Analysis of Revenue Proposals

FY 2019-20
Executive Budget

MARCH
2019

About the Independent Fiscal Office

The Independent Fiscal Office (IFO) provides revenue projections for use in the state budget process along with impartial and timely analysis of fiscal, economic and budgetary issues to assist Commonwealth residents and the General Assembly in their evaluation of policy decisions. In that capacity, the IFO does not support or oppose any policy it analyzes, and will disclose the methodologies, data sources and assumptions used in published reports and estimates.

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INDEPENDENT FISCAL OFFICE

March 22, 2019

This report provides an analysis of the tax and revenue proposals included in the *2019-20 Executive Budget* released in February 2019. The Independent Fiscal Office (IFO) publishes this report to fulfill its statutory duties as provided under Section 604-B (a)(4) of the Administrative Code of 1929. The statute requires that the IFO "provide an analysis, including economic impact, of all tax and revenue proposals submitted by the Governor or the Office of the Budget."

This report uses various data sources to derive estimates of the revenue proposals included in the budget. All data sources and methodologies used to derive those estimates are noted in the relevant sections of this document. The IFO would like to thank the various organizations that provided input for this report.

Questions or comments regarding the contents of this report may be submitted to contact@ifo.state.pa.us.

Sincerely,

MATTHEW J. KNITTEL
Director

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Introduction

This report provides revenue estimates for the tax and revenue proposals contained in the *2019-20 Executive Budget* released in February 2019. The Independent Fiscal Office (IFO) publishes this report to fulfill its statutory duties as provided under Section 604-B (a)(4) of the Administrative Code of 1929. The statute requires that the IFO "provide an analysis, including economic impact, of all tax and revenue proposals submitted by the Governor or the Office of the Budget."

The report contains two sections. The first section analyzes the tax and revenue proposals included in the *2019-20 Executive Budget* and the corresponding impact on General Fund revenues over a five-year period. The text includes brief descriptions of the data sources and methodologies used to derive the revenue estimates, as well as an interstate comparison of CNIT rates and filing methods. The second section analyzes the proposal to increase the state minimum wage from $7.25 to $12.00 per hour. It discusses potential employment effects, income effects and implications for General Fund revenues and expenditures. Due to lack of current research, the section provides only general comments on the proposed increase in the minimum wage from $12.00 to $15.00 per hour over a six-year period.

The analyses contained in this report are based on descriptions from the *2019-20 Executive Budget* and, when available, technical language provided by the administration. For this year, the administration provided language for the proposed increase in the minimum wage, but language was not available for the proposed corporate net income tax rate reduction, enactment of combined reporting or the newly proposed transfers.

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Tax and Revenue Proposals

The *2019-20 Executive Budget* proposes changes to the corporate net income tax, new transfers from the personal income tax and the sales and use tax to various funds and an expansion of the Resource Enhancement Tax Credit. This analysis projects that the proposals will reduce General Fund revenues by $192 million in fiscal year (FY) 2019-20. The reduction is projected to increase to $873 million by FY 2023-24.

	18-19	**19-20**	**20-21**	**21-22**	**22-23**	**23-24**
Table 1.1						
General Fund Revenue Impact Summary						
Corporate Net Income Tax	n.a.	-$2	-$26	-$222	-$418	-$658
Sales and Use Tax	n.a.	-135	-168	-172	-172	-172
Personal Income Tax	n.a.	-52	-43	-43	-42	-40
Resource Enhancement Tax Credit	n.a.	-3	-3	-3	-3	-3
Total	**n.a.**	**-192**	**-240**	**-440**	**-634**	**-873**

Note: Figures in dollar millions.

