we first need the estimated tax revenue and program expense associated with different contribution rates. The DOL Worker PLUS model described above is used to simulate the tax revenue income from the employment data and to predict the program expenses based on the leave taking behavior. According to the Scope of Work, the contribution rate is set to range from 0.80% to 1.20% with SSWB applied to taxable income and cost-share between employers and employees is set at 50/50.

Appendix – Table 2 shows the simulated total tax revenue from 2024 to 2030 with SSWB in taxable income with payroll contribution rates from 0.80% to 1.20%. According to SB 275 (Ch. 48), Section 8.3, each employer with 15 or more employees shall contribute to the fund. Employers with fewer than 15 employees are not obligated to make employer contributions; thus, these contributions should be excluded from the total tax revenue contribution. Appendix – Table 3 presents the waived contributions from employers with fewer than 15 employees with a cost-share formula of 50/50. Besides the tax revenue collected, additional start-up funding is also provided by the State between calendar quarter 4 of 2024 and quarter 4 of 2025 before any benefits are paid, with possible scenarios of $40, $60, and $90 million considered in the analysis.

The total expense of each year comprises three components: benefit expense, administrative cost, and paid back start-up funding. The majority of program expense are allocated to benefit payments. During the years 2024 and 2025, there are no benefit expenses or administrative costs since the benefits program starts on January 1, 2026. Starting from 2026, the administrative cost is approximated as a percentage of the trust-fund assets collected each year. For this analysis, we consider three representative scenarios for the administrative cost: 3%, 5%, and 8% of the trust-fund assets collected. The start-up funding provided by the State will be repaid over time to spread out the costs. The repayment will occur evenly over 1, 5, 7, and 10 years, starting from 2026. Appendix Table 4 presents the total expenses, including estimated benefit expenses, administrative costs, and the paid back start-up funds. For this specific scenario, the

administrative cost is approximated as 5% of trust-fund assets, and the start-up funding of $60 million is scheduled to be paid back over 5 years.

Given the simulated tax revenue and program expense, Appendix Table 5 presents the yearly statement of cash flows from 2024 to 2030 with contribution tax rate of 1.0%, sharing formula of 50%, SSWB as a cap on the amount of taxable wages, administrative cost approximated as 5% of trust-fund assets, and start-up funding of $60 million scheduled to be paid back in 5 years.

3.3 Optimization of contribution rate using linear optimization model

Here, we use linear optimization techniques to optimize the objective function while adhering to a specific set of constraints and employ the simplex algorithm to find the optimal contribution rates for various scenarios. Our formulation involves two optimization models: Model A and Model B. Model A enforces the target fund levels in all years between 2024 to 2030. On the other hand, Model B only requires that the target fund level be met in the starting year 2026. Our optimization models for our contribution rate are formulated as follows:

Sets:

T: set of years with $t \in (2024, \dots, 2030)$.

Deterministic parameters:

Exp_t: benefit expenses at year $t \in (2024, \dots, 2030)$.

b_0: estimated intercept coefficient to predict revenue Rev_t^r.

b_1: estimated slope coefficient of contribution tax rate r to predict revenue Rev_t^r.

b_2: estimated slope coefficient of year t to predict revenue Rev_t^r.

Stochastic parameters:

$Level$: target fund level expressed as a percentage of expected annual outgo.

$Schedule$: number of years required to pay back start-up funding.

$AdminPct$: administrative costs expressed as a percentage of trust funds collected each year.

$Startup$: total start-up funding in the unit of million dollars.

$Startup_t$: start-up funding in the unit of million dollars at year $t \in (2024, 2025)$.

$$Startup_{2024} = 20\%\ Startup \quad (3.1)$$

$$Startup_{2025} = 80\%\ Startup$$

$$Startup_t = 0, t \in (2026, \dots, 2030)$$

$Payback_t$: amount of start-up funding paid back at year $t \in (2024, \dots, 2030)$.

$$Payback_t = 0, t \in (2024, 2025)$$

$$Payback_t = \frac{Startup}{Schedule}, t \in (2026, \dots, 2025 + Schedule\ ) \quad (3.2)$$

Decision variables:

r: contribution tax rate.

Calculated variables:

Rev_t^r: total tax revenue collected with contribution rate r at year $t \in (2024, \dots, 2030)$.

$Admin_t^r$: administrative cost with contribution rate r during year $t \in (2024, \dots, 2030)$.

$Cost_t^r$: total cost with contribution rate r during year $t \in (2024, \dots, 2030)$.

$Balance_t^r$: end-of-year balance of year $t \in (2024, \dots, 2030)$ with contribution rate r.

Objective for Model A:

$$\text{Minimize } \sum_{t=2024}^{2030}(Balance_t^r - Level * Cost_t^r) \quad (3.3a)$$

Objective for Model B:

$$\text{Minimize}(Balance_{2006}^r - Level * Cost_{2006}^r) \quad (3.3b)$$

Constraints:

Target fund level constraint for Model A:

$$Balance_t^r - Level * Cost_t^r \geq 0, t \in (2024, \dots, 2030) \quad (3.4a)$$

Target fund level constraint for Model B:

$$Balance_{2026}^r - Level * Cost_{2026}^r \geq 0 \quad (3.4b)$$

Revenue prediction:

$$Rev_t^r = b_0 + b_1 * r + b_2 * t, t \in (2026, \dots, 2030) \quad (3.5)$$

Administrative cost calculation:

$$Admin_t^r = 0, t \in (2024, 2025)$$

$$Admin_t^r = AdminPct * Rev_t^r, t \in (2026, \dots, 2030) \quad (3.6)$$

Cost calculation:

$$Cost_t^r = Exp_t + Admin_t^r + Payback_t, t \in (2024, \dots, 2030) \quad (3.7)$$

End-of year balance calculation:

$$Balance_t^r = 25\%Rev_{t-1}^r + Startup_t - Cost_t^r, t = 2024$$

$$Balance_t^r = 103\%Balance_{t-1}^r + Rev_t^r + Startup_t - Cost_t^r, t \in (2025, \dots, 2030) \quad (3.8)$$

Non-negativity constraint: $$r \geq 0 \quad (3.9)$$

This optimization model seeks for the optimal contribution rate that results in the end-of-year balances closest to the target fund level while guaranteeing the target fund level must be satisfied either for all years from 2024 to 2030 (Model A) or only for initial year 2026 (Model B). The objective function (3.3a) is to minimize the aggregate deviations between the actual balance at the end of each year and the target balance of this year across 2024 to 2030. The objective function (3.3b) is to minimize the difference between the actual balance at the end of initial year 2026 and the target balance of initial year 2026.

The target balance for each year is determined by the target fund level and the total expense of the corresponding year, and the actual end-of-year balance must be greater than or equal to the target balance of this year, as represented by target fund level constraint (3.4a) and (3.4b). Equations (3.1) assign 20% of start-up funding to year 2024 and the other 80% to year 2025 because start-up funding is provided by the State for calendar quarter 4 of 2024 and the entire year of 2025. Equation (3.2) calculates the amount of start-up funding to pay back each year starting from 2026 according to the number of years required to pay back assuming the payback is equally divided to each year. The multiple linear regression equation (3.5) is a linear approximation of tax revenue based on the simulated total revenue for each year with different contribution tax rates with adjusted R square of 0.9982. Equations (3.6) state administrative costs

do not exist in years 2024 and 2025 as benefit claims do not start until 2026, and administrative costs during fiscal years 2026-2030 are expressed as a percentage of trust-fund assets collected in a year. Equation (3.7) defines the total cost for each year to be consisting of administrative cost, benefit expense, and payback of the corresponding year. As shown in equations (3.8), end-of-year balance of year 2024 is represented by the summation of one fourth of collected tax revenue and start-up funding deducting this year's total cost, and end-of-year balances of the other years are calculated as the summation of previous year's end-of-year balance considering 3% interest rate, collected tax revenue and start-up funding subtracting this year's total cost. Non-negativity constraint (3.9) enforces the decision variable contribution tax rate must take non-negative values.

3.4 Optimization results and implications

Using the linear optimization model formulated above and simplex algorithm, optimal contribution rates are solved for different target fund levels, different start-up funding amounts, different administrative costs expressed as percentages of trust funds collected, and different schedules to pay back the start-up funding. Table 3.1 (a)-(e) display the optimal contribution rates when the target fund level is required to be satisfied for each year from 2024 to 2030. Table 3.2 (a)-(e) provide the optimization results when the target fund level is only mandatory for the year 2026 to smoothly "spend-down" the trust fund assets that will be built up over the first 5 quarters.

