December 1, 2021

The Honorable Lawrence J. Hogan, Jr.
Governor, State of Maryland
100 State Circle
Annapolis, MD 21401

The Honorable William Ferguson
President, Maryland Senate
H-107 State House
100 State Circle
Annapolis, MD 21401

The Honorable Adrienne Jones
Speaker, Maryland House of Delegates
H-101 State House
100 State Circle
Annapolis, MD 21401

The Honorable Katherine Klausmeier
Co-Chair, Joint Committee on
Unemployment Insurance Oversight
123 James Senate Office Building
11 Bladen Street
Annapolis, MD 21401

The Honorable Ned Carey
Co-Chair, Joint Committee on
Unemployment Insurance Oversight
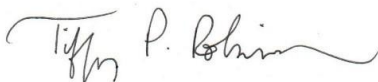161 Lowe House Office Building
6 Bladen Street
Annapolis, MD 2140

RE: House Bill 907 - Unemployment Insurance - Study on System Reforms

Dear Governor Hogan, Senate President Ferguson, Speaker Jones and Chairs Klausmeier and Carey:

In accordance with House Bill 907 of the 2021 Maryland General Assembly Legislative Session, Chapter 45, the Maryland Department of Labor presents the Final Report on Unemployment Insurance - Study of System Reforms**.** This report includes an assessment by the Maryland Department of Labor of several analyses conducted independently by the W.E. UpJohn Institute for Employment Research in coordination with The Jacob France Institute of the University of Baltimore.

I look forward to your review of the report and will be pleased to respond to any questions regarding the Department's assessment of these independent analyses. If my staff can be of further assistance, or if you have any questions regarding this report, please feel free to contact me at 410-230-6020.

Sincerely,

Tiffany P. Robinson
Secretary

Maryland
DEPARTMENT OF LABOR

Study on System Reforms

The Joint Committee on Unemployment Insurance Oversight passed Maryland House Bill 907 (2021) ("H.B. 907") entitled "Unemployment Insurance - Study on System Reforms". This legislation required MDL to study: (1) expanded eligibility for unemployment benefits for various types of workers; (2) the costs and benefits of increasing the weekly maximum benefit amount, the allowance that claimants receive for their dependents, and the income disregard for part-time work; (3) alternative approaches to the experience rating process; (4) the establishment of clear standards for when an employee is entitled to claim unemployment insurance benefits if the employee leaves a job for reasons relating to unsafe working conditions; (5) the existing penalties for fraud and the need for enhancing or altering those penalties; (6) the solvency of the Unemployment Insurance Trust Fund, as adjusted based on implementation of each of the system reforms studied under the requirements of the bill; and (7) any other issue that MDL determines is necessary to include in its evaluation of the State's unemployment insurance system.

To conduct the study envisioned by H.B. 907, MDL contracted with the W.E. Upjohn Institute for Employment Research ("Upjohn") in coordination with the Jacob France Institute ("JFI") at the University of Baltimore. Upjohn and JFI conducted independent research and analysis to produce four reports and one related memo which address items 1-3, 6, and 7 outlined in the legislation. Items 4 and 5 were researched by MDL. The completed reports and memo by Upjohn and JFI, as well as the internal research conducted by MDL, are included as attachments to this report and are outlined below:

1) Report 1 Maryland UI Analysis -- Seasonal Employment
2) Report 2 Maryland UI Analysis -- Benefit Generosity
3) Report 3 Maryland UI Analysis -- Benefit Charging Rules
4) Report 4 Maryland UI Analysis -- Related Analyses
5) Memo - Related Maryland Baseline Simulations
6) A Review of the Standards for Benefit Eligibility and a Review of the Existing Penalties for Fraud

The reports and related analyses conducted by Upjohn and JFI contain findings, assumptions, and policy recommendations that are attributable to the research institutions and not representative of MDL. The findings and research within these reports are extensive. MDL has conducted a review of these reports and would like to highlight some key findings.

One critical finding of the report is that the actions of the Administration to ease the burden on employers through non-charging of COVID-19 related benefits and infusing over $1 billion in relief funds to the state unemployment insurance trust fund (UITF), which was done through bipartisan budget negotiations, has resulted in the UITF being in a financially sound position for the foreseeable future.

Report 4, "Related Analyses", examines and simulates the effects of 2020 changes in UI financing. Specifically, it looks at what the effect of Non-Charging employers for pandemic related benefits through 2023, mandating Tax Schedule C for 2022 and 2023, and infusing $1 billion in relief funds into the UITF will have on the fund stability and solvency in future years. This baseline simulation also assumes that no changes are made to the current tax structure or benefit standards of the current state program. The results, illustrated in the chart below, project that the UITF will reach solvency by the end of 2021, Tax Schedule A for employers will be implemented by 2024, and that both will remain true through at least 2025.

In summation, this simulation projects that the UITF will be financially sound for the foreseeable future, which provides policy makers with the time necessary to conduct a thorough review and discussion on system reforms. This is of particular importance as the effects of the pandemic continue to create economic uncertainty.

Maryland Baseline Simulation that Includes Schedule F for 2021, Schedule C for 2022-2023, Non-Charging for 2020 through 2023, and a $1 Billion Infusion in the second half of 2021

Year	Benefits paid	UI tax revenue	Interest	Year-end trust balance, *1	AHCM	Tax schedule
	Values in Millions of Dollars					
2020	1,794	444	17	84	0.04	A
2021	459	732	10	366	1.12 ←	F
2022	448	461	28	1,399	1.12	C
2023	449	466	29	1,459	1.12	C
2024	447	386	29	1,424	1.06	A
2025	448	392	29	1,402	1.00	A
2026	446	400	28	1,382	0.95	A
2027	448	409	28	1,369	0.91	A
2028	445	416	28	1,365	0.88	A
2029	446	425	28	1,370	0.85	A
2030	444	435	28	1,386	0.83	A
2031	440	445	28	1,417	0.82	A
2032	439	454	29	1,459	0.81	A

The central finding of the reports conducted by Upjohn and JFI are suggested UI financing alternatives, to include indexing Maryland's Taxable Wage Base (TWB), which would account for a significant tax increase for Maryland employers. The report suggests that by indexing the TWB, the state may be better suited to maintain fund solvency into future years. However, this policy recommendation would represent an estimated 20.7% UI tax increase on Maryland employers. Of critical importance is that the reports suggest this tax increase would impact Small and Medium sized Enterprises (SMEs) more than the average Maryland employer, increasing their UI taxes by an average of 25.3%, which represents an additional $32 per employee on average (see table below). The reason SMEs would be more severely impacted by indexing the TWB, the report finds, is that SMEs on average pay 1.2% higher wages than the average Maryland employer.

Effects of Changing from a Taxable Wage Base Fixed at $8,500 to
a Taxable Wage Base Indexed to Twenty-five Percent of Average Annual Wages on
All Maryland Employers and Small and Medium Sized Employers (SMEs)
having Fewer than 50 Employees

Effects on	All Maryland Employers	All Maryland SMEs
Taxable Wages (%)	54.2	54.5
Benefit Ratios (%)	31.5	31.5
Tax Rates (%)	14.8	13.8
Total Tax Payments (%)	20.7	25.3
Taxes Per Employee ($)	$31	$32

Source: Estimates from microsimulations based on Maryland UI program administrative data.

Recommendations

The economic landscape in Maryland has changed significantly over the past year and a half due to the COVID-19 pandemic. Our state, along with every other state in the nation has grappled with the unprecedented trials this pandemic brought with it. This includes the many challenges of serving our state's unemployed residents and the business community alike. The nature and speed at which these challenges presented themselves was not only unprecedented, but truly unlike any scenario ever faced before, particularly as it relates to the administration of the state's unemployment insurance program.

The Maryland Department of Labor (MDL), which houses the Division of Unemployment Insurance (DUI), administers the state's unemployment insurance program. Over the course of this pandemic, MDL has made astounding strides to not only improve the state's UI program but to implement and administer the 10 new federal unemployment insurance programs that were created by the federal government during the pandemic. Furthermore, MDL worked with the legislature and administration to ensure the expansion of benefit eligibility criteria to address pandemic circumstances, launched a new modernized UI system to enable the administration of the new federal programs, hired over 2,000 state and contractual employees, developed and provided an array of new tools for customers to connect with the agency and/or self serve their needs, implemented enhanced fraud detection and prevention tools to combat targeted nationwide, sophisticated fraud schemes, and collaborated with Governor Hogan and the Maryland General Assembly to ease the impact on employers and ensure trust fund solvency into the future.

While this pandemic has been tenuous and presented state agencies with many challenges, it has also provided policy makers and states agencies alike with an opportunity to examine lessons learned to ensure the state is prepared to handle similar crises in the future. The analysis conducted by Upjohn and JFI covers a breadth of key areas within the unemployment insurance system that should be carefully and thoroughly reviewed by policy makers.

Given the UITF's projected solvency through at least 2025, and the regressive nature of many of the recommendations contained in the analyses conducted by Upjohn and JFI, MDL does not endorse or recommend a higher tax burden on the Maryland employer community at this tenuous economic time. MDL recommends that the Maryland General Assembly and other key policy makers conduct an in-depth review of the materials presented in these reports and collect extensive stakeholder input before implementing any UI financing reforms to the state's unemployment insurance system.

MDL also recommends that policy makers consider the following changes to address future crisis:

1) Consider suspending mitigation language during times of extreme emergency to allow for expedited claims processing.

2) Consider enhanced penalties for fraudulent activity in the system to better protect legitimate claimants and employers from what has been an onslaught of sophisticated fraud.

Maryland Unemployment Insurance Analysis: Report 1—Seasonal Employment

November 2021

Christopher J. O'Leary and Kenneth J. Kline
W.E. Upjohn Institute for Employment Research

Submitted to:

Tiffany Robinson, Secretary
Maryland Department of Labor
1100 N. Eutaw Street
Baltimore, MD 21201

by:

Ting Zhang, Associate Director
Jacob France Institute
University of Baltimore
1420 N. Church Street
Baltimore, MD 21201

Maryland Unemployment Insurance (UI) Analysis:
Report 1--Seasonal Employment

1. OVERVIEW

This is the first in a series of four Upjohn Institute reports assessing the effects of unemployment insurance (UI) program changes considered in Maryland House Bill 907 of 2021. The Upjohn Institute worked with the Jacob France Institute (JFI) at the University of Baltimore to do this work. This report, subtitled "Seasonal Employment," examines the extent of seasonal or part year employment in Maryland and the degree of involvement by workers in these categories with the UI system. This analysis gives insights into how changes in rules for UI eligibility by seasonal and part year workers could affect benefit access and UI benefit financing obligations.

Our analysis is based on UI program administrative data that includes employer quarterly earnings reports. This is the best measure available in the data to identify seasonal patterns or part year employment. For this analysis we examine repeat quarterly patterns with and without earnings. Such patterns of earnings based on calendar quarters do not necessarily jibe with all regular seasonal employment opportunities but results of our analysis are suggestive of seasonal or part year employment patterns. We can observe the proportions of UI applicants, recipients, and the amount of UI benefits among recipients that we identify to be seasonal employees. We can also measure the beneficiary rates for those returning to the same employer each year.

Among those identified as seasonal or part year employees the rates of UI application and recipiency are relatively low. That means the UI non-applicant rate among seasonal employees is relatively high so that expanding UI eligibility for part or all of this group could significantly increase benefit payment totals. The available program administrative data permit us to identify the industries involved in seasonal employment. However, demographic variables such as age or educational attainment are available only for UI applicants so we cannot see characteristics for seasonal workers who do not apply for UI benefits. For example, we cannot see the proportion of seasonal or part year UI non-applicants who are young and full-time students in calendar quarters when they do not have earnings.

2. SEASONAL EMPLOYMENT

2.1. Defining a sample for analysis

To investigate seasonal employment in Maryland we use program administrative records from 2013 through 2019. Starting in 2012, monetary eligibility for UI benefits required quarterly earnings of $1,176 and base period total earnings of $1,800 (Table 1).[1]

For a low wage worker earning the minimum wage in Maryland, the hours worked in the base period to qualify for the minimum Maryland weekly UI benefit declined from 2013 to 2019 as the minimum wage rose. The federal minimum wage of $7.25 per hour prevailed in Maryland in 2013 and 2014, the state minimum hourly wage was increased to $8.00 January 1, 2015 and then quickly rose to $10.10 in July 2018 which was in effect throughout 2019 (Table 2). Over the period 2013 to 2019 the base period hours of work needed at the prevailing minimum declined

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[1] The UI base period is normally the first four of the last five completed calendar quarters before the quarter of UI application.

from 248.3 to 178.2. In the high quarter the minimum hours required declined from 12.5 to 9.0 per week, with the remaining hours in the base period declining from 6.6 to 4.8 per week.

Considering all records of quarterly earnings over the period 2013 to 2019, Table 3 shows that the lowest percentages were in the first (24.4 percent) and the fourth (25.0) quarters of the year. This suggests the most seasonal or part year employment is in calendar quarters two and three.

In Table 4 we present counts of wage earners by the number of quarters with earnings in each of the years 2013 through 2019. The top panel of the table shows that the numbers with earnings in one, two, or three quarters are about the same and the numbers with four quarters of earnings is much higher. The bottom panel of Table four shows about ten percent of wage earners in each of the first three categories, that is, one, two, or three quarters with earnings and the remaining 70 percent had earnings in all four quarters. This suggests a high degree of seasonal or part year employment.

Table 5 shows average earnings for the groups summarized in Table 4. The bottom panel of Table 5 shows that average quarterly earnings of those working in one, two, or three quarters averaged less than half of average quarterly earnings for those with earnings in four quarters. Over the years 2013 to 2019 average quarterly earnings were $5,323 for those working one quarter, $6,066 two quarters, $7,704 three quarters, and $15,102 four quarters.

This preliminary analysis led to two strategies for using quarterly earnings records to analyze seasonal employment the first is presented in Tables 6 to 9 and the second in Tables 10 to 13. The first strategy limits the sample for analysis to workers who had zero earnings in the first calendar quarter and had the same major employer in two or more consecutive years. The first quarter of the year has the lowest rate of employment. The major employer in a calendar quarter is the one paying the biggest share of earnings. Having the same major employer in consecutive years while having zero earnings in the first quarter is a clear pattern of seasonal employment.

Table 1   **Maryland Minimum Monetary Eligibility Requirements**

| | Earnings required | |
| | High quarter | Base period |
Year (*1)	High quarter	Base period
2019	1,176	1,800
2018	1,176	1,800
2017	1,176	1,800
2016	1,176	1,800
2015	1,176	1,800
2014	1,176	1,800
2013	1,176	1,800
2012	1,176	1,800
2011	576	900
2010	576	900

Note: (*1) The current requirement of $1,176 in the high quarter and $1,800 in the base period became effective March 1, 2012.

Source: UDDOL (2020) "Comparison of State Unemployment Insurance Laws"
https://oui.doleta.gov/unemploy/comparison/2020-2029/comparison2020.asp

Table 2   **Maryland Minimum Wage and Resulting Hours Needed to Satisfy Current Minimum Eligibility (High quarter earnings $1,176 with total base earnings of $1,800)**

Effective date (*1)	Minimum wage	Total hours needed	High quarter hours		Remainder to qualify	
			Total	Per-week	Total	Per-week (*1)
1/1/21	11.75	153.2	100.1	7.7	53.1	4.1
1/1/20	11.00	163.6	106.9	8.2	56.7	4.4
7/1/18	10.10	178.2	116.4	9.0	61.8	4.8
7/1/17	9.25	194.6	127.1	9.8	67.5	5.2
7/1/16	8.75	205.7	134.4	10.3	71.3	5.5
7/1/15	8.25	218.2	142.5	11.0	75.6	5.8
1/1/15	8.00	225.0	147.0	11.3	78.0	6.0
Prior	7.25	248.3	162.2	12.5	86.1	6.6

Note: (*1) The $11.75 hourly wage effective January 1, 2021 is for employers with 15 or more employees. It is $11.60 for firms with 14 or fewer employees.

https://www.dllr.state.md.us/labor/wages/wagehrfacts.shtml
https://www.laborlawcenter.com/education-center/maryland-minimum-wage-increase-2015/
https://www.businessforafairminimumwage.org/news/00267/maryland-minimum-wage-bill-summary-2013

Table 3 **Quarter of Calendar Year with Non-Zero Earnings among Maryland Wage Earners, 2013 – 2019**

Quarter of year	Number of records	Percent
1	17,470,593	24.4
2	18,024,508	25.2
3	18,261,921	25.5
4	17,875,985	25.0

Source: Author's calculations based on Maryland UI program administrative data.

Table 4 **Distribution of Maryland Wage Earners by Number of Quarters with Earnings in a Year, 2013 - 2019**

Year	Total wage earners	Wage Earners by Number of Quarters with Earnings in Year			
		1	2	3	4
2013	2,932,394	305,634	305,372	296,362	2,025,026
2014	2,951,003	307,710	308,395	330,657	2,004,241
2015	2,999,985	318,221	320,690	311,835	2,049,239
2016	3,040,364	313,172	315,251	298,271	2,113,670
2017	3,064,076	307,829	318,848	296,930	2,140,469
2018	3,084,685	310,324	315,367	297,312	2,161,682
2019	3,101,696	306,548	315,697	324,884	2,154,567

Year	Total wage earners	Share by Number of Quarters with Earnings			
		1	2	3	4
2013	2,932,394	0.104	0.104	0.101	0.691
2014	2,951,003	0.104	0.105	0.112	0.679
2015	2,999,985	0.106	0.107	0.104	0.683
2016	3,040,364	0.103	0.104	0.098	0.695
2017	3,064,076	0.100	0.104	0.097	0.699
2018	3,084,685	0.101	0.102	0.096	0.701
2019	3,101,696	0.099	0.102	0.105	0.695
Overall		0.102	0.104	0.102	0.692

Source: Author's calculations based on Maryland UI program administrative data.

Table 5　　　**Average Total Annual Earnings and Average Quarterly Earnings by Number of Quarters Worked in the Year among Maryland Wage Earners, 2013 - 2019**

| Year | Annual average | Average Annual Earnings by Number of Quarters Worked | | | |
		1	2	3	4
2013	42,723	4,791	11,176	22,496	56,165
2014	43,387	5,089	11,300	23,220	57,531
2015	44,831	5,267	12,158	22,557	59,478
2016	45,575	5,186	11,877	22,006	59,911
2017	46,946	5,749	12,378	22,447	61,418
2018	48,244	5,544	12,619	23,483	62,977
2019	49,634	5,633	13,362	25,377	64,867
Overall	45,951	5,323	12,132	23,112	60,408

| Year | Average quarterly | Average Quarterly Earnings by Number of Quarters Worked | | | |
		1	2	3	4
2013	11,536	4,791	5,588	7,499	14,041
2014	11,757	5,089	5,650	7,740	14,383
2015	12,147	5,267	6,079	7,519	14,869
2016	12,282	5,186	5,939	7,335	14,978
2017	12,673	5,749	6,189	7,482	15,355
2018	12,990	5,544	6,310	7,828	15,744
2019	13,388	5,633	6,681	8,459	16,217
	12,408	5,323	6,066	7,704	15,102

Source: Author's calculations based on Maryland UI program administrative data.

2.2. Not working in the first calendar quarter

Table 6 shows the number of workers with no earnings in the first quarter of two consecutive calendar years and having the same major employer for earnings in other quarters in both years. While Table 5 shows there were approximately 3 million workers each year from 2013 to 2019 in Maryland, Table 6 shows there were approximately 25,000 to 40,000 seasonal workers with no first quarter earnings returning to the same employer in each of the years. Table 6 also shows that among such seasonal workers over these six years, a total of only 18,152 or 9 percent applied for UI.

Table 7 shows that among the 18,152 UI applicants, 86.8 percent or 15,752 became UI beneficiaries. These beneficiaries had an average weekly benefit amount of $294 and average benefit year compensation of $5,897 meaning an average duration of 20.1 weeks.

Table 8 shows that within this group of seasonal workers, 62.7 percent of the of the UI applicants worked in four base period quarters—not necessarily four consecutive quarters. Among UI non-applicants just over 75 percent had earnings in two or more calendar quarters in their UI base period which should yield earnings sufficient for monetary UI eligibility. This raises the question, why did they not apply? It could be that non-monetary eligibility factors influenced the

application decision. For example, seasonal summer employees might return to school in the fall and be unavailable for work and still return to work the next summer.

Among UI applicants and beneficiaries, Table 9 shows the quarters of base period employment and for beneficiaries the table shows average weekly benefit amounts and benefit year total compensation. The figures in Table 9 show the average duration of these seasonal workers is 20.1 weeks. This is a relatively long duration of benefit receipt. Table 14 below spanning the same time period from 2014 to 2019 shows that among all Maryland UI beneficiaries in this period the average duration of benefit receipt was 15.4 weeks. These data suggest that while the weekly benefit amount is lower for seasonal employees the average duration of benefit receipt is about one-third longer.

Table 6   **UI Application Rates Among Workers Who Had No Earnings in the 1st Quarter of Two Consecutive Years and Worked for the Same Major Employer in Both Years**

Year	Number of individuals	Applied for UI (*1)	Share of total
2014	25,314	2,320	0.092
2015	38,512	4,089	0.106
2016	37,470	3,490	0.093
2017	37,383	3,285	0.088
2018	37,953	3,006	0.079
2019	24,862	1,962	0.079
	201,494	18,152	0.090

Note: (*1) UI application occurred from three quarters prior to three quarters after the 1st quarter reference period. Priority is given to UI claims with BYB date in the 1st quarter reference period, then one quarter prior, then one quarter after, then two quarters prior, then two quarters after.
Source: Author's calculations based on Maryland UI program administrative data.

Table 7   **UI Benefit Receipt Summary Among Workers Who Had No Earnings in the First Quarter for Two Consecutive Years and Worked for the Same Major Employer in those Years and Applied for UI Benefits**

					UI received	
Year	UI applicants	Received benefits	Share of applicants	Average WBA	Total	Average per recipient
2014	2,320	2,043	0.881	279.99	12,140,899	5,943
2015	4,089	3,577	0.875	288.36	20,247,854	5,661
2016	3,490	2,987	0.856	289.71	17,400,372	5,825
2017	3,285	2,822	0.859	299.77	16,999,744	6,024
2018	3,006	2,588	0.861	305.42	15,601,294	6,028
2019	1,962	1,735	0.884	301.12	10,498,904	6,051
	18,152	15,752	0.868	293.78	92,889,067	5,897

Source: Author's calculations based on Maryland UI program administrative data.

Table 8 **Quarters of Employment in the Five Quarters Prior to BYB (UI Applicants) or 1st Quarter (Non-Applicants) for Maryland Workers with No Earnings in the 1st Quarter for Two Consecutive Years and Worked for the Same Major Employer in Both Years**

| Quarters employed | UI Applicants | | | Non-Applicants | | |
	Number	Share	Cumulative share	Number	Share	Cumulative share
0	31	0.002	0.002	0	0.000	0.000
1	292	0.016	0.018	45,048	0.246	0.246
2	1,518	0.084	0.101	74,067	0.404	0.650
3	3,145	0.173	0.275	32,099	0.175	0.825
4	11,384	0.627	0.902	25,994	0.142	0.967
5	1,781	0.098	1.000	6,134	0.033	1.000
	18,152			183,342		

Source: Author's calculations based on Maryland UI program administrative data.

Table 9 **UI Benefits Summary Among Workers Who Had No Earnings in the First Quarter for Two Consecutive Years and Worked for the Same Major Employer in those Years and Applied for UI Ordered by the Number of Quarters Employed in the Five Quarters Prior to BYB**

| Quarters employed | UI applicants | Received benefits (*1) | Share of applicants | Average WBA | UI received | |
					Total	Average per recipient
0	31	2	0.065	222.50	2,655	1,328
1	293	55	0.188	256.29	327,355	5,952
2	1,518	971	0.640	265.19	5,641,510	5,810
3	3,145	2,401	0.763	276.84	13,699,913	5,706
4	11,384	10,696	0.940	296.16	62,935,744	5,884
5	1,781	1,627	0.914	321.58	10,281,889	6,320
	18,152	15,752	0.868	293.78	92,889,066	5,897

Note: (*1) Though at least two quarters of earnings are required in the base period to qualify for UI benefits, the edited earnings history that determines monetary eligibility is different in some cases than what is reported in the unedited quarterly wage records which were used to determine the number of quarters employed for this table. If earnings were not reported but the applicant can show pay-stubs from employment, monetary eligibility can be established.
Source: Author's calculations based on Maryland UI program administrative data.

2.3. Working only in the second and third calendar quarters

Table 10 presents a summary of a sample of potentially seasonally employed workers that uses a more stringent definition than that used in the previous section. These workers are a sub-set of the 201,494 summarized in Table 6 and have employment in quarters two and three *only* in successive calendar years. Table 10 shows this sub-sample totals 84,604 workers and if the

requirement that consecutive years be with the same major employer, the sample size declines further to 56,891. Whether or not the same major employer restriction is applied, the data show a very low rate of UI application among these seasonally employed wage earners.

One possible explanation for the low UI application rate could be the non-monetary eligibility issue concerning availability for work. For example, full-time college students attending school during a traditional academic year, might be employed beginning in the latter part of the second calendar quarter and continue through the summer before returning to school before the end of the third calendar quarter. Full-time students fitting this pattern would be ineligible for UI benefits and very unlikely to apply because they are not available for work. Some high school students who work in summer jobs could also fit this profile. Had data on demographic characteristics for UI non-applicants been available, one would expect to see a large share of young persons with very large share having educational attainment of high school or less.

Table 11 presents the characteristics that are available for the 1,257 persons in this group who applied for UI benefits. With an average age of 43.8 years, they are on average older than the student profile just discussed. Indeed, the age distribution of these UI applicants shows less than 12 percent are of likely student age with 74 percent of the sample age 30 or older. While we do not have demographic data on all seasonal workers, the quarterly wage record data available for all Maryland wage earners includes industry of employment which we summarize in Tables 12 and 13.

The data in Table 12 show the proportion of persons working only in quarters two and three for two or more consecutive years that are consistently employed in the same industry as defined by two-digit North American Industry Classification System (NAICS) codes. For this sample, one might expect consistent industry employment in industries like retail or hospitality. In this sample, nearly 75 percent maintain consistent employment in the same industry (Table 12). As the data in Table 10 showed, this is not totally unexpected. Among the 84,604 persons in this sample, 56,891 or 67 percent were employed with the same major employer in consecutive years.

Table 13 shows the industry detail for persons in this sample with consistent industry attachment. The art-entertainment-recreation industry has the largest share of persons fitting this profile at 28.7 percent of the sample. Amusement parks would fall in this category and we would expect those companies to employ younger persons seasonally. Accommodation and food services (hospitality) is the next largest category employing 19.4 percent of this sample, again a likely place for younger students to find employment. These two industries combined include nearly half of the sample.

9

Table 10   **UI Application Rates Among Workers Who Worked in Quarters Two and Three Only in Two or More Consecutive Years without and with the Requirement that the Major Employer be the Same**

| Year | Number of individuals | Applied for UI (*1) | Share of total | Same major employer restriction | | |
				Number of individuals	Applied for UI (*1)	Share of total
2014	14,200	290	0.020	9,617	190	0.020
2015	13,760	263	0.019	9,103	159	0.017
2016	14,334	238	0.017	9,482	153	0.016
2017	15,923	209	0.013	10,807	123	0.011
2018	16,551	175	0.011	11,291	95	0.008
2019	9,836	82	0.008	6591	58	0.009
	84,604	1,257	0.015	56,891	778	0.014

Note: (*1) UI application occurred from three quarters prior to three quarters after the fourth quarter reference period. In case of multiple UI applications in this period, priority is given to UI claims with a BYB date in the fourth quarter reference period, then in the following order: one quarter prior, one quarter after, two quarters prior, two quarters after, three quarters prior, three quarters after.
Source: Author's calculations based on Maryland UI program administrative data.

Table 11 **Characteristic Summary of the 1,257 UI Applicants Who Only Worked in Calendar Quarters Two and Three in Two or More Consecutive Years**

Characteristic	Characteristic mean
Age at application	43.8
Less than 24	0.119
25 - 29	0.119
30 - 39	0.196
40 - 49	0.181
50+	0.363
Gender	
Male	0.602
Female	0.398
Education (n = 1,256)	
Less than high school	0.146
GED	0.049
High school graduate	0.502
Post-secondary, no certificate/diploma	0.138
Certificate, career training	0.010
Associate degree	0.059
Bachelor degree	0.084
Advanced degree	0.012
Job separation reason (n = 1,248)	
Lack of work	0.610
Quit	0.150
Discharged/fired	0.099
Still employed	0.013
Temporary layoff	0.044
Information not provided	0.055
End of assignment, temporary agency	0.020
Other	0.009
Benefit receipt summary	
Monetary eligible	0.754
UI recipient	0.649
Weekly benefit amount	277
Total UI received	6,398

Source: Author's calculations based on Maryland program administrative data.

Table 12   **Maryland Wage Earners Who Worked in Quarters Two and Three Only in Two or More Consecutive Years and in the Same Industry**

Year	Number of individuals	Same industry each year	Share of total
2014	14,200	10,620	0.748
2015	13,760	10,145	0.737
2016	14,334	10,641	0.742
2017	15,923	12,119	0.761
2018	16,551	12,566	0.759
2019	9,836	7,295	0.742
	84,604	63,386	0.749

Source: Author's calculations based on Maryland UI program administrative data.

Table 13   Industry Distribution of Wage Earners Who Worked in Quarters Two and Three Only in Two or More Consecutive Years and in the Same Industry, 2014 - 2019

NAICS Code	Industry Description	Overall Number of persons	Share	UI applicants Number of persons	Share
11	Agriculture	347	0.005	17	0.014
21	Mining	12	0.000	0	0.000
22	Utilities	71	0.001	2	0.002
23	Construction	2,408	0.038	152	0.126
31-33	Manufacturing	1,146	0.018	53	0.044
42	Wholesale Trade	673	0.011	22	0.018
44-45	Retail Trade	3,446	0.054	112	0.092
48-49	Transportation, Warehousing	509	0.008	30	0.025
51	Information	203	0.003	1	0.001
52	Finance and Insurance	430	0.007	5	0.004
53	Real Estate, Rental and Leasing	854	0.013	38	0.031
54	Professional, Scientific, Technical Services	2,732	0.043	29	0.024
55	Company/Enterprise Management	135	0.002	1	0.001
56	Administrative, Support, Waste Mgmt	4,946	0.078	150	0.124
61	Educational Services	7,108	0.112	22	0.018
62	Health Care and Social Assistance	1,677	0.026	26	0.021
71	Arts, Entertainment, and Recreation	18,184	0.287	77	0.064
72	Accommodation and Food Services	12,288	0.194	406	0.335
81	Other Services	2,127	0.034	10	0.008
92	Public Administration	4,086	0.064	57	0.047
99	Unclassified	4	0.000	1	0.001
	Total	63,386		1,211	

Source: Author's calculations based on Maryland UI program administrative data.

2.4. Comparing seasonal with total employment

To contrast the patterns of UI usage by Maryland seasonal workers with all employees in the state, Table 14 summarizes all UI usage in Maryland from 2014 through 2019. The available data for 2014 covers about half of the year, so over the five and one-half years period in Maryland there were 799,094 UI applicants of whom 513,787 or 64.3 percent were paid UI benefits, those UI beneficiaries received an average weekly benefit amount of $343 and an average total of $5,269 in the UI benefit year. The average duration of benefit receipt was 15.4 weeks.

By broadest definition of seasonal employment, those with zero earnings in the first calendar quarter of the year, included 201,494 workers. Among these 18,152 applied for UI benefits and of these 15,752 or 86.8 percent received UI benefits. They were paid an average weekly benefit amount of $294 and an average total of $5,897 in the benefit year. The average duration of benefit receipt was 20.1 weeks.

Seasonal UI applicants over the period amounted to 2.3 percent of all UI applicants in Maryland. Their average weekly benefit amounts were about 17 percent lower, but their average duration of benefits was 30.5 percent longer. On average these seasonal workers drew 11.9 percent more UI benefits than the average UI beneficiary in the period.

Only 18,152 of 201,494 or 9.0 percent of workers identified as seasonal by having no earnings in the first calendar quarter of consecutive years while having the same major employer in those years applied for UI benefits. This group of benefit applicants had a higher than average beneficiary rate (86.6 percent) compared to all Maryland UI applicants (64.3 percent) in the period.

By another stricter definition of seasonally employed--having earnings only in the second and third calendar quarters, but a broader definition of repeat employment—returning to the same industry we see the industry distribution of workers who return to the same seasonal job in consecutive years. The industries most involved in this pattern are hospitality (hotels and restaurants), arts-entertainment-recreation (includes amusement parks), and educational services (probably summer camps), and among seasonal workers who are UI applicants hospitality has the largest share, followed by retail trade, and construction.

The conjecture is that many seasonal employees who do not apply for UI in the off season are probably younger and still engaged in full time education. Seasonal workers who do use the UI system tend to use it more intensively than the average Maryland UI beneficiary. Some states have special provisions for seasonal employers that lets them register with the state as a seasonal employer and inform employees of the expected duration of employment opportunities with no implied obligation otherwise. Seasonal employees so designated and informed by employees are not entitled to UI compensation in the off-season based on seasonal lack of work. Other policies to encourage UI application and eligibility for seasonal workers could easily expand UI benefit financing obligations.

Table 14 **Summary of Maryland Micro-UI Applicant and Benefit Receipt Data for 2014 through 2019 (*1)**

Year (*1)	Total UI applicants	Received UI benefits	Share of total	Average WBA	UI benefits	
					Total UI payments	Average per recipient
2014	88,036	56,312	0.640	315.43	289,006,656	5,132
2015	157,832	104,417	0.662	334.94	544,935,552	5,219
2016	151,841	98,743	0.650	342.35	517,952,704	5,245
2017	146,520	94,728	0.647	348.70	499,179,328	5,270
2018	130,568	81,426	0.624	351.66	420,250,432	5,161
2019	124,297	78,161	0.629	355.32	436,020,512	5,578
	799,094	513,787	0.643	342.51	2,707,345,184	5,269

Note: (*1) UI applicant micro-data provided for 2014 are complete October through December of 2014. Data for 2014 for January through September of 2014 appear to be at roughly 40-50 percent of expected levels.   Estimates in this report for UI application rates of seasonally employed persons for 2014 are likely understated as a result.
Source: Author's calculations based on Maryland UI program administrative data.

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Maryland Unemployment Insurance Analysis: Report 2—Cost and Benefits of Increasing Unemployment Insurance Benefit Generosity

Maryland Unemployment Insurance (UI) Analysis:
Report 2—Costs and Benefits of Increasing UI Benefit Generosity

EXECUTIVE SUMMARY

This report was prepared by the Upjohn Institute in cooperation with the Jacob France Institute (JFI) at the University of Baltimore. The JFI prepared administrative data for analysis and provided overall project management. The University of Baltimore, Office of Sponsored Research administered the contract from the Maryland Department of Labor.

Accepted standards for unemployment insurance (UI) benefit adequacy require have been developed over 60 years based on research and federal advisories. These standards were most recently enunciated by the Advisory Council on Unemployment Compensation (ACUC 1996, p. 22). The standards for weekly UI benefits attempt to balance adequate income replacement and sufficient countercyclical stimulus against work disincentives. The standards are:

- Weekly benefit amount (WBA) replacing 50 percent of prior earnings
- Maximum WBA set at two-thirds of the average weekly wage.
- Minimum WBA replacing more than 50 percent of prior earnings.
- Potential benefit duration should be 26 weeks.

Maryland provides 54 percent of earnings for anyone earning less than $797 weekly in their high earning quarter and 26 weeks potential duration to all beneficiaries. However, the maximum weekly benefit amount (WBA) and the minimum WBA are too low. Fifty percent wage replacement does not extend to two-thirds of the average weekly wage (AWW). Since October 1, 2010 the Maryland maximum WBA has been fixed at $430 including any dependents allowance. Having a WBA maximum at two-thirds of the state AWW assures that UI provides adequate income replacement to at least 80 percent of UI beneficiaries.

In 2019 the AWW in Maryland UI covered employment was $1,157 so that two-thirds of the AWW is $775. Setting the minimum WBA at 25 percent of the maximum in 2019 would have set the minimum WBA at $194 up from the 2019 level of $50. The current Maryland dependents allowance is $8 per dependent up to a maximum of $40 per week. A modest improvement in dependents allowance would be $25 per dependent up to $100 per week total.

This report is subtitled costs and benefits of increasing UI benefit generosity, but the focus is on the costs of achieving the standards listed in this introduction. There is ample research evidence that benefits meeting these standards provide adequate temporary income replacement while not discouraging return to work.