Corporate Net Income Tax

The administration's proposal (1) reduces the corporate net income tax (CNIT) rate from 9.99 percent to 8.99 percent for tax years beginning in 2020; 8.29 percent for tax years beginning in 2021; 7.49 percent for tax years beginning in 2022; 6.99 percent for tax years beginning in 2023; and 5.99 percent for tax years beginning in 2024 and thereafter and (2) requires corporations that are members of a unitary business group to apportion their income via a combined annual report for tax purposes, a filing method commonly known as combined reporting, effective for tax years beginning in 2020 and thereafter.[1]

Methodology

The CNIT proposal was analyzed in the following order: (1) rate reduction and (2) combined reporting. The stacking order does not affect the total net impact of the proposal, but it does change the relative magnitudes of the rate reduction and combined reporting estimates.

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[1] A unitary business is a single economic enterprise that is comprised of separate parts of a single business entity or of a commonly controlled group of business entities that are sufficiently interdependent, integrated and interrelated through their activities so as to provide a synergy and mutual benefit that produces a sharing or exchange of value among them and a significant flow of value to the separate parts. Source: "Allocation and Apportionment Regulations" Multistate Tax Commission (MTC) www.mtc.gov/uploadedFiles/Multistate_Tax_Commission/Uniformity/Uniformity_Projects/A_-_Z/AllocaitonandApportionmentReg.pdf.

Rate Reduction

The estimate applies the proposed rate reduction to the IFO's most recent CNIT baseline projection. The estimate includes a behavioral impact that partially offsets the static revenue loss due to the lower tax rate because corporations have less incentive to use tax planning techniques to reduce Pennsylvania corporate tax liability if tax rates are reduced. In addition, when fully phased in, the 40 percent reduction in the tax rate would likely be sufficient to have a positive impact on firms' location decisions.

Combined Reporting

Under mandatory combined reporting, multi-state businesses that form a unitary group are required to file a combined return as if the related entities were a single corporation. The combined return reflects the net income or loss associated with the business operations of all members of the unitary group and income is apportioned to the taxing jurisdiction based on the activity of the combined group in that jurisdiction. Supporters believe this filing method reduces a taxpayer's ability to shift profits to low or no tax states through related party transactions and is subject to less manipulation by taxpayers. Supporters also note that the filing method will "level the playing field" because Pennsylvania-only firms cannot shift profits to other states. Opponents believe it will subject profits to tax that have little or no economic connection to the state and constrain economic growth. They also believe that the filing method will introduce significant administrative complexity.

Determination of the unitary group is a key component of combined reporting and is generally based on the ownership of the group, as well as the relationships between the corporations within the group. Estimating the impact from the shift to combined reporting is subject to uncertainty, largely because taxing authorities lack full information regarding the characteristics of potential unitary groups. The overall taxable income and apportionment for each group will change based on the group's composition, and some groups will realize an increase in tax liability compared to separate entity reporting, while others realize a decline. The determination of the composition of the unitary group can also be complicated and subjective. As a result, the members included in a unitary group may be subject to significant litigation. Despite the uncertainty, combined reporting is generally assumed to increase tax collections in high rate states due to various methods that can be used to shift profits to low or no tax states.

In 2013, the IFO issued a report which used research from states that implemented combined reporting during the previous decade to examine the revenue impact from that filing method.[2] The report found that combined reporting could increase revenues by roughly 9 to 13 percent. As an update to that analysis, the IFO reviewed CNIT collections and GDP data for the six states ("CR states") that have implemented combined reporting since 2006 to determine the impact that filing method had on state tax collections.[3]

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[2] See "Corporate Tax Base Erosion: Analysis of Policy Options," Independent Fiscal Office (March 2013) http://www.ifo.state.pa.us./Releases.cfm.
[3] The CR states include Connecticut, Massachusetts, New York, Rhode Island, Vermont and Wisconsin. Kentucky and New Jersey implemented combined reporting for 2019 but were excluded from the analysis because data were not available for the post-combined reporting period. For states that enacted a rate reduction, revenues were adjusted for the rate change. West Virginia and Michigan also enacted combined reporting during that period but were excluded from the analysis due to other fundamental changes to the tax system (Michigan) or a collapse of the tax base motivated by natural resource firms (West Virginia).