Table 3.1 (a) Optimal contribution rate with target fund level of 100% from 2024 to 2030

Admin Cost Percentage		3%			5%			8%		
Start-Up Fund (millions)		40	60	90	40	60	90	40	60	90
Pay Back Years	1	0.8775	0.8774	0.8773	0.8947	0.8946	0.8945	0.9218	0.9217	0.9216
	5	0.8781	0.8783	0.8786	0.8953	0.8955	0.8958	0.9224	0.9226	0.9230
	7	0.8766	0.8760	0.8752	0.8938	0.8932	0.8923	0.9208	0.9203	0.9194
	10	0.8754	0.8743	0.8726	0.8926	0.8914	0.8897	0.9196	0.9185	0.9167

Table 3.1 (b) Optimal contribution rate with target fund level of 110% from 2024 to 2030

Admin Cost Percentage		3%			5%			8%		
Start-Up Fund (millions)		40	60	90	40	60	90	40	60	90
Pay Back Years	1	0.8921	0.8920	0.8919	0.9099	0.9098	0.9097	0.9380	0.9379	0.9377
	5	0.8928	0.8930	0.8934	0.9106	0.9108	0.9112	0.9386	0.9389	0.9393
	7	0.8912	0.8907	0.8899	0.9090	0.9085	0.9077	0.9370	0.9365	0.9356
	10	0.8901	0.8890	0.8873	0.9078	0.9067	0.9050	0.9358	0.9346	0.9329

Table 3.1 (c) Optimal contribution rate with target fund level of 120% from 2024 to 2030

Admin Cost Percentage		3%			5%			8%	
Start-Up Fund (millions)		40	60	90	40	60	90	40	60	90
Pay Back Years	1	0.9067	0.9067	0.9153	0.9251	0.9250	0.9334	0.9541	0.9540	0.9620
	5	0.9075	0.9078	0.9082	0.9259	0.9262	0.9266	0.9549	0.9552	0.9557
	7	0.9059	0.9054	0.9047	0.9243	0.9238	0.9230	0.9533	0.9527	0.9519
	10	0.9047	0.9037	0.9020	0.9231	0.9220	0.9203	0.9520	0.9509	0.9492

Table 3.1 (d) Optimal contribution rate with target fund level of 130% from 2024 to 2030

Admin Cost Percentage		3%			5%			8%	
Start-Up Fund (millions)		40	60	90	40	60	90	40	60	90
Pay Back Years	1	0.9391	0.9469	0.9586	0.9586	0.9666	0.9785	0.9894	0.9976	1.0100
	5	0.9222	0.9225	0.9230	0.9412	0.9415	0.9420	0.9712	0.9715	0.9721
	7	0.9206	0.9202	0.9195	0.9396	0.9391	0.9384	0.9695	0.9690	0.9683
	10	0.9194	0.9184	0.9168	0.9384	0.9373	0.9356	0.9683	0.9671	0.9655

Table 3.1 (e) Optimal contribution rate with target fund level of 140% from 2024 to 2030

Admin Cost Percentage		3%			5%			8%	
Start-Up Fund (millions)		40	60	90	40	60	90	40	60	90
Pay Back Years	1	0.9810	0.9894	1.0021	1.0023	1.0109	1.0238	1.0360	1.0450	1.0583
	5	0.9572	0.9538	0.9486	0.9780	0.9745	0.9692	1.0109	1.0073	1.0018
	7	0.9555	0.9512	0.9448	0.9762	0.9719	0.9653	1.0091	1.0046	0.9978
	10	0.9542	0.9493	0.9419	0.9749	0.9699	0.9624	1.0078	1.0026	0.9948

Table 3.2 (a) Optimal contribution rate with target fund level of 100% in year 2026

Admin Cost Percentage		3%			5%			8%	
Start-Up Fund (millions)		40	60	90	40	60	90	40	60	90
Pay Back Years	1	0.8142	0.8201	0.8290	0.8287	0.8348	0.8438	0.8516	0.8578	0.8671
	5	0.7945	0.7906	0.7847	0.8087	0.8047	0.7987	0.8310	0.8269	0.8207
	7	0.7931	0.7884	0.7815	0.8072	0.8025	0.7955	0.8295	0.8247	0.8174
	10	0.7920	0.7869	0.7791	0.8062	0.8009	0.7931	0.8284	0.8230	0.8149

Table 3.2 (b) Optimal contribution rate with target fund level of 110% in year 2026

Admin Cost Percentage		3%			5%			8%		
Start-Up Fund (millions)		40	60	90	40	60	90	40	60	90
Pay Back Years	1	0.8557	0.8622	0.8721	0.8718	0.8785	0.8885	0.8972	0.9041	0.9144
	5	0.8350	0.8312	0.8255	0.8507	0.8468	0.8410	0.8755	0.8715	0.8655
	7	0.8335	0.8290	0.8222	0.8492	0.8446	0.8376	0.8739	0.8691	0.8620
	10	0.8324	0.8273	0.8197	0.8481	0.8429	0.8351	0.8727	0.8674	0.8594

Table 3.2 (c) Optimal contribution rate with target fund level of 120% in year 2026

Admin Cost Percentage		3%			5%			8%		
Start-Up Fund (millions)		40	60	90	40	60	90	40	60	90
Pay Back Years	1	0.8973	0.9045	0.9153	0.9151	0.9224	0.9334	0.9431	0.9507	0.9620
	5	0.8756	0.8719	0.8664	0.8929	0.8892	0.8836	0.9203	0.9164	0.9106
	7	0.8741	0.8696	0.8629	0.8914	0.8868	0.8800	0.9186	0.9140	0.9069
	10	0.8729	0.8679	0.8603	0.8902	0.8850	0.8773	0.9174	0.9121	0.9042

Table 3.2 (d) Optimal contribution rate with target fund level of 130% in year 2026

Admin Cost Percentage		3%			5%			8%		
Start-Up Fund (millions)		40	60	90	40	60	90	40	60	90
Pay Back Years	1	0.9391	0.9469	0.9586	0.9586	0.9666	0.9785	0.9894	0.9976	1.0100
	5	0.9164	0.9128	0.9075	0.9354	0.9317	0.9263	0.9654	0.9617	0.9560
	7	0.9147	0.9104	0.9038	0.9337	0.9292	0.9225	0.9637	0.9591	0.9522
	10	0.9135	0.9085	0.9011	0.9325	0.9274	0.9197	0.9624	0.9572	0.9493

Table 3.2 (e) Optimal contribution rate with target fund level of 140% in year 2026

Admin Cost Percentage		3%			5%			8%		
Start-Up Fund (millions)		40	60	90	40	60	90	40	60	90
Pay Back Years	1	0.9810	0.9894	1.0021	1.0023	1.0109	1.0238	1.0360	1.0450	1.0583
	5	0.9572	0.9538	0.9486	0.9780	0.9745	0.9692	1.0109	1.0073	1.0018
	7	0.9555	0.9512	0.9448	0.9762	0.9719	0.9653	1.0091	1.0046	0.9978
	10	0.9542	0.9493	0.9419	0.9749	0.9699	0.9624	1.0078	1.0026	0.9948

As depicted in Table 3.1 (a)-(e) and Table 3.2 (a)-(e), variations in start-up funds, spanning from 40 to 90 million, do not yield a significant difference on the optimal contribution rate when the target fund levels are required for all years from 2024 to 2030. When the target fund level is only obligatory for the year 2026, start-up funds have a more pronounced impact on the optimal contribution rates. It is interesting to observe that the optimal contribution rates display an upward trend as start-up funds increase when repayment of start-up funds is mandated within a

single year. Conversely, when repayment is spread over multiple years, an increase in start-up funds results in a decrease in the optimal contribution rates. This observation highlights the importance of considering the repayment terms when evaluating the impact of start-up funds on the overall contribution rate.

When a target fund level of up to 120% is required for all years from 2024 to 2030, the impact of pay-back schedule on the optimal contribution rate is minimal regardless of start-up funds and administrative cost percentage. Otherwise, there is a notable decrease in the optimal contribution rate as the required pay-back period increases from 1 year to 5 years. On the other hand, when the target fund level is mandated only for the year 2026, there is a significant increase in the optimal contribution rates when the repayment term is extended from 1 year to 5 years. However, there is no substantial difference in optimal contribution rates among 5, 7, and 10-year repayment schedules. Based on these results, it is advisable to opt for a pay-back schedule of multiple years, as it tends to yield better contribution rates, especially when the target fund level is required for the year 2026 only.

Regardless of whether the target fund level is required for a single year or for all years, the percentage of administrative cost out of trust-fund assets plays a crucial role in influencing the outcomes across all target fund levels, start-up funds, and pay-back schedules. The variability in administrative cost percentage can lead to disparate results for the optimal contribution rate. Consequently, having an accurate estimation of administrative costs, expressed as a percent of trust-fund, becomes critical in making reliable predictions and determining the best contribution rate.

The numerical results reveal that the target fund level is the most influential factor in determining the optimal contribution rate as it leads to the most substantial variations in optimal rates when the target fund level increases from 100% to 140%. In essence, the prescribed target fund level plays a central role in shaping the optimal value of contribution tax rate. When the target fund level remains up to 120%, the optimal contribution rates are notably lower when the target fund levels are required only for the year 2026, as compared to when they are mandated for all years from 2024 to 2030. However, as the target fund level reaches at least 130%, the distinction in optimal contribution rates between these two models, Model A and Model B, diminishes.

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Appendix I

Table 1 Estimation Assumptions

Year	Wage Adjustment	CPI Benefit Adjustment	Wage Adjustment Cumulative	Benefit Expense Adj.	State AWW	Weekly Benefit Cap	SSWB	Employment Growth Rate Per Year	Employment Size Projection
2021	9.36	3.89	1.000	1.000	1050	802	$142,800		
2022	4.79	5.26	1.048	1.053	1338	844	$147,000	Base Year	**2,737,947**
2023	4.15	8.51	1.091	1.142	1402	916	$160,200	1.400	2,776,278
2024	3.76	4.00	1.132	1.188	1455	952	$167,700	0.958	2,802,875
2025	4.06	2.53	1.178	1.218	1514	977	$174,900	0.958	2,829,727
2026	4.10	2.40	1.227	1.247	1576	1000	$181,200	0.958	2,856,835
2027	4.08	2.40	1.277	1.277	1640	1024	$188,700	0.958	2,884,204
2028	4.01	2.40	1.328	1.308	1706	1049	$196,500	0.958	2,911,834
2029	4.03	2.40	1.381	1.339	1775	1074	$204,600	0.958	2,939,730
2030	4.01	2.40	1.437	1.371	1846	1100	$212,700	0.958	2,967,892

Notes:

1. CPI is based on Trustee Report 2023, page 104 -105, and Table V.B.1.
2. Wage Adjustment data is based on Trustee Report 2023, Table V.B1 on Page 110.
3. SSWB in 2022 and 2023 is based on Social Security Administration' Contribution And Benefit Base; projections for 2024 through 2030 is based on the report titled "Social Security Administration publishes wage base projections for 2024 through 2032" by Ernst & Young Global Limited (taxnews.ey.com).
4. Wage inflation adjustment uses the current year's inflation rate; Benefit inflation adjustment uses the previous year's inflation rate (CPI)
5. Employment growth 2022-2023 based on BLS report, https://www.bls.gov/eag/eag.MD.htm (12-month % change from April 2022 to April 2023); projected growth thereafter is based on Maryland Employment Projection 2020-2030.
6. State AWW from 2020- 2023 are reported numbers; State AWW from 2024 - 2032 are estimated based on $1402 in 2023, which is aligned with the AWW listed in the report titled "Maryland Workers' Compensation Commission Maximum Rate of Benefits for Calendar Year 2023," as well as the estimated wage adjustments in 2024-2030 suggested in the Trustee Report 2023.