Increasing the maximum WBA

The Maryland WBA is based on high quarter earnings (HQE) in the base period. The HQE represents the closest to full time earnings. The base period is normally the first four of the five calendar quarters completed before benefit application. The Maryland WBA is computed as $((1/24)*(HQE)$. Therefore, the Maryland WBA replaces 54 percent of prior earnings up to the maximum of $430. We estimate the cost of raising the maximum to two-thirds of the state

AWW. We also consider lowering the replacement rate to 50 percent ((1/26)*HQE) to partially pay for the higher maximum WBA.

We estimate that indexing the maximum benefit to two-thirds of HQE would have required 29.2 percent more revenue using the existing 54 percent wage replacement rate. Lowering the replacement rate to 50 percent ((1/26)*HQE) reduces the estimated increase in benefit payments to 21.9 percent for 2019.

Increasing the minimum WBA and increasing the dependent's allowance

Assuming the maximum WBA is indexed to (0.67*AWW) and the replacement rate is set to 50 percent ((1/26)*HQE), we simulate the minimum WBA to be indexed to 25 percent of the maximum. These changes would have raised the increase in benefit payments from 21.9 to 23.6 percent for 2019.

Indexing the maximum WBA to (0.67*AWW) and indexing the minimum WBA to (0.25*Maximum WBA), increasing the dependents allowance to $25 per dependent with the maximum allowance capped at $100 per week all together would have increased benefit payments 26.1 percent for 2019.

Simulated costs of increasing benefit generosity

For calendar year 2019, if the WBA formula was changed to (1/26)*HQE (50 percent wage replacement), and the maximum WBA indexed as (0.67)*AWW benefits payments would have increased about 21.9 percent. Additionally, indexing the minimum benefit to 25 percent of the maximum WBA suggests total benefit costs would increase 23.6 percent. Finally, increasing the per dependent allowance to $25 per with a maximum of $100 the combined set of increases would likely increase benefit payments 26.1 percent.

Simulated costs of increasing benefit generosity with a behavioral response

The preceding analysis computed cost increases through rescaling recent observed levels of benefit payments. However, when benefits are higher beneficiaries are likely to respond with longer durations. Evidence on the effect of benefits on UI durations suggests that a 10 percent increase in the wage replacement ratio will increase UI benefit durations by about 1.0 week, with the range of estimates between 0.5 and 1.5 weeks. The average Maryland duration of UI benefit receipt was 15.8 weeks in 2019. Extrapolating from the estimated behavioral response, we assume benefit durations will increase on average 2.56 weeks. Relative to a mean duration of 15.8 weeks observed in our analysis sample that is a 16.2 percent increase in duration of benefit receipt. Adding the behavioral response to benefit year UI receipt raises the combined effect of all increases in benefit generosity, together with a reduction to 50 percent in the wage replacement rate, to an increase of 32.1 percent over five years up from 23.9 percent. The increased UI generosity with and without behavioral effects for 2019 are estimated to cost 34.3 and 26.1 percent more respectively.

Among the elements of increased benefit generosity, just adding the indexed maximum WBA while allowing for a behavioral response will increase benefit payments 37.6 percent. However, reducing the wage replacement ratio from 54 to 50 percent will more than pay for each of the other more targeted expansions of benefits with the total increase for all changes being 34.3 percent. The additional expansions to index the minimum WBA and improve dependents allowances effectively increases the wage replacement ratio for the lowest earners and beneficiaries with families. It should be noted that we have focused on point estimates of the mean response. Naturally, there is a distribution around the mean. Since the range of estimates for the behavioral response to a 10 percent increase in the wage replacement rate is between 0.5 and 1.5 weeks, we should regard our point estimate of a 34.3 percent increase in benefit payment costs as being in the middle of a range that could vary between 30 and 39 percent.

Increasing the income disregard for partial UI benefits

While receiving UI benefits, Maryland UI claimants who work part-time while looking for full-time work can still qualify for a weekly benefit payment provided those earnings in a week are less than their WBA. Claimants are required to report weekly earnings on their continued claim form and in the calculation of their benefit amount, the first $50 of earnings is disregarded. Earnings above that $50 limit reduce the weekly benefit amount dollar-for-dollar.

To analyze changing the partial benefits formula we use data on weekly Maryland UI continued claims filed with benefit year begin (BYB) dates in 2015 through 2019. This file includes data on 7.2 million weekly claims. Among these, just less than 10 percent (684,881) involved reported earnings. Among UI claimants reporting earnings, 9.2 percent report earnings amounts less than the current disregard of $50. About 4.2 percent of claimants with earnings report exactly $50 earned in a week when claiming UI benefits. The shares of claimants in selected ranges of income reporting are shown in the figure below. There is wide dispersion in earnings amounts reported and the distribution of those amounts has a very long tail. This results in the average amount reported ($274) being considerably above the median reported weekly earnings ($170) that evenly divides the distribution between higher and lower amounts.

Distribution of Reported Weekly Earnings Amounts Represented as a Share of All Observations Based on Benefit Year Information for UI Claims Filed 2015 - 2019
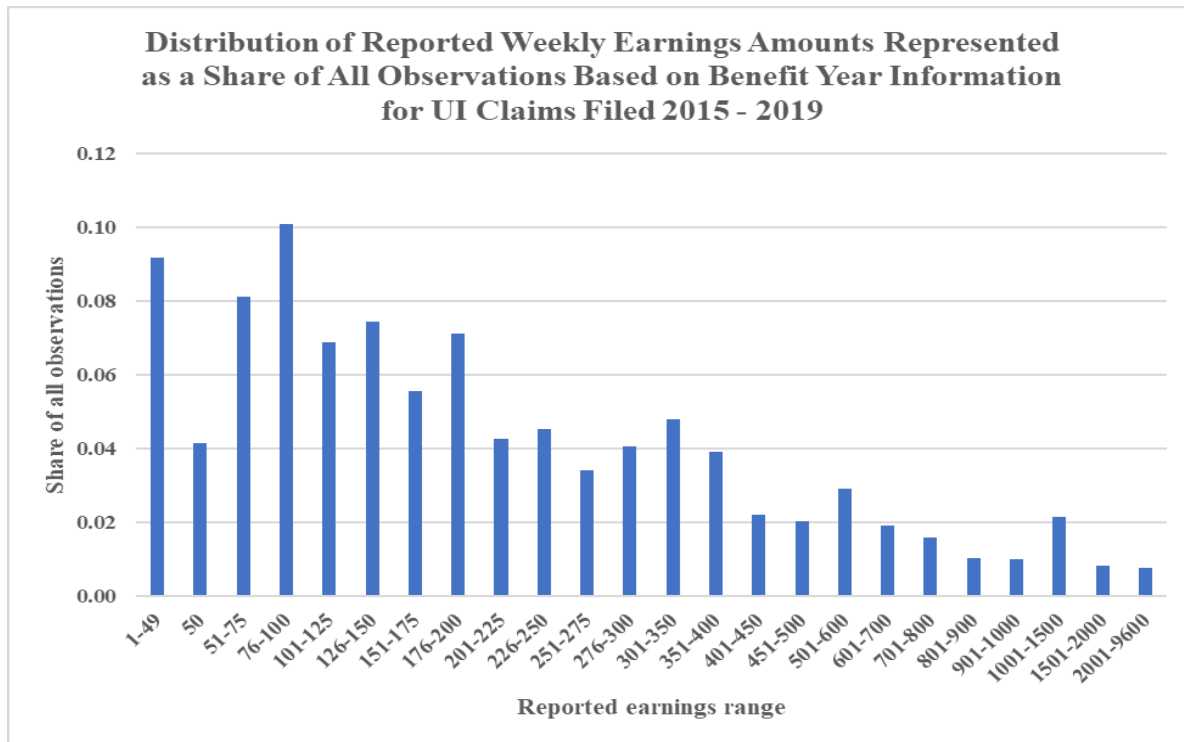
On average over the years 2015 to 2019, Maryland UI beneficiaries reported $983 of earnings during the benefit year that were spread over an average of 3.7 weeks. These UI beneficiaries received just under $2.4 billion in total UI compensation. Over these five years, UI beneficiaries reported $182 million in earnings when filing UI continued claims. Of that amount, the current $50 weekly earnings disregard excluded $25.7 million in earnings from reducing weekly benefits. Without the $50 earnings disregard about 1.1 percent less benefits would have been paid.

We simulated the effects of raising the disregard level to $100, $150, and $200. Our simulations assume no changes to the current minimum or maximum weekly benefit amount and no behavioral response on the part of UI claimants that might change the frequency and amounts of earnings reported. Doubling the disregard to $100 is simulated to increase benefit costs by less than one percent. The largest disregard value tested ($200) increases costs over the five years of data by $33.2 million or about 1.4 percent.

As the disregard is increased, the total amount of earnings affecting benefit computations declines relative to current levels. Therefore, average weekly compensation rises, and beneficiaries could exhaust benefit entitlements more quickly. Higher weekly UI compensation amounts in one or more weeks where earnings were reported means that those claimants who reported the earnings and exhausted their UI entitlement would reach exhaustion sooner in the benefit year.

Maryland's current partial benefit system does not pay benefits if weekly earnings exceed the WBA. In most states, benefits are payable until weekly earnings exceed the WBA plus the disregard. For example, with the current $50 disregard in Maryland if a UI claimant had a $300

weekly benefit amount and reported $320 in earnings for the week, that claimant would not be eligible for a UI benefit that week. However, in most states the amount of earnings deducted from the WBA would have been $270 ($320 earnings reported less $50 disregard). So that the claimant would have been paid a $30 UI benefit for that week.

We simulated the change in benefit payments if claimants could receive compensation in weeks when reported earnings exceed the WBA but did not exceed the sum of the WBA plus the disregard. This type of partial UI benefits rule is common in nearly all states. Using this method, the largest disregard tested ($200) would have resulted in an increase in UI compensation of $39.4 million over the five-year period observed from 2015 to 2019. That would be an increase of $6.2 million from $33.2 million.

Financing increased benefit generosity through an indexed taxable wage base

We simulated financing increased Maryland UI benefit generosity by modestly increasing the UI taxable wage base (TWB). The Maryland UI TWB was set to the current level of $8,500 in 1993 and has not increased since. In 1993, the $8,500 TWB was 32 percent of total UI covered wages, by 2019 it had fallen to less than 18 percent of UI covered wages. We simulate the TWB indexed to 25 percent of the average annual wage (AAW) or 28 percent of UI covered wages. Our cost analysis is dynamic because it examines the balance between system revenues and costs over time. Indexing the TWB is a natural means of financing indexed maximum and minimum weekly benefit amounts. It is a way to keep system income and expenditures in balance over time. The financing simulation summarized in the table below also assumes a behavioral response to increased benefit generosity.

Simulation of Maryland UI Financing with Increased Benefit Generosity and a Behavioral Response over the 2023-2032 Simulation Period (*1)

			Values in millions of dollars				
Year	Benefits paid	UI tax revenue	Interest	Year-end trust balance	AHCM	Tax schedule	Average WBA
2020	1,794	444	17	84	0.04	A	322
2021	459	732	10	366	1.12	F	318
2022	448	461	28	1,399	1.12	C	342
2023	675	763	29	1,530	1.15	C	520
2024	682	847	31	1,694	1.24	B	536
2025	693	880	35	1,906	1.35	B	552
2026	695	693	38	1,937	1.34	A	565
2027	714	714	39	1,994	1.32	A	586
2028	720	737	40	2,047	1.31	A	605
2029	733	764	41	2,115	1.31	A	624
2030	739	791	42	2,206	1.31	A	644
2031	744	823	44	2,325	1.34	A	665
2032	753	852	47	2,466	1.37	A	687
2020-2032	9,850	9,501	442				536
2023-2032	7,149	7,865	387				598

Note: (*1) Starting from the baseline UNIS-X model simulation, model parameters related to weeks compensated were reduced 35.0 percent (O'Leary and Kline (2021b), Table A6). For the current simulation with behavioral response, that parameter was set to -30.8 to increase total UI benefit costs 6.6 percent over the 2023-2032 period.

Dynamic simulations were performed using the UNIS-X Simulation model developed by the U.S. Department of Labor. The model is initialized with values of macroeconomic variables set to yield the expected 2021 calendar year end reserve balance and assuming changes over the next 10 years of variable values reflecting a steady gradual recovery for Maryland from the 2020 pandemic experience. Our simulations impose the financial actions made by Maryland in 2020 and 2021. In particular, Maryland employers were not be charged for benefit payments in 2020 unless their unemployment experience was better in that period. Additionally, while UI tax schedule F is in effect for 2021, tax schedule C will be in effect in 2022 and 2023. Tax schedule C is achieved under Maryland law by the infusion of $1 billion in reserves into the system.

The simulation suggests that after tax schedule C is in effect for 2022 and 2023, schedule B would be applicable in 2024 and 2025. This result is due to the simulated increase in the taxable wage base beginning in 2023 and the existing trigger system which is based on the reserve balance as a percentage of total taxable wages. After 2025 the model has the UI financing system using the lowest tax rate schedule A for the duration of the forecast interval. Furthermore, with the indexed TWB, indexed WBA maximum and minimum, and higher dependents allowances the average high-cost multiple (AHCM) remains over 1.0 into the foreseeable future. This is the reserve standard established in Maryland statute 8-612(f).

The following table summarizes the incremental costs of the program and behavioral changes estimated by the UNIS-X model over 10 years. Total benefit payments are simulated to be $2,696 million higher than the baseline simulation results over 10 years. Following are the percentage increases for each component of benefit payments: 1) indexing the maximum WBA to two-thirds of the average weekly wage—47.2 percent, 2) indexing the minimum WBA to 25 percent of the maximum—1.0 percent, 3) introducing a dependents allowance of $25 per dependent with the total allowance capped at $100 per week—1.3 percent, and 4) the behavioral response to increased benefit generosity—6.6 percent. The simulation table above shows all these increased benefits are paid for by indexing the taxable wage base to 25 percent of average annual wages. With this change the system maintains an AHCM over 1.0 throughout the period ending at an AHCM of 1.37 in 2032. In that year tax schedule A would be in effect with the best rated employers paying 0.3 percent on a taxable wage base of $20,000 in 2032 or a maximum of $60 per employee.

Summary of Simulated Total Benefits Paid from 2023 through 2032 for the Maryland Baseline Simulation and Policy Changes
(Levels and changes in benefit amounts in millions of dollars)

UNIS-X simulation	Total benefits 2023-2032	Incremental change	Incremental percentage change
Baseline	4,452.8		
Maximum WBA indexed 66.7% of AWW	6,552.8	2,100.1	47.2
Indexed maximum, minimum 25% of max	6,621.2	68.4	1.0
Indexed max and min, DA $25 max $100	6,705.0	83.8	1.3
Indexed max, min, DA, Behavioral response	7,149.0	444.0	6.6
Totals relative to baseline		2,696.2	57.2

1. INTRODUCTION[1]

Accepted standards for unemployment insurance (UI) benefit adequacy have been developed over 60 years based on research and federal advisories. These standards were most recently enunciated by the Advisory Council on Unemployment Compensation (ACUC 1996, p. 22). The standards for weekly UI benefits attempt to balance adequate income replacement and sufficient countercyclical stimulus against work disincentives. The standards are:

- the weekly benefit amount (WBA) should replace 50 percent of prior earnings,
- the maximum WBA should be set at two-thirds of the average weekly wage,
- the minimum WBA should replace more than 50 percent of prior earnings, and
- potential benefit duration should be 26 weeks.

The Maryland WBA is computed as (1/24) times earnings in the high earning quarter of the 12-month base period. Using the high quarter of earnings yields the calendar quarter with employment closest to regular full-time work for the individual. Since a calendar quarter has 13 weeks, a benefit formula that is (1/24) of 13 weeks replaces 54 percent of earnings for anyone earning less than $797 weekly in their high earning quarter.

Since October 1, 2010 the Maryland maximum WBA has been fixed at $430 including any dependents allowance. Combined with a formula for 50 percent wage replacement below the maximum, having a WBA maximum at two-thirds of the state AWW assures that UI provides adequate income replacement to at least 80 percent of UI beneficiaries.

- In 2019 the average weekly wage (AWW) in Maryland UI covered employment was $1,157 so that two-thirds of the AWW is $775.

- Setting the minimum WBA at 25 percent of the maximum in 2019 would have set the minimum WBA at $194 up from the 2019 level of $50.

- Maryland provides a uniform potential duration of 26 weeks which meets the ACUC adequacy standard.

The ACUC (1996) was silent on the issue of dependents allowance, but several states provide dependents allowances to UI beneficiaries. The current Maryland dependents allowance is $8 per dependent up to a maximum of $40 per week. A modest improvement in dependents allowance would be $25 per dependent up to $100 per week total.

This report is subtitled costs and benefits of increasing UI benefit generosity, but the focus is on the costs of achieving the standards listed in this introduction. There is ample research evidence that benefits meeting these standards provide adequate temporary income replacement while not discouraging return to work (O'Leary 1998).

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[1] This introduction is drawn from O'Leary and Kline (2021a) and is an appropriate preface to the full set of simulation results presented in the next section. This report supplements core results from O'Leary and Kline (2021a) with macro simulations to estimate long term program costs for benefit changes.

2. COSTS AND BENEFITS OF INCREASING BENEFIT GENEROSITY

2.1. Data for analysis

To define an analytic sample of Maryland UI beneficiaries over the years 2015-2019, we start with all monetarily eligible UI applicants then validate that the system reported WBA can be calculated from the available quarterly wage record data. We need cases with verified wage data to simulate costs for different benefit rules. We find the computations to match the system value for the WBA in 82.9 percent of the cases, and among these monetarily eligible UI applicants, 70.1 percent became UI beneficiaries—this is our analytic sample (Table 1).

Table 1 Benefits Simulation Sample Summary based on Micro UI Claims Data and Quarterly Wage Records

		Records where the WBA Calculated from the Quarterly Wage Records Matches UI Claims Micro Data File, (*1)	
Year of BYB	Monetary eligible applicants	Wage record WBA match	
		Number	Match rate
2015	145,042	119,404	0.823
2016	140,245	115,127	0.821
2017	135,865	112,174	0.826
2018	120,830	100,936	0.835
2019	114,592	96,370	0.841
Total/avg	656,574	544,011	0.829
	Simulation Sample of UI Beneficiaries whose WBA Calculated from Wage Records Matched Micro Data File		
Year of BYB	Matched and monetary eligible, (*1)	UI beneficiaries	
		Number	Beneficiary rate
2015	119,404	86,476	0.724
2016	115,127	81,513	0.708
2017	112,174	78,947	0.704
2018	100,936	68,539	0.679
2019	96,370	65,989	0.685
Total/avg	544,011	381,464	0.701
	Simulation Minimum and Maximum WBAs		
Year of BYB	Average weekly wage	Weekly benefit amounts	
		Maximum (0.67*AWW)	Minimum (0.25*Max)
2015	1048.67	702	176
2016	1067.23	715	179
2017	1095.17	733	183
2018	1123.99	753	188
2019	1157.38	775	194

Note: (*1) The match check includes the verification that the amount of base period earnings provided in the micro data file matches the value calculated from the quarterly wage records as well as the verification that the calculated WBA based on high quarter earnings matches that provided in the micro data file.

We use this sample of beneficiaries to estimate the changes in benefit payment costs from four sets of UI benefit improvements guided the ACUC (1996) standards. We increase the maximum and minimum WBAs by indexing them to the AWW. We also increase the dependents allowance. Since these benefit increases will all cost money, we include simulations reducing the replacement rate from the current 54 percent to the accepted standard of 50 percent.

2.2. Increasing the maximum weekly benefit amount (WBA)

Table 2 presents simulation results from indexing the maximum WBA at two-thirds of the AWW while first preserving the current 54 percent wage replacement rate ((1/24)*HQE) and then lowering the replacement rate to 50 percent ((1/26)*HQE). Based on the analysis sample of UI beneficiaries who filed claims in 2015 to 2019, indexing the maximum benefit to two-thirds of high quarter earnings would require 26.3 percent more revenue using the existing 54 percent wage replacement rate. With increases in the AWW and changes in the mix of claimants over the period, the estimate for 2019 suggests benefit payments would be 29.2 percent higher. Lowering the replacement rate to 50 percent ((1/26)*HQE) reduces the estimated increase in benefit payments to 21.9 percent for 2019.

Table 2 Simulation Summary of Indexing the Maximum WBA to 0.67 x the Average Weekly Wage with the WBA Defined Using 1/24 and 1/26 x High Quarter Earnings

Maximum WBA at 0.67 x AWW with WBA at 1/24 x HQE						
Year of BYB	Avg WBA by Maximum, *1		Full-time Equivalent weeks, *2	UI benefits paid by maximum ($ millions)		Percentage change
	$430	0.67*AWW		$430	0.67*AWW	
2015	328	400	15.8	461.9	565.8	22.5
2016	336	416	15.5	435.7	543.2	24.7
2017	342	430	15.2	424.7	541.1	27.4
2018	346	441	14.7	360.1	464.1	28.9
2019	353	456	15.8	374.0	483.2	29.2
	340	427	15.4	2,056.5	2,597.5	26.3
Maximum WBA at 0.67 x AWW with WBA at 1/26 x HQE						
Year of BYB	Avg WBA by Maximum, *1		Full-time equivalent weeks, *2	UI benefits paid by maximum ($ millions)		Percentage change
	$430	0.67*AWW		$430	0.67*AWW	
2015	328	377	15.8	461.9	534.1	15.6
2016	336	393	15.5	435.7	513.4	17.8
2017	342	406	15.2	424.7	511.8	20.5
2018	346	416	14.7	360.1	438.8	21.9
2019	353	431	15.8	374.0	456.1	21.9
	340	403	15.4	2,056.5	2,454.2	19.3

Note: *1) Includes dependents allowance of $8 per dependent capped at $40. *2) UI compensation received divided by the weekly benefit amount.

2.3. Increasing the minimum WBA and increasing the dependent's allowance

Table 3 presents simulation results for two additional benefit modifications. In both simulations, the maximum WBA is indexed to 0.67*AWW and the replacement rate is set to 50 percent

((1/26)*HQE). Adding lowering the WBA replacement rate to 50 precent and indexing the maximum WBA to two-thirds of the average weekly wage would have raised benefit payments 19.3 percent over the whole data period, additionally indexing the minimum to 25 percent of the maximum would have raised benefit payments by 21.1 percent. So that, the incremental cost of indexing the minimum would be 1.8 percent of the original level of benefit payments.

The final simulation results presented in Table 3 allows for increasing the dependents allowance to $25 per dependent with the maximum allowance capped at $100 per week. Adding this change to the reduced replacement rate and indexed maximum and minimums would increase benefit payments by 23.9 percent over the whole data period or by 2.8 percent of the original level of benefits. This full package of improvements would have increased benefit payments 26.1 percent for 2019 over the actual 2019 level of benefit payments.

Table 3 Simulation Summaries Indexing Minimum to 0.25 x Maximum (0.67 x AWW) and Introducing Dependents Allowance of $25 per Dependent but Capped at $100

Minimum WBA Set to 0.25 of Maximum (0.67*AWW), WBA = 1/26 x High Quarter Earnings						
Year of BYB	Avg WBA by Maximum, *1		Full-time equivalent weeks, *3	UI benefits paid by maximum ($ millions)		Percentage change
	$430	0.67*AWW		$430	0.67*AWW	
2015	328	385	15.8	461.9	543.4	17.6
2016	336	401	15.5	435.7	521.2	19.6
2017	342	413	15.2	424.7	518.5	22.1
2018	346	423	14.7	360.1	444.4	23.4
2019	353	438	15.8	374.0	462.2	23.6
	340	410	15.4	2,056.5	2,489.6	21.1
Dependents Allowance at $25 per (Capped at $100) with Indexed Min and Max and WBA 1/26 HQE						
Year of BYB	Avg WBA by Maximum		Full-time Equivalent weeks, *3	UI benefits paid by maximum ($ millions)		Percentage change
	$430, *1	0.67*AWW, *2		$430	0.67*AWW	
2015	328	393	15.8	461.9	558.7	21.0
2016	336	408	15.5	435.7	534.4	22.7
2017	342	420	15.2	424.7	530.2	24.8
2018	346	429	14.7	360.1	453.8	26.0
2019	353	443	15.8	374.0	471.6	26.1
	340	417	15.4	2,056.5	2,548.7	23.9

Note: *1) Dependents allowance $8 per dependent ($40 maximum). *2) The new average WBA associated with the maximum of 0.67*AWW includes $25 per dependent capped at $100. *3) UI compensation received divided by the weekly benefit amount.

2.4. Simulated costs of increasing benefit generosity

Given growth in wages over the period, the most recent estimate available in the data for 2019 likely provides the best indication of the additional funding needed to modify benefit provisions. Table 4 presents the 2019 results for each of the simulations discussed. Assuming Maryland switched the WBA formula to (1/26)*HQE (50 percent wage replacement), and indexed the maximum WBA to (0.67)*AWW benefits payments would increase about 21.9 percent. Modifying this further by indexing the minimum benefit to 25 percent of the maximum, suggests the benefit increase would be 23.6 percent. Finally, increasing the per dependent allowance to $25 per with a maximum of $100 the combined set of increases would likely increase benefit payments 26.1 percent.

Table 4 Summary of Simulation Results for 2019 after Benefit Modifications Using Micro UI Data Sample

| | | Simulation results for 2019 | | |
| | | UI benefits paid (*2) ($ millions) | | |
Simulation scenario for 2019	Simulated average WBA (*1)	Baseline	Simulation	Percentage change
Max =(2/3)*AWW, WBA=(1/24)*HQE	456	374.0	483.2	29.2
Max WBA =(2/3)*AWW, WBA=(1/26)*HQE	431	374.0	456.1	21.9
Max =(2/3)*AWW, Min = 0.25*Max, WBA=(1/26)*HQE	438	374.0	462.2	23.6
DA $25 ($100 max), Indexed Max, Min, WBA=(1/26)*HQE	443	374.0	471.6	26.1

Note: (*1) The average WBA for 2019 is $353 under the baseline scenario where the maximum WBA is $430 and the WBA is calculated using 1/24*HQE. This includes dependents allowances at $8 per dependent with a maximum of $40. (*2) Average full-time equivalent weeks of unemployment (total UI compensation divided by WBA) in 2019 was 15.8 weeks among all UI beneficiaries. This figure was used to calculate total UI benefits paid under the baseline and alternate scenarios. The simulated baseline benefits paid of $374 million is for observations in our analysis sample with benefit year begin dates in 2019. Total UI benefits paid to laid off workers from UI contributing employers in Maryland were $377 million in 2019.

2.5. Simulated costs of increasing benefit generosity with a behavioral response

The preceding analysis computed cost increases due to higher benefit maximums and allowances assuming no changes in behavior. However, when benefits are higher beneficiaries are likely to respond with longer durations. A summary of studies about the effect of benefits on durations suggests that a 10 percent increase in the wage replacement ratio will increase UI benefit durations by about 1.0 week (Decker 1997, pp. 292-296). The estimates summarized range between 0.5 and 1.5 weeks and mostly regard first spell effects. Very few Maryland UI benefit years involve more than one spell of UI benefit receipt. For our simulations we assume the response to a 10 percent rise in the wage replacement rate is a 1.0 week increase in benefit year duration or receipt.

In Table 3 we see the average WBA actually paid in 2019 was $353 and that average WBA would rise to $443 if the listed increases in benefit maximum, minimum, and dependents allowances were all adopted. Relative to 2019 Maryland average weekly wages of $1,156 these average WBAs would yield replacement rates of 30.5 and 38.3 percent respectively. That means the increases in program generosity would increase the average replacement rate by 25.6%. The average Maryland duration of UI benefit receipt was 15.8 weeks (Table 3). Extrapolating from the estimated behavioral response of 1.0 weeks for a 10 percent increase in wage replacement

rate, we assume benefit durations will increase on average 2.56 weeks. Relative to a mean duration of 15.8 weeks (Table 3) that is a 16.2 percent increase in duration of benefit receipt. This effect allows us to scale up our estimated costs of generosity increases to account for a behavioral response.

Adding the behavioral response of 16.2 percent to average benefit year UI receipt raises the combined effect of all increases in benefit generosity, together with the reduction to 50 percent wage replacement, to an increase of 32.1 percent (Table 5) on average over five years up from 23.9 percent (Table 3). The increased UI generosity with and without behavioral effects for 2019 are estimated to cost 34.3 and 26.1 percent more respectively. As shown in Table 6 the percentage increase in added benefit costs due to the behavioral response would be 6.6 percent. Even though the behavioral response to increased benefit generosity is estimated to increase 16.2 percent, costs are estimated to increase only 6.6 percent because many of the affected beneficiaries are already near the maximum potential duration of 26 weeks. That duration limit dampens the likely increase in total benefit payments.

Table 5   **Maryland Simulation of Increased UI Benefits with a Behavioral Response of a 15.9 percent Increase in UI Duration**

Year of BYB	UI beneficiaries	Weekly benefit amount		Full-time weeks of UI	Total UI costs ($ million)		Percentage change
		Baseline	Simulation		Baseline	Simulation	
2015	86,476	328	393	15.8	461.9	593.8	28.6
2016	81,513	336	408	15.5	435.7	569.1	30.6
2017	78,947	342	420	15.2	424.7	566.2	33.3
2018	68,539	346	429	14.7	360.1	486.0	34.9
2019	65,989	353	443	15.8	374.0	502.2	34.3
	381,464	340	417	15.4	2,056.5	2,717.3	32.1

Note: Computations based on Maryland UI program administrative data.

Table 6   **Incremental UI Cost Increase of Behavioral Response in the Increased UI Benefits Simulation**

Year of BYB	Total UI costs ($ million)		Percentage change
	No response	With response	
2015	558.7	593.8	6.3
2016	534.4	569.1	6.5
2017	530.2	566.2	6.8
2018	453.8	486.0	7.1
2019	471.6	502.2	6.5
	2,548.7	2,717.3	6.6

Note: Computations based on Maryland UI program administrative data.

Table 7 includes the behavioral response to increased benefit generosity to recompute summary results given in Table 4 for each dimension of increasing benefits using 2019 figures. In this table we see that simply adding the indexed maximum WBA while allowing for a behavioral response will increase benefit payments 37.6 percent. However, reducing the wage replacement ratio from 54 to 50 percent will more than pay for each of the other more targeted expansions of

benefits with the total increase for all changes being 34.3 percent. The additional expansions to index the minimum WBA and improve dependents allowances effectively increases the wage replacement ratio for the lowest earners and beneficiaries with families.

Table 7 Summary of Simulation Results for 2019 after Benefit Modifications and Including a Behavioral Response Using Micro UI Data Sample

| | Simulation results for 2019 | | |
| | Simulated average WBA (*1) | UI benefits paid (*2) ($ millions) | | Percentage change |
Simulation scenario for 2019		Baseline	Simulation	
Max =(2/3)*AWW, WBA=(1/24)*HQE	456	374.0	514.7	37.6
Max WBA =(2/3)*AWW, WBA=(1/26)*HQE	431	374.0	485.8	29.9
Max =(2/3)*AWW, Min = 0.25*Max, WBA=(1/26)*HQE	438	374.0	492.3	31.6
DA $25 ($100 max), Indexed Max, Min, WBA=(1/26)*HQE	443	374.0	502.2	34.3

Note: (*1) The average WBA for 2019 is $353 under the baseline scenario where the maximum WBA is $430 and the WBA is calculated using 1/24*HQE. This includes dependents allowances at $8 per dependent with a maximum of $40. (*2) Average full-time equivalent weeks of unemployment (total UI compensation divided by WBA) in 2019 was 10.9 (includes zero beneficiaries) July 2021 final report to 15.8 (conditional on receiving a benefit payment) weeks. This figure was used to calculate total UI benefits paid under the baseline and alternate scenarios. The simulated baseline benefits paid of $374 million is for observations in our analysis sample with benefit year begin dates in 2019. Total UI benefits paid to laid off workers from UI contributing employers in Maryland were $377 million in 2019.

Finally, in discussing the effects of adding behavioral responses to cost estimates it should be noted that we have focused on point estimates of the mean response. Naturally, there is a distribution around the mean. Since the range of estimates for the behavioral response to a 10 percent increase in the wage replacement rate is between 0.5 and 1.5 weeks, we should regard our point estimate of a 34.3 percent increase in benefit payment costs as being in the middle of a range that could vary between 30 and 39 percent.[2]

3. INCREASING THE INCOME DISREGARD FOR PARTIAL UI BENEFITS

Maryland UI claimants who obtain interim, temporary, part-time employment while in the process of looking for full-time work can still qualify for part of their weekly benefit amount provided those earnings in a week are less than their weekly benefit amount. Claimants are required to report these earnings on their continued claim form and in the calculation of their benefit amount, the first $50 of earnings is disregarded in the calculation of benefit payment. Earnings above that $50 limit reduce the weekly benefit amount dollar-for-dollar. In this section, we estimate the cost of increasing the amount of earnings that is allowed before the reduction in the weekly benefit due to earnings.

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[2] The 2019 estimated percentage increase in benefit costs due to benefit changes and behavioral response is 34.3 percent (Table 5). Without the behavioral response, the percentage increase in cost is estimated to be 26.1 percent (Table 4). If the response were 0.5 weeks or half of what we've assumed, the estimated percentage increase would be 30.2 percent (30.2 = 26.1 + (34.3 – 26.1)/2). If the response were 1.5 weeks, the difference would be 50 percent greater or 38.4 percent (38.4 = 26.1 + (34.3 – 26.1)*1.5).

3.1 Data for analysis

Micro-data for weekly, UI, continued claims were made available to Upjohn and are complete for UI claims filed that have benefit year begin (BYB) dates in 2015 through 2019. Table 8 summarizes the number of records in the data. After submitting their continued claim form, some claimants may have payment denied, typically due to non-monetary, continuing eligibility reasons (being able, available, and searching for work). The data provided include a variable that indicates the reason for the UI payment denial. Any value for this variable other than "00" indicates a denied payment and since no UI payment for that week is possible, we exclude those payment records even if they include earnings reported by the claimant.

Table 8   Summary of Regular UI Payment Records in the Continued Claims File Using Benefit Year Begin (BYB) Dates 2015 - 2019 Conditional on Non-Payment Reason Code Equals "00" or "14" (*1)

	Before Any Data Checks		After Data Checks (*2)	
	Number of records	Share of total records	Number of records	Share of total records
All records in file	7,418,587	1.000	7,247,359	1.000
Non-zero UI check	7,186,190	0.969	7,015,804	0.968
Earnings reported	804,932	0.109	684,881	0.095
$50 < Earnings reported < WBA	523,867	0.651	443,533	0.648
Earnings $1 - $50	94,030	0.117	91,377	0.133
Earnings reported greater than WBA (*3)	187,340	0.233	149,974	0.219

Note: (*1) The non-payment reason code of "00" means there is no reason payment should be denied. The non-payment reason code is set to "14" if the individual reports earnings equal to or above the WBA. In these cases, the $50 earnings disregard does not apply. However, we include those records here as part of our sample as they are part of the pool that could be impacted by WBA and/or earnings disregard policy changes. Lastly, 501 observations with reported earnings of 9999 or greater were excluded as outliers. (*2) Records are further checked that the WBA from the claimant file which includes the allowance for dependents less deductions for reported earnings, other excluded income such as pension or severance, federal and state taxes, child support, and overpayment offset equals the amount of the UI payment issued. (*3) Prior to data checks, 23.3 percent of the records associated with claimants who reported earnings were for amounts greater than the claimant's WBA. This percentage drops considerably to 21.9 percent due to the large number of records that also indicated the individual had received a UI payment. Given the inconsistency, those records were excluded.

There is one exception to this which is for reason code "14." This code indicates that the claimant reported earnings that were equal to or above the weekly benefit amount and that was the reason the payment was denied. We have included these records because we will test the cost impact of allowing individuals to earn up to their weekly benefit *plus* the amount of the earnings disregard, which is customary in many states.

Lastly, we verify the data for accuracy. We start with the weekly benefit amount and deduct any income that was not part of the monetary eligibility process, such as severance amounts or pension income. Next, we deduct earnings reported by the claimant that are above the current $50 disregard. Finally, we further deduct third-party payments such as tax withholding or child support and subtract the amount of any eligible payment that was applied to past over-payments. The amount that remains, if any, must equal the amount of the UI payment issued.[3]

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[3] Errors like these in administrative data extracts for research purposes are not uncommon and are not necessarily indicative of an inherent system problem since there is a difference between what may readily be extracted from a data system and the complete set of information available to those who administer the UI payment process. Given

Table 8 shows that the resulting data set after record checks indicates among continued claims records which were potentially eligible for payment, just under 10 percent were associated with earnings being reported. Table 9 and Figure 1 summarize the distribution of earnings amounts associated with those 684,881 records.