The analysis uses a relatively simple test for this purpose. The test compares the difference in average growth rates for private state GDP and CNIT revenues for CR states and 10 control states from 2005 to 2018.[4][5] Overall, there should be a positive relationship between state economic growth and CNIT tax revenues over the 13-year period: higher state economic growth should be positively correlated with corporate profits and CNIT revenues. For the 10 control states, the analysis finds that average CNIT revenue growth (1.2 percent) lagged state GDP growth (3.5 percent) by 2.3 (weighted average) to 1.5 (unweighted average) percentage points during the time period under consideration. (See **Table 1.2**.) By comparison, for CR states, the growth rate differential is only 1.0 (weighted) or 0.9 (unweighted) percentage points because average CNIT revenue growth lags GDP growth by a smaller percentage. Overall, the difference in the growth rate differential between the two groups is roughly 1.3 (weighted) to 0.6 (unweighted) percentage points.

This simple comparison suggests that the change in filing method expanded the tax base in CR states and led to higher CNIT revenue growth rates than would otherwise be expected. Given average state GDP growth rate of 3.0 to 3.5 percent per annum, a 1.0 percentage point differential between the two groups is roughly equivalent to a 12 percent expansion of the tax base for CR states. It is noted that this is an average result, and certain CR states recorded stronger gains (MA and WI), while others recorded a reduction (RI) using this comparison methodology.

Table 1.2
Combined Reporting Base Expansion

	2005 to 2018 Average Growth Rates[1]		
	CNIT[2]	GDP	Difference
Control States			
Weighted	1.2%	3.5%	-2.3%
Unweighted	1.6	3.1	-1.5
Combined Reporting States			
Weighted	2.7	3.7	-1.0
Unweighted	2.1	3.1	-0.9

[1] See footnote 5 for a description of the growth rate computation.

[2] Data through FY 2016-17 are from the U.S. Census Bureau's Annual Survey of State Government Tax Collections. Data for FY 2017-18 are estimated based on information published on various state websites.

Sources: U.S. Census, U.S. Bureau of Economic Analysis and various state websites.

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[4] The 10 control states did not enact major tax law changes during the time period, such as a rate reduction (except Maryland). They are also economically diversified states and are not dependent on natural resources or particular sectors (e.g., high tech). Control states include Pennsylvania, Florida, Georgia, Maryland, New Jersey (prior to implementation of combined reporting), Virginia, Minnesota, Iowa, Alabama and Missouri.

[5] The analysis used two-year averages at the start and end of the period due to the inherent volatility of CNIT revenues. For example, the starting level for CNIT revenues is the average of FY 2004-05 and FY 2005-06 and the end point is the average of FY 2016-17 and FY 2017-18. For GDP, the starting point is the average of calendar year (CY) 2004 and CY 2005 and the end point uses CY 2016 and CY 2017. The GDP computation excludes the government sector.

Having determined the general impact of combined reporting for CR states, the IFO considered three additional factors to determine the appropriate base expansion parameter to use for the estimate: (1) proposed restrictions on the use of net operating losses (NOLs), (2) by FY 2023-24, the CNIT rate will have declined by 4.0 percentage points under the administration's proposal and (3) the Department of Revenue estimates that the addback provision for intangible expenses enacted in 2013 generates roughly $40-$50 million annually.[6] The addback provision reverses certain tax shifting transactions that combined reporting is designed to prevent, thereby reducing the revenue impact from a change to mandatory combined reporting. Combined reporting could also be less effective (i.e., a smaller relative base expansion and revenue impact) at lower tax rates because firms have less incentive to engage in tax planning. However, Pennsylvania also has a higher tax rate than the six CR states and more restrictive NOL provisions. Both characteristics suggest that combined reporting could have larger revenue implications for Pennsylvania. The analysis assumes that these effects generally offset each other and uses a 12 percent base expansion parameter upon enactment of combined reporting, but the parameter declines to 10 percent as the statutory tax rate decreases under the first part of the proposal.