Table 2. Tax revenue with SSWB in taxable income ($ millions)

Payroll Contribution Rate	0.8%	0.9%	1.0%	1.1%	1.2%
2024	307	346	384	423	461
2025	1241	1396	1551	1706	1861
2026	1250	1352	1562	1718	1874
2027	1259	1417	1574	1732	1889
2028	1268	1427	1585	1744	1902
2029	1276	1436	1595	1755	1914
2030	1283	1444	1604	1764	1925

Table 3. Waived contributions from employers of size fewer than 15 with a cost-share formula of 50/50 ($ millions)

Payroll Contribution Rate	0.8%	0.9%	1.0%	1.1%	1.2%
2024	45	51	56	62	68
2025	188	211	235	258	282
2026	195	220	244	269	293
2027	203	229	254	280	305
2028	212	238	265	291	317
2029	220	248	275	303	330
2030	229	258	286	315	343

Table 4. Total expenses consisting of benefit expenses, administrative costs and paid back start-up funding ($ millions)

Year	Benefit Expenses	Admin Costs	Pay-back
2024	$0	$0	$0
2025	$0	$0	$0
2026	$1,273	$72	$12
2027	$1,294	$72	$12
2028	$1,311	$72	$12
2029	$1,334	$73	$12
2030	$1,349	$73	$12

Notes:

1. Administrative costs are approximated as 5% of fund collected in a year.
2. Start-up funding of $60 million is to be paid back over 5 years.

Table 5 Statement of Cash Flows ($ millions)

Year	Start-up fund	Tax Revenue	Contribution employer size <15	Benefit expense	Admin cost	Amount to pay back	Total Revenue	Total Cost	End-of-year fund balance	Target fund balance
2024	$12	$382	$28	$0	$0	$0	$366	$0	$366	$0
2025	$48	$1,542	$117	$0	$0	$0	$1,472	$0	$1,850	$0
2026	$0	$1,554	$122	$1,273	$72	$12	$1,432	$1,357	$1,980	$1,628
2027	$0	$1,566	$127	$1,294	$72	$12	$1,439	$1,378	$2,100	$1,654
2028	$0	$1,578	$132	$1,311	$72	$12	$1,445	$1,395	$2,214	$1,674
2029	$0	$1,590	$138	$1,334	$73	$12	$1,452	$1,419	$2,313	$1,702
2030	$0	$1,602	$143	$1,349	$73	$12	$1,459	$1,434	$2,408	$1,721

Notes:

1. Contribution tax rate is 1.0%; cost-sharing formula is 50/50; SSWB as a cap on the amount of taxable wages.
2. Administrative costs are approximated as 5% of fund collected in a year; start-up funding of $60 million is to be paid back over 5 years.

Appendix II

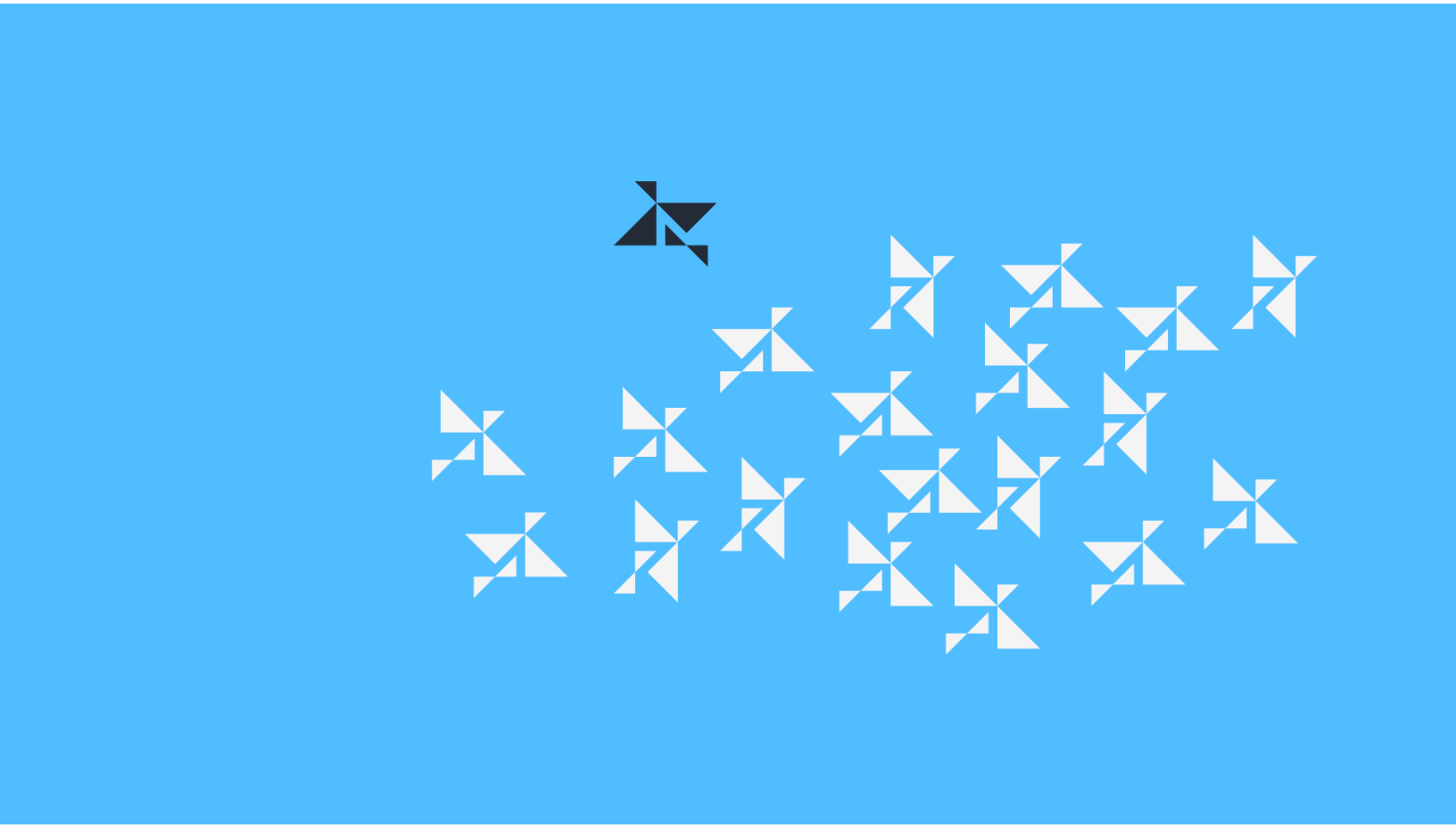
MILLIMAN REPORT

Actuarial Analysis for the Maryland Family and Medical Leave Insurance Program

Commissioned by University of Baltimore

July 25, 2023

Paul Correia, FSA, MAAA



Milliman

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Section 1 – Introduction

Milliman was engaged by University of Baltimore to perform an actuarial analysis of the Maryland Family and Medical Leave Insurance (FAMLI) program established in Maryland Senate Bill 275 Chapter 48 (2022) and modified in Senate Bill 828 (2023). Our analysis focused on the expected costs of paying benefits to covered employees and maintaining solvency of the FAMLI fund. We were asked to perform the following specific tasks on this project:

1. Study and make recommendations on the total rate of contribution to be set October 1, 2024 required to establish and maintain a solvent program that will begin paying benefits on January 1, 2026, based on the following parameters:

    a) Contribution rate cap of 1.2% of taxable wages, based on the definition of taxable wages used for Social Security payroll tax contributions.
    b) 50% / 50% cost-share between employers and employees.
    c) Any program start-up funding provided by the State will be paid back over time out of trust-fund assets, though not necessarily paid back in year one.

2. Provide multiple scenarios for a range of possible target fund levels that should be maintained in any given year set at reasonable or recommended levels. Assume this is a long-term range, sustainable level, potentially achieved as late as 2030 (or another date you recommend) and ideally maintained indefinitely. Assume a goal of eventually arriving at a sustainable long-term target fund level.

3. Provide multiple scenarios for paying back the start-up funding so as to spread out the costs and have minimal impact on the contribution rate.

4. Provide multiple scenarios for a range of possible start-up administrative cost scenarios based on reasonable assumptions.

5. Provide multiple possible scenarios for ongoing program administrative costs expressed as a percent of trust-fund assets collected in a year.

6. Provide recommendations on sustainably and smoothly “spending down” the trust fund assets that will be built up over 5 quarters of collections between Q4 2024 and Q4 2025 (inclusive) before any benefits are paid.

This report provides the results of our analysis as well as documentation of the data, assumptions, and analytical methods. The results include estimated contribution rates for different scenarios that vary in terms of the target fund ratio and expense assumptions.