3.2 Earnings currently reported

Table 9 shows that while 9.2 percent of the records have earnings amounts less than the current disregard of $50, there is a spike at that level with 4.2 percent of the records having exactly $50. The shares in each range reported in Table 9 are also plotted in Figure 1. The two exhibits show the considerable dispersion of earnings amounts reported and that the distribution of those amounts has a very long tail. This results in the average amount reported ($274) being considerably above the median value ($170) that evenly divides the distribution between higher and lower earnings amounts reported.
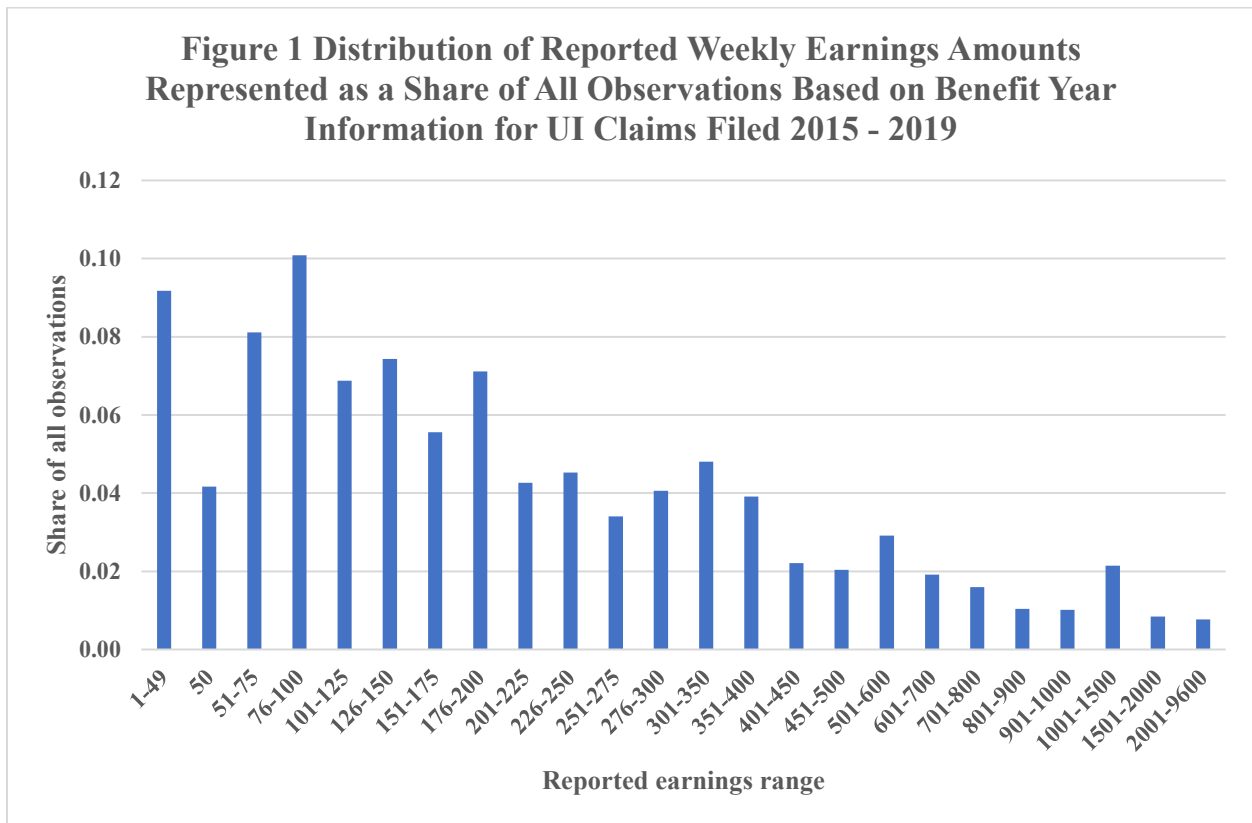
Figure 1 Distribution of Reported Weekly Earnings Amounts Represented as a Share of All Observations Based on Benefit Year Information for UI Claims Filed 2015 - 2019

Note: Computations based on Maryland UI program administrative data.

Table 9   **Distribution of Reported Earnings Amounts among UI Claimants who Reported Earnings During their Benefit Having File Claims 2015 - 2019**

Range of amount of earnings reported	Number of records	Share of total	Cumulative share
1 - 49	62,849	0.092	0.092
50	28,528	0.042	0.133
51 - 75	55,574	0.081	0.215
76 - 100	69,096	0.101	0.315
101 - 125	47,087	0.069	0.384
126 - 150	50,925	0.074	0.459
151 - 175	38,075	0.056	0.514
176 - 200	48,701	0.071	0.585
201 - 225	29,232	0.043	0.628
226 - 250	30,991	0.045	0.673
251 - 275	23,336	0.034	0.707
276 - 300	27,827	0.041	0.748
301 - 350	32,895	0.048	0.796
351 - 400	26,795	0.039	0.835
401 - 450	15,162	0.022	0.857
451 - 500	13,984	0.020	0.878
501 - 600	19,972	0.029	0.907
601 - 700	13,116	0.019	0.926
701 - 800	10,956	0.016	0.942
801 - 900	7,114	0.010	0.952
901 - 1000	6,946	0.010	0.962
1001 - 1500	14,700	0.021	0.984
1501 - 2000	5,771	0.008	0.992
2001 - 9600	5,249	0.008	1.000
Total records	684,881		
Average amount reported	274		
Standard deviation	382		
Median value	170		

Note: Computations based on Maryland UI program administrative data.

Table 10 presents a summary of earnings reported after aggregating the weekly continued claims records into totals for the full benefit year. For benefit years beginning in 2015 through 2019, 40.7 percent of UI recipients reported one or more weeks with earnings. On average, UI beneficiaries reported $983 of earnings during the benefit year that were spread over an average of 3.7 weeks.

Table 10   **Maryland UI Recipients Who Report Earnings in their Benefit Year based on Claims with Benefit Year Begin Dates 2015 – 2019**

Year of BYB	Total UI recipients	Recipients reporting earnings	Share of total	Total reported in benefit year			Weeks with earnings
				Average amount	Standard deviation	Median	
2015	103,775	43,830	0.422	969	1,339	560	3.8
2016	98,134	40,491	0.413	969	1,328	570	3.7
2017	94,112	38,198	0.406	975	1,341	575	3.6
2018	80,947	31,323	0.387	973	1,351	572	3.5
2019	77,855	31,250	0.401	1,041	1,404	620	3.5
	454,823	185,092	0.407	983	1,350	578	3.7

Note: Computations based on Maryland UI program administrative data.

Table 11 furthers the benefit year summary. For benefit years beginning 2015 through 2019, the UI beneficiaries received just under $2.4 billion in total UI compensation. It is important for this and subsequent tables to note that UI compensation as defined here is distinct from actual UI payments received. It is the amount recipients were entitled to receive before any deductions for income tax withholding, child support or application of payment amounts to past overpayments. Entitled UI compensation does reflect deductions for earnings reported.

Table 11   **Summary UI Compensation and Reported Earnings Information Using the Existing $50 Earnings Disregard (dollar amounts in millions, *1)**

Year of BYB	Total UI recipients	Total UI compensation	Weeks compensated	Total earnings reported	Earnings disregarded (*2)		
					Amount disregarded	Share of UI compensation	Share of earnings
2015	103,775	537.2	15.9	42.5	6.4	0.012	0.151
2016	98,134	510.7	15.7	39.2	5.6	0.011	0.144
2017	94,112	492.1	15.4	37.2	5.3	0.011	0.143
2018	80,947	415.0	14.9	30.5	4.2	0.010	0.139
2019	77,855	431.1	16.1	32.5	4.0	0.009	0.124
	454,823	2,386.1	15.6	182.0	25.7	0.011	0.141

Note: (*1) UI compensation which is summarized here is not the total amount of payments issued to claimants. It is the amount the claimant is entitled to receive before any third-part deductions. It is defined as the weekly benefit amount minus deductions for income that was not part of the eligibility determination process such as pension income or severance, minus deductions for earnings reported on continued claims, but before any further deductions for taxes, child support enforcement or past overpayments. (*2) The $50 earnings disregard does not apply to earnings at or above the weekly benefit amount.

Table 11 shows that recipients received some UI compensation in nearly 16 weeks during their 52-week benefit year and reported $182 million of earnings. While not shown, that amount is 7.6 percent of total UI compensation received. Of the $182 million reported, the current $50 weekly earnings disregard excluded $25.7 million from reducing weekly benefit amounts which is 1.1 percent of all benefits paid. Based on this, at current benefit levels, one would expect a modest increase in the disregard to have minimal impact of total benefit costs which Table 12 confirms.

3.3 Simulation results

Table 12 presents aggregate results from simulating earnings disregard values of $100, $150, and $200. This assumes no changes to the current minimum or maximum weekly benefit amount and assumes no behavioral response on the part of UI claimants that might change the frequency and amounts of earnings reported. Doubling the disregard to $100 results in an increase in benefit costs of less than one percent. The largest value tested ($200) increases costs over the five years of data by $33.2 million or just 1.4 percent (see Appendix A, Tables A1 through A4, for detailed simulation results).

Table 12 also shows a somewhat unexpected result. As the disregard is increased, the total amount of earnings reported declines relative to current levels. This is an accounting result that reflects the higher disregard amount leading to an increased amount of some UI payments. Greater UI compensation amounts in one or more weeks where earnings were reported means that those claimants who reported the earnings and exhausted their UI entitlement would reach exhaustion sooner in the benefit year. Weeks with earnings which they reported in the current policy environment become irrelevant since in the simulation, exhaustion has already occurred.

Table 12 — **Summary of Earnings Disregard Simulations Relative to the Current $50 Disregard Based on UI Claims with BYB Dates 2015-2019**

| | Total UI Compensation ($ million) | | | Total Earnings Disregarded ($ million) | | |
| | | Change from $50 disregard | | | Change from $50 disregard | |
Disregard	Amount	Amount	Percent	Amount	Amount	Percent
$50 (baseline)	2,386.1			25.7		
$100	2,402.3	16.2	0.7	44.5	18.9	73.6
$150	2,412.6	26.5	1.1	57.5	31.8	124.0
$200	2,419.4	33.2	1.4	66.6	41.0	159.7

| | Total Reported Earnings ($ million, *1) | | | Average Weeks with Earnings (*1) | | |
| | | Change from $50 disregard | | | Change from $50 disregard | |
Disregard	Amount	Amount	Percent	Amount	Amount	Percent
$50 (baseline)	182.0			15.60		
$100	180.4	-1.56	-0.9	15.58	-0.02	-0.1
$150	178.9	-1.51	-0.8	15.56	-0.04	-0.3
$200	177.8	-1.10	-0.6	15.55	-0.06	-0.4

Note: (*1) The amount of total reported earnings and the average number of weeks claimants report earnings decline as the disregard is increased because some reach UI exhaustion sooner due to increased UI compensation brought about by the higher disregard. Once exhaustion is reached, the weeks claimed beyond that point that were valid under the baseline scenario are no longer relevant.

Maryland's current policy allows the $50 disregard to be deducted from reported earnings that are less than the claimant's weekly benefit amount. Many states allow the disregard to apply to all earnings amounts reported. Therefore, as an example using the current $50 disregard, if a UI claimant had a $300 weekly benefit amount and reported $320 in earnings for the week, that claimant would not be eligible for a UI benefit for that week. If the disregard were allowed, the amount of earnings deducted from the WBA would have been $270 ($320 earnings reported less $50 disregard). That claimant would have been eligible for a $30 UI benefit for that week.

Table 13 presents the same results as in Table 12 only allowing the disregard to apply to all reported earnings amounts. Claimants could potentially still receive compensation for reported earnings amounts up to the weekly benefit amount plus the amount of the disregard. This modification has a rather small impact. Using this method with the largest disregard tested ($200), would have resulted in an increase in UI compensation of $39.4 million over the five years of data, up from $33.2 million reported in Table 12. UI compensation costs would have been 1.7 percent higher over the five years compared with the 1.4 percent increase reported in Table 12 (see Appendix A, Tables A5 through A8, for detailed simulation results).

A previous field experiment raising the income disregard found increased reporting of weekly earnings but little change in duration of benefits (O'Leary 1997). We do not adjust for any behavioral response in our simulations of changing income disregards.

Table 13   **Summary of Earnings Disregard Simulations Relative to the Current $50 Allowing Earnings up to WBA Plus the Disregard Based on UI Claims with BYB Dates 2015-2019**

	Total UI Compensation			Total Earnings Disregarded		
		Change from $50 disregard			Change from $50 disregard	
Disregard	Amount	Amount	Percent	Amount	Amount	Percent
$50 (baseline)	2,386.8			26.9		
$100	2,404.5	17.7	0.7	49.0	22.1	82.2
$150	2,417.0	30.1	1.3	66.1	39.2	145.7
$200	2,426.3	39.4	1.7	79.8	52.9	196.7

	Total Reported Earnings (*1)			Average Weeks with Earnings (*1)		
		Change from $50 disregard			Change from $50 disregard	
Disregard	Amount	Amount	Percent	Amount	Amount	Percent
$50 (baseline)	182.6			15.62		
$100	181.4	-1.15	-0.6	15.61	-0.01	-0.0
$150	180.1	-1.30	-0.7	15.61	-0.01	-0.1
$200	179.2	-0.91	-0.5	15.60	-0.02	-0.1

Note: (*1) The amount of total reported earnings and the average number of weeks claimants report earnings decline as the disregard is increased because some reach UI exhaustion sooner due to increased UI compensation brought about by the higher disregard. Once exhaustion is reached, the weeks claimed beyond that point that were valid under the baseline scenario are no longer relevant.

4. FINANCING INCREASED BENEFIT GENEROSITY BY AN INDEXED TAX BASE

This section provides results from a dynamic analysis of financing increased Maryland UI benefit generosity by modestly increasing the UI taxable wage base. The cost analysis is dynamic because it examines the balance between system revenues and costs over time. Indexing the WBA maximum to the growth in the average weekly wage means benefit costs increase over time. Our dynamic analysis balances increased benefit payments with an indexed taxable wage base tied to twenty-five percent of average annual earnings.

Table 14 presents results from macro simulations performed using the UNIS-X Simulation model developed by the U.S. Department of Labor (citation). The model is initialized with values of macroeconomic variables set to yield the expected 2021 calendar year end reserve

balance and assuming changes over the next 10 years of variable values that assume a steady gradual recovery for Maryland from the 2020 severe pandemic experience. Results in Table 14 impose the near-term financing changes imposed by Maryland legislative and executive actions. Most importantly, Maryland employers will not be charged for benefit payments in 2020 unless their unemployment experience would be improved by including 2020 in their benefit ratio computation. Additionally, while UI tax schedule F is in effect for 2021, tax schedule C will be in effect in 2022 and 2023. Tax schedule C is achieved under Maryland law by the infusion of $1 billion in reserves into the system.[4]

Table 14   **Maryland Baseline Simulation that Includes Schedule F for 2021 and Schedule C for 2022-2023 with a Non-Charging Adjustments, a $1 Billion Infusion in 2021Q3 and 2021Q4 and No Changes to the Taxable Wage Base or Benefit Levels**

| | Values in Millions of Dollars | | | | | |
Year	Benefits paid	UI tax revenue	Interest	Year-end trust balance, *1	AHCM	Tax schedule
2020	1,794	444	17	84	0.04	A
2021	459	732	10	366	1.12	F
2022	448	461	28	1,399	1.12	C
2023	449	466	29	1,459	1.12	C
2024	447	386	29	1,424	1.06	A
2025	448	392	29	1,402	1.00	A
2026	446	400	28	1,382	0.95	A
2027	448	409	28	1,369	0.91	A
2028	445	416	28	1,365	0.88	A
2029	446	425	28	1,370	0.85	A
2030	444	435	28	1,386	0.83	A
2031	440	445	28	1,417	0.82	A
2032	439	454	29	1,459	0.81	A

Note: (*1) In the UNIS-X model using the option to add additional historical data, the third quarter of 2021 tax contributions were increased $1 billion to reflect the cash infusion. This infusion is not reflected in the model's beginning and ending balances until 2022.

In addition to UNIS-X model parameter values documented in Appendix A of O'Leary and Kline (2021d), we list in Table 15 values to be simulated with changes taking effect in 2023. These include setting the taxable wage base to 25 percent of the average annual wage and indexing the maximum WBA to two-thirds of the average weekly wage. Table 15 also shows the average WBA that results from the indexed maximum, and then two more average WBA values that reflect the incremental addition of two more policy changes: 1) indexing the minimum WBA to 25 percent of the maximum, and 2) introducing a dependents allowance of $25 per dependent with the total allowance capped at $100 per week. See appendix A for the methodology used to estimate changes in the average weekly benefit amounts that result from the policy changes.

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[4] Funds for infusing UI reserves come from the CARES Act and the American Rescue Plan. Our simulation suspends Maryland Revised Statutes 8-612 (f) requiring an average high-cost multiple (ACHM) of 1.0 or better to lower the tax schedule. We allow the tax schedule triggers in MRS 9-612 (d) to operate.

Table 15   **Simulated Values of the Taxable Wage Base and Weekly Benefit Amounts from Policy Changes Assumed Effective beginning in 2023**

Year	Taxable wage base	Simulation WBAs based on 2/3 of AWW			
		Maximum	Average	Add indexed minimum	Add $25 DA max of $100
2020	8,500	430	322	322	322
2021	8,500	430	318	318	318
2022	8,500	430	342	342	342
2023	16,400	839	504	511	520
2024	16,700	858	519	527	536
2025	17,100	877	535	542	552
2026	17,500	897	551	557	565
2027	17,900	917	568	576	586
2028	18,300	938	586	595	605
2029	18,700	959	605	613	624
2030	19,100	980	624	633	644
2031	19,600	1,002	644	654	665
2032	20,000	1,025	666	676	687

Note: Computations based on Maryland UI program administrative data.

Table 16 presents results of the UNIS-X simulation that starts with baseline scenario that was initialized to account for 2021 expected year end reserves, non-charging for 2020 benefits and its implications for tax schedule C in 2022 and 2023 and the $1 billion infusion in the third and fourth quarters of 2021. It further simulates the changes to the taxable wage base, maximum and minimum WBA values and dependents allowance that were summarized in Table 15. We see in Table 16 that the Maryland UI system is stable under these benefit, financing, and macro-economic scenarios through 2032.

The model suggests after schedule C for 2022 and 2023, schedule B would be applicable in 2024 rather than schedule A as one might expect. This is due to the significant increase in the taxable wage base in beginning in 2023 and the existing trigger system which is based on the trust balance as a percentage of total taxable wages. However, from there, the model has the system using the lowest tax rate schedule for the duration of the forecast interval.

Table 16   **Maryland Simulation Summary that Modifies the Baseline Scenario to Index the Taxable Wage Base to 25 percent of the Average Annual Wage, Index the Maximum WBA to Two-Thirds of the Average Weekly Wage and Index the Minimum WBA to 25 percent of the Maximum and Increase Dependents Allowance to $25 per Dependent with a Maximum of $100 Weekly**

			Values in millions of dollars				
Year	Benefits paid	UI tax revenue	Interest	Year-end trust balance	AHCM	Tax schedule	Average WBA
2020	1,794	444	17	84	0.04	A	322
2021	459	732	10	366	1.12	F	318
2022	448	461	28	1,399	1.12	C	342
2023	633	763	29	1,571	1.18	C	520
2024	640	847	33	1,778	1.31	B	536
2025	650	668	36	1,821	1.31	A	552
2026	652	688	37	1,909	1.31	A	565
2027	669	714	38	1,987	1.32	A	586
2028	676	737	40	2,084	1.34	A	605
2029	687	764	42	2,198	1.36	A	624
2030	693	791	45	2,335	1.40	A	644
2031	698	823	47	2,503	1.44	A	665
2032	706	852	51	2,693	1.50	A	687
2020-32	9,406	9,284	452				536
2023-32	6,705	7,647	398				598

Note: Results from UNIS-X model simulation.

Table 17 presents a summary of the incremental costs of the three different benefit provisions simulated—indexing the maximum WBA to two-thirds of the average weekly wage, indexing the minimum WBA to 25 percent of the new maximum, and increasing the dependents allowance to $25 per dependent with a cap of $100 weekly. Recently Maryland increased the WBA maximum in two successive years. First to $410 in October 2009, then to $430 in October 2010, but it has not been raised since (USDOL 2021). Moving to an indexed maximum set at two-thirds of the average weekly wage beginning in 2023 would increase benefit payments by a simulated $2.1 billion over 10 years. In comparison to this, changes to the minimum WBA and dependents allowance have relatively small effects on benefit payments. However, as the simulation summary in Table 16 showed, given its economic assumptions, the taxable wage base set to 25 percent of the average annual wage is predicted to be sufficient to fund the increased benefit levels and provide a healthy level of system reserves.

Table 17   **Summary of Simulated Total Benefits Paid from 2023 through 2032 for the Maryland Baseline Simulation and Policy Changes (Levels and changes in benefit amounts in millions of dollars)**

UNIS-X simulation	Total benefits 2023-2032	Incremental change	Incremental percentage change
Baseline	4,452.8		
Maximum WBA indexed 66.7% of AWW	6,552.8	2,100.1	47.2
Indexed maximum, minimum 25% of max	6,621.2	68.4	1.0
Indexed max and min, DA $25 max $100	6,705.0	83.8	1.3
Totals relative to baseline		2,252.2	50.6

Next, we used the UNIS-X model to simulate the financing effects of adding a behavioral response to the simulation summarized in Table 16. The results in Table 18 suggest that after tax schedule C is in effect for 2022 and 2023, schedule B would be applicable for two years--2024 and 2025. This result is due to the simulated increase in the taxable wage base beginning in 2023 and the existing trigger system which is based on the reserve balance as a percentage of total taxable wages. After 2025 the UNIS-X model switches the UI financing system to the lowest tax rate schedule A through 2032.

Table 18   **Increased Benefits Simulation with a Behavioral Response Designed to Increase Total UI Benefit Costs by 6.6 percent Over the 2023-2032 Simulation Period (*1)**

Year	Benefits paid	UI tax revenue	Interest	Year-end trust balance	AHCM	Tax schedule	Average WBA
	Values in millions of dollars						
2020	1,794	444	17	84	0.04	A	322
2021	459	732	10	366	1.12	F	318
2022	448	461	28	1,399	1.12	C	342
2023	675	763	29	1,530	1.15	C	520
2024	682	847	31	1,694	1.24	B	536
2025	693	880	35	1,906	1.35	B	552
2026	695	693	38	1,937	1.34	A	565
2027	714	714	39	1,994	1.32	A	586
2028	720	737	40	2,047	1.31	A	605
2029	733	764	41	2,115	1.31	A	624
2030	739	791	42	2,206	1.31	A	644
2031	744	823	44	2,325	1.34	A	665
2032	753	852	47	2,466	1.37	A	687
2020-2032	9,850	9,501	442				536
2023-2032	7,149	7,865	387				598

Note: (*1) Starting from the baseline UNIS-X model simulation, model parameters related to weeks compensated were reduced 35.0 percent (O'Leary and Kline (2021b), Table A6). For the current simulation with behavioral response, that parameter was set to -30.8 to increase total UI benefit costs 6.6 percent over the 2023-2032 period.

As Table 18 shows, the indexed WBA maximum and minimum, higher dependents allowances, and a behavioral response to higher benefits are all paid for by indexing the TWB to 25 percent of average annual wages. The average high-cost multiple (AHCM) is simulated to remain over 1.0 through 2032. This is the reserve standard established in Maryland statute 8-612(f). At the end of the simulation period, the AHCM is 1.37 on tax schedule A with the best rated employers paying 0.3 percent on a taxable wage base of $20,000 in 2032 or a maximum of $60 per employee.

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Appendix A

Detailed Summary Tables for Different Levels of Earnings Disregard

Table A1   Summary Information Using the Existing $50 Earnings Disregard (dollar values in millions)

Year of BYB	Total UI recipients	Total UI compensation	Weeks compensated	Total earnings reported	Earnings disregarded		
					Amount disregarded	Share of UI compensation	Share of earnings
2015	103,775	537.2	15.9	42.5	6.4	0.012	0.151
2016	98,134	510.7	15.7	39.2	5.6	0.011	0.144
2017	94,112	492.1	15.4	37.2	5.3	0.011	0.143
2018	80,947	415.0	14.9	30.5	4.2	0.010	0.139
2019	77,855	431.1	16.1	32.5	4.0	0.009	0.124
	454,823	2,386.1	15.6	182.0	25.7	0.011	0.141

Table A2   Summary Information from a Simulation of a $100 Earnings Disregard (dollar values in millions)

Year of BYB	Total UI recipients	Total UI compensation	Weeks compensated	Total earnings reported	Earnings disregarded		
					Amount disregarded	Share of UI compensation	Share of earnings
2015	103,775	541.2	15.9	42.1	11.1	0.021	0.264
2016	98,134	514.2	15.6	38.9	9.7	0.019	0.251
2017	94,112	495.5	15.4	36.9	9.2	0.019	0.250
2018	80,947	417.7	14.9	30.2	7.3	0.018	0.243
2019	77,855	433.7	16.1	32.3	7.1	0.016	0.220
	454,823	2,402.3	15.6	180.4	44.5	0.019	0.247

Table A3   Summary Information from a Simulation of a $150 Earnings Disregard (dollar values in millions)

Year of BYB	Total UI recipients	Total UI compensation	Weeks compensated	Total earnings reported	Earnings disregarded		
					Amount disregarded	Share of UI compensation	Share of earnings
2015	103,775	543.7	15.9	41.7	14.3	0.026	0.342
2016	98,134	516.4	15.6	38.5	12.5	0.024	0.325
2017	94,112	497.7	15.3	36.7	11.9	0.024	0.325
2018	80,947	419.5	14.9	30.0	9.5	0.023	0.316
2019	77,855	435.3	16.0	32.0	9.2	0.021	0.289
	454,823	2,412.6	15.6	178.9	57.5	0.024	0.321

Table A4   Summary Information from a Simulation of a $200 Earnings Disregard (dollar values in millions)

Year of BYB	Total UI recipients	Total UI compensation	Weeks compensated	Total earnings reported	Earnings disregarded		
					Amount disregarded	Share of UI compensation	Share of earnings
2015	103,775	545.3	15.9	41.4	16.5	0.030	0.399
2016	98,134	517.9	15.6	38.3	14.5	0.028	0.379
2017	94,112	499.1	15.3	36.4	13.8	0.028	0.379
2018	80,947	420.6	14.9	29.9	11.0	0.026	0.369
2019	77,855	436.4	16.0	31.9	10.8	0.025	0.339
	454,823	2,419.4	15.5	177.8	66.6	0.028	0.375

Table A5   **Summary Information Using the Existing $50 Earnings Disregard but Allowing Earnings up to WBA plus the Disregard (dollar values in millions)**

Year of BYB	Total UI recipients	Total UI compensation	Weeks compensated	Total earnings reported	Earnings disregarded		
					Amount disregarded	Share of UI compensation	Share of earnings
2015	104,093	537.4	16.0	42.6	6.8	0.013	0.159
2016	98,396	510.9	15.7	39.4	5.9	0.012	0.150
2017	94,330	492.3	15.4	37.3	5.6	0.011	0.149
2018	81,134	415.1	14.9	30.6	4.4	0.011	0.145
2019	77,999	431.2	16.1	32.6	4.2	0.010	0.130
	455,952	2,386.8	15.6	182.6	26.9	0.011	0.147

Table A6   **Summary Information firm Simulation of $100 Earnings Disregard but Allowing Earnings up to WBA plus the Disregard (dollar values in millions)**

Year of BYB	Total UI recipients	Total UI compensation	Weeks compensated	Total earnings reported	Earnings disregarded		
					Amount disregarded	Share of UI compensation	Share of earnings
2015	104,298	541.8	15.9	42.3	12.3	0.023	0.290
2016	98,580	514.7	15.7	39.1	10.8	0.021	0.275
2017	94,503	495.9	15.4	37.2	10.1	0.020	0.273
2018	81,288	418.1	14.9	30.4	8.0	0.019	0.264
2019	78,111	434.0	16.1	32.4	7.8	0.018	0.242
	456,780	2,404.5	15.6	181.4	49.0	0.020	0.270

Table A7   **Summary Information firm Simulation of $150 Earnings Disregard but Allowing Earnings up to WBA plus the Disregard (dollar values in millions)**

Year of BYB	Total UI recipients	Total UI compensation	Weeks compensated	Total earnings reported	Earnings disregarded		
					Amount disregarded	Share of UI compensation	Share of earnings
2015	104,426	544.8	15.9	42.0	16.4	0.030	0.391
2016	98,691	517.4	15.7	38.8	14.4	0.028	0.373
2017	94,607	498.5	15.4	36.9	13.6	0.027	0.369
2018	81,386	420.2	14.9	30.2	10.9	0.026	0.360
2019	78,179	436.0	16.1	32.2	10.7	0.025	0.332
	457,289	2,417.0	15.6	180.1	66.1	0.027	0.367

Table A8   **Summary Information firm Simulation of $200 Earnings Disregard but Allowing Earnings up to WBA plus the Disregard (dollar values in millions)**

Year of BYB	Total UI recipients	Total UI compensation	Weeks compensated	Total earnings reported	Earnings disregarded		
					Amount disregarded	Share of UI compensation	Share of earnings
2015	104,535	547.1	15.9	41.7	19.7	0.036	0.473
2016	98,778	519.4	15.7	38.6	17.4	0.034	0.452
2017	94,698	500.5	15.4	36.7	16.4	0.033	0.447
2018	81,462	421.8	14.9	30.1	13.2	0.031	0.437
2019	78,238	437.5	16.1	32.1	13.1	0.030	0.408
	457,711	2,426.3	15.6	179.2	79.8	0.033	0.445

Appendix B

Adjustments to the Average WBA in the UNIS-X Model for Simulations that Increase the
Minimum WBA and the Allowance for Dependents

The UNIS-X model for Maryland conveniently allows users to simulate changes to the maximum weekly benefit amount either by explicitly entering maximum values or specifying the maximum to be a percentage of the average weekly wage. For the minimum WBA, the model does not have an explicit way to set or modify minimum values. Instead, we rely on one of the model's options to modify UI benefit payments by making percentage adjustments to the average weekly benefit amount. To estimate the amount of the adjustment needed, we turn to the micro-UI data.

Table B1 summarizes the micro sample of UI beneficiaries who filed claims in 2015 through 2019 and whose weekly benefit amount could be verified by extracting the high quarter earnings from the quarterly earnings record and calculating $1/24^{th}$ of that value.[5] Since we wish to set the minimum benefit to 25 percent of the maximum WBA, where the maximum is set at two-thirds of the average weekly wage, we first calculate weekly benefit amounts for the sample based on the new maximum while preserving the current $50 minimum and then average across the observations. Over the five years, this resulted in an average weekly benefit amount of $443.09. Table B1 further shows that very few UI recipients are at the $50 minimum given that it requires someone to have high quarter earnings exactly at the minimum monetary qualification amount ($1,176).

Next, we set the minimum weekly benefit amount equal to 25 percent of the maximum and assign beneficiaries that value if their existing WBA is less than that amount. The average then rises across the sample to $447.69 which is an increase of 1.04 percent. Minimum WBA values range from 174 to 192 over this period and the share of beneficiaries at this new minimum rises considerably to nearly 10 percent of the sample on average.[6]

The micro data over this period suggests an increase in minimum benefits to 25 percent of a maximum that is indexed to two-thirds of the average weekly wage would increase the average weekly benefit amount of 1.04 percent. Under the assumption that the increased benefit does not alter behavior, total costs would increase by that same percentage. Initial runs of the UNIS-X model that forced an increase of 1.04 percent if the average weekly benefit produced somewhat less than that amount of increase in total benefit costs (reason unknown). Ultimately, in the simulation, we increased the average weekly benefit amount 1.43 percent in each year, 2023 through 2032, to achieve the estimated cost increase of 1.04 percent.

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[5] With the maximum WBA capped at $430, for persons at the maximum, we only know whether the amount calculated from the high quarter earnings data in the quarterly wage records is $430 or greater. We cannot be totally certain that the high quarter value extracted is correct, only that it is sufficient to generate a WBA of $430.

[6] As noted beneath Table B1, the minimum monetary eligibility requirement in Maryland is $1,176 in the high quarter. This value translates to weekly earnings of $90, given 13 weeks in the quarter. Setting the minimum to the level simulated (25 percent of the indexed maximum), on average, would result in some persons receiving more in UI benefits per week than was earned through employment—an obvious, negative incentive to return to work. The purpose of this simulation is to estimate the cost of a substantial increase in minimum UI benefits, and we do not address minimum monetary eligibility requirements in this report.

Table B1	Estimate of the Impact on the Average Weekly Benefit Amount in Maryland from Indexing Minimum WBA to 25 percent of the Maximum with the Maximum WBA Set at Two-Thirds of Average Weekly Wage

Year of BYB	Number of beneficiaries	WBA at existing $50 min	Share at $50 min	WBA with minimum indexed	Percentage change in WBA	Minimum WBA (*1)	Share at minimum
2015	86,476	415.81	0.0002	420.95	1.24	174	0.111
2016	81,513	432.85	0.0003	437.53	1.08	177	0.099
2017	78,947	449.67	0.0002	454.06	0.97	182	0.093
2018	68,539	458.11	0.0002	462.43	0.94	187	0.091
2019	65,989	467.99	0.0002	472.34	0.93	192	0.087
	381,464	443.09	0.0002	447.69	1.04	182	0.097

Note: Maryland's current minimum eligibility requirement over this period was at least $1,176 in the high quarter and hence the $50 minimum WBA when calculated at 1/24th of the high quarter. The $1,176 minimum value for the high quarter means average earnings of $90 weekly given 13 weeks in a quarter.

Table B2 presents a summary of estimating the percentage increase in the average weekly benefit amount that would result from increasing dependents allowance from the current $8 per dependent to $25 with a cap of $100 per week. The summary is based on the same method summarized in Table B1. First, the average WBA is calculated with the maximum WBA set to two-thirds of the average weekly wage. Next, the modifications to dependents allowances are introduced and the percentage difference calculated.

Table B2	Estimate of the Impact on the Average Weekly Benefit Amount of Changing the Dependents Allowance to $25 per Dependent with a $100 Weekly Cap in an Environment where the Maximum WBA is Set at Two-Thirds of the Average Weekly Wage

Year of BYB	Number of beneficiaries	Share with dependents	Average number of dependents	WBA without allowance	WBA with allowance	Percentage change
2015	86,476	0.163	1.65	415.81	422.11	1.51
2016	81,513	0.152	1.64	432.85	438.71	1.35
2017	78,947	0.147	1.62	449.67	455.22	1.23
2018	68,539	0.138	1.61	458.11	463.37	1.15
2019	65,989	0.128	1.64	467.99	472.95	1.06
	381,464	0.147	1.63	443.09	448.72	1.27

Just under 15 percent of UI beneficiaries in the sample reported dependents with each reporting 1.63 dependents on average over the five-year period. The average weekly benefit amount without any allowance for dependents is the same as in Table B1. It is based on the maximum being set at two-thirds of the average weekly wage. On average, the weekly benefit amount rises 1.27 percent after introducing the allowance being set to $25 per dependent with a cap of $100. Assuming no behavioral response to the increased generosity, total UI benefit costs would also be expected to rise by that amount. To force the UNIS-X model to hit that target cost increase, the average weekly benefit amount was increased 1.77 percent in each year, 2023 through 2032.

Maryland Unemployment Insurance Analysis: Report 3—Effects of Changing Unemployment Insurance Benefit Charging Rules

Submitted to:

Tiffany Robinson, Secretary
Maryland Department of Labor
1100 N. Eutaw Street
Baltimore, MD 21201

by:

Ting Zhang, Associate Director
Jacob France Institute
University of Baltimore
1420 N. Church Street
Baltimore, MD 21201

Maryland Unemployment Insurance (UI) Analysis: Report 3
Effects of Changing Unemployment Insurance Benefit Charging Rules

EXECUTIVE SUMMARY

This is the third in a series of four Upjohn Institute reports assessing the effects of unemployment insurance (UI) program changes considered in Maryland House Bill 907 of 2021. The Upjohn Institute worked with the Jacob France Institute (JFI) at the University of Baltimore to do this work. This report, subtitled "Effects of Changing Unemployment Insurance Benefit Charging Rules," examines two contexts for benefit non-charging: 1) Waivers for benefit charges in a crisis—the pandemic shutdown case in 2020, and 2) Reducing benefit charges for work sharing plans.