The combined reporting estimate reflects timing issues related to state or taxpayer challenges under the new reporting regime. It is not unusual for states or taxpayers to dispute the inclusion or exclusion of entities that comprise a unitary group. Resolution of those issues could take several years. The full implementation of the new reporting regime by a state tax authority will also require additional resources for audit and enforcement purposes.

Revenue Impact

Table 1.3 displays the estimated net revenue impact of the CNIT proposal over the next five fiscal years. The proposal has no impact on FY 2018-19 and reduces revenue by $2 million for FY 2019-20. By the end of the five-year window, the net impact of the proposal is a revenue reduction of $658 million due to the CNIT rate reduction. The Department of Revenue anticipates that the proposal will require updates to the business tax system and additional staff training at a one-time cost of $1 million (not included in table).

Table 1.3 Corporate Net Income Tax Detail						
	18-19	19-20	20-21	21-22	22-23	23-24
Rate Reduction	n.a.	-$78	-$313	-$538	-$762	-$984
Combined Reporting	n.a.	76	287	315	344	326
Total	**n.a.**	**-2**	**-26**	**-222**	**-418**	**-658**

Note: Figures in dollar millions.

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[6] Under the administration's proposal, sharing of NOLs between members of a unitary business group is not permitted and the 40 percent NOL cap is applied to the member's apportionable share of the combined business income (essentially a separate company basis).

Interstate Comparison

Table 1.4 provides a comparison of (1) state CNIT rates and (2) the applicable reporting method. Forty-four states currently levy a CNIT, with the highest statutory rate (12.00 percent) levied by Iowa followed by New Jersey (11.50 percent) and Pennsylvania (9.99 percent).[7] Fourteen states use a graduated rate structure, while 30 levy a flat rate. Since 2009, 15 states have reduced their top corporate tax rate.[8]

As of 2019, 26 states and the District of Columbia require combined reporting for businesses that meet unitary group standards. The most recent states to enact combined reporting were Kentucky and New Jersey (both in 2018). The remaining 18 states that levy a CNIT require separate reporting. Seven of the states that require separate reporting have processes in place where (1) the taxpayer can elect to use a different filing method (e.g., consolidated) or (2) the state tax authority can require a taxpayer to file a combined return based on audit results.

Table 1.4 States with Corporate Net Income Tax					
State	**Tax Rate**	**Method**	**State**	**Tax Rate**	**Method**
Alabama	6.50%	Separate	Minnesota	9.80%	Combined
Alaska	0.00 - 9.40%	Combined	Mississippi	3.00 - 5.00%	Multiple
Arizona	4.90%	Combined	Missouri	6.25%	Separate
Arkansas	1.00 - 6.50%	Separate	Montana	6.75%	Combined
California	8.84%	Combined	Nebraska	5.58 - 7.81%	Combined
Colorado	4.63%	Combined	New Hampshire	7.70%	Combined
Connecticut	7.50%	Combined	New Jersey	6.5 -11.5%	Combined
Delaware	8.70%	Separate	New Mexico	4.80 - 5.90%	Multiple
Florida	5.50%	Separate	New York	6.50%	Combined
Georgia	5.75%	Separate	North Carolina	2.50%	Multiple
Hawaii	4.40 - 6.40%	Combined	North Dakota	1.41 - 4.31%	Combined
Idaho	6.93%	Combined	Oklahoma	6.00%	Separate
Illinois	9.50%	Combined	Oregon	6.60 - 7.60%	Combined
Indiana	5.75%	Multiple	**Pennsylvania**	**9.99%**	**Separate**
Iowa	6.00 - 12.00%	Separate	Rhode Island	7.00%	Combined
Kansas	4.00 - 7.00%	Combined	South Carolina	5.00%	Multiple
Kentucky	5.0%	Combined	Tennessee	6.50%	Multiple
Louisiana	4.00 - 8.00%	Separate	Utah	4.95%	Combined
Maine	3.50 - 8.93%	Combined	Vermont	6.00 - 8.50%	Combined
Maryland	8.25%	Separate	Virginia	6.00%	Multiple
Massachusetts	8.00%	Combined	West Virginia	6.50%	Combined
Michigan	6.00%	Combined	Wisconsin	7.90%	Combined