Data Reliance

In performing the analysis, Milliman relied on publicly available data and other information including paid family and medical leave claim experience in states with mandated benefits, and Maryland employment statistics from a variety of sources. A bibliography of relevant sources is included in Appendix B. Milliman did not audit or independently verify any of the data and other information, except that we did review the data for reasonableness and consistency. To the extent that any of the data or other information is incorrect or inaccurate, the results of our analysis could be affected and may need to be revised.

Distribution

Milliman's work is prepared solely for the use and benefit of the University of Baltimore, under the terms and conditions of the agreement signed between Milliman and the University of Baltimore on September 3, 2022. Milliman recognizes that this report may be public records subject to disclosure to third parties. Milliman does not intend to benefit and assumes no duty or liability to any third-party recipients of the report. To the extent that this report is not subject to disclosure under applicable public records laws, the University of Baltimore shall not disclose Milliman's work to any third parties without our prior written consent.

Variability of Results

The projections contained herein are estimates based on carefully constructed assumptions and methodologies that have been described in this report. Actual experience, however, will differ from those assumptions. As such, actual results will vary from the estimates provided and the cost of benefits provided under the FAMLI program may be either higher or lower than the amounts illustrated in this report.

I certify that all costs, liabilities, and other factors used or provided in this report have been determined on the basis of actuarial assumptions and methods that are individually reasonable and which, in combination, offer our best estimate of anticipated experience of the Maryland FAMLI program. I further certify that, to the best of my knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Guides to Professional Conduct, amplifying Opinions, and supporting Recommendations of the American Academy of Actuaries.

Qualifications

I, Paul Correia, am a consulting actuary for Milliman, Inc. and a member of the American Academy of Actuaries. I meet the qualification standards of these organizations for rendering the actuarial opinions contained herein.

Section 2 – Executive Summary

We calculated initial FAMLI contribution rates by targeting a fund balance in the range of 100% to 140% of total expenditure in 2026 as of December 31, 2026. In our view, this initial target range is reasonable for a new program because there is uncertainty about how claim experience will emerge when FAMLI benefits first begin. In addition, we have observed claim incidence rates grade up gradually in the initial years for new programs in other states, and it may make sense to set a higher target in the initial years to mitigate the risk of underestimating the ultimate claim experience of the program. The estimated initial contribution rates are provided in Table 1 below:

Table 1
Estimated Initial FAMLI Contribution Rates
Baseline Assumptions

Target Fund Ratio in First Year	Employer	Employee	Overall
100%	0.40%	0.40%	0.74%
110%	0.42%	0.42%	0.77%
120%	0.44%	0.44%	0.81%
130%	0.46%	0.46%	0.85%
140%	0.48%	0.48%	0.88%

Note that the sum of employer and employee contribution rates does not equal the overall rate due to the small employer exemptions for employers with fewer than 15 employees who are exempt from paying the employer portion of premium. In other words, because the taxable wages are different for employers and employees – i.e., small employers are included for employee contributions and excluded for employer contributions – the effective contribution from employers is smaller than the effective contribution for employees, meaning the overall effective contribution rate is lower than the sum of the two pieces. If there were no small business exemptions, the employer and employee rates shown above would be lower and would sum to the overall rate.

The contribution rates in Table 1 assume start-up costs equal to $67 million, based on estimated start-up costs developed by Spring Consulting Group for self-administering the FAMLI program. The rates also assume ongoing administrative expenses equal to 5% of family claim costs plus 7% of medical claim costs, based on typical PFML expense ratios in states with PFML programs. In addition, the contribution rates in Table 1 assume repayment of the start-up loan by January 1, 2026. This set of assumptions comprises our ‘baseline’ scenario.

We tested different expense assumptions and repayment schedules, and we have developed contribution rates for these alternative scenarios, which are included in Section 3 of this report. For expenses, we assumed a low ($40 million), baseline ($67 million), and high ($80 million) scenario for start-up costs, as well as a low (3% family plus 5% medical), baseline (5% family plus 7% medical), and high (7% family plus 9% medical) scenario for ongoing administration. For the start-up loan, we assumed repayment by January 1, 2026 in the baseline scenario, and we assumed repayment in 5, 7, and 10 years for alternative scenarios.

We developed financial projections for the Maryland FAMLI program from October 1, 2024 through December 31, 2034, based on demographic and morbidity assumptions derived from a variety of sources. The projections are included in Section 4 of this report. In our projections, we assumed the target fund ratio could be reduced over time as claim experience emerges, because there would be less uncertainty about emerging claim costs, and historical experience could be used to adjust the contribution rates. In addition,

mature PFML programs often feature lower targets than new programs. Our approach for projecting contribution rates in future years involved gradually reducing the fund ratio from its initial value (i.e., 100%, 110%, etc.) to an ultimate target of 35% over time. This ultimate level is based loosely on the target fund ratio in other states with mature PFML programs (e.g., California's target is 25% to 50% of prior year's expenditure) and on surplus formulas used by insurance companies for disability insurance products.

The estimated contribution rates in this report are different than those included in Milliman's report to University of Baltimore dated November 10, 2022 for several reasons, such as the availability of more recent experience for developing morbidity and demographic assumptions resulting in changes to these assumptions. Documentation of the data, assumptions, and methods used in our analysis is provided in Section 5 of this report. Appendix A contains a summary of the FAMLI benefit design assumed in our study, and Appendix B contains a bibliography of the sources used in our analysis.

Section 3 – Contribution Rates

We estimated FAMLI contribution rates for different scenarios that vary in terms of expense assumptions and target fund ratios. We assumed $40 million (low scenario), $67 million (baseline scenario derived from actuarial study performed by Spring Consulting Group), and $80 million (high scenario) in start-up costs. For comparison, Washington reported $63 million and Colorado reported $52 million in start-up costs for their PFML programs. The impact of assuming different start-up costs in our analysis is relatively small, because start-up costs are relatively minor compared to other program expenses.

We considered the following expense scenarios for ongoing administration:

- Administrative expenses equal to 3% of family costs plus 5% of medical costs (low scenario).
- Administrative expenses equal to 5% of family costs plus 7% of medical costs (baseline scenario), based on administrative expenses reported in states with PFML programs.
- Administrative expenses equal to 7% of family costs plus 9% of medical costs (high scenario).

We calculated initial contribution rates by targeting an initial fund ratio of 100%, 110%, 120%, 130%, and 140% of total expenditure in 2026. The initial fund ratio represents the ratio of the fund balance on December 31, 2026 to total expenditure in 2026.

The estimated contribution rates are provided in the following tables. We included three decimals for ease of comparison. The rates shown below assume the start-up loan will be repaid by January 1, 2026. The expected impact of extending the repayment period is minor and is discussed further below (see Table 7).

Table 2
Estimated Initial FAMLI Contribution Rates as a Percentage of Taxable Wages
Target Fund Ratio: 100%

Scenarios			Contribution Rates		
Start-up Costs ($ million)	Family Expense Ratio	Medical Expense Ratio	Employer Rate	Employee Rate	Overall Rate
$40	3%	5%	0.386%	0.386%	0.717%
$40	5%	7%	0.394%	0.394%	0.732%
$40	7%	9%	0.403%	0.403%	0.748%
$67	3%	5%	0.389%	0.389%	0.723%
$67	5%	7%	0.397%	0.397%	0.738%
$67	7%	9%	0.406%	0.406%	0.753%
$80	3%	5%	0.391%	0.391%	0.725%
$80	5%	7%	0.399%	0.399%	0.740%
$80	7%	9%	0.407%	0.407%	0.756%

Table 3
Estimated Initial FAMLI Contribution Rates as a Percentage of Taxable Wages
Target Fund Ratio: 110%

Scenarios			Contribution Rates		
Start-up Costs ($ million)	Family Expense Ratio	Medical Expense Ratio	Employer Rate	Employee Rate	Overall Rate
$40	3%	5%	0.405%	0.405%	0.752%
$40	5%	7%	0.414%	0.414%	0.768%
$40	7%	9%	0.423%	0.423%	0.785%
$67	3%	5%	0.408%	0.408%	0.758%
$67	5%	7%	0.417%	0.417%	0.774%
$67	7%	9%	0.426%	0.426%	0.790%
$80	3%	5%	0.410%	0.410%	0.761%
$80	5%	7%	0.418%	0.418%	0.777%
$80	7%	9%	0.427%	0.427%	0.793%

Table 4
Estimated Initial FAMLI Contribution Rates as a Percentage of Taxable Wages
Target Fund Ratio: 120%

Scenarios			Contribution Rates		
Start-up Costs ($ million)	Family Expense Ratio	Medical Expense Ratio	Employer Rate	Employee Rate	Overall Rate
$40	3%	5%	0.424%	0.424%	0.788%
$40	5%	7%	0.433%	0.433%	0.804%
$40	7%	9%	0.443%	0.443%	0.822%
$67	3%	5%	0.427%	0.427%	0.793%
$67	5%	7%	0.436%	0.436%	0.810%
$67	7%	9%	0.446%	0.446%	0.827%
$80	3%	5%	0.429%	0.429%	0.796%
$80	5%	7%	0.438%	0.438%	0.813%
$80	7%	9%	0.447%	0.447%	0.830%

Table 5
Estimated Initial FAMLI Contribution Rates as a Percentage of Taxable Wages
Target Fund Ratio: 130%

Scenarios			Contribution Rates		
Start-up Costs ($ million)	Family Expense Ratio	Medical Expense Ratio	Employer Rate	Employee Rate	Overall Rate
$40	3%	5%	0.443%	0.443%	0.823%
$40	5%	7%	0.453%	0.453%	0.840%
$40	7%	9%	0.462%	0.462%	0.859%
$67	3%	5%	0.446%	0.446%	0.829%
$67	5%	7%	0.456%	0.456%	0.846%
$67	7%	9%	0.466%	0.466%	0.864%
$80	3%	5%	0.448%	0.448%	0.832%
$80	5%	7%	0.457%	0.457%	0.849%
$80	7%	9%	0.467%	0.467%	0.867%