Waivers for UI benefit charges in a crisis

Employer UI tax rates are based on experience rating. Meaning that when employers have layoffs resulting in UI benefit payments, those benefits are charged back to the employer resulting in a higher UI tax rate. Experience rating of tax rates is based on the premise that employers have some control over their layoffs. However, in the COVID19 era few employers had any control over layoffs. Many layoffs were necessary because in many workplaces social distancing for worker safety was impossible. Consequently, it was reasonable to non-charge individual employers for UI benefit payments in the COVID19 period. Maryland achieved this through a 2020 executive order of Governor Hogan.

A lesson of the pandemic may be that employers are better able to survive, and workers have better access to temporary income replacement, when employer charging for UI benefits is suspended—or waived. Future crises may emerge when this will be a good policy practice. The experience of the pandemic gives us a basis to estimate the cost of non-charging for UI in a crisis. The cost of non-charging is significant, but not catastrophic since many employers were able to maintain business activities through the pandemic by social distancing or telecommuting.

To estimate the cost of non-charging in the pandemic we start with a baseline simulation calibrated to match the expected 2021 Maryland year end UI reserve balance. We simulate a 12-year benefit payment and financing cycle using the UNIS-X UI financing simulation model developed for Maryland by the U.S. Department of Labor. We impose all the known short-term conditions constraining the normal operation of the existing Maryland UI benefit and financing system. These conditions include: 1) not charging employers for 2020 pandemic-related UI benefits unless their benefit ratio would improve with charging (this is simulated by tax rate adjustments), 2) infusing reserves before October 2021 to assure tax schedule C is in effect in 2022, 3) infusing additional reserves before January 2022 to ensure tax schedule C will be in effect in 2023 (the total 2021 cash infusion is about $1 billion), 4) the taxable wage base remains unchanged at $8,500, and 5) the maximum weekly benefit amount remains fixed at $430.

Next, we used the UNIS-X model to simulate benefits and taxes with employer charging for 2020 benefits, but all other conditions are the same. That is, we retain the $1 billion 2021 cash infusion, the taxable wage base remains at $8,500, and the maximum weekly benefit amount remains at $430. The difference in results between the non-charging simulation and the simulation allowing for charging yields estimates of the costs of non-charging.

The contrast finds that non-charging resulted in just under $450 million in forgone revenue in 2021, and just over $180 million in forgone revenue in both 2022 and 2023. The total revenue loss for all three years is $817 million. Benefit payments are assumed to be the same in both simulations. In addition to lower revenues, the annually lower reserve balances mean interest income is also lost. Assuming a 2.0 percent interest rate (currently 2.48) over 12 years, non-charging for pandemic UI benefits means $179 million less in interest income over the 12 years of the simulation, 2021-2032.

Adding the lost tax revenue to the foregone interest income yields a total loss of just under $1 billion. Had the additional revenue been available, the model suggests that along with the cash infusion in 2021, the average high-cost multiple (AHCM)[1] would have reached a very healthy level of 1.70 at the end of the 2023 calendar year. However, a key takeaway from the simulation analysis is that regardless of the simulation scenario, if other things remain unchanged the Maryland UI financing position will deteriorate over time. The decline in reserve strength suggests long-term stability is not attainable under the current benefit financing structure.

The underlying weakness in Maryland's UI financing system appears to be the low $8,500 taxable wage base that has been in effect since 1993. That fixed taxable wage base is not tied to growth in worker wages (indexation). This is most likely the reason the UNIS-X model forecasts declining AHCM values over time. The revenue foregone by non-charging during the pandemic could be recovered through a temporary surtax or some sort uniform solvency tax. However, such a one-time measure would not address the fundamental problem of an inadequate taxable wage base which is causing a long-term financial imbalance between revenues and expenditures in the Maryland UI system. As discussed in report two in this series of four reports, indexing the taxable wage base and the maximum and minimum weekly benefit amounts could improve adequacy in income replacement and balance in benefit financing.

Reducing benefit charges for work sharing plans

The Maryland workshare program was signed into law in 1984 with the first workshare beneficiaries in 1985. The program can be a powerful tool for employers to use in periods of slack demand to help preserve relationships with employees. For employees, workshare helps avoid the difficulty of complete separation, even if on a temporary basis, keeps them connected to their employer, and keeps fringe benefits like health insurance active. Workshare helps employers return to full production quickly by just expanding hours with workers already on the payroll who have the knowledge and skills to do the job--hiring and training costs are avoided.

There are two sources of data on workshare activity. Monthly state reports to the federal government on employers operating workshare plans provides counts of beneficiaries in plans, and total compensation paid. Data are also available from program administrative records. There is close agreement on workshare activity from the two sources. The main message in the data is that workshare is not widely used.

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[1] The ACHM is the number of years of benefits payable from reserves at the average payment rate of the three highest UI payment years in the past twenty.

While there are records of workers receiving workshare benefits as early as 1985 in Maryland, the first records of employer plans are for 2012. Between 2012 and 2019 there were fewer than seven plans in any given year. The peak for monthly UI workshare claims in that span averaged 96 per month in 2019. With the onset of the pandemic and full federal funding for workshare, there was a sizeable spike in workshare plans and beneficiaries in 2020 with activity declining in the first nine months of 2021. In 2020 and 2021 a total of 127 Maryland employers operated workshare plans that paid a combined average of about 300 benefit claims per month. Even including the pandemic workshare activity, the total expenditure on UI workshare benefits over 12 years from 2010 through 2021 was $10.8 million, or less than $1 million per year.

Program administrative data were available for 23 employers running workshare programs between 2015 and 2019. Nearly all these employers were in the manufacturing industry. Despite the small number of companies, there was considerable variation in firm size by employment. Small, medium, and relatively large firms are all represented in this group. While appearing to be clustered in the manufacturing industry, the data suggest that targeting workshare for some degree of non-charging would be beneficial to a broad array of employers classified by employment size.

The available data for workshare show very low usage of this potentially valuable UI program by Maryland employers. Non-charging for worksharing UI benefits could increase program participation rates and the impact on the Maryland UI reserve position is likely to be small. In non-recessionary times, the numbers of employers using workshare as an alternative to UI are very small but suspending or reducing benefit charges during these periods, along with an informational campaign about the program, could broaden the knowledge of the program that would be more widely operational in crisis periods when federal funding could be forthcoming.

There have been three recent cases of full federal funding for workshare. The Middleclass Tax Relief and Job Creation Act of 2012, Coronavirus Aid Relief and Economic Security (CARES) Act of 2020, and the American Rescue Plan (ARP) of 2021 all fully reimbursed states for workshare benefits. Since workshare benefits are normally charged to employers and benefit charges normally increase employer tax rates, reimbursing for workshare benefits could induce employers to use workshare over layoffs to avoid UI tax rate increases while maintaining contact with employees.

1. WAIVERS FOR BENEFIT CHARGES IN A UI CRISIS

1.1. Baseline simulation

The baseline simulation relies on the UNIS-X model for Maryland that was developed by the U.S. Department of Labor to simulate the revenue and trust balance implications of policy actions taken in 2020 and 2021. The principal actions were 1) not charging employers for 2020 pandemic-related UI benefits unless their benefit ratio would improve with charging, 2) infusing reserves before October 2021 to assure tax schedule C is in effect in 2022, 3) infusing additional reserves before January 2022 to ensure tax schedule C will be in effect in 2023. Table 1 presents the baseline simulation which reflects these actions.[2]

Table 1 **Maryland Baseline Summary with Adjustments for Non-Charging of UI Benefits**

| | Values in millions of dollars | | | | | | |
Year	Taxable wages	Benefits paid	UI tax revenue	Interest	Year-end trust balance, *1	AHCM	Tax schedule	Average WBA
2020	20,284	1,794	444	17	84	0.04	A	322
2021	19,310	459	732	10	366	1.12	F	318
2022	19,744	448	461	28	1,399	1.12	C	342
2023	20,159	449	466	29	1,459	1.12	C	346
2024	20,591	447	386	29	1,424	1.06	A	350
2025	21,030	448	392	29	1,402	1.00	A	354
2026	21,485	446	400	28	1,382	0.95	A	358
2027	21,947	448	409	28	1,369	0.91	A	362
2028	22,347	445	416	28	1,365	0.88	A	366
2029	22,834	446	425	28	1,370	0.85	A	371
2030	23,341	444	435	28	1,386	0.83	A	375
2031	23,863	440	445	28	1,417	0.82	A	380
2032	24,396	439	454	29	1,459	0.81	A	384
2021-2032		5,360	5,421	320				

Note: (*1) In the UNIS-X model using the option to add additional historical data, the third quarter of 2021 tax contributions were increased $1 billion to reflect the cash infusion. This infusion is not reflected in the model's beginning and ending balances until 2022.

Additionally, throughout the simulation period the taxable wage base was assumed to remain unchanged at $8,500 and the maximum weekly benefit amount was fixed at $430. The baseline simulation also accounts for a cash infusion in the last two quarters of 2021 totaling about $1 billion. Average tax rates used in the model for schedule F in 2021 and schedule C in 2022 and 2023 were adjusted to capture the effect of non-charging of pandemic UI benefits. A complete discussion of the baseline methodology, including non-charging adjustments, and the economic assumptions that underly the forecast can be found in O'Leary and Kline (2021).

To simulate tax revenue, the UNIS-X model uses an average tax rate for each of Maryland's six tax schedules. The tax rates used for the baseline simulation were developed by Upjohn using

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[2] This baseline simulation is drawn from O'Leary and Kline (2021) and is an appropriate starting point to examine the effects of non-charging employers for UI benefit payments to their laid off employees.

Employment and Training Administration (ETA) 204 data from years in which the relevant tax rate schedules were in effect.[3] For example, the default average tax rate used by the model for schedule F is 5.13 percent. This is based on ETA 204 data from years around the financial crisis--2009, 2010 and 2011. The average tax rate used for schedule C is 2.93 percent and was calculated using ETA 204 data from 2013 and 2014.

To reflect non-charging of pandemic UI benefits, the schedule F average rate was reduced to 2.88 percent and the schedule C average rate was lowered to 2.11 percent.[4] To estimate the lost tax revenue from non-charging for pandemic UI benefits, we re-execute the UNIS-X model baseline using the default tax rate for schedule F for 2021 of 5.13 percent and schedule C tax rate of 2.93 percent for 2022 and 2023.   The difference between the two simulations gives the non-charging cost estimate.

1.2. Non-charging cost estimates

Table 2 presents the simulation summary with no adjustments for non-charging. Side-by-side comparison between the two simulations for UI tax revenue, interest earned on the UI trust balance, year-end reserves, and the average high-cost multiple (AHCM) are presented in Table 3 and Table 4.

Table 2 **Maryland Baseline Summary with NO Adjustments for Non-Charging of UI Benefits**

Year	Values in millions of dollars					AHCM	Tax schedule	Average WBA
	Taxable Wages	Benefits paid	UI tax revenue	Interest	Year-end trust balance			
2020	20,284	1,794	444	17	84	0.04	A	322
2021	19,310	459	1,179	12	816	1.41	F	318
2022	19,744	448	645	37	1,944	1.58	C	342
2023	20,159	449	648	42	2,225	1.70	C	346
2024	20,591	447	390	45	2,209	1.65	A	350
2025	21,030	448	392	45	2,222	1.58	A	354
2026	21,485	446	400	45	2,218	1.53	A	358
2027	21,947	448	409	45	2,221	1.47	A	362
2028	22,347	445	416	45	2,235	1.44	A	366
2029	22,834	446	425	45	2,257	1.40	A	371
2030	23,341	444	435	46	2,291	1.37	A	375
2031	23,863	440	445	46	2,340	1.35	A	380
2032	24,396	439	454	47	2,400	1.34	A	384
2021-2032		5,360	6,238	499				

Source: Results from a UNIS-X model simulation for Maryland using default average tax rates for all tax schedules.

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[3] States must annually submit to the U.S. Department of Labor, Employment and Training Administration (ETA) the ETA 204 report which is a statement of the range of Maryland UI benefit ratios with the numbers of employers, the amount of taxable wages, and the average tax rates in each 0.1 increment of the benefit ratio range from 0.0 to 15.0 percentage points.
[4] Determination of the tax rates to yield revenues under non-charging is explained in Appendix A in O'Leary and Kline (2021).

The data in Table 3 suggest that non-charging resulted in just under $450 million in forgone revenue in 2021, and just over $180 million in forgone revenue in each year, 2022 and 2023. The total revenue loss for all three years is estimated to be $817 million. Given the same level of UI benefit payments assumed in each simulation, the absence of that revenue in the trust results in forgone interest income over time. According to the model with its assumed interest rate of 2.0 percent, non-charging pandemic UI benefits means $179 million less interest income over the 12 years of the simulation, 2021-2032.

Table 3   **UNIS-X Baseline Simulation Summary of Revenue and Interest Income Differences Due to Non-Charging**

Year	Taxable wages	UI Tax Revenue ($ millions)			Interest Income ($ millions)		
		UI Benefit charging	Non-charging UI benefits	Difference	UI Benefit charging	Non-charging UI benefits	Difference
2020	20,284	444	444	0	17.2	17.2	0.0
2021	19,310	1,179	732	-447	12.0	9.6	-2.4
2022	19,744	645	461	-185	37.1	28.0	-9.1
2023	20,159	648	466	-181	41.9	28.9	-13.0
2024	20,591	390	386	-4	44.9	29.2	-15.7
2025	21,030	392	392	0	44.8	28.6	-16.1
2026	21,485	400	400	0	44.6	28.1	-16.5
2027	21,947	409	409	0	44.6	27.8	-16.8
2028	22,347	416	416	0	44.7	27.6	-17.1
2029	22,834	425	425	0	45.1	27.6	-17.5
2030	23,341	435	435	0	45.6	27.8	-17.8
2031	23,863	445	445	0	46.4	28.2	-18.2
2032	24,396	454	454	0	47.5	28.9	-18.5
2021-2032		6,238	5,421	-817	499.0	320	-178.7

Source: Contrasting results from UNIS-X model simulations for Maryland given in Tables 1 and 2.

Table 4 shows the cumulative "loss" of just under $1 billion as reflected in the difference in the year-end trust balance between the two simulations.[5] The difference that the billion-dollar loss makes in the average high-cost multiple is quite striking as well. Had the additional revenue been available, the model suggests along with the cash infusion in 2021, the AHCM would have reached a very healthy level of 1.70 at the end of the 2023 calendar year.[6] However, the key takeaway from the simulated AHCM values is the deterioration of Maryland's UI reserve position over time regardless of the simulation scenario. The decline in reserve strength suggests long-term stability is not attainable in the current financing policy environment.

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[5] While the magnitude of the cost estimate is obviously substantial and described here as a "loss of" or "forgone" revenue, the analysis and description is not intended as a criticism of the policy decision to not charge Maryland employers for the benefits associated with what was clearly an extraordinary exogenous event.

[6] Had the revenue been available, the infusion of cash to reach schedule C for 2022 and 2023 could have been less and the peak AHCM would have been lower. In the simulation, we do not modify the cash already infused into the system nor the expected cash infusion in late 2021. Also, the model does not include a behavioral response by firms to what would have been a much larger UI tax bill had non-charging not been implemented. The growth rates for employment and wages are assumed to be the same in both simulations. This further increases the likelihood that the AHCM peak and subsequent values are overstated.

| Table 4 | UNIS-X Baseline Simulation Summary of Differences in Year-End Trust Balance and Average High-Cost Multiple (AHCM) Due to Non-Charging of Benefits |

	Year-end Trust Balance ($ million)			AHCM	
Year	UI Benefit charging	Non-charging UI benefits	Difference	UI Benefit charging	Non-charging UI benefits
2020	84	84	0	0.04	0.04
2021	816	366	-449	1.41	1.12
2022	1,944	1,399	-545	1.58	1.12
2023	2,225	1,459	-767	1.70	1.12
2024	2,209	1,424	-786	1.65	1.06
2025	2,222	1,402	-819	1.58	1.00
2026	2,218	1,382	-836	1.53	0.95
2027	2,221	1,369	-852	1.47	0.91
2028	2,235	1,365	-870	1.44	0.88
2029	2,257	1,370	-887	1.40	0.85
2030	2,291	1,386	-905	1.37	0.83
2031	2,340	1,417	-923	1.35	0.82
2032	2,400	1,459	-942	1.34	0.81

Source: Contrasting results from UNIS-X model simulations for Maryland given in Tables 1 and 2.

The underlying weakness in Maryland's UI financing system appears to be the low $8,500 taxable wage base that has been in effect since 1993. That fixed taxable wage base is not tied to growth in worker wages (indexation). This is most likely the reason the UNIS-X model forecasts declining AHCM values over time. The revenue foregone by non-charging during the pandemic could be recovered through a temporary surtax or some sort uniform solvency tax. However, such a one-time measure would not address the fundamental problem causing long-term financial imbalance between revenues and expenditures in the Maryland UI system. As discussed in report two in this series of reports, indexing the taxable wage base and the maximum and minimum weekly benefit amounts could improve adequacy in income replacement and balance in benefit financing.

2. REDUCING BENEFIT CHARGING FOR WORKSHARING PLANS

2.1. Data and analysis

Two sources of information on the Maryland workshare or short time compensation (STC) program are available for analysis. The first is the Employment and Training Administration (ETA) 5159 report and the second is from a limited number of records on STC from program administrative data on UI beneficiaries and STC employers. UI claimant data were provided to Upjohn by the Unemployment Insurance Division of the Maryland Department of Labor through the Jacob France Institute. Table 5 presents an annual summary of the monthly ETA 5159 data. Monthly data in the ETA 5159 reports on UI claims and associated payment amounts related to STC go back to 1985—Table 5 shows data starting in 2010. However, monthly data on employers and the average number of active plans start in 2012.

Table 5   **Summary of ETA 5159 Workshare Data for Maryland**

Year	Claims		Total payment amount		Active plans per month (*2)
	Total	Monthly average	Total	Average per claim (*1)	
2010	1,390	116	1,262,720	908	na
2011	708	59	624,472	882	na
2012	549	46	595,141	1,084	6
2013	620	52	347,487	560	5
2014	53	4	110,211	2,079	4
2015	139	12	37,573	270	1
2016	159	13	185,120	1,164	3
2017	18	2	89,741	4,986	1
2018	268	22	197,375	736	2
2019	1,148	96	109,058	95	1
2020	5,759	480	6,090,356	1,058	73
2021	457	57	1,111,583	2,432	54
	11,268	80	10,760,837	955	15

Note: (*1) The average amount of UI payments per claim is only an approximation as it assumes payments are made in the same year during which the claim was filed. Persons filing a workshare claim late in a year are likely to receive UI payments in the subsequent year. (*2) Maryland did not begin reporting the number of firms with active plans each month until July 2012. Plans are reported in the data each month they are active. The number of unique plans in a year is not known. This table reports the annual average of plans active in monthly data.

The summary data in Table 5 show that workshare is not widely used by Maryland employers. The ETA 5159 data report how many beneficiaries and employers were involved in STC plans each month, therefore the exact number of unique plans operated in a given year is not known from these data. However, it appears that 5 or fewer plans were active on average in any given month prior to the pandemic. Data on plans spike dramatically in 2020 to 73 active plans on average per month and the average monthly number of plans in 2021 through August was 54. As expected, the dollar amount of benefits associated with these claims is consistent with limited usage. Even using 2010 which had the highest total dollars in benefits of any pre-pandemic year, total UI payments related to workshare were just $1.3 million. That same year, total regular UI payments to Maryland employees of taxable employers was nearly $850 million (USDOL 2021).

Table 6 (which straddles three pages) compares monthly STC participation figures from ETA 5159 reports with program administrative micro data provided to Upjohn where the UI claims appear to be related to workshare. Such claims were identified in the micro data using two variables associated with the UI claim. The first is referred to as the JCR code which identifies categories related to employer attachment. Examples include JCR codes for union-hiring hall membership, job attached and expecting recall, and temporary layoff. One of the JCR codes is an indicator for workshare participation. Another variable in the data that indicates a possible workshare claim is the job separation reason code. Along with the usual separation reason codes for things like quit, discharge, lack of work, or labor dispute, there is also a code for workshare.

Unfortunately, the concordance between values of the two variables is not 100 percent. Separately, the JCR code flagged 817 UI claims as being part of workshare and the job separation reason code identified 732 claims as being part of workshare. This left two options for selecting claims for a micro-workshare sample: 1) Select claims where either the JCR or job separation reason code suggested a workshare claim which would maximize sample size, or 2) Select only claims where both the JCR and the separation reason code suggest a workshare claim which would be more restrictive.

The more restrictive definition was applied which set the micro sample of UI claims to 673 compared with 876 claims that would have been identified by the either/or approach. Table 6 presents a comparison of the micro information compared to counts from the ETA 5159 reports. The overall pattern of participation from the two measures is reasonably close with payment amounts somewhat smaller in the micro sample which may be due to the restricted selection.[7] Large differences begin in 2020 because the inflow of UI claims for the micro sample ends at the end of 2019.

Table 6   **Maryland Workshare Claims and Employers from the ETA 5159 and Micro Data Files (*1)**

Year and month	Number of claims (*2)		Payments (*2)		Active employers (*2)	
	ETA 5159	Micro-data	ETA 5159	Micro-data	ETA 5159	Micro-data
201501			10,440		3	
201502		1	10,791	172	3	1
201503	3		6,774	258	3	1
201504		3	1,092	376	2	1
201505			546	564	1	1
201506						
201507						
201508						
201509						
201510			364	564	1	1
201511			364	188	1	1
201512	136	107	7,202	13,207	1	1

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[7] The year and month associated with total workshare UI payments from the micro-data in Table 6 is based on the week ending date of the week for which the claimant was requesting UI payment. It is unclear if those dates were used for submitting the ETA 5159 report or whether the ETA 5159 data reflect the subsequent dates when payments were issued for the weeks claimed.

Table 6   **Maryland Workshare Claims and Employers from the ETA 5159 and Micro Data Files (*1)**

Year and month	Number of claims (*2)		Payments (*2)		Active employers (*2)	
	ETA 5159	Micro-data	ETA 5159	Micro-data	ETA 5159	Micro-data
201601	6	1	29,238	32,444	1	1
201602	19	16	27,158	23,476	3	3
201603	1	1	27,671	23,380	3	3
201604	3	4	25,913	29,843	4	5
201605	9	2	10,524	3,945	4	5
201606	1	1	3,343	2,578	3	3
201607		19	5,749	6,925		2
201608		66	10,952	7,504	2	2
201609	75	1	18,903	19,257	3	3
201610	45	40	18,200	20,114	3	3
201611			5,474	6,090	3	3
201612		1	1,995	2,223	2	1
201701	2	13	26,861	28,099	2	3
201702		2	9,016	8,739	2	3
201703						
201704		30		1,323		1
201705	15	36	42,555	52,285	2	2
201706			2,241	1,247	2	1
201707			1,008	1,290	1	1
201708						
201709						
201710						
201711	1		4,920		1	
201712		7	3,140	2,709	2	1
201801	10	10	10,934	3,612	2	1
201802			12,706	10,384	2	2
201803			10,917	12,292	2	2
201804			10,446	8,272	2	2
201805			3,224	4,472	1	2
201806			806	1,548	1	1
201807	33	6	7,706	1,726	1	1
201808	196	214	7,873	820	1	1
201809	28	12	50,001	74,399	2	2
201810	1	5	66,213	42,352	2	2
201811			13,178	2,939	2	1
201812		1	3,371	3,541	1	2
201901	1		312	1,720	1	1
201902						
201903						
201904						
201905		1		0		1
201906	5	2	1,482	779	1	2
201907	25		3,145	934	1	2
201908	20	68	2,516	7,407	1	2
201909	301	1	22,945	24,284	2	3
201910	352		27,083	23,784	1	2
201911	296	1	22,975	29,720	1	2
201912	148	1	28,600	22,415	1	2
202001	147		27,771	22,578	1	2
202002			142	1,250	1	1
202003	285		5,816	204	1	1

Table 6   **Maryland Workshare Claims and Employers from the ETA 5159 and Micro Data Files (*1)**

Year and month	Number of claims (*2)		Payments (*2)		Active employers (*2)	
	ETA 5159	Micro-data	ETA 5159	Micro-data	ETA 5159	Micro-data
202004	1,876		67,047	454	35	3
202005	1,926		450,624	1,337	84	3
202006	359		811,684	802	112	3
202007	561		1,352,146	172	134	1
202008	394		1,833,662	258	137	1
202009	44		697,330	172	123	1
202010	112		288,358		85	
202011	33		239,010		90	
202012	22		316,766		73	
202101	53		212,716		74	
202102	21		236,175		63	
202103	56		174,433		60	
202104	139		106,038		53	
202105	131		129,515		54	
202106	37		121,872		49	
202107	15		67,983		41	
202108	5		62,851		42	

Note: (*1) Two variables from the UI applicant data provided to Upjohn by Maryland are available to identify workshare claimants. The JCR code having the value 2 and/or the job separation reason code having the value 96. Given that there were some cases where the JCR code and the separation reason code disagreed whether the claim was work-share, we used the more restrictive definition that both the JCR code and the separation reason code must indicate a work-share claim. (*2) Number of claims, total payments, and the number of active employers from the ETA 5159 workshare data use columns 1, 5 and 10 from the data file (https://oui.doleta.gov/unemploy/DataDownloads.asp). The year and month associated with the number of claims from the micro data is based on the BYB date of the UI claim. Total payment amount and number of active employers from the micro data are based on merging workshare claimants with the continued claims data file by employee ID and BYB. Payment amounts are summed by the year and month of the week-ending dates of payments. Since the separating employer ID was provided by Maryland, the number of active employers is simply the count of the number of unique employer IDs in a year and month based on the week ending date of payment.

Table 7 presents industry and employment information for the 23 employers in the 2015-2019 micro data associated with workshare claims based on the separating employer ID from those claims which was provided in the micro data extract. The data show that nearly all the workshare claims come from the manufacturing industry. Of the 673 workshare claims identified, 619 (92 percent) were associated with manufacturing employers.

Table 7 also shows the number of employees at each firm in the year prior to the benefit year begin dates of their workshare claims. Although there are only 23 firms in the sample, the data show considerable variation in firm size. Small, medium, and relatively large firms are represented in this small sample. While appearing to be clustered in the manufacturing industry, the data suggest that targeting workshare for some degree of non-charging would be beneficial to a broad array of employers classified by employment size.

Table 7   Industry Distribution of Workshare Claims in the Maryland Micro Data, 2015 - 2019 (*1)

Employer	Industry	NAICS Code	Work-share Claims Number	Share of total	Annual employment Year before BYB Date(s)
	Construction				
1	Building Equipment Contractors	2382	5	0.007	27
2	Building Equipment Contractors	2382	4	0.006	37
	Sub-total, average annual employment		9	0.013	32
	Manufacturing				
3	Textile Furnishings Mills	3141	1	0.001	7
4	Printing and Related	3231	1	0.001	19
5	Printing and Related	3231	1	0.001	58
6	Architectural, Structural Metals	3323	41	0.061	127
7	Architectural, Structural Metals	3323	6	0.009	45
8	Other Fabricated Metals	3329	1	0.001	419
9	HVAC, Commercial Refrigeration	3334	218	0.324	638
10	Communications Equipment	3342	134	0.199	159
11	Communications Equipment	3342	111	0.165	268
12	Semiconductor, Other Electronic	3344	13	0.019	43
13	Aerospace Products and Parts	3364	19	0.028	49
14	Office Furniture	3372	73	0.108	233
	Sub-total, average annual employment		619	0.920	172
15	Wholesale Machinery, Equipment and Supplies	4238	20	0.030	29
	Transportation				
16	School and Employee Bus	4854	1	0.001	46
17	Freight Transportation Arrangement	4885	8	0.012	12
18	Freight Transportation Arrangement	4885	1	0.001	28
	Sub-total, average annual employment		10	0.015	29
19	Technical and Trade Schools	6115	7	0.010	22
20	Individual and Family Services	6241	5	0.007	26
21	Dry-cleaning and Laundry Services	8123	1	0.001	47
22	Other (*2)	9999	1	0.001	1,826
23	Other (*2)	9999	1	0.001	4,147
			673	1.000	361

Note: (*1) Two variables from the UI applicant data provided to us by Maryland are available to identify work-share claimants. The JCR code having the value 2 and/or the job separation reason code having the value 96. Given that there were some cases where the JCR code and the separation reason code were not in agreement as to whether the claim was workshare, we used the more restrictive definition that both the JCR code and the separation reason code must indicate a work-share claim. (*2) Industry information suppressed.

2.2. Summary

The Maryland workshare program was signed into law in 1984 with the first beneficiaries in 1985.[8] The program can be a powerful tool for employers to use in periods of slack demand to help preserve relationships with employees. For employees, workshare helps avoid the difficulty of complete separation, even if on a temporary basis, keeps them connected to their employer, and keeps fringe benefits like health insurance active. Workshare helps employers return to full production quickly by just expanding hours with workers already on the payroll who have the knowledge and skills to do the job. The available data for workshare show little usage of this potentially valuable UI program by Maryland employers. Targeting this program for some degree of non-charging firms for the associated UI benefit payments could increase program participation rates with a small impact on the Maryland UI reserve position. In non-recessionary times, the numbers of employers using workshare as an alternative to UI are small but suspending or reducing benefit charges during these periods, along with an informational campaign about the program, could broaden the knowledge of the program that would be more widely operational in crisis periods when federal funding could be forthcoming.[9]

There have been three recent cases of federal funding for workshare. The Middleclass Tax Relief and Job Creation Act of 2012 provided for up to three years of 100 percent reimbursement for workshare benefit payments. Some states passed these reimbursements on to individual employer accounts so that employer UI tax rates were not affected by workshare benefits during that period. Similarly, the Coronavirus Aid Relief and Economic Security (CARES) Act in 2020 and the American Rescue Plan (ARP) in 2021 fully reimbursed states for workshare benefits. Since workshare benefits are normally charged to employers and benefit charges normally increase employer tax rates, reimbursing for workshare benefits could induce employers to use workshare over layoffs to avoid UI tax rate increases while maintaining contact with employees.

The data on workshare in Maryland since 2021 suggest employers are more likely to use workshare when benefit payments are not charged, and to date the scale of workshare usage means the cost of providing such reimbursement is modest. If the popularity of workshare expands, the costs could rise. However, it appears that in severe crises the federal government is likely to pay for workshare benefits, and during non-crisis periods employer usage of workshare is low. It may well be worth broadening knowledge of workshare throughout the employer community so that it could become a widely used tool for macroeconomic stabilization in crisis periods.

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[8] https://www.dllr.state.md.us/employment/worksharing/
[9] Houseman et al. (2017) provided evidence that informational campaigns about workshare can spread understanding about workshare in the employer community.

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Maryland Unemployment Insurance Analysis: Report 4—Related Analyses

W.E. Upjohn Institute for Employment Research
300 South Westnedge Avenue
Kalamazoo, Michigan 49007-4686 U.S.A.

communications@upjohn.org
269.343.5541

Upjohn.org

Maryland Unemployment Insurance Analysis:
Report 4—Related Analyses

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This is the fourth in a series of four Upjohn Institute reports assessing the effects of unemployment insurance (UI) program changes considered in Maryland House Bill 907 of 2021. The Upjohn Institute worked closely with the Jacob France Institute (JFI) at the University of Baltimore to do this work.[1] This report, subtitled "Related Analyses," examines overlapping issues in three separate sections: 1) modestly raising and indexing the Maryland UI taxable wage base, 2) adding a UI tax paid directly by employees, and 3) simulating the effects of Maryland UI tax schedule C in 2022 and 2023 resulting from cash infusions to UI reserves while non-charging employers for 2020 payments of regular Maryland UI benefits during the pandemic.

Each of the three sections of this report also describes the effects for small to medium sized employers (SME) having fewer than 50 employees each. SMEs with fewer than 50 employees constitute 92 percent of all employers in Maryland. They pay 35.1 percent of all UI covered wages in Maryland to 34.4 percent of all workers in the state. The SMEs pay on average somewhat higher than statewide annual average wages.

INDEXING THE UI TAXABLE WAGE BASE

The Maryland UI taxable wage base (TWB) was set at $8,500 in 1993 and has not changed since. In 1993, $8,500 amounted to 32 percent of average annual earnings which were $26,500 for a Maryland worker in a UI covered job (USDOL 2021). As the Maryland economy and labor force have grown over the years, the capacity to finance UI benefits has shrunk because the TWB has remained fixed. Furthermore, macrosimulation analysis showed that with the TWB fixed at $8,500, the current UI tax schedules, and the current tax schedule triggers, the Maryland UI benefit financing system will never meet the reserve target set in MRS 8-612 (f) of an average high-cost multiple of 1.0 or higher (O'Leary and Kline 2021). Also, simply indexing the current TWB to future wage growth would not be sufficient to reach the target reserve level either.

To simulate the effects of indexing, we set the TWB as 25 percent of average annual earnings. Simulations suggest that with the TWB set at $8,500 only 18.4 percent of total earnings in the state are taxable, while indexing the TWB to 25 percent of the average annual wage would make 28.4 percent of total earnings subject to the UI tax. That is less than the 32 percent subject to taxes in 1993. Through experience rating of UI taxes, an increase in taxable wages will lower average employer UI benefit ratios leading to lower tax rates. The net effect of the indexed TWB on UI taxes for an individual employer depends on average wages paid and the level of recent UI benefit charges.

Simulations suggest that setting the TWB as 25 percent of average annual earnings will yield a net increase of 20.7 percent in total tax payments with per employee taxes rising $31 on average. Increases will be somewhat larger for employers paying higher than average wages. Such employers predominate in mining, utilities, manufacturing, wholesale trade, finance, company and enterprise management, and real estate. Industries with relatively lower average annual

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earnings such as agriculture, retail trade, art and recreation, accommodation and food services would see smaller percentage increases in taxable payrolls.

Based solely on average earnings, one would expect the increase in TWB to impact the company and enterprise management industry the most and the accommodation and food services industry the least. However, given the wage distributions and rates of UI usage, the percentage changes in total UI tax payments are simulated to be nearly identical, being 17.5 percent in company and enterprise management and 17.7 percent in accommodation and food services. Despite similar percentage increases, tax payments per employee increase by just $12 in the accommodation and food services industry, while the company/enterprise management industry sees UI tax payments per employee increase $36. Other relatively lower wage industries also see relatively smaller changes in UI taxes per employee. These include retail trade ($20), educational services ($21), entertainment and recreation ($19) and services excluding public administration ($21).

Effects for small and medium sized enterprises (SMEs)

Maryland SMEs pay annual average wages that are about 1.2 percent higher than the average of all employers in the state. Consequently, the switch to a TWB indexed to 25 percent of average annual wages from a fixed $8,500 per year would increase taxable wages by 54.5 percent for SMEs compared with a 54.2 percent increase for all employers. The increased taxable wage base would lower benefit ratios by 31.5 percent for both SMEs and all employers. However, tax rates are simulated to decline slightly less for SMEs at 13.8 percent compared with 14.8 percent for the full sample. The net effect is simulated to be a slightly higher change in total tax payments for SMEs. Total tax payments are estimated to increase by 25.3 percent for SMEs firms compared with a 20.7 percent increase for the full analytic sample. However, the average tax payments per employee rise by just one dollar for SMEs to $32, compared with an increase of $31 for the full sample. These results are summarized in the following table.

Effects of Changing from a Taxable Wage Base Fixed at $8,500 to
a Taxable Wage Base Indexed to Twenty-five Percent of Average Annual Wages on
All Maryland Employers and Small and Medium Sized Employers (SMEs)
having Fewer than 50 Employees

Effects on	All Maryland Employers	All Maryland SMEs
Taxable Wages (%)	54.2	54.5
Benefit Ratios (%)	31.5	31.5
Tax Rates (%)	14.8	13.8
Total Tax Payments (%)	20.7	25.3
Taxes Per Employee ($)	$31	$32

Source: Estimates from microsimulations based on Maryland UI program administrative data.

To summarize how the impacts of increasing the TWB differs across industries by firm size, we present three groups of firms. There are three industries with a $1 larger increase in tax payments per employee for SMEs—wholesale trade, information, and the art, entertainment, and recreation industry. There are three industries that see a $2 per employee larger tax increase for SMEs—transportation and warehouse, administration, support and waste management, and public administration. Finally, both the mining and utilities industries would see taxes $6 per worker higher for SMEs compared to the overall average Maryland employer.

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ADDING AN EMPLOYEE UNEMPLOYMENT INSURANCE TAX

In the United States, only Alaska, New Jersey and Pennsylvania apply a UI tax on employee earnings. In Pennsylvania, the tax is occasionally applied to gross covered wages, but in Alaska and New Jersey it is applied to the same taxable wage base faced by employers. In New Jersey, the tax rate is 0.425 percent. In Alaska, the tax rate varies from a minimum of 0.5 percent to a maximum of 1.0 percent. The tax rates faced by wage earners in Pennsylvania range from 0 to 0.08 percent of total gross wages depending on the trust balance.