Note: States designated as "multiple" generally require separate reporting, but either allow taxpayers to elect another form of reporting, or may require combined reporting based on audits. Indiana's rate decreases to 5.5% on July 1, 2019.
Sources: "State Corporate Income Tax Rates and Brackets for 2019," Tax Foundation (February 2019) and CCH State Tax SmartCharts (March 2019).

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[7] New Jersey imposes a temporary surtax of 2.5 percent for tax years 2018 and 2019 and 1.5 percent for tax years 2020 and 2021. The surtax applies to allocated taxable net income that exceeds $1 million.
[8] "State Corporate Income Tax Rates and Brackets for 2019" and "State Corporate Income Tax Rates and Brackets for 2009," Tax Foundation.

Sales and Use Tax

Transfer to Tobacco Settlement Fund

The administration's proposal creates a sales and use tax (SUT) transfer to the Tobacco Settlement Fund for debt service payments. This provision is expected to reduce FY 2019-20 non-motor SUT revenues by $115 million. See **Table 1.5** for this transfer and the transfer that follows.

Transfer to Commonwealth Financing Authority

The administration's proposal increases the SUT transfer to the Commonwealth Financing Authority for school construction (PlanCon) debt service payments. This provision is expected to reduce FY 2019-20 non-motor SUT revenues by $20 million.

Table 1.5 Sales and Use Tax Transfer Detail						
	18-19	**19-20**	**20-21**	**21-22**	**22-23**	**23-24**
Tobacco Settlement Fund	n.a.	-$115	-$115	-$115	-$115	-$115
Commonwealth Financing Authority	n.a.	-20	-53	-57	-57	-57
Total	**n.a.**	**-135**	**-168**	**-172**	**-172**	**-172**

Note: Figures in dollar millions. Estimates provided by the Department of Revenue.

Personal Income Tax

Transfer to Environmental Stewardship Fund

The administration's proposal creates a personal income tax (PIT) transfer to the Environmental Steward-ship Fund for Growing Greener debt service payments. This provision is expected to reduce FY 2019-20 PIT withholding revenues by $20 million. See **Table 1.6** for this transfer and all transfers that follow.

Transfer to Farm Show Lease Fund

The administration's proposal creates a PIT transfer to the Farm Show Lease Fund for Farm Show lease payments. This provision is expected to reduce FY 2019-20 PIT withholding revenues by $13 million.

Transfer to School Safety and Security Fund

The administration's proposal creates a PIT transfer to the School Safety and Security Fund for grants. This provision is expected to reduce FY 2019-20 PIT withholding revenues by $15 million.

Transfer to SERS - Defined Contribution Fund

The administration's proposal creates a PIT transfer to the Defined Contribution Fund for costs associated with the SERS Defined Contribution Plan. This one-time transfer is expected to reduce FY 2019-20 PIT withholding revenues by $4 million.

Table 1.6 Personal Income Tax Transfer Detail						
	18-19	**19-20**	**20-21**	**21-22**	**22-23**	**23-24**
Environmental Stewardship Fund	n.a.	-$20	-$15	-$15	-$14	-$12
Farm Show Lease Fund	n.a.	-13	-13	-13	-13	-13
School Safety and Security Fund	n.a.	-15	-15	-15	-15	-15
SERS - Defined Contribution Fund	n.a.	-4	0	0	0	0
Total	**n.a.**	**-52**	**-43**	**-43**	**-42**	**-40**

Note: Figures in dollar millions. Estimates provided by the Department of Revenue.