Table 6
Estimated Initial FAMLI Contribution Rates as a Percentage of Taxable Wages
Target Fund Ratio: 140%

Scenarios			Contribution Rates		
Start-up Costs ($ million)	Family Expense Ratio	Medical Expense Ratio	Employer Rate	Employee Rate	Overall Rate
$40	3%	5%	0.462%	0.462%	0.858%
$40	5%	7%	0.472%	0.472%	0.877%
$40	7%	9%	0.482%	0.482%	0.895%
$67	3%	5%	0.466%	0.466%	0.864%
$67	5%	7%	0.475%	0.475%	0.882%
$67	7%	9%	0.486%	0.486%	0.901%
$80	3%	5%	0.467%	0.467%	0.867%
$80	5%	7%	0.477%	0.477%	0.885%
$80	7%	9%	0.487%	0.487%	0.904%

To evaluate the impact of extending the start-up loan repayment period, we amortized the payments over 1, 5, 7, and 10 years in our projections, then we recalibrated the contribution rates to the initial target fund ratio. The following table contains estimated initial contribution rates for the different amortization periods based on an initial fund ratio of 120% and baseline expense assumptions (i.e., start-up costs equal to $67 million and ongoing expenses equal to 5% of family claim costs plus 7% of medical claim costs, although other assumptions produce relativities that are similar to this baseline scenario). We assumed 0% interest for repayment of the loan. The expected impact of extending the repayment period is minor because start-up costs are relatively small compared to overall program costs.

Table 7
Expected Impact of Extending the Start-up Loan Repayment Period
Target Fund Ratio of 120% and Baseline Expense Assumptions

Amortization Period	Employer	Employee	Overall
1 year	0.436%	0.436%	0.810%
5 years	0.432%	0.432%	0.801%
7 years	0.431%	0.431%	0.800%
10 years	0.430%	0.430%	0.798%

Section 4 – Financial Projections

This section contains financial projections for the Maryland FAMLI program from October 1, 2024 through December 31, 2034. The projections vary in terms of initial target fund balance (100% to 140%) and contribution rates, and include the following items:

- **Eligible Employees** – Projection of eligible employees that assumes 0.95% annual employment growth based on Maryland employment forecasts from 2020 to 2030 reported by the Maryland Department of Labor. The projections assume all Maryland employers provide FAMLI benefits through the state fund. Although employers will have the option to provide benefits through private insurance plans, we do not have sufficient detail on how these options will be structured to estimate the proportion of employers who would elect these options. The second phase of our analysis for University of Baltimore will include further discussion of employer participation in private plans.

- **Taxable Wages** – Projection of taxable wages based on the definition of taxable wages used for Social Security payroll tax contributions. The projection was developed using Maryland wage data from 2022 reported on the State of Maryland website, projected based on wage growth forecasts from the US Congressional Budget Office.

- **Claims** – Projection of the number of claims approved for benefits between 2026 and 2034, for family leave, medical leave, and in total. The projection assumes claim incidence rates will increase gradually during the initial years as the program phases in, a dynamic that we have observed in other states with newly adopted PFML programs. The projection also assumes employees with children born, adopted, or fostered in 2025 will be eligible for bonding benefits in 2026, consistent with Senate Bill 275 (Chapter 48).

- **Benefit Payments ($ millions)** – Projection of benefit payments between 2026 and 2034 for family leave, medical leave, and in total. The expected benefit payments are based on the Maryland FAMLI benefit design defined in Maryland Senate Bill 275 Chapter 48 (2022) and modified by Senate Bill 828 (2023). The estimated payments for family claims are higher in 2026 than 2027 due to the backlog of bonding claims for children born, fostered, or adopted in 2025.

- **Expenses ($ millions)** – Projection of start-up costs and ongoing administrative expenses based on our baseline assumptions. The assumed $67 million in start-up costs is based on the start-up costs reported by Spring Consulting for administering the FAMLI program internally. The assumed administrative expenses represent 5% of total family costs and 7% of total medical costs in every year, based on average expenses reported in other states with similar programs.

- **Total Expenditure ($ millions)** – Projection of total costs for family leave, medical leave, and in total. The total expenditure is the sum of benefit payments and administrative expenses in every year.

- **Contribution Rate** – Projection of illustrative contribution rates that provide adequate funding for benefits and expenses, and include higher margin in early years as the program phases in. The initial contribution rates are the same as the rates included in Table 1. We either held the initial rates level or recalibrated the rates in future years, depending on the scenario, with an objective to reduce the fund ratio gradually over time and eventually reach a target of 35%. According to our projections, a run rate of 0.83% is expected to maintain stable funding and sustain a fund ratio of 35% in future years.

- **Contributions ($ millions)** – Projection of contributions from employers, employees, and in total, based on the illustrative contribution rates and the assumed taxable wages. The contributions

assume that employers with fewer than 15 employees will be exempt from paying the employer portion of contributions. The contributions begin on October 1, 2024, fifteen months before the effective date of benefits.

- **Fund Balance ($ millions)** – Projection of fund balances equal to the contributions in a given year, minus total expenditure in that year, plus the assumed investment income on fund balances in that year. We have assumed 3.0% annual investment income based on current yields for short term assets. This assumption may need to be revised if different returns are expected from the assets held in the fund.

- **Investment Income ($ millions)** – Projection of estimated income on assets in the fund, calculated as 3% of the current year's fund balance.

- **Fund Ratio** – Ratio of the end-of-year fund balance to total expenditure from the prior twelve months.

The scenarios we considered for developing projections of Maryland FAMLI experience from October 1, 2024 through December 31, 2034 are summarized below. For each of the scenarios, we assumed repayment of the start-up loan would occur by January 1, 2026.

- Projection 1: The initial contribution rate is 0.74% of taxable wages corresponding to an initial target fund ratio of 100%. We held the rate of 0.74% level through 2032 which resulted in a reduction of the fund ratio to 39% by December 31, 2032. We increased contribution rates to 0.81% in 2033 and 0.83% in 2034 to maintain a 35% fund ratio in those years. Our modeling beyond 2034 suggests that holding the rate at 0.83% would sustain a fund ratio of 35% in future years.

- Projection 2: The initial contribution rate is 0.77% of taxable wages corresponding to an initial target fund ratio of 110%. We held the rate of 0.77% level throughout the projection period resulting in a fund ratio of 57% by December 31, 2034. Our modeling suggests that holding the 0.77% rate beyond 2034 is expected to reduce the fund ratio to 35% by 2037, and rates would need to be increased to 0.83% in 2038 and beyond to maintain a 35% fund ratio.

- Projection 3: The initial contribution rate is 0.81% of taxable wages corresponding to an initial target fund ratio of 120%. We held the rate of 0.81% level throughout the projection period, which is expected to gradually reduce the fund ratio to 99% by December 31, 2034. Our modeling beyond 2034 shows continued gradual reductions in the fund ratio over time and reaching 35% by December 31, 2052.

- Projection 4: The initial contribution rate is 0.85% of taxable wages corresponding to an initial target fund ratio of 130%. We held the rate of 0.85% level through 2027, which is expected to increase the fund ratio to 147% by December 31, 2027. We decreased the rate to 0.83% in 2028 and beyond, which results in decreasing fund ratios in future years. The expected fund ratio is 131% by December 31, 2034.

- Projection 5: The initial contribution rate is 0.88% of taxable wages corresponding to an initial target fund ratio of 140%. We held the rate of 0.88% level through 2027, which is expected to increase the fund ratio to 162% by December 31, 2027. We decreased the rate to 0.83% in 2028 and beyond, which results in decreasing fund ratios in future years. The expected fund ratio is 144% by December 31, 2034.

Note that different contribution rates could have been used to reduce the target fund ratio more quickly in Projections 3, 4, and 5. For example, the initial contribution rate in Projection 5 (0.88%) could be reduced lower than 0.83% in 2028 to bring the fund ratio within target in a shorter timeframe; however, based on our assumptions and modeling methods, the rate would then need to be increased to 0.83% at a later date. We are happy to develop projections corresponding to other rate scenarios at University of Baltimore's request.

The financial projections shown below depend on a variety of actuarial assumptions about future experience, including but not limited to employment and wage growth, FAMLI claim experience, expenses, and investment income. It is nearly certain that actual experience will vary from these assumptions, meaning that the program's actual fund balance will be higher or lower than the illustrated values.