We conducted simulations applying a 0.3 percent (0.003) employee tax rate to taxable earnings using the existing $8,500 wage base and a simulated taxable wage base set at 25 percent of the average annual wage. That is the lowest tax rate in the lowest Maryland UI tax rate schedule. Obviously, the revenue implications of this policy change would be substantial, but there are benefit payment implications too. Having a small tax applied to individual employee earnings, with current and year to date withholdings reported on every pay stub, could help workers understand that UI is social insurance not welfare since they have paid insurance premiums while working. Employee contributions could increase the UI recipiency rate by increasing voluntary applications.

If individual wage earners were subject to UI taxation over the years of available data (2013Q1-2020Q2), at the fixed $8,500 taxable wage base, just under $600 million could have been raised—or something less than $100 million per year. That total would have been $900 million if the TWB was indexed to 25 percent of average annual wages. Over the same period, Maryland employers paid just over $4 billion in UI taxes.

UI taxes are paid by employers on the TWB earned by each employee every year. However, under an employee tax, if workers hold multiple jobs in a year or if they leave one job for another, they would start paying taxes on the first dollar of the TWB for each job. Reasonable state policy would be to rebate excess UI tax payments to multiple job holders through the annual income tax process in the same way the U.S. Treasury rebates excess Social Security contributions. If excess employee tax contributions were refunded under an $8,500 TWB, the revenue estimate would be $523.6 million which is 12.9 percent of total simulated employer tax contributions. Among all wage earners, 17.8 percent would receive some portion of their UI tax withholdings as a refund if the taxable wage base remains at $8,500, and about 15.1 percent these workers would be due a refund under the indexed TWB scenario.

Under the current $8,500 TWB, the average wage earner would pay between $25 and $26 per year in UI tax liability before any refund. This would be about $22 per year on average after correcting for the impact of multiple job holding. The maximum UI tax liability under the current TWB for a wage earner after refund would be just $25.50 per year (0.003 x $8,500).

Effects for SMEs

To analyze the effects of employee taxes in SMEs we restrict the sample somewhat. If an employee held a job in a year with one or more employers having 50 or more employees, that

observation was excluded from our analysis. Therefore, our sample size for analysis of SMEs is somewhat smaller than previous SME analysis.

Between 2013Q1 and 2020Q2, individuals who worked in the year solely for employers having fewer than 50 employees were 21.3 percent of all Maryland wage earners and their earnings comprised 21.0 percent of total earnings over the period. For full calendar years in the period, earnings per year in the full sample averaged $45,906 per wage earner and $45,968 in the SME sample.

Before considering any refunds for multiple job holding, for the $8,500 TWB for persons working for SMEs taxable wages averaged $7,749 per year compared with $8,416 for the full sample which is 7.9 percent lower. For the TWB indexed to average annual wages, taxable wages would average $11,777 among SME employees and $12,557 for the full sample of all employers.

Excluding all employees who worked for at least one employer with 50 or more employees, just 8.6 percent of employees had multiple jobs at SMEs, while the rate is 23.6 percent of earners at all employers in Maryland. Accounting for multiple job holding this way and using the indexed TWB, the average wage earner in 2019 would have withholdings of $41.12 compared with the $38.48 average for persons employed exclusively at SMEs. After any year end refunds for excess withholding, the 2019 averages are virtually identical at $36.90 and $36.74 for all wage earners and those at SMEs respectively.

In 2019, persons who held multiple jobs in that year but worked only for SMEs averaged $48,705 in earnings compared with $39,609 for the sample of all employers. As a result, even though fewer earners worked for multiple employers in the restricted SME sample, they would have been much more likely to have been refunded some of their UI tax withholdings. Across the existing ($8,500) and simulated (25 percent of AAW) taxable wage base values, 86.8 and 75.6 percent respectively of the multiple job holders in 2019 in the restricted SME sample would have received a refund. For the overall sample, the 2019 rebate rates would have been 81.9 percent for the existing wage base and 69.3 percent for the simulated value.

EFFECTS OF MARYLAND UI TAX SCHEDULE C IN 2022 AND 2023

Using the UNIS-X model for Maryland developed by the U.S. Department of Labor we simulated the long-term effects of the fiscal actions taken by Maryland UI program administrators in 2021. Following are the important facts accounted for in initializing the UNIS-X simulation.

- UI tax schedule F was in effect for 2021.
- Employers were not charged for pandemic related benefits paid in 2020—unless considering the 2020 period would yield a lower benefit ratio for the employer.
- Maryland UI tax schedule C will be in effect for 2022 and 2023.
- Non-charging for 2020 UI benefit payments was extended to 2022 and 2023.
- A cash infusion into the Maryland UI trust account of $1 billion was assumed to be fully made by the end of 2021.

- The Maryland UI taxable wage base of $8,500 is assumed.
- The maximum UI weekly benefits of $430 is assumed with existing dependents allowances.
- The new employer tax rate is 2.6 percent.

Maryland Baseline Simulation that Includes Schedule F for 2021,
Schedule C for 2022-2023, Non-Charging for 2020 through 2023,
and a $1 Billion Infusion in the second half of 2021

| | Values in Millions of Dollars | | | | | |
Year	Benefits paid	UI tax revenue	Interest	Year-end trust balance, *1	AHCM	Tax schedule
2020	1,794	444	17	84	0.04	A
2021	459	732	10	366	1.12	F
2022	448	461	28	1,399	1.12	C
2023	449	466	29	1,459	1.12	C
2024	447	386	29	1,424	1.06	A
2025	448	392	29	1,402	1.00	A
2026	446	400	28	1,382	0.95	A
2027	448	409	28	1,369	0.91	A
2028	445	416	28	1,365	0.88	A
2029	446	425	28	1,370	0.85	A
2030	444	435	28	1,386	0.83	A
2031	440	445	28	1,417	0.82	A
2032	439	454	29	1,459	0.81	A

Note: (*1) In the UNIS-X model using the option to add additional historical data, the third quarter of 2021 tax contributions were increased $1 billion to reflect the cash infusion. This infusion is not reflected in the model's beginning and ending balances until 2022.

There are two important things to take from this baseline simulation. First, the goal of having an average, high-cost multiple (AHCM) of 1.0 is expected to be met at year-end 2021 because of the infusion of $1 billion into the Maryland trust account.[2] Second, the current Maryland UI financing system is insufficient to achieve and maintain an AHCM equal to or greater than1.0 over time. With the cash infusion and staying on tax schedule C in 2022 and 2023, despite non-charging for 2020 pandemic benefits, Maryland is expected to achieve an AHCM of 1.12 as the trust balance is simulated to reach $1.46 billion by the end of 2023. However, after that, schedule A would be triggered and with the current $8,500 taxable wage base in effect, expected annual revenue falls short of expected annual benefits. This leads to a gradual decline in reserves and the AHCM. This suggests the current Maryland UI financing system will not provide sufficient forward funding. The revenue shortfall in this scenario is mainly due to the low taxable wage base of $8,500 that has been in effect since 1993.

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[2] The average, high-cost multiple is based on the current trust balance divided by an estimate of average benefit costs that would be incurred over the course of a year assuming the average cost rate of the three most expensive years that have occurred in the last 20 years. A value of 1.0 means the balance in the trust fund is sufficient to pay benefits at that high rate for one year. An AHCM of 1.0 is the standard set by the USDOL to qualify for short-term zero interest borrowing after 2018. Maryland law (8-612 (f)) prevents reduction in the tax schedule if the AHCM is not above 1.0.

1. INDEXING THE TAXABLE WAGE BASE

1.1. Introduction

This section of the report discusses the effects of tying the Maryland unemployment insurance (UI) taxable wage base (TWB) to a percentage of average earnings of UI covered workers. The Maryland TWB is currently $8,500 where it has been fixed since 1993. Indexing the TWB to a percentage of average annual earnings will increase the tax capacity of the Maryland UI benefit financing system which has steadily eroded over the years. A low TWB is a regressive financing mechanism that bears more heavily on low wage workers—particularly multiple job holders whose earnings are taxed on each separate job from the first dollar earned. Indexing the TWB will improve equity in UI benefit financing.

In 1993, the $8,500 TWB amounted to 32 percent of average annual earnings which were $26,500 for Maryland workers covered by UI (USDOL 2021). By 2019, with the TWB still at $8,500 that percentage had fallen to 17.7. That means that as the Maryland economy and labor force has grown, the relative capacity to finance UI benefits has shrunk because the taxable wage base has remained fixed. Furthermore, macrosimulation analysis showed that with the TWB fixed at $8,500, the current UI tax schedules, and the current tax schedule triggers, the Maryland UI benefit financing system will never meet the reserve target set in MRS 8-612 (f) of an average high-cost multiple of 1.0 or higher (O'Leary and Kline 2021).

Even though employers directly pay all UI taxes, research shows that the incidence of the tax is largely borne by workers through lower wages with the industry average tax fully shifted to workers (Anderson and Meyer 2000). When firms in an industry are similar, the shifting of the tax burden can be nearly complete.

1.2. Analysis

Results Summary for All Firms

The micro-data for analysis is comprised of employer UI tax records for all Maryland employers and quarterly earnings records for all Maryland wage earners (see O'Leary and Kline, 2021, section 1.2). The earnings information for this sub-sample of all experience rated firms is summarized in Table 1. Over the calendar year period of 2016 through the second quarter of 2020--the last quarter in which data are available--these firms reported $331 billion in earnings that they paid to their employees. Of the $331 billion paid to employees, $61 billion or 18.4 percent of it was taxable at the current $8,500 taxable wage base. Over the same period, had the taxable wage base been indexed to 25 percent of the average annual wage, earnings subject to UI taxation would have been 54.2 percent higher. The TWB indexed to 25 percent of average annual wages would make 28.4 percent of earnings subject to the UI tax. As Table 2 and Table 3 will show, the realized tax revenue increase is considerably less than 54.2 percent due to the impact of the higher taxable wage base on the sample firms' benefit ratios and tax rates.

Firm taxable earnings are the denominator in the benefit ratio calculation and depending a firm's wage structure, the upward shift of employee earnings being taxable up to 25 percent of the

state-wide average annual wage from $8,500 produces a significantly lower benefit ratio for the same level of UI benefit charges. As Table 2 shows, there is a 31.5 percent average reduction in firm benefit ratios which translates to a 14.8 percent average reduction in tax rates that are applied to the new taxable earnings amount. The net result is a 20.7 percent increase in total tax payments as shown in Table 3. Tax payments per employee rise $31 on average.

Table 1   Earnings Information from Micro-Sample of Experience Rated Firms (*1)

Calendar year (*2)	Number of firms	Total earnings	Taxable earnings by TWB $8,500	Taxable earnings by TWB 25% of AAW	Percent change
2016	86,244	64,869	11,392	16,909	48.4
2017	88,391	68,571	12,277	18,586	51.4
2018	89,057	75,479	12,888	19,973	55.0
2019	89,638	81,602	13,524	21,486	58.9
2020	88,996	40,632	10,935	17,106	56.4
	442,326	331,153	61,017	94,061	54.2

Note: (*1) Sample used here is the same as in "Financing Maryland Unemployment Insurance: Final Report," July 2021. See section 1.2, pages 3-4 of that report for discussion how that sample was derived. (*2) Data for 2020 are available for the first two quarters only.

Table 2   Impacts on Firm Benefit Ratio and Tax Rate from Setting the TWB at 25 percent of AAW using a Micro Sample of Experience Rated Firms

Calendar year	Number of firms	Benefit ratio Actual	Benefit ratio Simulated	Percent change	Tax rate Actual	Tax rate Simulated	Percent change
2016	86,244	0.0199	0.0144	-27.8	0.0156	0.0135	-13.0
2017	88,391	0.0177	0.0123	-30.7	0.0146	0.0125	-14.3
2018	89,057	0.0155	0.0105	-32.2	0.0133	0.0113	-15.0
2019	89,638	0.0140	0.0093	-33.5	0.0123	0.0104	-15.8
2020	88,996	0.0126	0.0082	-35.3	0.0117	0.0097	-16.7
	442,326	0.0159	0.0109	-31.5	0.0135	0.0115	-14.8

Table 3   Impacts on Total Firm Tax Payments from Setting the TWB at 25 percent of the AAW using a Micro Sample of Experience Rated Firms

Calendar year (*1)	Number of firms	Tax payments ($ million) Actual	Tax payments ($ million) Simulated	Percent change	Tax payments per employee Actual	Tax payments per employee Simulated	Tax payments per employee Change
2016	86,244	256.05	306.18	19.6	113	147	34
2017	88,391	259.08	311.86	20.4	105	139	34
2018	89,057	245.68	297.21	21.0	97	130	33
2019	89,638	239.11	293.54	22.8	91	124	33
2020	88,996	181.63	216.98	19.5	80	104	23
	442,326	1,181.54	1,425.76	20.7	97	128	31

Note: (*1) Data for 2020 available for the first two quarters.

Results Summary for Smaller Firms

Tables 4 through 6 present this same analysis only restricting the sample of experience rated firms to those with fewer than 50 employees annually. Following is a summary:

1) The number of firms with less than 50 employees annually comprises nearly 92 percent of the total sample (406,921 of 442,326 total firms). On an earnings basis, these smaller firms represent 35.1 percent and 36.4 percent of total and taxable wages, respectively. See Table 1 and Table 4.

2) Among the firm with less than 50 employees, an increase in the taxable wage base to 25 percent of the average annual wage results in a 54.5 percent increase in taxable payrolls which is very comparable to the 54.2 percent increase for all firms, regardless of size. See Table 1 and Table 4.

3) The increase in the taxable wage base pushes smaller firm benefit ratios down by 31.5 percent, matching the overall distribution. Tax rates fall somewhat less at 13.8 percent compared with a 14.8 percent average for all firms. See Table 2 and Table 5.

4) With tax rates falling somewhat less for the smaller firms, total tax payments increase 25.3 percent for the firms with less than 50 employees compared with a 20.7 percent increase for the full sample. However, on a per-employee basis, the change in tax payments is quite comparable. Firms with less than 50 employees annually see tax payments per employee rise $32 compared with the $31 increase for all firms. See Table 2 and Table 6.

Table 4   **Earnings Information from Micro-Sample of Experience Rated Firms with less than 50 Annual Employees**

Calendar year (*1)	Number of firms	Total earnings	Taxable earnings by TWB $8,500	25% of AAW	Percent change
			Earnings in $ million		
2016	79,355	24,050	4,446	6,626	49.0
2017	81,091	25,064	4,527	6,905	52.5
2018	81,579	25,611	4,557	7,105	55.9
2019	81,945	27,681	4,588	7,332	59.8
2020	82,951	13,891	4,066	6,298	54.9
	406,921	116,295	22,184	34,265	54.5

Note: (*1) Data for 2020 available for the first two quarters.

Table 5   **Impacts on Firm Benefit Ratio and Tax Rate from Setting the TWB at 25 percent of AAW on Firms with less than 50 Annual Employees**

Calendar year	Number of Firms	Benefit ratio Actual	Benefit ratio Simulated	Percent change	Tax rate Actual	Tax rate Simulated	Percent change
2016	79,355	0.0198	0.0143	-27.8	0.0148	0.0130	-12.0
2017	81,091	0.0176	0.0122	-30.8	0.0138	0.0120	-13.2
2018	81,579	0.0154	0.0104	-32.2	0.0126	0.0109	-13.9
2019	81,945	0.0139	0.0093	-33.6	0.0117	0.0100	-14.7
2020	82,951	0.0126	0.0081	-35.3	0.0112	0.0095	-15.8
	406,921	0.0158	0.0108	-31.5	0.0128	0.0111	-13.8

Table 6   **Impacts on Total Firm Tax Payments from Setting the TWB at 25 percent of the AAW on Firms with less than 50 Annual Employees**

Calendar year (*1)	Number of Firms	Tax payments ($ million) Actual	Tax payments ($ million) Simulated	Percent change	Tax payments per employee Actual	Tax payments per employee Simulated	Change
2016	79,355	92.66	115.47	24.6	109	144	35
2017	81,091	88.13	110.49	25.4	101	135	34
2018	81,579	80.38	101.55	26.3	94	127	33
2019	81,945	75.05	95.98	27.9	88	122	34
2020	82,951	64.65	78.89	22.0	78	101	23
	406,921	400.87	502.39	25.3	94	125	32

Note: (*1) Data for 2020 available for the first two quarters.

Results by Industry for All Firms

Table 7 presents an industry breakdown for all firms in the sample. The industry detail is based on two-digit NAICS (North American Industry Classification System) codes. Table 7 presents the number of firms in each industry in the analysis sample, the industry's average annual firm employment, and the average earnings per employee for firms in the industry. For further comparison, the industry share of the total number of firm-year observations is presented along with the industry share of total employment over the period. For example, the professional, scientific, and technical industry has the greatest number of observations in the sample (18.2 percent of the total) but has a relatively smaller average annual employment at the firms (14.0 employees per firm). The result is that the professional, scientific, and technical industry share of total employment is 11.8 percent and is exceeded by retail trade (14.1 percent) and accommodation and food services (13.7 percent).

Table 7 **Industry Summary Information for a Select Micro-Sample of Experience Rated Firms, 2016-2020 (*1)**

Industry	Firm-year observations	Share of total	Average annual firm employment	Industry share of total employment	Average earnings per employee
Overall	442,326	1.000	21.5	1.000	40,032
Agric, Forestry, Fishing	2,189	0.005	14.9	0.003	23,054
Mining	235	0.001	24.4	0.001	41,703
Utilities	368	0.001	80.0	0.003	63,086
Construction	51,083	0.115	16.9	0.091	33,416
Manufacturing	11,621	0.026	41.2	0.050	41,943
Wholesale Trade	29,103	0.066	14.4	0.044	71,299
Retail Trade	39,826	0.090	33.7	0.141	22,552
Transportation, Warehousing	10,429	0.024	32.3	0.035	29,358
Information	6,301	0.014	22.7	0.015	69,675
Finance and Insurance	16,945	0.038	21.4	0.038	68,716
Real Estate, Rental, Leasing	15,814	0.036	14.3	0.024	42,657
Prof, Scientific, Technical	80,428	0.182	14.0	0.118	61,409
Company/Enterprise Management	920	0.002	66.8	0.006	124,750
Admin, Support and Waste Mgmt	30,747	0.070	29.0	0.094	32,328
Educational Services	7,031	0.016	20.9	0.015	27,700
Health Care/Social Assistance	44,255	0.100	23.5	0.109	37,632
Art, Entertainment, Recreation	6,875	0.016	36.5	0.026	21,514
Accommodation and Food Services	30,039	0.068	43.5	0.137	11,858
Other Services (Except Pub Admin)	57,395	0.130	7.9	0.047	25,058
Public Administration	376	0.001	22.0	0.001	29,618
Unclassifiable	346	0.001	6.7	0.000	30,291

Note: (*1) Data for 2020 is available for the first two quarters.

Variation in average earnings per employee across industries is important to this analysis. With the current taxable wage base at $8,500, the incidence of UI taxation falls in a disproportionate way onto the earnings of employees at firms of relatively lower wage industries. Differences in wage growth over time across industries exacerbates this problem especially since the $8,500 taxable wage base has been in effect since 1993. As a result, industries with relatively higher earnings should see relatively greater increases in taxable payrolls and UI tax payments when increasing the wage base to 25 percent of the average annual wage.

Table 8   Industry Earnings Information for a Select Micro-Sample of Experience Rated Firms, 2016 - 2020 (*1)

Industry	Firm-year observations	Earnings ($ million, 2016 - 2020)			
		Total	Taxable by TWB		Percent change
			$8,500	25% of AAW	
Overall	442,326	331,152.7	61,016.8	94,060.6	54.2
Agric, Forestry, Fishing	2,189	655.3	203.5	306.7	50.7
Mining	235	253.0	42.1	69.1	64.2
Utilities	368	2,693.6	237.3	397.7	67.6
Construction	51,083	33,892.5	6,248.3	9,988.3	59.9
Manufacturing	11,621	23,712.1	3,614.9	5,891.5	63.0
Wholesale Trade	29,103	21,734.7	3,140.5	5,086.0	62.0
Retail Trade	39,826	25,337.8	7,565.3	11,066.4	46.3
Transportation, Warehousing	10,429	11,279.4	2,208.1	3,470.0	57.1
Information	6,301	8,395.5	996.2	1,618.4	62.5
Finance and Insurance	16,945	29,285.4	2,835.4	4,701.2	65.8
Real Estate, Rental, Leasing	15,814	9,759.5	1,638.7	2,606.3	59.0
Prof, Scientific, Technical	80,428	72,757.4	8,591.3	14,094.4	64.1
Company/Enterprise Management	920	5,219.1	472.4	779.0	64.9
Admin, Support and Waste Mgmt	30,747	20,246.6	5,241.7	7,816.9	49.1
Educational Services	7,031	3,571.1	820.3	1,226.2	49.5
Health Care/Social Assistance	44,255	33,454.4	6,865.6	10,525.1	53.3
Art, Entertainment, Recreation	6,875	3,550.9	1,037.9	1,406.7	35.5
Accommodation and Food Services	30,039	13,093.9	6,246.7	8,442.3	35.1
Other Services (Except Pub Admin)	57,395	11,921.3	2,936.1	4,449.3	51.5
Public Administration	376	292.5	61.0	98.5	61.6
Unclassifiable	346	46.6	13.6	20.4	49.8

Note: (*1) Data for 2020 is available for the first two quarters.

Table 8 summarizes total and UI taxable earnings across industries and the results correlate highly with the pattern for average annual earnings per employee presented in Table 7. Industries with relatively higher average annual earnings (Table 7) see greater than average percentage increases in taxable wages. Examples include utilities, manufacturing, wholesale trade, finance, and real estate. Industries with relatively lower average annual earnings such as agriculture, retail trade, art and recreation, accommodation and food see smaller percentage increases in taxable earnings.

Greater exposure of earnings to taxation in higher wage industries compared with lower-wage industries should lead to greater tax contributions from those industries paying higher average wages, but the final effect of the increased TWB on tax contributions is influenced by the dispersion of earnings and the usage of UI within and across industries. These distributions translate the taxable wage base increase into reductions in benefit ratios and tax rates that are summarized in Table 9. The result of all these interactions is presented in Table 10 which summarizes total tax payments across industries.

Table 9   **Industry Benefit Ratios and Tax Rates for a Select Micro-Sample of Experience Rated Firms, 2016 - 2020 (*1)**

Industry	Firm-year observations	Benefit ratio by TWB			Tax rates by TWB		
		$8,500	25% of AAW	Percent change	$8,500	25% of AAW	Percent change
Overall	442,326	0.0159	0.0109	-31.5	0.0135	0.0115	-14.8
Agric, Forestry, Fishing	2,189	0.0183	0.0126	-31.1	0.0128	0.0113	-12.1
Mining	235	0.0575	0.0383	-33.3	0.0299	0.0255	-14.9
Utilities	368	0.0324	0.0209	-35.5	0.0185	0.0160	-13.2
Construction	51,083	0.0305	0.0209	-31.5	0.0199	0.0170	-14.5
Manufacturing	11,621	0.0224	0.0146	-34.7	0.0183	0.0149	-18.6
Wholesale Trade	29,103	0.0158	0.0103	-34.6	0.0136	0.0114	-16.4
Retail Trade	39,826	0.0114	0.0081	-29.3	0.0108	0.0093	-13.7
Transportation, Warehousing	10,429	0.0351	0.0239	-31.7	0.0208	0.0184	-11.7
Information	6,301	0.0147	0.0096	-34.9	0.0139	0.0114	-17.8
Finance and Insurance	16,945	0.0126	0.0083	-34.2	0.0127	0.0105	-17.3
Real Estate, Rental, Leasing	15,814	0.0143	0.0097	-32.2	0.0132	0.0111	-16.4
Prof, Scientific, Technical	80,428	0.0141	0.0094	-33.4	0.0129	0.0107	-16.5
Company/Enterprise Mgmt	920	0.0143	0.0093	-35.0	0.0145	0.0116	-20.2
Admin, Support, Waste Mgmt	30,747	0.0278	0.0194	-30.4	0.0193	0.0167	-13.6
Educational Services	7,031	0.0096	0.0067	-30.4	0.0111	0.0095	-14.4
Health Care/Social Assistance	44,255	0.0103	0.0071	-31.3	0.0123	0.0102	-16.9
Art, Entertainment, Recreation	6,875	0.0134	0.0101	-24.9	0.0123	0.0111	-10.3
Accommodation, Food	30,039	0.0093	0.0072	-22.0	0.0095	0.0086	-9.5
Other Services	57,395	0.0077	0.0053	-31.3	0.0086	0.0076	-12.5
Public Administration	376	0.0139	0.0090	-34.9	0.0147	0.0118	-20.0
Unclassifiable	346	0.0106	0.0078	-26.8	0.0067	0.0060	-10.6

Note: (*1) Data for 2020 is available for the first two quarters.

Table 10 also illustrates the difficulty in assessing the impact of an increased taxable wage base. Based solely on the average earnings per employee values that were shown in Table 7, one would expect the significant increase in taxable wages to impact the company/enterprise management industry the most. While the accommodation and food services industry should be impacted least. But given differences in wage dispersion within industries, and greater UI usage (higher benefit ratio) in the company management industry (Table 9), the percentage changes in total UI tax payments in the two industries are nearly identical. The company management industry sees total tax payments increase 17.5 percent while accommodation and food services see UI taxes increase 17.7 percent.

The preceding discussion suggests using an alternate measure to assess the impact from increasing the taxable wage base to 25 percent of the average weekly wage. In Table 10, we also summarize UI tax payments per employee by industry which we believe provides a clearer picture of the impact of a broadened UI tax base. Tax payments per employee increase by $12 in the accommodation and food services industry, while the company/enterprise management industry sees UI tax payments per employee increase $36. Other relatively lower wage industries also see relatively smaller changes in UI taxes per employee. These include retail trade ($20), educational services ($21), entertainment and recreation ($19) and services excluding public administration ($21).

Table 10   Industry Total and Per-employee Tax Payments for a Select Micro-Sample of Experience Rated Firms, 2016 - 2020 (*1)

Industry	Firm-year observations	Tax payments ($ million)		Percent change	Tax payments per employee		
		($8,500)	25% of AAW		($8,500)	25% of AAW	Change
Overall	442,326	1,181.5	1,425.8	20.7	97	128	31
Agric, Forestry, Fishing	2,189	3.9	4.8	22.2	85	113	28
Mining	235	1.1	1.4	27.1	240	322	82
Utilities	368	3.1	3.9	29.0	139	195	56
Construction	51,083	178.0	222.1	24.7	145	193	48
Manufacturing	11,621	84.9	102.5	20.7	138	178	40
Wholesale Trade	29,103	64.1	77.6	21.0	107	146	39
Retail Trade	39,826	120.4	141.4	17.4	71	91	20
Transportation, Warehousing	10,429	47.5	58.7	23.8	151	206	54
Information	6,301	22.9	27.1	18.2	108	144	37
Finance and Insurance	16,945	50.9	61.6	21.1	100	133	33
Real Estate, Rental, Leasing	15,814	39.0	47.4	21.4	99	131	32
Prof, Scientific, Technical	80,428	175.4	213.3	21.7	100	135	35
Company/Enterprise Mgmt	920	10.2	12.0	17.5	116	152	36
Admin, Support, Waste Mgmt	30,747	125.2	147.9	18.1	132	173	41
Educational Services	7,031	15.4	18.2	18.4	75	96	21
Health Care/Social Assistance	44,255	106.2	127.7	20.3	87	111	24
Art, Entertainment, Recreation	6,875	18.7	21.6	15.3	68	87	19
Accommodation, Food	30,039	70.6	83.1	17.7	50	61	12
Other Services	57,395	42.5	51.7	21.7	63	84	21
Public Administration	376	1.3	1.5	18.6	125	165	40
Unclassifiable	346	0.1	0.1	32.2	45	62	17

Note: (*1) Data for 2020 is available for the first two quarters.

There are some notable exceptions in this discussion. The transportation and warehousing industry along with administration, support, waste management, and remediation services are both relatively lower wage industries. Average annual earnings per employee are just over $29 and $32 thousand, respectively, considerably less than the average (Table 7). However, these industries also have very high UI usage as measured by the benefit ratio (Table 8).[3] As a result, the transportation and warehousing industry sees a hefty $54 per employee increase in UI tax payments and the administration, support, and waste management industry increases $41 per employee. These two cases highlight the struggle to find a balance between equity from with broadening the UI taxable wage base and the experience rating principle which dampens inefficiencies associated with cross-firm and cross-industry subsidization of UI benefit costs.

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[3] These two industries also have a high share of firms at the maximum tax rate allowed under schedule A which increases the likelihood that despite the increase in the taxable wage base and the resulting reduction in the benefit ratio, the firm will remain at that maximum (O'Leary and Kline, 2021, section 2.4, page 61).

Results by Industry for Smaller Firms

Tables 11 through 14 present the industry discussion after restricting the sample to experience rated firms with less than 50 employees. A comparison of distributions in Table 11 and Table 7 shows some differences that are not unexpected. Annual average firm employment drops from 21.5 to 8.0. The retail trade and accommodation and food service industries highlight the importance of a relatively small number of very large employers. Not restricting firm size, retail trade is 9.0 percent of all employers and 14.1 percent of total employment (Table 7). With the sample restricted to observations with less than 50 employees, retail trade is 8.9 percent of all employers but just 9.7 percent of total employment. Accommodation and food services demonstrates a similar pattern that results in average annual firm employment falling from 43.5 to 14.2 and its share of total employment declining from 13.7 to 10.5 percent as shown in Tables 7 and 11, respectively.

Table 11   **Industry Information for a Select Micro-Sample of Experience Rated Firms with less than 50 Employees Annually, 2016-2020 (*1)**

Industry	Firm-year observations	Share of Total	Average annual firm employment	Industry share of total employment	Average earnings per employee
Overall	406,921	1.000	8.0	1.000	40,526
Agric, Forestry, Fishing	2,068	0.005	8.8	0.006	23,202
Mining	208	0.001	14.3	0.001	41,448
Utilities	293	0.001	8.4	0.001	60,415
Construction	47,365	0.116	8.6	0.125	32,836
Manufacturing	9,728	0.024	10.9	0.032	41,612
Wholesale Trade	27,375	0.067	6.6	0.055	72,659
Retail Trade	36,397	0.089	8.7	0.097	22,457
Transportation, Warehousing	9,381	0.023	9.1	0.026	29,389
Information	5,777	0.014	6.5	0.011	70,954
Finance and Insurance	15,733	0.039	6.3	0.030	67,975
Real Estate, Rental, Leasing	14,983	0.037	6.3	0.029	42,276
Prof, Scientific, Technical	76,169	0.187	6.5	0.151	61,210
Company/Enterprise Mgmt	759	0.002	7.6	0.002	133,918
Admin, Support, Waste Mgmt	27,236	0.067	9.3	0.078	33,609
Educational Services	6,350	0.016	10.0	0.019	28,233
Health Care/Social Assistance	40,406	0.099	9.6	0.118	38,315
Art, Entertainment, Recreation	5,881	0.014	10.7	0.019	23,362
Accommodation, Food Services	24,097	0.059	14.2	0.105	12,263
Other Services	56,040	0.138	5.4	0.093	25,018
Public Administration	337	0.001	13.3	0.001	29,116
Unclassifiable	338	0.001	3.8	0.000	30,711

Note: (*1) Data for 2020 is available for the first two quarters.

Important to assessing the impact of the increased taxable wage base on smaller employers is examining changes in average taxable earnings per employee once the observations of larger firms are excluded. Overall, the change in employee average earnings is very modest, increasing about $500 or 1.2 percent. As would be expected from this small change, a comparison of taxable earnings shows the overall increase for smaller firms is 54.5 percent (Table 12) compared with 54.2 percent for the unrestricted sample (Table 8).

Table 12   **Industry Earnings Information for a Select Micro-Sample of Experience Rated Firms with less than 50 Employees Annually, 2016 - 2020 (*1)**

| Industry | Firm-year observations | Earnings ($ million, 2016 - 2020) | | | Percent change |
| | | Total | Taxable by TWB | | |
			$8,500	25% of AAW	
Overall	406,921	116,295.4	22,183.6	34,265.2	54.5
Agric, Forestry, Fishing	2,068	372.4	114.6	173.8	51.6
Mining	208	131.5	22.4	36.5	62.9
Utilities	293	131.6	18.3	29.7	62.6
Construction	47,365	14,619.1	2,986.1	4,733.6	58.5
Manufacturing	9,728	3,938.9	775.2	1,233.6	59.1
Wholesale Trade	27,375	10,532.8	1,376.4	2,235.7	62.4
Retail Trade	36,397	6,449.2	1,966.8	2,888.8	46.9
Transportation, Warehousing	9,381	2,380.5	598.5	928.9	55.2
Information	5,777	2,330.1	281.3	457.4	62.6
Finance and Insurance	15,733	7,124.2	756.7	1,228.0	62.3
Real Estate, Rental, Leasing	14,983	3,939.6	686.2	1,087.9	58.6
Prof, Scientific, Technical	76,169	29,614.0	3,771.8	6,127.8	62.5
Company/Enterprise Mgmt	759	682.1	45.3	74.3	64.0
Admin, Support, Waste Mgmt	27,236	7,073.1	1,669.6	2,535.7	51.9
Educational Services	6,350	1,265.7	340.0	493.8	45.2
Health Care/Social Assistance	40,406	13,127.5	2,638.0	4,048.8	53.5
Art, Entertainment, Recreation	5,881	882.2	287.9	399.8	38.8
Accommodation, Food Services	24,097	3,544.4	1,760.6	2,383.1	35.4
Other Services	56,040	7,986.8	2,048.3	3,105.5	51.6
Public Administration	337	142.1	32.0	51.3	60.2
Unclassifiable	338	27.4	7.6	11.3	48.7

Note: (*1) Data for 2020 is available for the first two quarters.

In terms of the impact of the increased taxable wage base on benefit ratios and tax rates of smaller firms, benefit ratios declined 31.5 percent matching the decline of the overall sample. However, tax rates declined slightly less at 13.8 percent compared with 14.8 percent for the full sample (see Table 9 and Table 13).

Table 13   Industry Benefit Ratios and Tax Rates for a Select Micro-Sample of Experience Rated Firms with less than 50 Employees Annually, 2016 - 2020

Industry	Firm-year observations	Benefit ratio by TWB			Tax rates by TWB		
		$8,500	25% of AAW	Percent change	$8,500	25% of AAW	Percent change
Overall	406,921	0.0158	0.0108	-31.5	0.0128	0.0111	-13.8
Agric, Forestry, Fishing	2,068	0.0177	0.0122	-31.1	0.0120	0.0107	-11.1
Mining	208	0.0617	0.0412	-33.2	0.0310	0.0267	-14.0
Utilities	293	0.0377	0.0243	-35.6	0.0191	0.0170	-11.2
Construction	47,365	0.0302	0.0207	-31.3	0.0189	0.0164	-13.4
Manufacturing	9,728	0.0221	0.0144	-34.8	0.0168	0.0140	-16.7
Wholesale Trade	27,375	0.0157	0.0103	-34.6	0.0131	0.0111	-15.3
Retail Trade	36,397	0.0112	0.0079	-29.3	0.0101	0.0088	-12.4
Transportation, Warehousing	9,381	0.0361	0.0247	-31.7	0.0205	0.0183	-10.5
Information	5,777	0.0145	0.0094	-35.1	0.0131	0.0109	-16.7
Finance and Insurance	15,733	0.0124	0.0082	-34.1	0.0121	0.0102	-16.0
Real Estate, Rental, Leasing	14,983	0.0138	0.0094	-32.1	0.0124	0.0105	-15.3
Prof, Scientific, Technical	76,169	0.0139	0.0093	-33.4	0.0123	0.0104	-15.5
Company/Enterprise Mgmt	759	0.0133	0.0087	-34.8	0.0126	0.0104	-17.6
Admin, Support, Waste Mgmt	27,236	0.0288	0.0200	-30.5	0.0188	0.0164	-12.4
Educational Services	6,350	0.0093	0.0065	-30.3	0.0104	0.0090	-13.1
Health Care/Social Assistance	40,406	0.0102	0.0070	-31.3	0.0119	0.0100	-16.3
Art, Entertainment, Recreation	5,881	0.0132	0.0099	-25.2	0.0113	0.0103	-9.2
Accommodation, Food Services	24,097	0.0095	0.0074	-22.0	0.0088	0.0080	-8.3
Other Services	56,040	0.0076	0.0052	-31.4	0.0084	0.0074	-12.0
Public Administration	337	0.0139	0.0090	-35.0	0.0142	0.0115	-19.1
Unclassifiable	338	0.0108	0.0079	-26.8	0.0067	0.0060	-10.5

Overall, the net effect of all these factors leads to a slightly higher change in total tax payments for smaller firms. Total tax payments increase by just over $100 million or 25.3 percent for the smaller firms (Table 14) compared with a 20.7 percent increase for the full analytic sample (Table 10). However, the average tax payments per employee rise just one dollar, to $32 (Table 14), compared with an increase of $31 for the full sample (Table 10).