Resource Enhancement Tax Credit

The administration's proposal increases the annual cap for the Resource Enhancement Tax Credit from $10 million to $13 million, effective July 1, 2019. Beginning in FY 2019-20, the proposal would reduce General Fund revenues by $3 million annually. See Table 1.1.

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Raising the Minimum Wage

The administration proposes to raise the state minimum wage from the federal minimum of $7.25 to $12.00 per hour on July 1, 2019, and increase that amount by $0.50 every year until the minimum wage is $15.00 beginning on July 1, 2025. On July 1, 2026 and every year thereafter, the minimum wage would increase by an annual cost-of-living adjustment based on the Consumer Price Index for All Urban Consumers (CPI-U) for the Pennsylvania, New Jersey, Delaware and Maryland region. The proposal also removes the ability of employers to count tips when calculating an employee's hourly wage. In other words, employers must also pay tipped employees the regular minimum wage.

The IFO has published analyses of various minimum wage proposals the past four years with the most recent analysis released April 2018. The following bullets list major changes from last year's analysis that will impact the updated estimates:

- The analysis uses U.S. Census data for 2018 instead of 2017. Those data show a notable drop in the number of non-tipped Pennsylvania workers earning under $10.00 per hour (-65,000, primary jobs only) and a large increase in workers earning $15.00 per hour or more (+150,000).[9]

- Last year's analysis assumed a three-year phase-in to $12.00 per hour. The current analysis assumes the new wage rate of $12.00 is effective immediately on July 1, 2019.

- The current analysis assumes that some of the negative employment effect manifests itself as a reduction in hours worked, as opposed to lower employment.

- Last year's proposal did not change the hourly wage rate for tipped workers ($2.83). The current proposal treats tipped workers the same as other workers. Due to the high degree of uncertainty regarding the impact of raising the hourly wage for tipped workers from $2.83 to $12.00 per hour, the analysis does not combine tipped and non-tipped workers, and a more limited analysis is performed for tipped workers.

- Much new research has been published in the past three years. Overall, those studies suggest that the proposal could have a more moderate impact on employment opportunities for an increase to $12.00 per hour, in part because new Census data show fewer workers at very low wage rates where a higher minimum wage would have the greatest negative employment impact. However, research is much less clear on increases above $12.00, and a recent study suggests that negative employment effects could accelerate quickly after that level.

- In previous analyses, the IFO did not attempt to account for secondary jobs that were not included in the U.S. Census Current Population Survey dataset. This analysis imputes those missing secondary jobs across wage groups and other characteristics of affected workers such as gender, part- or full-time status and marital status. This imputation adds 430,000 individuals who hold more than one job, and the analysis assumes they are all part-time because those jobs were not identified as a primary job. This imputation is discussed in further detail below.

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[9] This shift may, in part, reflect the higher wages implemented in 2018 by several large national employers including Walmart ($11.00 per hour), CVS ($11.00), Target ($12.00) and Costco ($14.00). Costco and Amazon recently announced that they will increase the hourly wage to $15.00 this year.

- The Pennsylvania labor market continues to be tight, with relatively low unemployment. Barring a recession, demographic trends (i.e., a contracting working age cohort between the ages of 20 and 64) suggest that will likely continue over the next decade. Recent studies also find that some low-wage workers have not received wage gains that are commensurate with higher productivity due to a labor market that is not fully competitive for low-wage workers. Under these conditions, a higher minimum wage will cause less disruption than if there were slack in the labor market or a perfectly competitive labor market.

The analysis begins with a comparison of state minimum wage rates and a review of recent minimum wage studies. The analysis then examines the characteristics of lower-wage workers based on hourly wage rates, part- or full-time status, gender, age and marital/child status. Employer characteristics are also examined based on industry and employer size. Following these descriptive statistics, the analysis computes the impact of the higher proposed minimum wage on employment, incomes and General Fund revenues and expenditures. The analysis concludes with sections that examine tipped workers, the income mobility of low-income wage earners and the proposed phased-in increase from $12.00 to $15.00 per hour.