Projection 1: Initial target fund ratio equal to 100% of total expenditure in 2026

	10/2024 - 12/2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Eligible Employees		2,885,277	2,912,801	2,940,588	2,968,640	2,996,959	3,025,549	3,054,411	3,083,548	3,112,964
Taxable Wages ($ millions)										
Small Employers with < 15 Employees	$36,869	$31,086	$32,481	$33,938	$35,461	$37,052	$38,715	$40,452	$42,267	$44,164
All Other Employers	$219,806	$185,327	$193,643	$202,333	$211,412	$220,899	$230,812	$241,169	$251,991	$263,299
Total	**$256,675**	**$216,413**	**$226,124**	**$236,271**	**$246,873**	**$257,951**	**$269,527**	**$281,621**	**$294,258**	**$307,463**
Claims										
Family		59,854	46,142	48,446	50,375	51,873	52,368	52,867	53,372	53,881
Medical		105,880	112,234	117,837	122,530	126,173	127,376	128,592	129,818	131,057
Total		**165,733**	**158,377**	**166,283**	**172,905**	**178,046**	**179,744**	**181,459**	**183,190**	**184,937**
Benefit Payments ($ millions)										
Family		$601.3	$479.8	$521.4	$561.1	$598.0	$624.8	$652.9	$682.2	$712.8
Medical		$1,028.4	$1,128.3	$1,226.1	$1,319.5	$1,406.3	$1,469.4	$1,535.4	$1,604.3	$1,676.3
Total		**$1,629.7**	**$1,608.1**	**$1,747.5**	**$1,880.6**	**$2,004.3**	**$2,094.3**	**$2,188.3**	**$2,286.5**	**$2,389.1**
Expenses ($ millions)										
Family		$31.6	$25.3	$27.4	$29.5	$31.5	$32.9	$34.4	$35.9	$37.5
Medical		$77.4	$84.9	$92.3	$99.3	$105.9	$110.6	$115.6	$120.8	$126.2
Total	**$67.1**	**$109.1**	**$110.2**	**$119.7**	**$128.9**	**$137.3**	**$143.5**	**$149.9**	**$156.7**	**$163.7**
Total Expenditure ($ millions)										
Family		$633.0	$505.0	$548.8	$590.6	$629.5	$657.7	$687.2	$718.1	$750.3
Medical		$1,105.8	$1,213.2	$1,318.4	$1,418.9	$1,512.2	$1,580.0	$1,650.9	$1,725.0	$1,802.4
Total	**$67.1**	**$1,738.8**	**$1,718.3**	**$1,867.2**	**$2,009.5**	**$2,141.7**	**$2,237.8**	**$2,338.2**	**$2,443.1**	**$2,552.7**
Contribution Rate										
Employer	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.43%	0.45%
Employee	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.43%	0.45%
Overall*	**0.74%**	**0.74%**	**0.74%**	**0.74%**	**0.74%**	**0.74%**	**0.74%**	**0.74%**	**0.81%**	**0.83%**
Contributions ($ millions)										
Employers	$873.5	$736.5	$769.5	$804.0	$840.1	$877.8	$917.2	$958.4	$1,093.3	$1,183.4
Employees	$1,020.0	$860.0	$898.6	$938.9	$981.0	$1,025.1	$1,071.0	$1,119.1	$1,276.6	$1,381.8
Total	**$1,893.4**	**$1,596.4**	**$1,668.1**	**$1,742.9**	**$1,821.1**	**$1,902.9**	**$1,988.3**	**$2,077.5**	**$2,369.9**	**$2,565.2**
Investment Income ($ millions)	$54.8	$52.2	$52.2	$50.1	$45.9	$40.1	$33.8	$27.0	$25.7	$26.8
Fund Balance	$1,826.3	$1,738.8	$1,740.8	$1,668.7	$1,530.4	$1,337.5	$1,128.2	$901.3	$855.1	$893.2
Fund Balance % of Total Expenditure		100%	101%	89%	76%	62%	50%	39%	35%	35%

* The overall contribution rate is equal to the total contributions divided by the total taxable wages, and does not represent the sum of employer and employee rates due to the small business exemptions.

Projection 2: Initial target fund ratio equal to 110% of total expenditure in 2026

	10/2024 - 12/2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Eligible Employees		2,885,277	2,912,801	2,940,588	2,968,640	2,996,959	3,025,549	3,054,411	3,083,548	3,112,964
Taxable Wages ($ millions)										
Small Employers with < 15 Employees	$36,869	$31,086	$32,481	$33,938	$35,461	$37,052	$38,715	$40,452	$42,267	$44,164
All Other Employers	$219,806	$185,327	$193,643	$202,333	$211,412	$220,899	$230,812	$241,169	$251,991	$263,299
Total	**$256,675**	**$216,413**	**$226,124**	**$236,271**	**$246,873**	**$257,951**	**$269,527**	**$281,621**	**$294,258**	**$307,463**
Claims										
Family		59,854	46,142	48,446	50,375	51,873	52,368	52,867	53,372	53,881
Medical		105,880	112,234	117,837	122,530	126,173	127,376	128,592	129,818	131,057
Total		**165,733**	**158,377**	**166,283**	**172,905**	**178,046**	**179,744**	**181,459**	**183,190**	**184,937**
Benefit Payments ($ millions)										
Family		$601.3	$479.8	$521.4	$561.1	$598.0	$624.8	$652.9	$682.2	$712.8
Medical		$1,028.4	$1,128.3	$1,226.1	$1,319.5	$1,406.3	$1,469.4	$1,535.4	$1,604.3	$1,676.3
Total		**$1,629.7**	**$1,608.1**	**$1,747.5**	**$1,880.6**	**$2,004.3**	**$2,094.3**	**$2,188.3**	**$2,286.5**	**$2,389.1**
Expenses ($ millions)										
Family		$31.6	$25.3	$27.4	$29.5	$31.5	$32.9	$34.4	$35.9	$37.5
Medical		$77.4	$84.9	$92.3	$99.3	$105.9	$110.6	$115.6	$120.8	$126.2
Total	**$67.1**	**$109.1**	**$110.2**	**$119.7**	**$128.9**	**$137.3**	**$143.5**	**$149.9**	**$156.7**	**$163.7**
Total Expenditure ($ millions)										
Family		$633.0	$505.0	$548.8	$590.6	$629.5	$657.7	$687.2	$718.1	$750.3
Medical		$1,105.8	$1,213.2	$1,318.4	$1,418.9	$1,512.2	$1,580.0	$1,650.9	$1,725.0	$1,802.4
Total	**$67.1**	**$1,738.8**	**$1,718.3**	**$1,867.2**	**$2,009.5**	**$2,141.7**	**$2,237.8**	**$2,338.2**	**$2,443.1**	**$2,552.7**
Contribution Rate										
Employer	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%
Employee	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%
Overall*	**0.77%**	**0.77%**	**0.77%**	**0.77%**	**0.77%**	**0.77%**	**0.77%**	**0.77%**	**0.77%**	**0.77%**
Contributions ($ millions)										
Employers	$916.3	$772.6	$807.2	$843.5	$881.3	$920.8	$962.2	$1,005.3	$1,050.5	$1,097.6
Employees	$1,070.0	$902.1	$942.6	$984.9	$1,029.1	$1,075.3	$1,123.6	$1,174.0	$1,226.7	$1,281.7
Total	**$1,986.3**	**$1,674.7**	**$1,749.9**	**$1,828.4**	**$1,910.4**	**$1,996.2**	**$2,085.7**	**$2,179.3**	**$2,277.1**	**$2,379.3**
Investment Income ($ millions)	$57.6	$57.4	$60.0	$60.7	$59.5	$57.0	$54.1	$51.0	$47.5	$43.7
Fund Balance	$1,919.2	$1,912.7	$2,001.6	$2,022.9	$1,984.5	$1,898.5	$1,803.4	$1,698.7	$1,583.6	$1,457.7
Fund Balance % of Total Expenditure		110%	116%	108%	99%	89%	81%	73%	65%	57%

* The overall contribution rate is equal to the total contributions divided by the total taxable wages, and does not represent the sum of employer and employee rates due to the small business exemptions.

Projection 3: Initial target fund ratio equal to 120% of total expenditure in 2026

	10/2024 - 12/2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Eligible Employees		2,885,277	2,912,801	2,940,588	2,968,640	2,996,959	3,025,549	3,054,411	3,083,548	3,112,964
Taxable Wages ($ millions)										
Small Employers with < 15 Employees	$36,869	$31,086	$32,481	$33,938	$35,461	$37,052	$38,715	$40,452	$42,267	$44,164
All Other Employers	$219,806	$185,327	$193,643	$202,333	$211,412	$220,899	$230,812	$241,169	$251,991	$263,299
Total	**$256,675**	**$216,413**	**$226,124**	**$236,271**	**$246,873**	**$257,951**	**$269,527**	**$281,621**	**$294,258**	**$307,463**
Claims										
Family		59,854	46,142	48,446	50,375	51,873	52,368	52,867	53,372	53,881
Medical		105,880	112,234	117,837	122,530	126,173	127,376	128,592	129,818	131,057
Total		**165,733**	**158,377**	**166,283**	**172,905**	**178,046**	**179,744**	**181,459**	**183,190**	**184,937**
Benefit Payments ($ millions)										
Family		$601.3	$479.8	$521.4	$561.1	$598.0	$624.8	$652.9	$682.2	$712.8
Medical		$1,028.4	$1,128.3	$1,226.1	$1,319.5	$1,406.3	$1,469.4	$1,535.4	$1,604.3	$1,676.3
Total		**$1,629.7**	**$1,608.1**	**$1,747.5**	**$1,880.6**	**$2,004.3**	**$2,094.3**	**$2,188.3**	**$2,286.5**	**$2,389.1**
Expenses ($ millions)										
Family		$31.6	$25.3	$27.4	$29.5	$31.5	$32.9	$34.4	$35.9	$37.5
Medical		$77.4	$84.9	$92.3	$99.3	$105.9	$110.6	$115.6	$120.8	$126.2
Total	**$67.1**	**$109.1**	**$110.2**	**$119.7**	**$128.9**	**$137.3**	**$143.5**	**$149.9**	**$156.7**	**$163.7**
Total Expenditure ($ millions)										
Family		$633.0	$505.0	$548.8	$590.6	$629.5	$657.7	$687.2	$718.1	$750.3
Medical		$1,105.8	$1,213.2	$1,318.4	$1,418.9	$1,512.2	$1,580.0	$1,650.9	$1,725.0	$1,802.4
Total	**$67.1**	**$1,738.8**	**$1,718.3**	**$1,867.2**	**$2,009.5**	**$2,141.7**	**$2,237.8**	**$2,338.2**	**$2,443.1**	**$2,552.7**
Contribution Rate										
Employer	0.44%	0.44%	0.44%	0.44%	0.44%	0.44%	0.44%	0.44%	0.44%	0.44%
Employee	0.44%	0.44%	0.44%	0.44%	0.44%	0.44%	0.44%	0.44%	0.44%	0.44%
Overall*	**0.81%**	**0.81%**	**0.81%**	**0.81%**	**0.81%**	**0.81%**	**0.81%**	**0.81%**	**0.81%**	**0.81%**
Contributions ($ millions)										
Employers	$959.1	$808.7	$845.0	$882.9	$922.5	$963.9	$1,007.1	$1,052.3	$1,099.6	$1,148.9
Employees	$1,120.0	$944.3	$986.7	$1,031.0	$1,077.2	$1,125.6	$1,176.1	$1,228.8	$1,284.0	$1,341.6
Total	**$2,079.1**	**$1,753.0**	**$1,831.6**	**$1,913.8**	**$1,999.7**	**$2,089.4**	**$2,183.2**	**$2,281.2**	**$2,383.5**	**$2,490.5**
Investment Income ($ millions)	$60.4	$62.6	$67.9	$71.3	$73.2	$73.8	$74.4	$74.9	$75.3	$75.7
Fund Balance	$2,012.0	$2,086.5	$2,262.5	$2,377.0	$2,438.5	$2,459.5	$2,478.7	$2,496.0	$2,511.3	$2,524.4
Fund Balance % of Total Expenditure		120%	132%	127%	121%	115%	111%	107%	103%	99%