The industry detail of the change in tax payments per employee when comparing Table 14 with Table 10 shows that 13 of the 21 industries in the summaries have no change in tax payments per employee when comparing smaller firms with the overall average. Restricting the sample to the smaller firms shows three industries with a $1 increase in tax payments per employee— wholesale trade, information, and the art, entertainment, and recreation industry.

Three industries have firms that see a $2 per employee tax increase compared with the average— transportation and warehouse, administration, support and waste management, and public administration. Finally, though very small in size, both the mining and utilities industries see an increase of $6 per worker when comparing the less than 50 employee firms with the overall average.[4]

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[4] The differences discussed here are largely attributed to rounding the values for tax payments per employee to the nearest whole dollar. The actual average tax payments per employee for this sample under the existing wage base is $31.34 (rounds to $31) and is $31.82 (rounds to $32) for the restricted sample and gives the difference of $1 when the actual increase is $0.48 per employee.

Table 14 **Industry Total and Per-employee Tax Payments for a Select Micro-Sample of Experience Rated Firms with less than 50 Employees Annually, 2016 - 2020 (*1)**

Industry	Firm-year observations	Tax payments ($million)		Percent change	Tax payments per employee		Change
		$8,500	25% of AAW		$8,500	25% of AAW	
Overall	406,921	400.9	502.4	25.3	94	125	32
Agric, Forestry, Fishing	2,068	1.7	2.1	28.4	80	108	28
Mining	208	0.7	0.9	31.3	250	338	88
Utilities	293	0.4	0.6	31.7	144	206	62
Construction	47,365	75.2	96.4	28.1	138	186	48
Manufacturing	9,728	17.6	22.0	25.0	127	167	40
Wholesale Trade	27,375	26.3	32.9	25.0	103	142	39
Retail Trade	36,397	26.2	32.2	22.8	67	87	20
Transportation, Warehousing	9,381	15.4	20.4	31.8	151	207	56
Information	5,777	5.9	7.4	25.1	103	141	37
Finance and Insurance	15,733	12.8	16.0	25.3	95	129	34
Real Estate, Rental, Leasing	14,983	14.2	17.6	24.0	93	125	32
Prof, Scientific, Technical	76,169	70.8	89.0	25.7	96	131	35
Company/Enterprise Mgmt	759	1.0	1.2	25.6	102	138	36
Admin, Support, Waste Mgmt	27,236	38.4	48.4	26.1	131	174	43
Educational Services	6,350	5.3	6.6	23.4	71	93	21
Health Care/Social Assistance	40,406	39.2	47.8	22.0	85	110	25
Art, Entertainment, Recreation	5,881	4.6	5.6	21.8	66	86	20
Accommodation, Food Services	24,097	17.3	20.8	20.1	48	60	12
Other Services	56,040	27.3	33.8	24.2	62	83	21
Public Administration	337	0.6	0.7	21.7	123	164	41
Unclassifiable	338	0.1	0.1	29.0	45	63	17

Note: (*1) Data for 2020 is available for the first two quarters.

Results by Employment Size Category

Table 15 presents summary information with the analytic sample aggregated by employment size category. As previously stated, 92 percent of the observations in the sample are associated with firms with less than 50 employees. With an average of eight employees annually, these firms represent 34.3 percent of total employment in the sample. In terms of employment in Maryland that is accounted for by large companies in this sub-sample of all experience rated firms, the impact is obvious. Two industries with the largest average per firm employment account for nearly 23 percent of total employment, with just 1,739 firm-year observations or just 0.3 percent of total observations in the sample of all Maryland employers.

Average earnings per employee are largest among the smallest of firms, but the pattern is difficult to explain since it is influenced by several factors—wage rates, hours, the need for full-time or part-time employees, turnover, and the organization type of the firm.[5] These factors impact the magnitude of changes in taxable earnings across categories when simulating the increase in the TWB from $8,500 to 25 percent of the average annual wage. Table 16 presents

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[5] We have no information about the legal structure of these firms, whether Incorporated, LLC, S-Corp, DBA, independent contractor (1099), etc. Firms with one employee, for example, show the highest earnings per employee but we do not know the extent to which this category could be comprised of businesses organized in such a way that the owner draws a salary as the sole employee of the company.

the summary. Increases are greatest in percentage terms for the very small firms but are quite compressed in a narrow range and follow the pattern in average earnings per employee across the employee-count firm size categories.

Table 15 **Summary for a Select Micro-Sample of Experience Rated Firms by Employment Size Category, 2016-2020 (*1)**

Firm Size	Firm-year observations	Share of total	Average annual firm employment	Category share of total employment	Average earnings per employee
Overall	442,326	1.000	21.5	1.000	40,032
less than 50	406,921	0.920	8.0	0.343	40,526
1	101,509	0.229	1.0	0.011	50,931
2	54,822	0.124	2.0	0.012	43,018
3	35,298	0.080	3.0	0.011	40,102
4	27,316	0.062	4.0	0.011	38,365
5 – 9	78,669	0.178	6.7	0.055	35,614
10 – 19	60,435	0.137	13.6	0.086	33,892
20 – 49	48,872	0.110	30.6	0.157	33,748
50 – 99	19,212	0.043	68.6	0.138	34,558
100 – 249	11,424	0.026	151.7	0.182	33,768
250 – 499	3,030	0.007	340.8	0.108	34,717
500 – 999	1,101	0.002	694.7	0.080	34,308
1,000 or more	638	0.001	2,209.1	0.148	36,545

Note: (*1) Data for 2020 is available for the first two quarters.

Table 16 **Earnings Information by Firm Size for a Select Micro-Sample of Experience Rated Firms, 2016 – 2020 (*1)**

Firm Size	Firm-year observations	Earnings ($ million, 2016 – 2020)			Percent change
		Total	Taxable by TWB		
			$8,500	25% of AAW	
Overall	442,326	331,152.7	61,016.8	94,060.6	54.2
less than 50	406,921	116,295.4	22,183.6	34,265.2	54.5
1	101,509	5,209.2	908.2	1,419.8	56.3
2	54,822	5,594.9	873.9	1,363.6	56.0
3	35,298	4,450.3	805.3	1,256.3	56.0
4	27,316	4,179.2	801.9	1,248.8	55.7
5 – 9	78,669	18,804.7	3,667.2	5,678.4	54.8
10 – 19	60,435	27,695.6	5,472.3	8,434.3	54.1
20 – 49	48,872	50,361.6	9,654.8	14,864.0	54.0
50 – 99	19,212	45,070.7	8,391.8	12,956.1	54.4
100 – 249	11,424	58,393.6	10,962.3	16,943.1	54.6
250 – 499	3,030	35,556.5	6,440.9	9,955.8	54.6
500 – 999	1,101	25,947.0	4,702.0	7,245.3	54.1
1,000 or more	638	49,889.5	8,336.1	12,695.2	52.3

Note: (*1) Data for 2020 is available for the first two quarters.

Tables 17 and 18 show how firm wage structure and UI usage patterns translate into changes in benefit ratios, tax rates and tax payments when the data are aggregated by firm size class. When organized this way, percentage changes in benefit ratios are quite compressed across size categories but tax rates show a progression of larger percentage reductions as firm size increases (Table 17). However, the latter is heavily influenced by the fact that smaller firms are much more likely to have no UI usage. Many small firms have a benefit ratio of zero which keeps their tax rate at 0.3 percent despite the increase in the taxable wage base. Among observations associated with firms having nine or fewer employees, 84 percent have a zero benefit-ratio. This contrasts with 36 percent having a zero benefit-ratio among firms with 10 or more employees.

Table 17   Benefit Ratios and Tax Rates for a Select Micro-Sample of Experience Rated Firms, 2016 – 2020

| Firm Size | Firm-year observations | Benefit ratio by TWB | | | Tax rates by TWB | | |
		$8,500	25% of AAW	Percent change	$8,500	25% of AAW	Percent change
Overall	442,326	0.0159	0.0109	-31.5	0.0135	0.0115	-14.8
less than 50	406,921	0.0158	0.0108	-31.5	0.0128	0.0111	-13.8
1	101,509	0.0110	0.0075	-32.2	0.0066	0.0063	-4.4
2	54,822	0.0138	0.0094	-32.0	0.0091	0.0085	-6.7
3	35,298	0.0167	0.0114	-31.7	0.0115	0.0105	-8.8
4	27,316	0.0172	0.0118	-31.5	0.0130	0.0115	-11.0
5 – 9	78,669	0.0181	0.0124	-31.4	0.0154	0.0131	-14.9
10 – 19	60,435	0.0190	0.0131	-31.1	0.0181	0.0148	-18.3
20 – 49	48,872	0.0189	0.0130	-31.1	0.0203	0.0161	-20.5
50 – 99	19,212	0.0183	0.0125	-31.3	0.0213	0.0167	-21.7
100 – 249	11,424	0.0167	0.0115	-31.2	0.0210	0.0163	-22.3
250 – 499	3,030	0.0146	0.0100	-30.9	0.0196	0.0152	-22.4
500 – 999	1,101	0.0131	0.0091	-30.6	0.0187	0.0145	-22.7
1,000 or more	638	0.0116	0.0081	-30.3	0.0171	0.0134	-21.6

Table 18 shows that the pattern just discussed translates into the largest percentage increases in total tax payments for the smallest of firms compared to the overall average. But the preferred measure—changes in tax payments per employee—provides some context. Firms with three employees in a year, for example, would see an increase of $36 per employee, on average, or a total UI tax cost increase of $108 (Table 18). However, this is on top of the $120,000 average annual total payroll for these firms (Table 15). The largest of firms with 1,000 or more employees would see a UI tax increase of $18 per employee, on average, or just under $40,000 annually per firm. This is in the context of an average annual payroll of $80.7 million per firm. While these costs are appreciable, considering them relative to total payroll provides a context to assess the burden relative to the regressivity associated with the low $8,500 base that has been in effect since 1993.

Table 18 **Total and Per-employee Tax Payments for a Select Micro-Sample of Experience Rated Firms, 2016 - 2020 (*1)**

Firm Size	Firm-year observations	Tax payments ($ million)			Tax payments per employee		
		$8,500	25% of AAW	Percent change	$8,500	25% of AAW	Change
Overall	442,326	1,181.5	1,425.8	20.7	97	128	31
less than 50	406,921	400.9	502.4	25.3	94	125	32
1	101,509	5.7	8.6	50.1	56	84	28
2	54,822	7.8	11.3	45.8	71	103	33
3	35,298	9.1	13.0	42.3	86	123	36
4	27,316	10.4	14.4	38.5	95	132	37
5 - 9	78,669	58.1	75.9	30.7	110	144	34
10 - 19	60,435	103.3	128.9	24.9	125	156	31
20 - 49	48,872	206.5	250.3	21.2	137	166	29
50 - 99	19,212	186.1	222.1	19.3	142	169	28
100 - 249	11,424	238.2	281.3	18.1	137	162	25
250 - 499	3,030	128.4	151.2	17.7	125	147	22
500 - 999	1,101	91.1	106.2	16.5	119	139	20
1,000 or more	638	136.7	162.6	18.9	103	122	18

Note: (*1) Data for 2020 is available for the first two quarters.

New Employers

Table 19 presents summary information to assess the impact on new employers from increasing the taxable wage base to 25 percent of the average annual wage. Since these firms are not yet experience rated, their tax rate would still be 2.6 percent. They would fully bear the cost of the increased wage base unless a policy decision were made to reduce the new employer tax rate.

Table 19 **Impact on New Firms of Indexing the TWB to 25 percent of the AAW assuming No Change in the 0.026 Tax Rate**

Calendar year (*1)	Number of new firms	Earnings ($ million)				Tax payments ($ mil) by TWB		
			Taxable by TWB					
		Total	$8,500	25% of AAW	Percent change	$8,500	25% of AAW	Percent change
2016	28,596	5,435.3	1,347.2	1,887.8	40.1	34.7	49.1	41.5
2017	28,855	5,474.1	1,321.6	1,894.8	43.4	33.1	49.3	48.9
2018	29,091	5,193.9	1,392.4	2,030.8	45.8	35.7	52.8	47.8
2019	28,909	5,048.1	1,330.0	1,963.3	47.6	33.9	51.0	50.6
2020	19,640	1,992.6	718.2	1,034.4	44.0	18.5	26.9	45.2
	135,091	23,144.0	6,109.4	8,811.0	44.2	155.9	229.1	46.9

Note: (*1) Data for 2020 available for the first two quarters.

Table 19 shows that over the 2016-2020 period, increasing the wage base to 25 percent of the AAW for new employers would result in their taxable payrolls rising 44.2 percent, which is somewhat less than the 54.2 percent increase, on average, for the sample of all experience rated firms (Table 1). However, with the tax rate fixed at 2.6 percent, total tax payments for new firms would rise 46.9 percent which is significantly more than the 20.7 percent increase in total tax payments for experience rated firms (Table 3). If new employers saw the same 20.7 percent

increase in total tax payments, the data in Table 19 suggests their tax rate would need to be reduced to 2.1 percent. This is calculated as follows:

1) Total tax payments over the period under the existing $8,500 wage base were $155.9 million and should be increased 20.7 percent to be comparable in percentage terms to the experience rated sample (155.9 million x 1.207).

2) Divide the result by total taxable wages over the period under the simulated wage base ($8,811 million).

2. ADDING AN EMPLOYEE UNEMPLOYMENT INSURANCE TAX

2.1. Introduction

According to the USDOL "Comparison of State Unemployment Insurance Laws" for 2020, Alaska, New Jersey and Pennsylvania apply a UI tax on employee earnings. In Pennsylvania, the tax is applied to gross covered wages but in Alaska and New Jersey it is applied to the same taxable wage base faced by employers. In New Jersey, the tax rate is 0.425 percent. In Alaska, the tax rate varies from a minimum of 0.5 percent to a maximum of 1.0 percent. The rate is set at 27 percent of Alaska's average benefit cost rate subject to the limits just stated. The benefit cost rate is calculated using the total UI benefits paid over the past three years (excluding benefits assessed to reimbursable employers) as a percentage of taxable wages.[6] The tax rates faced by wage earners in Pennsylvania range from 0 to 0.08 percent of total gross wages depending on the trust balance.

The following simulations apply a 0.3 percent (0.003) employee tax rate to taxable earnings using the existing $8,500 wage base and a simulated taxable wage base of 25 percent of the average annual wage. Obviously, the revenue implications of this policy change would be substantial as the following computations show. But another consideration that has benefit cost implications is the UI recipiency rate that has been in steady decline in years before the pandemic. The recipiency rate is the percentage of unemployed workers who receive unemployment insurance benefits. The decline in recipiency could be due to behavioral factors. Vroman (2009, p. 50) reports evidence from the 2005 Currently Population Survey supplement that 17.8 percent of UI non-filers report a negative attitude about UI, expected hassle with application and benefit receipt, lack of knowledge about how to apply, or logistical barriers to application. These factors could contribute to low UI application rates among unemployed workers. Having a small tax applied to individual employee earnings, with current and year to date withholdings reported on every pay stub, could help workers understand that UI is social insurance not welfare since they have paid insurance premiums while working.

2.2. Analysis

Table 20 presents a summary of total and taxable earnings in Maryland over the population of all quarterly wage records for 2013 through the second quarter of 2020. Ignoring 2020 since only two quarters of data are available, the number of wage earners in Maryland increased nearly six percent from 2.9 million in 2013 to 3.1 million in 2019 while total earnings expanded 22.8 percent over the same period from $125.3 billion in 2013 to $153.9 billion in 2019.[7] Taxable earnings increased at a rate half of the percentage growth in earnings, growing 11.5 percent between 2013 through 2019, from $24.0 billion in 2013 to $26.8 billion in 2019. Growth in UI taxable wages over this period was restrained by the fixed $8,500 taxable wage base which limited growth to employment gains, workplace turnover, and increases in multiple concurrent

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[6] See https://live.laborstats.alaska.gov/uiprog/Tax_Rate_Calc.pdf for the calculation used for 2021.

[7] The number of wage earners in a year is considerably more than the employment number reported for the same year because of individuals moving in and out of employment, unemployment, and the labor force. Furthermore, annual employment numbers that are reported are an average of monthly values.

job holding. Given the employer's UI tax rate, for full-time workers, the UI tax is essentially a fixed head tax on employees.

The magnitude of the restriction is measured by the values in the right most column of Table 20 which summarizes what the taxable wage base would have been had it been indexed to 25 percent of the average annual wage. From 2013 to 2019, the average weekly wage grew 16.3 percent which would have meant the taxable wage base rising from $12,942 to $15,046.[8] Alternatively, had the $8,500 wage base been indexed to the growth in average wage rates over this period, it would have been about $9,900 in 2019.

Table 20 Maryland Total and Taxable Earnings Summary

		Earnings ($ million)			TWB value
			Taxable earnings by TWB		25% of
	Number of	Total		25% of	
Year (*1)	wage earners	Earnings	$8,500	AAW	AAW
2013	2,932,394	125,280	23,994	33,750	12,942
2014	2,951,003	128,034	24,473	34,968	13,233
2015	2,999,985	134,493	25,158	36,776	13,633
2016	3,040,364	138,565	25,539	37,901	13,874
2017	3,064,076	143,846	25,998	39,435	14,237
2018	3,084,685	148,817	26,348	40,845	14,612
2019	3,101,696	153,949	26,755	42,512	15,046
2020	2,725,063	74,992	20,625	32,496	15,268

Table 21 presents a similar analysis over the same interval from the point-of-view of the roughly 3.0 million annual wage earners in Maryland. Earnings per wage earner averaged $42,723 in 2013 and rose with the average weekly wage by 16.2 percent to $49,634 in 2019. If individual wage earners were subject to UI taxation, the right most two columns in Table 21 show the amount that would be subject to taxation under the current $8,500 wage base and the simulated amount under a TWB set at 25 percent of the average annual wage.

The taxable earnings values in Table 21 do not adjust for multiple job holding in a year. The averages are calculated by applying the wage base to all jobs wage earners hold in a year, ignoring whether multiple jobs are held concurrently or result from leaving one employer to join another. In subsequent analysis, data will be presented in two ways—first, by applying the wage base amount to all jobs and second, by restricting the total amount subject to taxation to the exact wage base amount regardless of the number of jobs held in a year. That is, taxes on earnings at all jobs or taxes on the annual earnings of the workers. We refer to these as before and after-tax

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[8] Indexing the taxable wage base to 25 percent of the average annual wage is what we have chosen to simulate. The amount of growth forgone by having the current, fixed, $8,500 wage base is still the amount of growth in the average weekly wage. That forgone percentage is still 16.3 percent (2013-2019) regardless of the percentage used for indexation.

refund—since tax refunds could be issued to multiple job holders with total earnings higher than the TWB on total earnings across all employers.[9]

Table 21   **Maryland Annual Earnings per Wage Earner**

| Year (*1) | Total earnings per wage earner | | | Taxable per earner by TWB | |
	Average	Standard deviation	Maximum	$8,500 (*2)	25% of AAW
2013	42,723	83,050	25,239,464	8,182	11,509
2014	43,387	87,933	17,576,280	8,293	11,849
2015	44,831	89,308	21,627,536	8,386	12,259
2016	45,575	92,381	23,743,764	8,400	12,466
2017	46,946	100,080	20,785,148	8,485	12,870
2018	48,244	97,148	19,817,544	8,541	13,241
2019	49,634	96,184	19,390,662	8,626	13,706
2020	27,520	54,472	10,498,961	7,569	11,925

Note: (*1) Data for 2020 available for the first two quarters. (*2) Not adjusted for multiple job holders.

Table 22 presents UI tax revenue amounts under the existing and simulated taxable wage base that would be generated if wage earners in Maryland were subject to a 0.3 percent (0.003) tax rate. This rate was chosen because it is the minimum tax rate under schedule A that was applied to the sample of experience rated employers discussed in section one of this report. Over the 7.5 years of available data (2013-2020Q2), even at the fixed $8,500 taxable wage base, just under $600 million potentially could have been raised--$900 million under the indexed taxable wage base scenario.

The preceding assumes all jobs were subject to the taxation. Limiting individual wage earner tax liability to the 0.003 tax rate times the wage base regardless of the number of jobs still would have raised over $500 million under the existing TWB and $800 million under the indexed TWB scenario. Over the same period, the employer tax file indicates that all Maryland employers paid just over $4 billion in UI taxes. If excess employee tax contributions were refunded under a TWB indexed to 25 percent of average wages, the revenue estimate is $523.6 million which is 12.9 percent of total employer tax contributions.

The last two columns in Table 22 show how many wage earners would receive a UI tax refund depending on the process used to implement and collect this tax. Among all wage earners, 17.8 percent would receive some portion of their UI tax withholdings as a refund if the taxable wage base remains at $8,500. The number of persons who receive a refund would fall somewhat if the wage base were indexed to 25 percent of the average annual wage. According to the quarterly earnings records of all Maryland wage earners, 15.1 percent these workers would be due a refund under the indexed scenario. These averages are biased downward slightly due to the incomplete data for 2020. The decline from 17.8 to 15.1 percent is due to wage earners who held multiple jobs whose total income across all jobs falls between the existing $8,500 TWB and the TWB set by 25 percent of the average annual wage.

In this report, we only address revenue amounts that could be generated from applying a UI tax to individual workers. We do not address the administrative issues related to how and when to collect the tax liability and potentially return overpaid amounts to wage earners.

Table 22   **Summary of Total Tax Revenue by TWB Assuming 0.003 Tax Rate on Individual Wage Earners**

| Year (*1) | Tax revenue ($ million) by Taxable Wage Base | | | | Employer tax payments ($ million) | Share of wage earners with refund | |
| | Before tax refund | | After tax refund | | | | |
	($8,500)	25% of AAW	($8,500)	25% of AAW		($8,500)	25% of AAW
2013	71.98	101.25	63.65	91.89	741.44	0.170	0.148
2014	73.42	104.90	64.21	94.48	537.42	0.179	0.155
2015	75.47	110.33	65.61	99.13	612.21	0.189	0.162
2016	76.62	113.70	66.67	102.40	526.83	0.189	0.162
2017	77.99	118.31	67.66	106.46	486.00	0.192	0.164
2018	79.04	122.54	68.40	110.24	446.40	0.195	0.166
2019	80.27	127.53	69.10	114.44	419.59	0.200	0.169
2020	61.88	97.49	58.28	93.97	289.48	0.101	0.074
	596.67	896.05	523.57	813.01	4,059.36	0.178	0.151

Note: (*1) Data for 2020 available for the first two quarters.

Tables 23 and 24 summarize the revenue amounts just discussed from the viewpoint of the individual wage earner. Under the current $8,500 TWB, the average wage earner would pay between $25 and $26 per year in UI tax liability before any refund. This drops to roughly $22 on average after correcting for the impact of multiple job holding. Indeed, the maximum UI tax liability under the current TWB for a wage earner after refund would be just $25.50 per year (0.003 x $8,500).[10]

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[10] The extreme maximum values shown in Table 23 if all jobs were subject to individual UI tax liability (before refund) are due to a handful of outliers in the data. There are just under 23 million wage-earner-year observations in the wage data. Of those, five observations have 1,000 or more different employers. Therefore, the maximum tax payment values prior to refund are suspect because of these few records.

Table 23 Summary of Average Tax Payments per Wage Earner in Maryland for the $8,500 Taxable Wage Base

Year (*1)	Before refund (TWB = $8,500)			After refund (TWB = $8,500)		
	Average per wage earner	Standard deviation	Maximum	Average per wage earner	Standard deviation	Maximum
2013	24.55	13.91	9,958.71	21.71	7.65	25.50
2014	24.88	14.74	12,046.32	21.76	7.59	25.50
2015	25.16	16.82	17,946.02	21.87	7.48	25.50
2016	25.20	19.66	25,753.14	21.93	7.43	25.50
2017	25.45	19.10	24,980.56	22.08	7.28	25.50
2018	25.62	13.04	5,087.89	22.17	7.21	25.50
2019	25.88	12.86	2,100.44	22.28	7.11	25.50
2020	22.71	10.00	537.43	21.39	7.72	25.50

Table 24 presents the same tax liability per wage earner computations had the applicable wage base been 25 percent of the average annual wage. Obviously, the liability per wage earner is greater due to the higher wage base and that liability grows each year due to linking that wage base to growth in the average wage. Using the most recent completed year (2019), each wage earner would have paid $41 on average in UI tax liability before any refund. After refund in 2019, workers would have averaged tax payments of $37 each and the maximum value for which any person could be liable would be just over $45.

Table 24 Summary of Average Tax Payments per Wage Earner in Maryland for the 50 percent of Average Annual Wage Taxable Wage Base

Year (*1)	Before refund (TWB = 25% of AAW)			After refund (TWB = 25% of AAW)		
	Average per wage earner	Standard deviation	Maximum	Average per wage earner	Standard deviation	Maximum
2013	34.53	19.62	11,639.05	31.33	12.85	38.83
2014	35.55	20.96	14,565.64	32.02	13.12	39.70
2015	36.78	23.69	22,009.08	33.04	13.46	40.90
2016	37.40	27.58	33,189.42	33.68	13.68	41.62
2017	38.61	27.65	33,301.52	34.75	13.90	42.71
2018	39.72	20.86	6,716.45	35.74	14.22	43.84
2019	41.12	21.24	2,729.89	36.90	14.58	45.14
2020	35.77	18.07	722.39	34.48	15.86	45.80

Much of the preceding discussion has focused on persons holding multiple jobs in a year and its implications for the potential tax policy of assessing a tax on individual wage earners. Table 25 summarizes the extent of the issue. Quite consistent throughout the data interval (ignoring 2020 due to it being an incomplete year in the data), 24 percent of wage earners hold more than one job in a year in Maryland. Again, we cannot distinguish in the data whether this is due to concurrent part-time job holding or due to job changes (or a mix of the two elements).

Table 25 also shows that the share of these earners who would receive a refund from their withholdings made by multiple employers if all jobs were taxed during the year would be quite

high even under the higher taxable wage base. The data show in 2019 nearly 70 percent of multiple job holders would receive a tax refund under the simulated TWB indexed to 25 percent of average earnings in the state.

Table 25   Summary of Multiple Job Holders in Maryland

| Year (*1) | Number of wage earners | Multiple jobs in year | Share | Average earnings | Share with tax refund by TWB | |
					$8,500	25% of AAW
2013	2,932,394	643,449	0.219	35,050	0.773	0.673
2014	2,951,003	678,761	0.230	35,453	0.780	0.675
2015	2,999,985	718,028	0.239	36,634	0.790	0.678
2016	3,040,364	726,959	0.239	36,457	0.792	0.677
2017	3,064,076	734,793	0.240	37,831	0.801	0.682
2018	3,084,685	741,212	0.240	38,404	0.810	0.689
2019	3,101,696	755,923	0.244	39,609	0.819	0.693
2020	2,725,063	390,025	0.143	22,808	0.708	0.515

Note: (*1) Data for 2020 available for the first two quarters.

Wage Earners at Small Firms

Tables 26 through 31 present the same analysis just discussed in Tables 20 through 25 with the only difference being that the sample of wage earners is restricted to those who only worked for firms with less than 50 employees. If a wage earner held multiple jobs in a year that included one or more employers with less than 50 employees as well as one or more employers with 50 or more, that observation is excluded from this analysis. Following is a summary of this restricted sample (Tables 26 through 31) compared with the full sample (Tables 20 through 25):

1) Between 2013 and 2020Q2, individuals who worked in the year solely for employers with less than 50 employees were 21.3 percent of all Maryland wage earners and their earnings comprised 21.0 percent of total earnings over the period (Tables 20 and 26). The near equality of these two percentages means their earnings per person differs little from the overall mean. Ignoring the incomplete year of 2020, earnings per year in the full sample averaged $45,906 per wage earner. For the restricted sample (all employers in year having less than 50 employees), average annual earnings were $45,968 (Tables 21 and 27).

2) When examining taxable earnings in the scenario where the wage base applies to all jobs held during the year, that is before any refund, taxable earnings were somewhat lower for the restricted sample. Using the complete years 2013 through 2019, taxable earnings using the $8,500 TWB for persons working for smaller employers averaged $7,749 per year compared with $8,416 for the full sample which is 7.9 percent lower. Persons in the restricted small employer sample averaged $11,777 in annual taxable earnings using the simulated 25 percent of the average annual wage as the TWB, 6.2 percent lower than the $12,557 average for the full sample of all employers (Tables 21 and 27).

Remembering that these averages are before any refund related to multiple job holding, the reason for the difference between small and all employers given the near equality in

average earnings is that wage earners in the sample restricted to smaller employers were much less likely to have multiple employers in the year. For 2013 through 2019 for the overall sample, 23.6 percent of wage earners had two or more jobs in a year. For the restricted sample, this average was just 8.6 percent (Tables 25 and 31).

3) Given the similar average earnings between small and all employers discussed in item 1) above, and differences in multiple job holding between the full and restricted samples, UI tax payments per wage earner prior to any refund are lower among employees of small firms than the overall average but are nearly identical after refunding tax payments above the limit of the tax rate times the wage base. Using the simulated taxable wage base (25 percent of AAW), prior to refund, the average wage earner in 2019 would have withholdings of $41.12 compared with the $38.48 average for persons employed at smaller firms. After refund, the 2019 averages are virtually identical at $36.90 and $36.74 for all wage earners and those from smaller firms, respectively (Tables 24 and 30).

4) Although persons who were employed solely at firms with less than 50 employees were much less likely to have multiple jobs (8.6 percent compared with 23.6 percent for the overall sample), the wage earners who worked for smaller firms and had multiple jobs had considerably higher average total annual earnings. In 2019, persons who held multiple jobs in that year but worked only for smaller firms averaged $48,705 in earnings compared with $39,609 for the sample of all employers. As a result, even though fewer earners worked for multiple employers in the restricted sample, they would have been much more likely to have been refunded some of their UI tax withholdings. Across the existing ($8,500) and simulated (25 percent of AAW) taxable wage base values, 86.8 and 75.6 percent of the multiple job holders in 2019 in the restricted sample would have received a refund, respectively. For the overall sample, the rates are 81.9 percent for the existing wage base and 69.3 percent for the simulated value (Tables 25 and 31).

Table 26   **Maryland Total and Taxable Earnings Summary for Employees of Firms with less than 50 Employees Annually (*1)**

| Year (*2) | Number of wage earners | Earnings ($ million) | | | TWB value 25% of AAW |
| | | Total earnings | Taxable earnings by TWB | | |
			$8,500	25% of AAW	
2013	630,481	26,499	4,803	6,832	12,942
2014	631,230	27,234	4,832	7,004	13,233
2015	632,806	28,142	4,874	7,244	13,633
2016	630,215	29,044	4,886	7,391	13,874
2017	632,810	30,181	4,937	7,648	14,237
2018	631,952	30,630	4,951	7,848	14,612
2019	627,622	31,307	4,944	8,050	15,046
2020	673,758	16,965	4,799	7,500	15,268

Note: (*1) The sample here is restricted to persons that only worked for firm(s) with less than 50 employees in the given year. (*2) Data for 2020 available for the first two quarters.

Table 27   **Maryland Annual Earnings per Wage Earner among Employees of Firms with less than 50 Employees Annually (*1)**

| Year (*2) | Total earnings per wage earner | | | Taxable per earner by TWB | |
	Average	Standard deviation	Maximum	$8,500	25% of AAW
2013	42,030	75,951	10,352,500	7,618	10,836
2014	43,144	84,095	17,576,280	7,655	11,095
2015	44,472	82,443	13,275,275	7,702	11,447
2016	46,086	88,774	23,743,764	7,752	11,729
2017	47,693	95,516	14,707,969	7,802	12,086
2018	48,469	90,115	12,995,135	7,834	12,418
2019	49,882	88,711	19,390,662	7,877	12,826
2020	25,180	46,127	6,634,441	7,123	11,132

Note: (*1) The sample here is restricted to persons that only worked for firm(s) with less than 50 employees in the given year. (*2) Data for 2020 available for the first two quarters.

Table 28   **Summary of Total Tax Revenue by TWB for Persons Employed at Firms with less than 50 Employees and Assuming 0.003 Percent Tax Rate on Individual Wage Earners (*1)**

| | Tax revenue ($ million) by Taxable Wage Base | | | | Employer tax payments ($ million, all | Share of earners with refund | |
| | Before tax refund | | After tax refund | | | | |
Year (*2)	($8,500)	25% of AAW	($8,500)	25% of AAW	employers)	($8,500)	25% of AAW
2013	14.41	20.50	13.66	19.63	741.44	0.069	0.061
2014	14.50	21.01	13.72	20.10	537.42	0.071	0.063
2015	14.62	21.73	13.81	20.77	612.21	0.073	0.063
2016	14.66	22.17	13.84	21.19	526.83	0.072	0.063
2017	14.81	22.94	13.97	21.91	486.00	0.074	0.065
2018	14.85	23.54	14.00	22.48	446.40	0.074	0.065
2019	14.83	24.15	13.97	23.06	419.59	0.074	0.064
2020	14.40	22.50	14.00	22.09	289.48	0.041	0.029
	117.08	178.55	110.98	171.24	4,059.36	0.068	0.059

Note: (*1) The sample here is restricted to persons that only worked for firm(s) with less than 50 employees in the given year. (*2) Data for 2020 available for the first two quarters.

30

Table 29   **Summary of Average Tax Payments per Wage Earner in Maryland for Persons Employed at Firms with less than 50 Employees and a $8,500 Taxable Wage Base (*1)**

Year (*2)	Before refund (TWB = $8,500)			After refund (TWB = $8,500)		
	Average per wage earner	Standard deviation	Maximum	Average per wage earner	Standard deviation	Maximum
2013	22.85	9.76	332.10	21.67	7.58	25.50
2014	22.96	9.79	346.80	21.74	7.52	25.50
2015	23.11	9.83	352.80	21.83	7.44	25.50
2016	23.26	9.75	312.14	21.97	7.33	25.50
2017	23.41	9.72	378.00	22.08	7.23	25.50
2018	23.50	9.70	300.75	22.15	7.17	25.50
2019	23.63	9.67	323.40	22.27	7.07	25.50
2020	21.37	9.19	285.72	20.77	8.02	25.50

Note: (*1) The sample here is restricted to persons that only worked for firm(s) with less than 50 employees in the given year. (*2) Data for 2020 available for the first two quarters.

Table 30   **Summary of Average Tax Payments per Wage Earner in Maryland for Persons Employed at Firms with less than 50 Employees and the Taxable Wage Base of 25 percent of the Average Annual Wage (*1)**

Year (*2)	Before refund (TWB = 25% of AAW)			After tax refund (TWB = 25% of AAW)		
	Average per wage earner	Standard deviation	Maximum	Average per wage earner	Standard deviation	Maximum
2013	32.51	15.27	492.01	31.13	12.81	38.83
2014	33.29	15.65	512.89	31.85	13.09	39.70
2015	34.34	16.20	531.19	32.82	13.46	40.90
2016	35.19	16.37	459.86	33.63	13.58	41.62
2017	36.26	16.78	569.20	34.63	13.87	42.71
2018	37.25	17.19	445.30	35.58	14.22	43.84
2019	38.48	17.67	446.30	36.74	14.57	45.14
2020	33.40	17.50	380.56	32.79	16.32	45.80

Note: (*1) The sample here is restricted to persons that only worked for firm(s) with less than 50 employees in the given year. (*2) Data for 2020 available for the first two quarters

Table 31   Summary of Multiple Job Holders in Maryland among Wage Earners Employed by Firms with less than 50 Employees Annually (*1)

Year (*2)	Number of wage earners	Multiple jobs in year	Share of all wage earners	Average annual earnings	Share with tax refund by TWB	
					$8,500	25% of AAW
2013	630,481	52,649	0.084	39,907	0.824	0.728
2014	631,230	54,149	0.086	40,749	0.828	0.729
2015	632,806	55,133	0.087	42,454	0.833	0.728
2016	630,215	54,198	0.086	44,298	0.841	0.736
2017	632,810	54,833	0.087	45,531	0.854	0.747
2018	631,952	54,776	0.087	46,504	0.858	0.749
2019	627,622	53,494	0.085	48,705	0.868	0.756
2020	673,758	39,054	0.058	24,343	0.716	0.506

Note: (*1) The sample here is restricted to persons that only worked for firm(s) with less than 50 employees in the given year. (*2) Data for 2020 available for the first two quarters

3. SIMULATING EFFECTS OF 2020 CHANGES IN UI FINANCING PROVISIONS

3.1. A New Baseline for Simulations

The UNIS-X model for Maryland developed by the U.S. Department of Labor allows users to simulate state policy modifications related to UI financing and benefits. However, predicted values from those policy changes such as annual revenue, benefit payments, and trust fund balance are always measured relative to a baseline forecast that combines economic assumptions with existing program parameters. Table 32 presents baseline results from the model. A complete discussion of the assumptions that underly the baseline simulation can be found in Appendix A.

| Table 32 | **Maryland Baseline Simulation that Includes Schedule F for 2021 and Schedule C for 2022-2023 with a Non-Charging Adjustments, a $1 Billion Infusion in 2021Q3 and 2021Q4 and No Changes to the Taxable Wage Base or Benefit Levels** |

| | Values in Millions of Dollars | | | | | |
Year	Benefits paid	UI tax revenue	Interest	Year-end trust balance, *1	AHCM	Tax schedule
2020	1,794	444	17	84	0.04	A
2021	459	732	10	366	1.12	F
2022	448	461	28	1,399	1.12	C
2023	449	466	29	1,459	1.12	C
2024	447	386	29	1,424	1.06	A
2025	448	392	29	1,402	1.00	A
2026	446	400	28	1,382	0.95	A
2027	448	409	28	1,369	0.91	A
2028	445	416	28	1,365	0.88	A
2029	446	425	28	1,370	0.85	A
2030	444	435	28	1,386	0.83	A
2031	440	445	28	1,417	0.82	A
2032	439	454	29	1,459	0.81	A

Note: (*1) In the UNIS-X model using the option to add additional historical data, the third quarter of 2021 tax contributions were increased $1 billion to reflect the cash infusion. This infusion is not reflected in the model's beginning and ending balances until 2022.

Two important facts imposed for this forecast are that UI tax schedule F was in effect for 2021 though employers were not charged for pandemic related benefits paid in 2020—unless considering the 2020 period would yield a lower benefit ratio for the employer. To capture the non-charging for 2020, a modification was made to the average tax rate used by the model for schedule F in 2021 to meet the expected revenue target. Results of the macro simulation also reflect the imposition of UI tax schedule C in effect for 2022 and 2023. For the macro simulation, the assumption of non-charging for 2020 UI benefit payments was extended to 2022 and 2023. The impacts of non-charging will be discussed in the next section. Also, the baseline simulation includes a cash infusion into the Maryland UI trust account of $1 billion which is expected to be fully made by the end of 2021. Sources for the infusion are Maryland grants under the Coronavirus Aid, Relief, and Economic Security (CARES) Act and the American Rescue Plan Act. The baseline forecast assumes the Maryland UI taxable wage base of $8,500,

maximum UI weekly benefits of $430 which includes the allowance for dependents and a tax rate for new employers of 2.6 percent.

There are two important things to take from the baseline forecast presented in Table 32, provided the economic and non-charging assumptions built into the forecast are appropriate. First, the desired goal of having an average, high-cost multiple (AHCM) of 1.0 is expected to be met at year-end 2021 because of the infusion of $1 billion into the Maryland trust account.[11] Second, the current Maryland UI financing system is insufficient to achieve and maintain an AHCM equal to or greater than1.0 over time. With the cash infusion and staying on tax schedule C in 2022 and 2023, despite non-charging for 2020 pandemic benefits, Maryland is expected to achieve an AHCM of 1.12 as the trust balance is simulated to reach $1.46 billion by the end of 2023. However, after that, schedule A would be triggered and with the current $8,500 taxable wage base in effect, expected annual revenue falls short of expected annual benefits. This leads to a gradual decline in reserves and the AHCM. This suggests the current Maryland UI financing system will not provide sufficient forward funding. The revenue shortfall in this scenario is mainly due to the low taxable wage base of $8,500 that has been in effect since 1993.

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[11] The average, high-cost multiple is based on the current trust balance divided by an estimate of average benefit costs that would be incurred over the course of a year assuming the average cost rate of the three most expensive years that have occurred in the last 20 years. A value of 1.0 means the balance in the trust fund is sufficient to pay benefits at that high rate for one year. An AHCM of 1.0 is the standard set by the USDOL to qualify for short-term zero interest borrowing after 2018. Maryland law (8-612 (f)) prevents reduction in the tax schedule if the AHCM is not above 1.0.

3.2 Non-Charging for 2020 Benefit Payments

Schedule F has been in effect during calendar year 2021 but the benefit ratio used to determine the tax rate for each firm reflects non-charging for pandemic related UI benefits. Under normal circumstances for experience rated firms, the benefit ratio that would determine the tax rate applied from schedule F tax rate for calendar year 2021 would be calculated using the sum of benefits paid by the firm during fiscal years ending June 30, 2018, 2019 and 2020 divided by the sum of its taxable wages over the same period. For 2021 that benefit ratio would be used unless the benefit ratio calculated using data from fiscal years ending June 30, 2017, 2018 and 2019 (i.e., non-charging for FY 2020) yielded a lower benefit ratio. This latter ratio determined the firm's tax rate for calendar year 2020 when schedule A was in effect. Therefore, most firms would have their tax rates shifted upwards from their assigned tax rate in schedule A to a higher rate schedule F for calendar year 2021. Therefore, even with non-charging for FY 2020 nearly all firms have a higher UI tax rate in 2021 compared with 2020 because schedule F has higher tax rates for every benefit ratio than does tax schedule A. Figure 1 shows that UI tax schedule F has a higher tax rate for every benefit ratio than tax schedule A by 0.025 (2.5 percent) (first step shifts up 0.019 or 1.9 percent).

Figure 1 Maryland UI Tax Schedules A and F

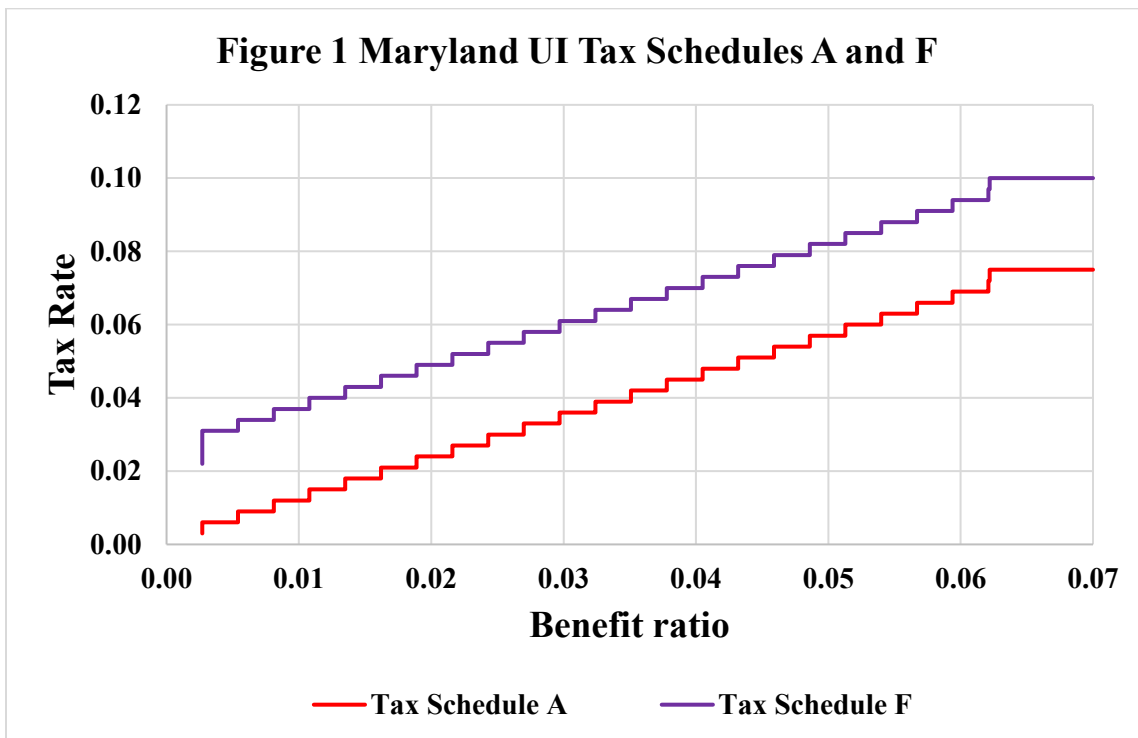Table 33 presents a summary of the estimate of the impact of this shift in tax rates from schedule A to schedule F for calendar year 2021. The UNIS-X model uses average tax rates for each schedule that could be in effect (A through F). The average tax rate for schedule F used by the model is 5.13 percent and is based on ETA 204 data for fiscal years 2009 through 2011 when schedule F was in effect.

The published ETA 204 average UI tax rate in each year in Table 33 is a weighted mean of firm tax rates that are in each row or "experience factor" in the ETA 204 distribution. The weights are the taxable earnings associated with the firms in each row.[12] Therefore, one method to estimate the effect of shift in tax rates due to non-charging for 2020 benefits would be to reweight the schedule F tax rates from 2009 through 2011 by the pre-pandemic, taxable earnings distribution that was applicable in 2017 through 2019.[13] On average, this suggests the average tax rate would be reduced 13.1 percent due to non-charging. For the individual years, the reduction is -6.8 percent for 2009, -17.9 percent for 2010, and -13.9 for the 2011 rate (Table 33).

Table 33   Summary of Schedule F Tax Rates from 2009-2011 and the Estimated Schedule F Tax Rates for 2021 Assuming Non-Charging

	Schedule F tax rate years			
	2009	2010	2011	Average
Taxable wage weighted data				
ETA 204 average tax rate	4.79	5.43	5.17	5.13
Re-weight by 2017-2019 taxable wages (*1)	4.46	4.46	4.45	4.46
Percentage change from non-charging	-6.8	-17.9	-13.9	-13.1
Number of accounts weighted data				
ETA 204 average tax rate (*2)	4.12	4.55	4.70	4.46
Re-weight by 2017-19 number of accounts (*3)	3.66	3.64	3.63	3.64
Percentage change from non-charging	-11.3	-19.9	-22.8	-18.3
Effective schedule F non-charging tax rates (*4)	4.25	4.35	3.99	4.19

Note: (*1) This takes the tax rate distribution from the ETA 204 data for the fiscal year (2009-2011) and re-weights by the distribution of taxable wages that was applicable pre-pandemic. (*2) These are not published average rates. These are the rates that result from re-weighting the tax rate distribution in the year (2009-2011) by the distribution of the number of accounts in that year (2009-2011). (*3) This takes the tax rate distribution from the ETA 204 data for the fiscal years (2009-2011) and reweights by the distribution of the number of firms that was applicable pre-pandemic. (*4) Since non-charging for 2020 involves firms staying in the same tax schedule row that they were in prior to the pandemic, the percentage change estimated by re-weighting by the distribution of the number of accounts provides the best impact estimate of freezing firms in their pre-pandemic, tax schedule row. However, the best estimate of the average tax rate applicable is based on the actual, published ETA 204 tax rates which are weighted by taxable wages. Therefore, this effective schedule F tax rate after non-charging is the result of applying the percentage change derived from rates weighted by the number of accounts to the actual ETA 204 rates which are taxable wage weighted. On average, this is 5.13 percent reduced 18.3 precent which yields the average estimate of 4.19 percent. However, given eight months of actual revenue data for 2021 and estimates for the remainder of 2021 provided to Upjohn from Maryland UI, the UNIS-X model baseline uses a 2021 tax rate of 2.88 percent to hit the revenue estimate.

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[12] The experience factor rows in the ETA 204 for Maryland represent firm benefit ratios. They are arranged from zero to 15.0 in one-tenth of a percentage point increments with 15.0 meaning a benefit ratio of 15 percent of taxable earnings or greater. For each row, the report contains the average tax rate of firms or accounts in that row, the number of accounts, and total taxable earnings of the firms in that row. In Table 33, we also weight by the number of experience rated accounts. This involves calculating the share of all accounts in a row and multiplying that share with the average tax rate associated with that row. That result is then summed across all rows to derive the overall, reweighted tax rate.

[13] Using three years of data to reweight was chosen to be consistent with the benefit ratio calculation which is based on three years of information.

Non-charging for pandemic related UI benefits means that most firms move upwards from their position in schedule A (applicable in 2020) to the benefit ratio range in schedule F (applicable in 2021). Given this, it is reasonable to reweight the 2009 through 2011, ETA 204, schedule F, tax rates by the distribution of the number of experience rated accounts that were applicable in 2017 through 2019. Assuming most of these accounts survived, this would yield a distribution that more closely represents the shift move that occurred. Therefore, first the ETA 204 tax rates for 2009, 2010 and 2011 were re-calculated using the distribution of experience rated accounts that was applicable in each of those years as weights. Next, the same tax rate distribution from those years was reweighted by the distribution of experience rated accounts from 2017-2019 and the percentage difference between the two rates was calculated.

Table 33 shows that maintaining the same benefit ratio from year to year reduced the schedule F average tax rates by 18.3 percent. The biggest estimated impact is a -22.8 percent decline when re-weighting the 2011 tax rate by the account distribution from 2017-2019. Given this methodology only approximates the shift between tax schedules and that some firms who may have avoided 2020 pandemic-related UI benefit charges could have their positions improve, we view the largest percentage reduction (-22.8 percent) as a more likely estimate of the revenue reduction due to non-charging.

Our estimated revenue reduction suggests that the 2021 schedule F tax rate to use in the UNIS-X model would be 3.99 percent (see last row in Table 33). This was calculated by taking the ETA 204 tax rate from 2011 of 5.17 percent and reducing it by 22.8 percent which is the estimated revenue loss from non-charging. However, this must be tempered by the fact that at the time the baseline UNIS-X model forecast for Maryland was generated, UI tax revenue through August 2021 was known. Using additional revenue estimates provided to Upjohn by the Maryland UI benefit financing office for the remainder of the year, the average schedule F tax rate required to force the UNIS-X model to hit that revenue target is 2.88 percent. This is a reduction of nearly 44 percent from the 5.13 percent average schedule F tax rate that is usually used by Upjohn in the UNIS-X model for Maryland simulations.

3.3 Imposing UI Tax Schedule C in 2022 and 2023

Maryland will be using tax schedule C for calendar years 2022 and 2023 and non-charging for 2020 pandemic-related UI benefits will also apply. To estimate the impact of non-charging on schedule C, we follow the same methodology just discussed but apply that method to 2013 and 2014 (two years when tax schedule C was in effect) which were used to develop an average schedule C tax rate for the UNIS-X model. Table 34 presents the summary and immediately after Table 34 is a discussion of the results.

Table 34   Summary of Tax Rates from 2013-2014 when Schedule C was in Effect and the Estimated Schedule C Tax Rates after Adjusting for Non-Charging of Benefits

	Schedule C tax rate years		
	2013	2014	Average
Taxable wage weighted data			
ETA 204 average tax rate	2.78	3.07	2.93
Re-weight by 2017-2019 taxable wages (*1)	2.25	2.60	2.42
Percentage change from non-charging	-19.1	-15.4	-17.2
Number of accounts weighted data			
ETA 204 average tax rate (*2)	2.10	2.45	2.28
Re-weight by 2017-19 number of accounts (*3)	1.59	1.96	1.78
Percentage change from non-charging	-24.2	-20.2	-22.0
Effective schedule C non-charging tax rates (*4)	2.11	2.45	2.28

Note: (*1) This takes the tax rate distribution from the ETA 204 data for the fiscal years (2013-2014) and re-weights by the distribution of taxable wages that was applicable prior to the pandemic. (*2) These are not published average tax rates. These are the rates that result from re-weighting the tax rate distribution in the year (2013-2014) by the distribution of the number of accounts that was applicable pre-pandemic. (*3) This takes the tax rate distribution from the ETA 204 data for the fiscal years (2013-2014) and re-weights by the distribution of the number of firms that was applicable prior to the pandemic. (*4) Since non-charging for 2020 involves firms staying in the same tax schedule row that they were in prior to the pandemic, the percentage change estimated by re-weighting the distribution of the number of accounts provides the best impact estimate of freezing firms in their pre-pandemic row tax schedule row. However, the best estimate of the average tax rate to apply to taxable wages to estimate tax revenue is the one weighted by taxable wages. Therefore, this effective schedule C tax rate after non-charging is the result of applying the percentage change from the rates based on number of accounts weighting to the actual ETA 204 rates which are taxable wage weighted. On average, the 2.93 percent tax rate was reduced 22.0 percent yielding the average estimate of 2.28 percent. However, for the baseline simulation, the 2.11 tax rate was chosen for reasons stated in Appendix A.

1) The non-charging estimate for schedule C starts with ETA 204 tax rates from 2013 and 2014 which were 2.78 percent and 3.07 percent, respectively. The tax rate distributions from 2013 and 2014 for each experience factor were reweighted by the distribution of experience rated accounts for those years. This computed the average tax rates to be 2.10 percent for 2013 and 2.45 percent for 2014.

2) The ETA 204 distribution of tax rates from 2013 and 2014 was then reweighted by the distribution of experience rated accounts from 2017 through 2019 (pre-pandemic years) which yielded an estimated tax rate of 1.59 percent for 2013 and 1.96 percent for 2014. This meant estimated percentage reductions due to non-charging of -24.2 and -20.2 percent for 2013 and 2014, respectively.

3) The estimated percentage reductions for 2013 and 2014 were then applied to the actual ETA 204 tax rates from those years to simulate 2022 and 2023. The 2.78 percent tax rate from 2013 was reduced 24.2 percent to 2.11 percent and the 3.07 tax rate from 2014 was reduced 20.2 percent to 2.45 percent.

4) The lowest of the reweighted tax rates, 2.11 percent from 2013, was chosen to use in the UNIS-X model for schedule C for both 2022 and 2023 for two reasons. First, the UNIS-X model required a larger than estimated reduction in the schedule F tax rate to hit the

2021 revenue estimates. Second, the methodology used here does not account for the unknown number of firms that will not stay at the same benefit ratio but will see their benefit ratio decline. This occurs because firm benefit ratios will be calculated with and without pandemic-related UI costs and the lowest tax rate will be used.

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Appendix A
UNIS-X Simulation Model Baseline Assumptions

Labor Market

Table A1 presents some history and forecast values for labor market economic inputs to the UNIS-X model used for the Maryland macro simulations. There are four key inputs to the Maryland model: 1) labor force growth, 2) covered employment growth, 3) the total unemployment rate, and 4) the average, weekly wage. Data needed to define the first three items are from the U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS) (https://www.bls.gov/lau/data.htm).[14] Data for covered employment and the average weekly wage are from the United States Department of Labor, Employment and Training Administration, ET Financial Data Handbook, 394 (https://oui.doleta.gov/unemploy/hb394.asp).

LAUS, monthly, seasonally adjusted data were downloaded through 2020 and then averaged to derive annual numbers. Initially, the estimates for 2021 for the size of the labor force and total employment were based on averaging monthly data for January through July of 2021.[15] However, historically, the August through December period in Maryland has consistently shown stronger growth on a seasonally adjusted basis compared with January through July. Therefore, the labor force and total employment levels were adjusted upward to account for the faster increase in the last five months of the year.[16] The upward adjustment was 0.2 percent for the labor force and 0.3 percent for total employment.

Forecast values for 2022-2032 for labor force and total employment rely on historical average growth rates. Prior work for the Maryland UI Financing Report (O'Leary and Kline, July 2021), relied on patterns that emerged from the financial crisis. However, given recent, far more steep declines in the labor force and employment due to the pandemic, the labor force growth pattern coming out of the 2008-2009 financial crisis is insufficient to recover at the rate already observed through September 2021. Assuming the 2009-2019 pattern would result in unemployment levels and therefore unemployment rates later in the forecast interval being unrealistically low and highly unlikely by historical standards.

Given the preceding, for macro simulation variable values beginning in 2022, we use the average growth rate in the labor force observed between 1999 and 2009 (1.0 percent) which as shown in the bottom of Table A1 is greater than the average rate of 0.7 percent observed between 2009

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[14] Items downloaded were levels of the labor force, total employment, unemployment, and the total unemployment rate. An estimated relationship between the growth in total employment and the growth in covered employment is used to define covered employment growth.

[15] The level and rate of unemployment fall out of the fact that the size of the labor force is total employment plus total unemployment. Once labor force and employment are forecast, the level of unemployment is labor force minus employment, and the unemployment rate is the level of unemployment divided by the labor force.

[16] Figures were adjusted upward by two percent for the period 2009 to 2019 by multiplying by the factor 1.02. This is the average over the eleven years 2009 to 2019 of the ratio of the average of levels over the five months from August to December divided by the average over all 12 months for each year.

and 2019. Total employment is assumed to grow 1.1 percent annually which is the 2009-2019 average growth rate. Given these assumed forecast values for the labor force and total employment, the level of unemployment (labor force minus employment) and the unemployment rate (unemployment divided by the labor force) are determined.

The employment growth rate used in the UNIS-X model is the growth in UI covered employment, not the growth in total employment. To derive that growth rate, using annual data, 1976 through 2020, we estimated a simple ordinary least squares (OLS) regression of the natural log of covered employment as a function of the natural log of total employment. The estimated coefficient on the log of total employment is an elasticity that measures the percentage change in covered employment for a one percent change in total employment.

The estimated parameter or elasticity is 1.178. We set forecast values for covered employment growth for 2021 through 2032 as the product of that parameter estimate and the assumed growth rate for total employment. For 2021, total employment is expected to decline by 0.8 percent. This translates into an expected 1.0 percent decline in covered employment. For the period 2022 through 2032, using the average total employment growth rate observed between 2009 and 2019 (1.1 percent) results in an expected yearly growth rate of 1.3 percent after multiplying by the estimated elasticity.

Events during the pandemic also presented a problem for developing a reasonable forecast for the average weekly wage. As shown in Table A1, according to the ET 394 data, the average weekly wage grew 10.3 percent in 2020. Presumably, this can be attributed to layoffs among relatively lower wage earners and continued steady employment through greater work flexibility, such as work-from-home, among relatively higher paid individuals when faced with pandemic lockdowns and restrictions. Also, historically, this rate of growth (10.3 percent) exceeds the inflation driven growth rate of 9.8 percent observed in 1980, and has only been exceeded in 1941-1943, obviously due to the production needs of World War II.

Given the preceding and the assumption of return to "relatively normal" economic activity in 2021, a decline in the average weekly wage in UI covered employment from 2020 to 2021 is likely. To forecast the 2021 value, we took the actual value for 2019 ($1,156.97) and grew it forward two years using the observed growth rates from 2008-2009 (1.5 percent) and 2009-2010 (2.6 percent). This resulted in a forecast value for 2021 of $1,204.30 which is a decline of 5.6 percent from the 2020 value. For 2022 through 2032 we assume the average growth rate that was observed for 2009 through 2019 of 2.2 percent.

UI Recipiency

The UNIS-X model has an automated update process that changes its "base year" when the data the model requires are available for all quarters in that new year. For this exercise, the model was updated for the available 2020 data which changed the model base year from 2019 to 2020. Once the data were updated, the model re-estimated internal parameters based on the latest available information. A key parameter in the model is the relationship between the insured unemployment rate (IUR) and the total unemployment rate (TUR). The ratio of the insured-to-total unemployment rate is a proxy for what economists refer to as the UI recipiency rate or the

share of unemployed who receive UI benefits. This value exploded in 2020 due to changes in eligibility conditions during the pandemic and created an outlier that resulted in considerable bias in that estimated model parameter.

Table A2 summarizes the IUR-to-TUR ratio. The data are from the United States Department of Labor, Employment and Training Administration, UI Quarterly Data Summary (https://oui.doleta.gov/unemploy/data_summary/DataSum.asp). The quarterly data were averaged to yield the annual values in Table A2. These data show this ratio has been declining considerably over time, falling below 0.3 just prior to the pandemic before the upward spike in 2020.

The forecast value for 2021 is based on data available for the first quarter of 2021 which showed a ratio of 0.419 based on an insured unemployment rate of 2.6 percent and a total unemployment rate of 6.2 percent. Multiplying our forecast total unemployment rate of 6.1 percent by that ratio (0.419) also yields an insured unemployment rate of 2.6 percent (change not noticed due to rounding). Beginning in 2022, we assume the ratio of insured-to-total unemployment rate that was observed 1999 through 2019 (0.352). Multiplying this ratio by the forecast total unemployment rate yields forecast values for the insured unemployment rate.

Using an option available in the UNIS-X model to adjust the model parameter associated with the IUR-TUR relationship, we constrained the model to preserve our forecast values for the insured unemployment rate after entering our forecast values for the total unemployment rate. Without doing so, the model produced results inconsistent with recent data, particularly for 2021.

Non-Charging of Benefits

Tax rates for 2021 are from schedule F and were determined without charging Maryland employers for 2020 pandemic related UI benefits. Maryland will move to schedule C for 2022 and 2023 and again will non-charge for 2020 UI benefits. To reflect that, the average tax rate used by the UNIS-X model must be reduced since non-charging of benefits reduces tax rates compared with what they would have been during typical economic scenarios.

The average tax rate for schedule F used in the model is 5.1 percent and is based on ETA 204 data during previous years when that schedule and benefit charging were in effect. Using known revenue for the first eight months of 2021 and estimates provided by Maryland for the remainder of 2021, expected UI tax revenue in 2021 is $732.2 million. To ensure the model would hit that target, the average tax rate used in the model for 2021 was set at 2.88 percent.

The estimated average tax rate to use in the UNIS-X model representing schedule C is 2.93 percent and is based on the average tax rate from ETA 204 reports for fiscal years 2013 and 2014. We refer to 2013 and 2014 because those were the most recent years when Maryland UI tax schedule C was in effect. The average UI tax rates for those two years appear in the first row of Table A3 which summarizes the method chosen to estimate the impact of non-charging on the estimated average tax rate for schedule C.   Non-charging involves "freezing" most firms at their experience factor, that is, keep employers in the same row in the distribution of benefit ratios. For the 2022 tax (calendar) year for experience rated firms, Maryland will calculate a firm's

benefit ratio (experience factor) based on fiscal years ending June 30, 2017, 2018 and 2019 and compare that with the benefit ratio (experience factor) for fiscal years ending June 30, 2019, 2020 and 2021. Since the former calculation involves pre-pandemic experience, most firms will stay in their same pre-pandemic row in the tax schedule unless their benefit ratio calculated over the pandemic years is lower.

Under the assumption that most firms will be frozen at their pre-pandemic experience and lacking more recent micro data to determine which firms move to a lower benefit ratio when including the pandemic years, one method is to take the ETA 204 tax rate distribution for 2013 and 2014 and weight it by pre-pandemic taxable wages. Doing so yields an average schedule C tax rate of 2.25 percent for 2013, 2.60 percent for 2014 and an average of 2.42 percent across both years (see Table A4 for the detailed distribution and calculation).

However, given that non-charging involves "freezing" most firms at their pre-pandemic experience factor, a better approach to calculating the percentage reduction in the average rate due to non-charging would be to weight the tax rate distribution for 2013 and 2014 by the distribution of the number of accounts in each experience factor row prior to the pandemic. This weighting is superior because it is the employers who are fixed in the same benefit ratio not necessarily the associated taxable wages. The result of this weighting appears in the second section of Table A3 (see Table A5 for the detailed distribution and calculation).

It is important to note that these rates that were estimated using the number of accounts as weights are not published and would never be published since they would not yield correct revenue amounts if multiplied with taxable wages. However, they are useful to calculate an estimated percentage reduction in the average tax rate due to non-charging since we believe most accounts (firms) will remain at their pre-pandemic experience factor. Furthermore, since the magnitude and direction of the change in their taxable earnings is not known (though presumably large and negative) that approach is not an option.

Weighting by the number of accounts produces greater percentage reductions in the average tax rate due to non-charging. The tax rate declines are estimated to be -24.2 and -20.2 percent for the 2013 and 2014 tax rate distributions of employers, respectively, compared with -19.1 and -15.4 percent when weighting by taxable wages. Next, to derive rates that can be multiplied with taxable earnings to estimate revenue, we apply the percentage changes that are based on the number of accounts as weights to the average schedule C tax rates originally used for the model. The result is estimated schedule C average tax rates of 2.11 and 2.45 percent, based on the 2013 and 2014 tax rate distributions, respectively.

Lastly, we chose to use the estimated schedule C tax rate of 2.11 percent from the 2013 rate distribution in the model for 2022 and 2023 since it is the lowest of the estimated rates. There are two reasons for this choice over the average of the 2013 and 2014 rates. First, we know that some firms went through the pandemic with a relatively better experience and will see improved benefit ratios (lower experience factor for the ETA 204 distribution). These firms will not be frozen at their pre-pandemic experience but will be assigned a lower schedule C tax rate because of their improved benefit ratio (experience factor). Our estimates are based on firms staying in

their pre-pandemic row since it is unknown how many firms will move to lower rates and how far that movement will be.

Second, and lastly, for 2021 UI tax rates, Maryland did not charge pandemic benefits but did allow tax schedule F to be in effect. The estimated average tax rate for schedule F used by the model is 5.13 percent. To hit revenue estimates for 2021 in the UNIS-X model, an average tax rate of 2.88 percent was needed which is nearly 44 percent lower than 5.13 percent. Therefore, even our lowest, estimated average tax rate for schedule C (2.11 percent) is likely an overestimate depending on changes in taxable earnings.

Beyond this discussion of non-charging and schedule C tax rates for 2022 and 2023, the forecast produced by the model beginning in 2024 uses the average tax rates for each schedule that were developed from the ETA 204 data. These average rates assumed by the model are: 1.69 (A), 2.25 (B), 2.93 (C), 3.94 (D), 4.54 (E) and 5.13 (F).

Model Parameter Adjustments

The UNIS-X model allows the user to adjust model parameter estimates to better align results with forecast assumptions and desired simulation scenarios. As previously discussed, since calendar year 2020 is an outlier due to the pandemic, the model's re-estimation upon updating the data for 2020 skewed results. The UNIS-X model allows the user to adjust four model parameters for each year in the simulation: 1) TUR-to-IUR, 2) average weekly benefits, 3) total weeks compensated, and 4) taxable wages.

Table A6 presents the adjustment values entered for each year for the TUR-to-IUR ratio and the total weeks compensated.[17] The adjustments to average weekly benefits and taxable wages were not relevant to Maryland simulations. Also, it is important to note that the adjustments we have made are not meant to reflect negatively on the UNIS-X model nor its methodology. They are simply necessary to mitigate the impacts of an extreme exogenous event (the pandemic) on more typical economic outcomes that the model was meant to predict.

Table A6 shows that the adjustment for 2021 is rather extreme but necessary to dampen the bias in the IUR-TUR relationship. Also, given current benefit payment levels in Maryland and the estimate provided by Maryland for total UI benefits expected to be paid in the remainder of 2021, the model overpredicts benefits paid and produces forecasts for 2022 and beyond that are inconsistent with the assumed economic scenario. Therefore, the parameter for weeks compensated was adjusted downward to meet the 2021 total benefits target and produce results in 2022 and beyond consistent with a gradual recovery from pandemic unemployment.

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[17] The discussion in the text focuses on the IUR-to-TUR ratio which proxies for the UI recipiency rate. In the UNIS-X model, the relationship is represented as the inverse or TUR-to-IUR. The meaning does not change. Only the sign on adjustment amounts changes.

Table A1   **History and Forecast Values for Key Inputs to the UNIS-X Model to for a Baseline Simulation for Maryland**

Year	Labor Force		Total Employment		Total Unemployment		Total Unemploy rate	Covered Employment		Average Weekly Wage	
	Level	Pct change	Level	Pct change	Level	Pct change		Level	Pct change	Level	Pct change
2005	2,931,631	1.6	2,800,381	1.8	131,249	-1.2	4.5	1,880,566	1.8	823.72	4.3
2006	2,984,216	1.8	2,859,388	2.1	124,828	-4.9	4.2	1,904,282	1.3	856.98	4.0
2007	2,989,780	0.2	2,878,633	0.7	111,147	-11.0	3.7	1,910,889	0.3	893.21	4.2
2008	3,028,385	1.3	2,891,046	0.4	137,339	23.6	4.5	1,890,528	-1.1	912.71	2.2
2009	3,050,229	0.7	2,819,927	-2.5	230,302	67.7	7.6	1,802,579	-4.7	926.19	1.5
2010	3,078,518	0.9	2,837,523	0.6	240,994	4.6	7.8	1,786,957	-0.9	950.05	2.6
2011	3,096,908	0.6	2,870,547	1.2	226,361	-6.1	7.3	1,801,864	0.8	971.91	2.3
2012	3,121,325	0.8	2,906,880	1.3	214,445	-5.3	6.9	1,835,696	1.9	996.51	2.5
2013	3,129,500	0.3	2,925,343	0.6	204,156	-4.8	6.5	1,864,253	1.6	995.56	-0.1
2014	3,124,848	-0.1	2,945,699	0.7	179,149	-12.2	5.7	1,883,368	1.0	1017.93	2.2
2015	3,140,166	0.5	2,983,591	1.3	156,575	-12.6	5.0	1,931,327	2.5	1048.67	3.0
2016	3,156,153	0.5	3,020,666	1.2	135,486	-13.5	4.3	1,964,486	1.7	1067.23	1.8
2017	3,202,683	1.5	3,071,960	1.7	130,724	-3.5	4.1	1,986,119	1.1	1095.17	2.6
2018	3,215,145	0.4	3,092,255	0.7	122,890	-6.0	3.8	2,005,211	1.0	1123.99	2.6
2019	3,269,613	1.7	3,155,973	2.1	113,640	-7.5	3.5	2,024,088	0.9	1156.97	2.9
2020	3,171,576	-3.0	2,957,348	-6.3	214,228	88.5	6.8	1,817,592	-10.2	1276.13	10.3
2021	3,124,064	-1.5	2,933,100	-0.8	190,963	-10.9	6.1	1,800,036	-1.0	1204.30	-5.6
2022	3,154,262	1.0	2,966,310	1.1	187,953	-1.6	6.0	1,824,045	1.3	1231.40	2.2
2023	3,184,753	1.0	2,999,895	1.1	184,858	-1.6	5.8	1,848,375	1.3	1259.10	2.2
2024	3,215,538	1.0	3,033,860	1.1	181,678	-1.7	5.7	1,873,029	1.3	1287.43	2.2
2025	3,246,621	1.0	3,068,210	1.1	178,411	-1.8	5.5	1,898,012	1.3	1316.39	2.2
2026	3,278,004	1.0	3,102,949	1.1	175,055	-1.9	5.3	1,923,328	1.3	1346.01	2.2
2027	3,309,691	1.0	3,138,081	1.1	171,610	-2.0	5.2	1,948,982	1.3	1376.29	2.2
2028	3,341,684	1.0	3,173,611	1.1	168,073	-2.1	5.0	1,974,978	1.3	1407.25	2.2
2029	3,373,986	1.0	3,209,544	1.1	164,443	-2.2	4.9	2,001,320	1.3	1438.91	2.2
2030	3,406,601	1.0	3,245,883	1.1	160,718	-2.3	4.7	2,028,014	1.3	1471.28	2.2
2031	3,439,531	1.0	3,282,633	1.1	156,897	-2.4	4.6	2,055,064	1.3	1504.38	2.2
2032	3,472,779	1.0	3,319,800	1.1	152,979	-2.5	4.4	2,082,475	1.3	1538.23	2.2
Avg growth 2009-19		0.7		1.1							2.2
Avg growth 1999-09		1.0		0.5							3.6
Avg growth 1989-99		1.0		1.0							4.1

Table A2   **Relationship of the Insured Unemployment Rate to the Total Unemployment Rate**

Year	Total	Insured	IUR-to-TUR Ratio
1989	3.8	1.5	0.388
1990	4.3	1.9	0.436
1991	5.9	3.3	0.549
1992	6.6	3.1	0.477
1993	6.0	2.5	0.410
1994	5.2	2.3	0.445
1995	5.0	2.2	0.437
1996	5.0	2.1	0.424
1997	4.8	1.8	0.375
1998	4.3	1.6	0.382
1999	3.5	1.4	0.399
2000	3.6	1.3	0.359
2001	4.2	1.6	0.381
2002	4.8	2.0	0.406
2003	4.8	2.0	0.406
2004	4.6	1.7	0.359
2005	4.5	1.5	0.324
2006	4.2	1.3	0.311
2007	3.7	1.5	0.389
2008	4.5	2.0	0.436
2009	7.6	3.3	0.430
2010	7.9	2.9	0.363
2011	7.3	2.5	0.336
2012	6.9	2.3	0.338
2013	6.5	2.2	0.337
2014	5.7	2.0	0.349
2015	5.0	1.6	0.325
2016	4.3	1.4	0.333
2017	4.1	1.3	0.325
2018	3.8	1.1	0.288
2019	3.5	1.0	0.286
2020	6.8	5.4	0.787
2021	6.1	2.6	0.419
2022	6.0	2.1	0.356
2023	5.8	2.1	0.356
2024	5.7	2.0	0.356
2025	5.5	2.0	0.356
2026	5.3	1.9	0.356
2027	5.2	1.8	0.356
2028	5.0	1.8	0.356
2029	4.9	1.7	0.356
2030	4.7	1.7	0.356
2031	4.6	1.6	0.356
2032	4.4	1.6	0.356
Avg 2009-2019:	5.7	2.0	0.337
Avg 1999-2019:	4.5	1.7	0.356
Avg 1989-2019:	5.0	1.9	0.381

Table A3   **Summary of Estimated Average Tax Rates for Schedule C from 2013-2014 and the Estimated Schedule C Average Tax Rates after Non-Charging for 2020**

	Schedule C estimated rates		
	2013	2014	Average
Taxable wage weighted data			
ETA 204 average tax rate	2.78	3.07	2.93
Re-weight by 2017-2019 taxable wages (*1)	2.25	2.60	2.42
Percentage change from non-charging	-19.1	-15.4	-17.2
Number of accounts weighted data			
ETA 204 average tax rate (*2)	2.10	2.45	2.28
Re-weight by 2017-19 number of accounts (*3)	1.59	1.96	1.78
Percentage change from non-charging	-24.2	-20.2	-22.0
Effective schedule C non-charging tax rates (*4)	2.11	2.45	2.28

Note: (*1) This takes the tax rate distribution from the ETA 204 data for the fiscal years (2013-2014) and re-weights by the distribution of taxable wages that was applicable prior to the pandemic. (*2) These are not published average tax rates. These are the rates that result from re-weighting the tax rate distribution in the year (2013-2014) by the distribution of the number of accounts that was applicable pre-pandemic. (*3) This takes the tax\ rate distribution from the ETA 204 data for the fiscal years (2013-2014) and re-weights by the distribution of the number of firms that was applicable prior to the pandemic. (*4) Since non-charging for 2020 involves firms staying in the same tax schedule row that they were in prior to the pandemic, the percentage change estimated by re-weighting the distribution of the number of accounts provides the best impact estimate of freezing firms in their pre-pandemic row tax schedule row. However, the best estimate of the average tax rate to apply to taxable wages to estimate tax revenue is the one weighted by taxable wages. Therefore, this effective schedule C tax rate after non-charging is the result of applying the percentage change from the rates based on number of accounts weighting to the actual ETA 204 rates which are taxable wage weighted. On average, this reduced the average 2.93 percent tax rate by 22.0 percent yielding the average estimate of 2.28 percent.