* The overall contribution rate is equal to the total contributions divided by the total taxable wages, and does not represent the sum of employer and employee rates due to the small business exemptions.

Projection 4: Initial target fund ratio equal to 130% of total expenditure in 2026

	10/2024 - 12/2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Eligible Employees		2,885,277	2,912,801	2,940,588	2,968,640	2,996,959	3,025,549	3,054,411	3,083,548	3,112,964
Taxable Wages ($ millions)										
Small Employers with < 15 Employees	$36,869	$31,086	$32,481	$33,938	$35,461	$37,052	$38,715	$40,452	$42,267	$44,164
All Other Employers	$219,806	$185,327	$193,643	$202,333	$211,412	$220,899	$230,812	$241,169	$251,991	$263,299
Total	**$256,675**	**$216,413**	**$226,124**	**$236,271**	**$246,873**	**$257,951**	**$269,527**	**$281,621**	**$294,258**	**$307,463**
Claims										
Family		59,854	46,142	48,446	50,375	51,873	52,368	52,867	53,372	53,881
Medical		105,880	112,234	117,837	122,530	126,173	127,376	128,592	129,818	131,057
Total		**165,733**	**158,377**	**166,283**	**172,905**	**178,046**	**179,744**	**181,459**	**183,190**	**184,937**
Benefit Payments ($ millions)										
Family		$601.3	$479.8	$521.4	$561.1	$598.0	$624.8	$652.9	$682.2	$712.8
Medical		$1,028.4	$1,128.3	$1,226.1	$1,319.5	$1,406.3	$1,469.4	$1,535.4	$1,604.3	$1,676.3
Total		**$1,629.7**	**$1,608.1**	**$1,747.5**	**$1,880.6**	**$2,004.3**	**$2,094.3**	**$2,188.3**	**$2,286.5**	**$2,389.1**
Expenses ($ millions)										
Family		$31.6	$25.3	$27.4	$29.5	$31.5	$32.9	$34.4	$35.9	$37.5
Medical		$77.4	$84.9	$92.3	$99.3	$105.9	$110.6	$115.6	$120.8	$126.2
Total	**$67.1**	**$109.1**	**$110.2**	**$119.7**	**$128.9**	**$137.3**	**$143.5**	**$149.9**	**$156.7**	**$163.7**
Total Expenditure ($ millions)										
Family		$633.0	$505.0	$548.8	$590.6	$629.5	$657.7	$687.2	$718.1	$750.3
Medical		$1,105.8	$1,213.2	$1,318.4	$1,418.9	$1,512.2	$1,580.0	$1,650.9	$1,725.0	$1,802.4
Total	**$67.1**	**$1,738.8**	**$1,718.3**	**$1,867.2**	**$2,009.5**	**$2,141.7**	**$2,237.8**	**$2,338.2**	**$2,443.1**	**$2,552.7**
Contribution Rate										
Employer	0.46%	0.46%	0.46%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%
Employee	0.46%	0.46%	0.46%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%
Overall*	**0.85%**	**0.85%**	**0.85%**	**0.83%**	**0.83%**	**0.83%**	**0.83%**	**0.83%**	**0.83%**	**0.83%**
Contributions ($ millions)										
Employers	$1,001.9	$844.8	$882.7	$909.4	$950.2	$992.8	$1,037.3	$1,083.9	$1,132.5	$1,183.4
Employees	$1,170.0	$986.5	$1,030.7	$1,061.9	$1,109.5	$1,159.3	$1,211.3	$1,265.7	$1,322.5	$1,381.8
Total	**$2,171.9**	**$1,831.2**	**$1,913.4**	**$1,971.2**	**$2,059.7**	**$2,152.1**	**$2,248.7**	**$2,349.6**	**$2,455.0**	**$2,565.2**
Investment Income ($ millions)	$63.1	$67.8	$75.7	$81.1	$85.0	$87.9	$90.9	$93.9	$97.1	$100.4
Fund Balance	$2,104.8	$2,260.4	$2,523.4	$2,703.1	$2,834.4	$2,929.9	$3,028.7	$3,131.0	$3,236.9	$3,346.4
Fund Balance % of Total Expenditure		130%	147%	145%	141%	137%	135%	134%	132%	131%

* The overall contribution rate is equal to the total contributions divided by the total taxable wages, and does not represent the sum of employer and employee rates due to the small business exemptions.

Projection 5: Initial target fund ratio equal to 140% of total expenditure in 2026

	10/2024 - 12/2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Eligible Employees		2,885,277	2,912,801	2,940,588	2,968,640	2,996,959	3,025,549	3,054,411	3,083,548	3,112,964
Taxable Wages ($ millions)										
Small Employers with < 15 Employees	$36,869	$31,086	$32,481	$33,938	$35,461	$37,052	$38,715	$40,452	$42,267	$44,164
All Other Employers	$219,806	$185,327	$193,643	$202,333	$211,412	$220,899	$230,812	$241,169	$251,991	$263,299
Total	**$256,675**	**$216,413**	**$226,124**	**$236,271**	**$246,873**	**$257,951**	**$269,527**	**$281,621**	**$294,258**	**$307,463**
Claims										
Family		59,854	46,142	48,446	50,375	51,873	52,368	52,867	53,372	53,881
Medical		105,880	112,234	117,837	122,530	126,173	127,376	128,592	129,818	131,057
Total		**165,733**	**158,377**	**166,283**	**172,905**	**178,046**	**179,744**	**181,459**	**183,190**	**184,937**
Benefit Payments ($ millions)										
Family		$601.3	$479.8	$521.4	$561.1	$598.0	$624.8	$652.9	$682.2	$712.8
Medical		$1,028.4	$1,128.3	$1,226.1	$1,319.5	$1,406.3	$1,469.4	$1,535.4	$1,604.3	$1,676.3
Total		**$1,629.7**	**$1,608.1**	**$1,747.5**	**$1,880.6**	**$2,004.3**	**$2,094.3**	**$2,188.3**	**$2,286.5**	**$2,389.1**
Expenses ($ millions)										
Family		$31.6	$25.3	$27.4	$29.5	$31.5	$32.9	$34.4	$35.9	$37.5
Medical		$77.4	$84.9	$92.3	$99.3	$105.9	$110.6	$115.6	$120.8	$126.2
Total	**$67.1**	**$109.1**	**$110.2**	**$119.7**	**$128.9**	**$137.3**	**$143.5**	**$149.9**	**$156.7**	**$163.7**
Total Expenditure ($ millions)										
Family		$633.0	$505.0	$548.8	$590.6	$629.5	$657.7	$687.2	$718.1	$750.3
Medical		$1,105.8	$1,213.2	$1,318.4	$1,418.9	$1,512.2	$1,580.0	$1,650.9	$1,725.0	$1,802.4
Total	**$67.1**	**$1,738.8**	**$1,718.3**	**$1,867.2**	**$2,009.5**	**$2,141.7**	**$2,237.8**	**$2,338.2**	**$2,443.1**	**$2,552.7**
Contribution Rate										
Employer	0.48%	0.48%	0.48%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%
Employee	0.48%	0.48%	0.48%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%
Overall*	**0.88%**	**0.88%**	**0.88%**	**0.83%**	**0.83%**	**0.83%**	**0.83%**	**0.83%**	**0.83%**	**0.83%**
Contributions ($ millions)										
Employers	$1,044.8	$880.9	$920.4	$909.4	$950.2	$992.8	$1,037.3	$1,083.9	$1,132.5	$1,183.4
Employees	$1,220.0	$1,028.6	$1,074.8	$1,061.9	$1,109.5	$1,159.3	$1,211.3	$1,265.7	$1,322.5	$1,381.8
Total	**$2,264.8**	**$1,909.5**	**$1,995.2**	**$1,971.2**	**$2,059.7**	**$2,152.1**	**$2,248.7**	**$2,349.6**	**$2,455.0**	**$2,565.2**
Investment Income ($ millions)	$65.9	$73.0	$83.5	$89.2	$93.3	$96.4	$99.7	$103.0	$106.5	$110.0
Fund Balance	$2,197.7	$2,434.3	$2,784.3	$2,971.8	$3,111.2	$3,215.0	$3,322.4	$3,433.4	$3,548.4	$3,667.3
Fund Balance % of Total Expenditure		140%	162%	159%	155%	150%	148%	147%	145%	144%

* The overall contribution rate is equal to the total contributions divided by the total taxable wages, and does not represent the sum of employer and employee rates due to the small business exemptions.