Table A4 Estimate of the Tax Rate for Maryland Schedule C Under Non-Charging Using ETA 204 Data

	Taxable payroll (1,000s)					Estimated schedule C tax rates		
Factor	FY 2017	FY 2018	FY 2019	Total	Share	2013	2014	Average
	18,485,690	18,636,361	18,935,345	56,057,396	1.000	2.25	2.60	2.42
0.0	4,421,143	4,797,479	4,833,596	14,052,218	0.251	0.66	0.95	0.80
0.1	539,291	633,338	677,057	1,849,686	0.033	0.90	1.20	1.05
0.2	522,356	731,225	788,566	2,042,147	0.036	1.20	1.50	1.35
0.3	611,126	626,589	940,112	2,177,827	0.039	1.20	1.50	1.35
0.4	598,283	626,851	784,222	2,009,356	0.036	1.20	1.50	1.35
0.5	566,420	715,425	744,325	2,026,170	0.036	1.50	1.80	1.65
0.6	549,942	593,566	787,490	1,930,998	0.034	1.50	1.80	1.65
0.7	598,476	490,244	685,356	1,774,076	0.032	1.50	1.80	1.65
0.8	1,037,465	1,128,362	624,128	2,789,955	0.050	1.80	2.10	1.95
0.9	433,786	507,103	531,864	1,472,753	0.026	1.80	2.10	1.95
1.0	421,105	400,466	449,291	1,270,862	0.023	2.10	2.40	2.25
1.1	479,324	547,507	701,306	1,728,137	0.031	2.10	2.40	2.25
1.2	438,297	414,568	439,072	1,291,937	0.023	2.10	2.40	2.25
1.3	326,456	339,249	395,817	1,061,522	0.019	2.40	2.70	2.55
1.4	523,837	349,698	345,429	1,218,964	0.022	2.40	2.70	2.55
1.5	366,861	334,868	344,175	1,045,904	0.019	2.40	2.70	2.55
1.6	283,885	259,572	279,820	823,277	0.015	2.70	3.00	2.85
1.7	483,044	626,242	266,188	1,375,474	0.025	2.70	3.00	2.85
1.8	325,766	215,807	269,061	810,634	0.014	3.00	3.30	3.15
1.9	216,829	213,579	282,496	712,904	0.013	3.00	3.30	3.15
2.0	216,009	243,945	238,232	698,186	0.012	3.00	3.30	3.15
2.1	209,800	138,726	207,913	556,439	0.010	3.30	3.60	3.45
2.2	154,100	158,576	183,253	495,929	0.009	3.30	3.60	3.45
2.3	193,457	125,496	132,317	451,270	0.008	3.30	3.60	3.45
2.4	175,412	143,613	177,845	496,870	0.009	3.60	3.90	3.75
2.5	170,238	152,508	158,259	481,005	0.009	3.60	3.90	3.75
2.6	268,712	308,269	144,433	721,414	0.013	3.73	4.05	3.89
2.7	214,223	119,503	147,873	481,599	0.009	3.90	4.20	4.05
2.8	96,561	153,232	122,845	372,638	0.007	3.90	4.20	4.05
2.9	141,341	127,160	118,854	387,355	0.007	4.20	4.50	4.35
3.0	85,325	94,255	73,514	253,094	0.005	4.20	4.50	4.35
3.1	101,883	93,378	83,256	278,517	0.005	4.20	4.50	4.35
3.2	115,680	65,918	109,545	291,143	0.005	4.50	4.80	4.65
3.3	108,238	76,163	72,297	256,698	0.005	4.50	4.80	4.65
3.4	106,786	87,316	72,697	266,799	0.005	4.50	4.80	4.65
3.5	135,371	139,947	64,390	339,708	0.006	4.80	5.10	4.95
3.6	72,054	83,590	52,329	207,973	0.004	4.80	5.10	4.95
3.7	65,957	49,312	67,779	183,048	0.003	5.10	5.40	5.25
3.8	58,846	43,482	94,328	196,656	0.004	5.10	5.40	5.25
3.9	51,415	64,694	61,575	177,684	0.003	5.10	5.40	5.25
4.0	66,791	46,230	50,841	163,862	0.003	5.40	5.70	5.55
4.1	75,645	34,806	58,691	169,142	0.003	5.40	5.70	5.55
4.2	55,808	48,237	30,643	134,688	0.002	5.40	5.70	5.55
4.3	69,548	46,090	47,612	163,250	0.003	5.70	6.00	5.85
4.4	158,856	125,078	39,743	323,677	0.006	5.70	6.00	5.85
4.5	60,702	44,143	45,597	150,442	0.003	6.00	6.30	6.15
4.6	55,919	33,594	31,584	121,097	0.002	6.00	6.30	6.15
4.7	39,168	39,606	43,628	122,402	0.002	6.00	6.30	6.15
4.8	46,594	33,970	32,463	113,027	0.002	6.30	6.60	6.45
4.9	34,091	36,637	35,576	106,304	0.002	6.30	6.60	6.45

Table A4   Estimate of the Tax Rate for Maryland Schedule C Under Non-Charging Using ETA 204 Data

Factor	Taxable payroll (1,000s)				Share	Estimated schedule C tax rates		
	FY 2017	FY 2018	FY 2019	Total		2013	2014	Average
5.0	41,553	18,671	22,068	82,292	0.001	6.30	6.60	6.45
5.1	26,747	22,187	23,579	72,513	0.001	6.60	6.90	6.75
5.2	25,465	41,921	29,461	96,847	0.002	6.60	6.90	6.75
5.3	61,236	48,367	29,042	138,645	0.002	6.75	7.03	6.89
5.4	25,576	22,690	19,257	67,523	0.001	6.90	7.20	7.05
5.5	26,637	23,387	17,868	67,892	0.001	6.90	7.20	7.05
5.6	23,395	14,918	29,125	67,438	0.001	7.20	7.50	7.35
5.7	21,571	25,769	38,798	86,138	0.002	7.20	7.50	7.35
5.8	42,148	18,639	14,574	75,361	0.001	7.20	7.50	7.35
5.9	28,662	19,324	17,135	65,121	0.001	7.50	7.80	7.65
6.0	16,842	15,943	14,752	47,537	0.001	7.50	7.80	7.65
6.1	16,276	17,662	24,159	58,097	0.001	7.50	7.80	7.65
6.2	45,453	32,595	17,478	95,526	0.002	7.50	8.10	7.80
6.3	17,192	13,424	10,970	41,586	0.001	7.50	8.10	7.80
6.4	17,126	10,262	13,258	40,646	0.001	7.50	8.40	7.95
6.5	16,050	14,820	13,359	44,229	0.001	7.50	8.40	7.95
6.6	18,354	22,217	7,019	47,590	0.001	7.50	8.40	7.95
6.7	12,924	11,527	12,350	36,801	0.001	7.50	8.70	8.10
6.8	17,981	10,498	11,498	39,977	0.001	7.50	8.70	8.10
6.9	12,947	13,254	9,052	35,253	0.001	7.50	8.70	8.10
7.0	18,344	6,877	13,695	38,916	0.001	7.50	9.00	8.25
7.1	28,625	16,699	10,340	55,664	0.001	7.50	9.00	8.25
7.2	9,055	7,960	10,919	27,934	0.000	7.50	9.00	8.25
7.3	11,454	7,188	6,940	25,582	0.000	7.50	9.00	8.25
7.4	13,282	10,177	7,487	30,946	0.001	7.50	9.00	8.25
7.5	7,582	11,511	10,115	29,208	0.001	7.50	9.00	8.25
7.6	15,386	7,102	8,804	31,292	0.001	7.50	9.00	8.25
7.7	8,675	11,201	6,836	26,712	0.000	7.50	9.00	8.25
7.8	10,191	9,503	10,040	29,734	0.001	7.50	9.00	8.25
7.9	9,264	7,650	14,861	31,775	0.001	7.50	9.00	8.25
8.0	85,230	67,618	37,132	189,980	0.003	7.50	9.00	8.25
8.5	56,703	42,924	30,335	129,962	0.002	7.50	9.00	8.25
9.0	40,468	43,016	25,928	109,412	0.002	7.50	9.00	8.25
9.5	35,445	21,942	32,449	89,836	0.002	7.50	9.00	8.25
10.0	21,747	22,278	19,692	63,717	0.001	7.50	9.00	8.25
10.5	33,222	46,810	23,521	103,553	0.002	7.50	9.00	8.25
11.0	23,594	28,358	18,847	70,799	0.001	7.50	9.00	8.25
11.5	21,337	25,799	21,038	68,174	0.001	7.50	9.00	8.25
12.0	18,709	19,810	12,840	51,359	0.001	7.50	9.00	8.25
12.5	22,013	10,758	17,581	50,352	0.001	7.50	9.00	8.25
15.0	333,007	283,893	251,860	868,760	0.015	7.50	9.00	8.25

Table A5   **Estimate of the Tax Rate for Maryland Schedule C Under Non-Charging Using ETA 204 Data Weighting by the Number of Accounts**

Factor	Number of Accounts				Share	Estimated schedule C tax rates		
	FY 2017	FY 2018	FY 2019	Total		2013	2014	Average
	116,128	116,709	117,711	350,548	1.000	1.59	1.96	1.78
0.0	82,713	85,404	86,651	254,768	0.727	0.66	0.95	0.80
0.1	1,059	1,103	1,486	3,648	0.010	0.90	1.20	1.05
0.2	990	1,027	1,201	3,218	0.009	1.20	1.50	1.35
0.3	946	912	1,122	2,980	0.009	1.20	1.50	1.35
0.4	868	895	1,051	2,814	0.008	1.20	1.50	1.35
0.5	827	892	1,003	2,722	0.008	1.50	1.80	1.65
0.6	844	815	909	2,568	0.007	1.50	1.80	1.65
0.7	790	794	885	2,469	0.007	1.50	1.80	1.65
0.8	1,433	1,432	831	3,696	0.011	1.80	2.10	1.95
0.9	647	649	761	2,057	0.006	1.80	2.10	1.95
1.0	661	585	720	1,966	0.006	2.10	2.40	2.25
1.1	670	585	718	1,973	0.006	2.10	2.40	2.25
1.2	597	630	655	1,882	0.005	2.10	2.40	2.25
1.3	592	541	668	1,801	0.005	2.40	2.70	2.55
1.4	517	509	582	1,608	0.005	2.40	2.70	2.55
1.5	552	495	527	1,574	0.004	2.40	2.70	2.55
1.6	539	545	566	1,650	0.005	2.70	3.00	2.85
1.7	988	941	517	2,446	0.007	2.70	3.00	2.85
1.8	453	417	494	1,364	0.004	3.00	3.30	3.15
1.9	433	419	486	1,338	0.004	3.00	3.30	3.15
2.0	450	425	456	1,331	0.004	3.00	3.30	3.15
2.1	427	382	411	1,220	0.003	3.30	3.60	3.45
2.2	335	405	405	1,145	0.003	3.30	3.60	3.45
2.3	415	322	367	1,104	0.003	3.30	3.60	3.45
2.4	364	368	378	1,110	0.003	3.60	3.90	3.75
2.5	349	337	337	1,023	0.003	3.60	3.90	3.75
2.6	664	698	335	1,697	0.005	3.73	4.05	3.89
2.7	317	306	324	947	0.003	3.90	4.20	4.05
2.8	316	279	345	940	0.003	3.90	4.20	4.05
2.9	294	265	276	835	0.002	4.20	4.50	4.35
3.0	264	255	258	777	0.002	4.20	4.50	4.35
3.1	300	254	277	831	0.002	4.20	4.50	4.35
3.2	256	235	252	743	0.002	4.50	4.80	4.65
3.3	274	257	250	781	0.002	4.50	4.80	4.65
3.4	261	232	266	759	0.002	4.50	4.80	4.65
3.5	503	470	216	1,189	0.003	4.80	5.10	4.95
3.6	248	234	244	726	0.002	4.80	5.10	4.95
3.7	217	222	222	661	0.002	5.10	5.40	5.25
3.8	225	198	205	628	0.002	5.10	5.40	5.25
3.9	212	208	217	637	0.002	5.10	5.40	5.25
4.0	226	182	208	616	0.002	5.40	5.70	5.55
4.1	229	170	214	613	0.002	5.40	5.70	5.55
4.2	212	185	172	569	0.002	5.40	5.70	5.55
4.3	209	171	177	557	0.002	5.70	6.00	5.85
4.4	392	329	173	894	0.003	5.70	6.00	5.85
4.5	158	153	156	467	0.001	6.00	6.30	6.15
4.6	194	155	166	515	0.001	6.00	6.30	6.15
4.7	173	165	157	495	0.001	6.00	6.30	6.15
4.8	163	149	141	453	0.001	6.30	6.60	6.45
4.9	152	152	156	460	0.001	6.30	6.60	6.45
5.0	176	145	163	484	0.001	6.30	6.60	6.45
5.1	132	129	134	395	0.001	6.60	6.90	6.75
5.2	160	126	135	421	0.001	6.60	6.90	6.75
5.3	279	272	134	685	0.002	6.75	7.03	6.89
5.4	146	118	127	391	0.001	6.90	7.20	7.05
5.5	126	122	112	360	0.001	6.90	7.20	7.05

Table A5   **Estimate of the Tax Rate for Maryland Schedule C Under Non-Charging Using ETA 204 Data Weighting by the Number of Accounts**

	Number of Accounts					Estimated schedule C tax rates		
Factor	FY 2017	FY 2018	FY 2019	Total	Share	2013	2014	Average
5.6	132	112	117	361	0.001	7.20	7.50	7.35
5.7	120	121	122	363	0.001	7.20	7.50	7.35
5.8	121	132	94	347	0.001	7.20	7.50	7.35
5.9	151	115	109	375	0.001	7.50	7.80	7.65
6.0	105	98	116	319	0.001	7.50	7.80	7.65
6.1	106	113	122	341	0.001	7.50	7.80	7.65
6.2	240	165	104	509	0.001	7.50	8.10	7.80
6.3	97	75	91	263	0.001	7.50	8.10	7.80
6.4	108	72	96	276	0.001	7.50	8.40	7.95
6.5	102	109	92	303	0.001	7.50	8.40	7.95
6.6	92	95	72	259	0.001	7.50	8.40	7.95
6.7	97	87	97	281	0.001	7.50	8.70	8.10
6.8	111	75	92	278	0.001	7.50	8.70	8.10
6.9	104	98	83	285	0.001	7.50	8.70	8.10
7.0	108	75	88	271	0.001	7.50	9.00	8.25
7.1	171	147	74	392	0.001	7.50	9.00	8.25
7.2	95	71	75	241	0.001	7.50	9.00	8.25
7.3	73	66	62	201	0.001	7.50	9.00	8.25
7.4	86	60	74	220	0.001	7.50	9.00	8.25
7.5	77	82	78	237	0.001	7.50	9.00	8.25
7.6	79	76	72	227	0.001	7.50	9.00	8.25
7.7	74	72	73	219	0.001	7.50	9.00	8.25
7.8	73	68	72	213	0.001	7.50	9.00	8.25
7.9	66	70	68	204	0.001	7.50	9.00	8.25
8.0	476	390	328	1,194	0.003	7.50	9.00	8.25
8.5	380	322	249	951	0.003	7.50	9.00	8.25
9.0	312	264	250	826	0.002	7.50	9.00	8.25
9.5	321	261	228	810	0.002	7.50	9.00	8.25
10.0	255	229	223	707	0.002	7.50	9.00	8.25
10.5	257	242	195	694	0.002	7.50	9.00	8.25
11.0	200	184	167	551	0.002	7.50	9.00	8.25
11.5	240	219	162	621	0.002	7.50	9.00	8.25
12.0	156	157	159	472	0.001	7.50	9.00	8.25
12.5	217	158	170	545	0.002	7.50	9.00	8.25
15.0	3,789	3,364	3,038	10,191	0.029	7.50	9.00	8.25

Table A6 **Model Parameter Adjustments for Each Forecast Year (values in percent, *1)**

Year	TUR-to-IUR	Weeks compensated
2021	95.0	-54.4
2022	-22.5	-35.0
2023	-22.5	-35.0
2024	-22.5	-35.0
2025	-22.1	-35.0
2026	-22.0	-35.0
2027	-21.3	-35.0
2028	-21.1	-35.0
2029	-20.3	-35.0
2030	-19.9	-35.0
2031	-19.7	-35.0
2032	-19.0	-35.0

Note (*1) Discussion in the text focuses on the IUR-to-TUR ratio which proxies for the UI recipiency rate. In the model, the relationship is represented as the inverse or TUR-to-IUR. The meaning does not change. Only the sign on adjustment amounts changes.

<h1 style="text-align: center">MEMORANDUM</h1>

TO: Tiffany Robinson, Secretary of Labor
Andrew Fulginiti, Director of Legislative Affairs
Maryland Department of Labor

FROM: Chris O'Leary and Ken Kline, W.E. Upjohn Institute
DATE: November 22, 2021
SUBJECT: Eliminating Maryland UI Tax Schedule A

This memo includes macro simulation results for three scenarios A) the baseline with all the 2021 factors included, B) the baseline with tax schedule A eliminated as an option and the minimum being tax schedule B, and C) the baseline simulation with an employee tax contribution added.

A. Baseline for Simulation with 2021 Financing Actions in Place

The UNIS-X model for Maryland developed by the U.S. Department of Labor allows users to simulate state policy modifications related to UI financing and benefits. However, predicted values from those policy changes such as annual revenue, benefit payments, and trust fund balance are always measured relative to a baseline forecast that combines economic assumptions with existing program parameters. Table 1 presents baseline results from the model.[1]

Table 1   **Maryland Baseline Simulation that Includes Schedule F for 2021 and Schedule C for 2022-2023 with a Non-Charging Adjustments, a $1 Billion Infusion in 2021Q3 and 2021Q4 and No Changes to the Taxable Wage Base or Benefit Levels**

| | Values in Millions of Dollars | | | | | |
Year	Benefits paid	UI tax revenue	Interest	Year-end trust balance, *1	AHCM	Tax schedule
2020	1,794	444	17	84	0.04	A
2021	459	732	10	366	1.12	F
2022	448	461	28	1,399	1.12	C
2023	449	466	29	1,459	1.12	C
2024	447	386	29	1,424	1.06	A
2025	448	392	29	1,402	1.00	A
2026	446	400	28	1,382	0.95	A
2027	448	409	28	1,369	0.91	A
2028	445	416	28	1,365	0.88	A
2029	446	425	28	1,370	0.85	A
2030	444	435	28	1,386	0.83	A
2031	440	445	28	1,417	0.82	A
2032	439	454	29	1,459	0.81	A

Note: (*1) In the UNIS-X model using the option to add additional historical data, the third quarter of 2021 tax contributions were increased $1 billion to reflect the cash infusion. This infusion is not reflected in the model's beginning and ending balances until 2022.

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[1] For a complete discussion of the assumptions contained within the baseline simulation, see appendix A in "Maryland Unemployment Insurance Analysis, Report 4—Related Analysis" by O'Leary and Kline, November 2021.

The important assumptions in the baseline simulation include:

- Schedule F is in effect for 2021 and schedule C is in effect for 2022 and 2023. Average tax rates for these schedules that are used by the model were adjusted for non-charging of pandemic UI benefits. In the case of schedule F, the average tax rate was adjusted further to meet expected 2021 revenue.
- New employer tax rate remains at 2.6 percent.
- A cash infusion that totals $1 billion is completed by year-end 2021.
- The taxable wage base remains at $8,500 and the maximum weekly benefit amount also stays at $430 (including allowance for dependents).

There are two main lessons from the baseline simulation. First, the desired goal of having an average, high-cost multiple (AHCM) of at least 1.0 is expected to be met at year-end 2021 because of the infusion of $1 billion into the Maryland trust account.[2] Second, the current Maryland UI financing system is insufficient to achieve and maintain an AHCM equal to or greater than 1.0 over time. With the cash infusion and staying on tax schedule C in 2022 and 2023, despite non-charging for 2020 pandemic benefits, Maryland is expected to achieve an AHCM of 1.12 as the trust balance is simulated to reach $1.46 billion by the end of 2023. However, after that, schedule A would be triggered and with the current $8,500 taxable wage base in effect, expected annual revenue falls short of expected annual benefits. This leads to a gradual decline in reserves and the AHCM. The revenue shortfall in this scenario is mainly due to the low taxable wage base of $8,500 that has been in effect since 1993.

B. Eliminating Maryland UI Tax Schedule A

Table 2 Maryland Baseline Summary with Schedule B as Best Tax Rate Schedule

Year	Benefits paid	UI tax revenue	Interest	Year-end trust balance	AHCM	Tax schedule	Average WBA
2020	1,794	444	17	84	0.04	A	322
2021	459	732	10	366	1.12	F	318
2022	448	461	28	1,399	1.12	C	342
2023	449	466	29	1,459	1.12	C	346
2024	447	507	30	1,546	1.14	B	350
2025	448	519	32	1,643	1.17	B	354
2026	446	530	34	1,757	1.21	B	358
2027	448	541	36	1,885	1.25	B	362
2028	445	551	39	2,027	1.30	B	366
2029	446	563	42	2,183	1.35	B	371
2030	444	576	45	2,357	1.41	B	375
2031	440	589	49	2,551	1.47	B	380
2032	439	602	53	2,764	1.54	B	384

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[2] The average, high-cost multiple is based on the current trust balance divided by an estimate of average benefit costs that would be incurred over the course of a year assuming the average cost rate of the three most expensive years that have occurred in the last 20 years. A value of 1.0 means the balance in the trust fund is sufficient to pay benefits at that high rate for one year. An AHCM of 1.0 is the standard set by the USDOL to qualify for short-term zero interest borrowing after 2018. Maryland law (8-612 (f)) prevents reduction in the tax schedule if the AHCM is not above 1.0.

Advantages of eliminating tax schedule A

- Maryland UI financing system stays above an Average High-Cost Multiple of 1.0 through 2032 but indexing the taxable wage base to 25 percent of the average annual wage is a less regressive way to maintain this standard.[3]
- An AHCM of 1.0 is the standard set by the USDOL to qualify for short-term zero interest borrowing after 2018. Maryland law (8-612 (f)) prevents reduction in the tax schedule if the AHCM is not above 1.0.

Disadvantages of eliminating tax schedule A

- With the taxable wage base fixed at $8,500, eliminating tax schedule A will keep the UI financing burden on low wage employers and workers.
- The minimum tax rate doubles from 0.3 percent to 0.6 percent for the best rated employers. That is, those employers with the lowest benefit ratios.
- For rate years 2016 to 2020, 65.5 percent of experience rated employers were in the lowest rate category.

C. Baseline Simulation with an Employee Tax

Table 3 modifies the baseline simulation by adding an employee tax of 0.3 percent assumed to take effect in calendar year 2024. The simulation assumes that the tax rate (0.003) applies to a maximum of $8,500 in earnings regardless of the number of jobs held by the wage earner during the year. The 0.3 percent rate was chosen because it matches the lowest possible tax rate faced by firms in the current Maryland UI financing system. The estimates account for potential year-end refunds individuals may receive due to the UI tax being withheld across multiple jobs.

Table 3   **Maryland Baseline Simulation Modified with an Employee Tax of 0.3 percent (0.003)**

Year	Benefits paid	UI tax revenue	Interest	Year-end trust balance	AHCM	Tax schedule	Average WBA
2020	1,794	444	17	84	0.04	A	322
2021	459	732	10	366	1.12	F	318
2022	448	461	28	1,399	1.12	C	342
2023	449	466	29	1,459	1.12	C	346
2024	447	442	30	1,481	1.10	A	350
2025	448	451	30	1,515	1.08	A	354
2026	446	461	31	1,558	1.07	A	358
2027	448	471	32	1,610	1.07	A	362
2028	445	479	33	1,674	1.08	A	366
2029	446	490	34	1,750	1.09	A	371
2030	444	501	36	1,840	1.10	A	375
2031	440	512	38	1,947	1.12	A	380
2032	439	523	40	2,069	1.15	A	384

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[3] See Table 18 of Section 4 in "Maryland Unemployment Insurance Analysis, Report 2—Cost and benefits of increasing unemployment insurance benefit generosity" by O'Leary and Kline, November 2021.

Since the UNIS-X model does not have an option available to simulate a UI tax on individual wage earners, a premium was added to the employer tax rates beginning in 2024 to increase revenue and mimic the employee tax. The tax rate premium was 0.26 percent and is based on taking simulated revenue after refunds for 2013 through the 2nd quarter of 2020 from a 0.003 percent tax rate using the micro-quarterly wage records and dividing by total taxable wages over the same interval.[4] The premium of 0.26 percent is less than the 0.3 percent simulated because it accounts for multiple job holding.

Since schedule A applies throughout the 2024-2032 interval when the employee tax is applicable, the average tax rate for schedule A used by the model was increased from 1.69 percent to 1.95 percent.

The simulation results in Table 3 suggest the employee tax would generate an additional $568 million in revenue over the nine years the tax is in effect (2024 through 2032). Year-end 2032 trust balance is projected to approach $2.1 billion compared with just under $1.5 billion in the baseline. The average high-cost multiple consistently stays just above the desired 1.0 throughout the simulation interval.

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[4] See section 2 in "Maryland Unemployment Insurance Analysis, Report 4—Related Analysis" by O'Leary and Kline, November 2021.

Background

Maryland House Bill 907 (2021) ("H.B. 907") entitled "Unemployment Insurance - Study on System Reforms" required MDL to study: (1) expanded eligibility for unemployment benefits for various types of workers; (2) the costs and benefits of increasing the weekly maximum benefit amount, the allowance that claimants receive for their dependents, and the income disregard for part-time work; (3) alternative approaches to the experience rating process; (4) the establishment of clear standards for when an employee is entitled to claim unemployment insurance benefits if the employee leaves a job for reasons relating to unsafe working conditions; (5) the existing penalties for fraud and the need for enhancing or altering those penalties; (6) the solvency of the Unemployment Insurance Trust Fund, as adjusted based on implementation of each of the system reforms studied under the requirements of the bill; and (7) any other issue that MDL determines is necessary to include in its evaluation of the State's unemployment insurance system.

This attachment covers topics 4 and 5 as outlined in the legislation and is research conducted by MDL.

Standards for Benefit Eligibility

H. B. 907 was enacted as an emergency measure in the context of the COVID-19 pandemic and became law on April 9, 2021. H. B. 907 requires the MDL to study, among other things, the establishment of clear standards for when an employee is entitled to claim unemployment insurance benefits if the employee: (1) leaves a job due to unsafe working conditions; (2) leaves a job in order to guard against an unreasonable risk of infection; (3) is terminated for refusing to work under unsafe work conditions; or (4) declines to accept work due to unsafe work conditions.

To ensure the health and safety of their employees, Maryland employers are required to adhere to workplace health safety regulations, including those issued by the U.S. Department of Labor, the Occupational Safety and Health Administration (OSHA), and the Maryland Occupational Safety and Health (MOSH). A safe and healthful work environment includes appropriate measures that would limit the spread of viruses such as COVID-19 and protect employees from infection.

MDL has conducted a review of its standards and has updated its directives to address lessons learned from this health pandemic. Generally, standards are guided by MD Statue and USDOL program rules, issued in the form of Unemployment Insurance Program Letters (UIPLs). Maryland's Division of Unemployment Insurance (DUI) will evaluate separations initiated by an employee's refusal to work because of unsafe working conditions and/or an unreasonable risk of infection at a worksite on a case-by-case basis to determine whether the separation was a voluntary quit or a discharge, whether good cause or valid circumstances apply, and the length of any

applicable penalty. If a worksite is not in compliance with the applicable health and safety regulations, a claimant who is discharged for refusing to work or quits due to worksite conditions, likely will be eligible for unemployment insurance benefits. In addition, a claimant who refuses to accept a job that is not in compliance with relevant health and safety regulations likely will not be disqualified from receiving unemployment insurance benefits. Current employees would be required to allow the employer to mitigate the problem. If the employee did not have good cause to refuse to work or to quit, other mitigating factors might apply to reduce any penalty. These might include the employee's particular medical condition or sensitivities.

The Center for Disease Control (CDC) also issues Guidance for Businesses and Employers. Much of what the CDC notes in its guidance is covered by OSHA and MOSH regulations. When evaluating whether a claimant had good cause to refuse to work or to quit a job due to hazards at the worksite, DUI will give great weight to the CDC's guidance.

Fraud Penalties

Title 8 Sections Pertaining to Unemployment Insurance Fraud

There are several sections within Title 8 of the Labor and Employment Article of the Annotated Code of Maryland that prohibit the filing of fraudulent unemployment insurance (UI) claims.

Section 8-1301 prohibits individuals from making false statements or failing to disclose material facts to obtain or increase UI benefits. This section applies to both claimants and employers. In addition, it prohibits Marylanders from committing those offenses to obtain benefits in another jurisdiction.

Section 8-1302 prohibits employers and parties to claims other than claimants, such as employers' agents or officers, from knowingly withholding or falsifying information pertaining to UI claims. Section 8-1302 also prohibits employers from willfully failing to meet certain obligations under the Title and relevant state law.

Section 8-1301 concerns the most common type of Unemployment Fraud -- lying to obtain or increase UI benefits -- and exists to protect Maryland taxpayers and businesses. Section 8-1302 exists primarily for the purpose of ensuring obligations are met, the responsible party pays for benefits, and that workers receive fair treatment under the law.

Current Penalties for Fraud Under Title 8

The penalties currently in effect for committing Unemployment Insurance Fraud, defined earlier in Title 8, are found in Section 8-1305. These penalties are not to exceed a $1,000 fine, 90 days in prison, and/or disqualification from receiving Unemployment Insurance benefits in the future. Additionally, individuals who have committed fraud may be required to pay back the full amount

of benefits to the Department of Labor with penalties and interest.

Penalties for Fraud Under Federal Law

Federal law requires states to charge at least 15% of an overpayment as a fine for fraudulently receiving benefits. The Maryland Department of Labor (Labor) is currently in compliance with this requirement.

In addition, many Unemployment Insurance fraud cases constitute wire fraud, which is punishable under Title 18, Section 1343 of the United States Code. This section establishes a maximum fine of $1,000,000 and imprisonment not exceeding 30 years as federal penalties for wire fraud.

Deterring and Preventing Fraud

During the pandemic, the Maryland Department of Labor dealt with an unprecedented number of fraudulent claims. By many estimates, a majority of claims filed were fraudulent. For example, a snapshot from March 9, 2020 - November 13, 2021, shows that 2,293,022 claims were flagged for fraud. Of these, 89.3% of in-state and out-of-state claims are fraudulent. 10.9% of all claims flagged for fraud were approved upon review.

While the Department has worked through a considerable volume of claims marked fraudulent or flagged for fraud, a few factors at play resulting from policy related to the COVID-19 Pandemic made stopping and catching fraudsters a more difficult task than usual. First, the federal unemployment insurance programs instituted by the CARES Act led new claims to skyrocket, which led to a natural increase in the amount of fraud investigations the Department had to conduct. Second, the lack of requirements within the federal programs and pressure to prioritize speed of service made the task of deterring and catching fraud even more daunting.

International Fraudulent Filings

While there have been noteworthy instances of fraudulent claims being filed by people within Maryland and other states, the majority of fraudulent claims are filed by entities located outside of the United States and in jurisdictions which do not readily comply with international and bilateral agreements regarding fraud enforcement.

Deterring and penalizing the type of unemployment insurance fraud seen on a massive scale during the pandemic requires action by the federal government in conjunction with foreign law enforcement agencies. However, the countries where most of the fraudsters are located are also the least likely to enter into such agreements with the United States. Consequently, it is often hard to effectively bring to justice these bad actors. Thus, deterrence often must effectively take the form of prevention, rather than punishment.

Domestic Fraudulent Filings

Fortunately, within the United States, state workforce agencies, including Labor, and states' Attorneys General and justice agencies have strong working relationships and avenues through which to find and prosecute individuals who commit Unemployment Insurance fraud. At this time, there is no pressing need to enact legislation to improve or facilitate these relationships and prosecutorial cooperation as the status quo is satisfactory. On the operational end, there is no serious need to institute laws to improve enforcement.

Reform of Fraud Penalties: Necessity and Recommendations.

Penalties can serve as highly effective deterrent measures against fraud, and decreasing the number of fraudulent filings plays a role in improving the Unemployment Insurance system's function during periods of increased filing (such as during the COVID-19 Pandemic) or during true emergencies.

Unfortunately, Maryland currently has no mandatory minimum fine in place for Unemployment Insurance Fraud, and its maximum fine is $1,000. That fine is the maximum for both employers and claimants who commit fraud. The maximum correctional penalty for claimant fraud is 90 days in prison. However, employers and their agents face a maximum correctional penalty "not to exceed" 1 year in prison. Employers should not face more than four times the amount of time in prison than claimants do for fraud. It is recommended that the carceral penalty either be decreased to a maximum of 90 days in prison for employers/employer agents, or increased to a year in prison at maximum for claimants.

The portions of the law dictating fines for fraud have not been updated since the 1986 Session of the Maryland General Assembly. In the case of fines, this is a particular concern. Since 1986, the dollar has experienced inflation of nearly 138%. Prior to 1986, the relevant section only included a mandatory minimum fine of $250 for fraudulent claims.

First, 8-1305 should be modified to again include a mandatory minimum fine for Unemployment Insurance fraud. The recommended mandatory minimum fine is $600, which according to the Bureau of Labor Statistics has approximately the same buying power in January of 2021 as $250 dollars had in January of 1986, the year in which the mandatory minimum fine was eliminated.

It is also recommended that the General Assembly increase the maximum fine for Unemployment Insurance Fraud, applied to both claimants and employers/their agents. The recommended maximum fine is $2,300. This quantity had approximately the same buying power in January of 2021 as $1,000 did in January of 1986, according to the Bureau of Labor Statistics.

Ultimately, penalties for Unemployment Insurance fraud should be updated in order to ensure that they are fair, sufficiently strict, and act effectively to discourage would-be fraudsters. This would best serve the interests of Maryland taxpayers and employers.