Section 5 – Data, Assumptions, and Analytical Methods

We researched Maryland employment data from several sources to develop demographic assumptions for projecting eligible employees and covered wages. These sources include distributions of Maryland workers and wages by age and gender from the US Census Bureau; Maryland employment forecasts from the Maryland Department of Labor; and wage growth forecasts from the US Congressional Budget Office. We adjusted the data to reflect the FAMLI eligibility threshold of 680 hours over the qualifying 12-month period, based on Maryland employment data reported in the 2021 American Community Survey. The following table shows the demographic mix of eligible employees assumed in 2026, when FAMILI benefits begin:

Table 8
Assumed Eligible Employees and Average Monthly Wages in 2026
By Age and Gender

Age	Eligible Employees		Average Monthly Wage	
	Male	Female	Male	Female
Less than 25	155,794	176,165	$2,761	$2,245
25 - 34	298,384	306,834	$6,425	$5,189
35 - 44	301,386	311,215	$9,418	$6,912
45 - 54	280,962	298,086	$11,485	$7,591
55 - 64	260,164	267,863	$11,154	$6,909
65 and above	118,187	110,236	$7,846	$5,023
Total	**1,414,878**	**1,470,399**	**$8,625**	**$5,989**

The demographic assumptions shown above include self-employed workers who are expected to participate in the FAMLI program. We assumed that self-employed workers represent 5% of the Maryland workforce, based on statistics reported on the State of Maryland website, and we assumed 10% of self-employed workers would opt into the program, based on participation rates in other states with mandated benefits.

We developed average weekly benefit amount assumptions that vary by age and gender based on the assumed wages of eligible employees, and the FAMLI benefit formula which provides 90% of wages up to 65% of the state average weekly wage (SAWW), plus 50% of wages above 65% of SAWW up to a maximum weekly benefit amount of $1,000 in 2026. The assumed weekly benefit amounts for 2026 are shown in Table 7 below by age and gender.

Table 9
Assumed 2026 Average Weekly Benefit Amounts
By Age and Gender

Age	Male	Female
Less than 25	$536	$437
25 - 34	$1,000	$970
35 - 44	$1,000	$1,000
45 - 54	$1,000	$1,000
55 - 64	$1,000	$1,000
65 and above	$1,000	$952

We developed morbidity assumptions for estimating FAMLI claims and benefit payments. These assumptions include claim incidence rates and average claim durations, and are based on historical PFML claim experience in states with mandated benefits, adjusted for differences in benefit design such as waiting period, replacement ratio, definition of family member, and qualifying event. The adjustments also reflect differences in industry and geographic risk between Maryland and the other states. The maternity and bonding incidence rates were adjusted for differences in birth rates between Maryland and the other states. We also assumed incidence rates would gradually increase from 2026 through 2030 as the FAMLI program phases in and benefit awareness increases, based on historical PFML claim patterns observed in New York (2018) and Washington (2020).

The morbidity assumptions vary by age and gender, consistent with the assumed eligible employees and average benefit amounts in Tables 8 and 9 above. We used these assumptions to calculate expected FAMLI benefit payments for every age/gender combination, as follows:

Expected Benefit Payments = Expected number of claims
x Expected claim duration
x Assumed average weekly benefit amount

where the expected number of claims was calculated by applying our incidence rate assumptions to the assumed eligible employees. The following table shows the expected FAMLI benefit payments in 2026 by age and gender:

Table 10
Expected FAMLI Benefit Payments in 2026
By Age and Gender

Age	Male	Female	Total
Less than 25	$12,286,438	$27,091,795	$39,378,232
25 - 34	$149,825,708	$463,722,915	$613,548,623
35 - 44	$126,828,425	$298,136,545	$424,964,971
45 - 54	$80,350,119	$143,572,701	$223,922,820
55 - 64	$104,706,313	$146,611,554	$251,317,866
65 and above	$36,142,205	$40,457,249	$76,599,454
Total	**$510,139,208**	**$1,119,592,758**	**$1,629,731,966**

The estimated benefit payments shown above are skewed toward younger female workers, in part, because they include payments for the backlog of eligible bonding claims corresponding to children born, adopted, or fostered 12 months prior to the benefit begin date. Also, our incidence rate assumptions for young female workers are higher than other workers due to maternity and bonding claims (even in the absence of backlog bonding claims from 2025).

We developed growth factors for projecting eligible employees, wages, and FAMLI benefit payments beyond 2026 based employment growth forecasts reported by the Maryland Department of Labor, and wage growth forecasts reported by the US Congressional Budget Office. The growth factors are cumulative and are provided in Table 11 below:

Table 11 Assumed Employment and Wage Growth Factors Cumulative Relative to 2026		
Year	**Employment**	**Wages**
2027	1.010%	1.035%
2028	1.019%	1.071%
2029	1.029%	1.109%
2030	1.039%	1.148%
2031	1.049%	1.188%
2032	1.059%	1.229%
2033	1.069%	1.272%
2034	1.079%	1.317%

The estimated contribution rates in this report are relatively insensitive to wage growth rates, because if wages grow is faster, then benefits will also grow faster and the expected impact on contribution rates would be relatively small.

Appendix A – Maryland FAMLI Benefit Design

The FAMLI program was established in Maryland Senate Bill 275 (Chapter 48) and includes the following benefits and provisions:

- **Contribution Begin Date**: October 1, 2024
- **Benefit Begin Date**: January 1, 2026
- **Eligibility**: All public and private employees who worked 680 hours or more during the 12-month period preceding the leave of absence date will be eligible for FAMLI benefits. Self-employed workers can opt into the program.
- **Permissible Leaves of Absence**: FAMLI covers leaves of absence taken for the following reasons:
    1. To care for a child during the first year after the child's birth or after the placement of the child through foster care, kinship care, or adoption;
    2. To care for a family member with a serious health condition;
    3. Because the covered individual has a serious health condition that results in the covered individual being unable to perform the functions of the covered individual's position;
    4. To care for a service member who is the covered individual's next of kin; or
    5. Because the covered individual has a qualifying exigency arising out of the deployment of a service member who is a family member of the covered individual.
- **Income Replacement**: FAMLI benefits replace 90% of the covered employee's average weekly wage up to an amount equal to 65% of the state average weekly wage, plus 50% of the covered employee's average weekly wage above an amount equal to 65% of the state average weekly wage.
- **Minimum Weekly Benefit Amount**: $50
- **Maximum Weekly Benefit Amount**: $1,000 for 2026, adjusted annually by The Secretary based on changes in the Consumer Price Index.
- **Maximum Benefit Period**: Generally speaking, employees can take 12 weeks of leave in a 12-month period. Employees who take leave for bonding with a new child or for their own serious health condition within a 12-month period will be eligible for an additional 12 weeks of FAMLI benefits, up to a combined total of 24 weeks in these cases.
- **Waiting Period**: None
- **Definition of Family Member**: The definition of "Family Member" includes a worker's spouse, siblings (including biological, adopted, fostered, and step siblings), children (including biological, adopted, fostered, or stepchildren), parents (including a spouse's parents), legal guardians, grandparents (including biological, adopted, fostered, and step grandparents), and grandchildren (including biological, adopted, fostered, and step grandchildren).

Appendix B – Bibliography

In performing the analysis, we relied, without audit, on certain data and information that is publicly available. To the extent any of the data or other items was incomplete or inaccurate, the results of our work may be affected and may need to be revised. The principal items on which we relied included the following:

Maryland FAMLI Program

- Maryland Senate Bill 275, Chapter 48, Labor and Employment – Family and Medical Leave Insurance Program – Establishment, 2022
- Maryland Senate Bill 828, Family and Medical Leave Insurance Program – Modifications, 2023
- Study of Maryland Family and Medical Leave Insurance Program, Spring Consulting Group, February 2023

Demographic Data

- Maryland Monthly Labor Review, September 2022, copyrighted by the Maryland Department of Labor
- US Census Bureau QWI Explorer, filtered for 2022 Maryland employment statistics
- The Economic Outlook for 2023 to 2033 in 16 Charts, US Congressional Budget Office, February 2023
- 2021 American Community Survey, US Census Bureau

PFML Claim Data

- Publicly available reports from the Washington PFML Advisory Committee Meetings published on a monthly basis (e.g., Advisory Committee Meeting, May 19, 2022, Washington Employment Security Department)
- Publicly available monthly data from California State Disability Insurance and Paid Family Leave programs (e.g., https://data.edd.ca.gov/Disability-Insurance/Disability-Insurance-DI-Monthly-Data/29jg-ip7e/data).
- Publicly available annual data for the New Jersey Temporary Disability Benefits and Family Leave Insurance programs (e.g., Annual Report for 2019 Family Leave Insurance and Temporary Disability Insurance Programs, New Jersey Department of Labor and Workforce Development).
- Publicly available annual data for the Rhode Island Temporary Disability Insurance and Temporary Care Insurance programs (e.g., Statistical & Fiscal Digest 2021, Rhode Island Department of Labor and Training)
- Publicly available quarterly data for the New York Paid Family Leave program (e.g., New York State Paid Family Leave Report 2018 – 2022, New York Department of Financial Services).
- Publicly available annual data from the Massachusetts PFML program (e.g., FY2021 Annual Report for the Massachusetts Paid Family and Medical Leave, Department of Paid Family and Medical Leave).
- Publicly available rating manuals used by insurance companies for pricing short-term disability benefits (obtained through SERFF queries).
- Birth rates by state reported by the US Center for Disease Control (e.g., https://www.cdc.gov/nchs/pressroom/sosmap/fertility_rate/fertility_rates.htm)

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