The focus of this analysis is on the immediate movement to a $12.00 minimum wage, and it provides only a brief discussion for the phased-in increase to $15.00 over the six years that follow. This approach is used to keep the analysis tractable and focused on near-term outcomes. Due to the lack of research, it is also less clear what the impact will be moving from $12.00 to $15.00 per hour. The IFO is not aware of any current studies that examine the statewide impact of a $15.00 minimum wage. Therefore, any estimates or projections for that portion of the proposal would be speculative.

Minimum Wage Across States

As of January 1, 2019, Pennsylvania and 20 other states do not require employers to pay a wage that exceeds the federal minimum of $7.25 per hour. (See **Table 2.1** on next page.) By contrast, 13 states and the District of Columbia require employers to pay an hourly wage of $10.00 or more. By January 1, 2023, 11 states and the District of Columbia will require employers to pay an hourly wage of $12.00 or more under current law.

Currently, all border states have a minimum wage that exceeds Pennsylvania by at least $1.00 per hour, and two states (New York and Maryland) have a minimum wage that is at least $2.00 higher.[10] If Pennsylvania increases the minimum wage to $12.00 in 2019, it would be exceeded only by Washington D.C. and tied with Washington, California and Massachusetts for the second highest minimum wage. If Pennsylvania continues to increase the minimum wage to $15.00 over the subsequent six years, on January 1, 2027, it would join six other states (Washington, California, Massachusetts, New Jersey, Illinois and Nevada) and Washington D.C. with a minimum wage that meets or exceeds $15.00.

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[10] As of July 1, 2019, New Jersey will also exceed Pennsylvania's minimum wage by more than $2.00, as the state minimum wage will increase to $10.00 per hour.

Table 2.1
Minimum Wage Rates by State (as of January 1st)

	2019 Rank	2019	2020	2021	2022	2023
Washington D.C.[1]	1	$13.25	$14.00	$15.00	$15.38	$15.73
Washington[1]	2	12.00	13.50	13.84	14.19	14.52
California[1,2]	2	12.00	13.00	14.00	15.00	15.35
Massachusetts	2	12.00	12.75	13.50	14.25	15.00
Colorado[1]	5	11.10	12.00	12.30	12.61	12.90
New York[1]	5	11.10	11.80	12.50	12.81	13.11
Arizona[1]	7	11.00	12.00	12.30	12.61	12.90
Maine[1]	7	11.00	12.00	12.30	12.61	12.90
Vermont[1]	9	10.77	10.98	11.26	11.54	11.81
Oregon	10	10.75	11.25	12.00	12.75	13.50
Rhode Island	11	10.50	10.50	10.50	10.50	10.50
Connecticut	12	10.10	10.10	10.10	10.10	10.10
Hawaii	12	10.10	10.10	10.10	10.10	10.10
Maryland	12	10.10	10.10	10.10	10.10	10.10
Alaska[1]	15	9.89	10.08	10.34	10.60	10.84
Minnesota[1]	16	9.86	10.05	10.31	10.57	10.81
Arkansas	17	9.25	10.00	11.00	11.00	11.00
Michigan	17	9.25	9.65	9.87	10.10	10.33
South Dakota[1]	19	9.10	9.28	9.51	9.75	9.98
Nebraska	20	9.00	9.00	9.00	9.00	9.00
New Jersey	21	8.85	11.00	12.00	13.00	14.00
Delaware	22	8.75	9.25	9.25	9.25	9.25
West Virginia	22	8.75	8.75	8.75	8.75	8.75
Missouri	24	8.60	9.45	10.30	11.15	12.00
Ohio[1]	25	8.55	8.72	8.94	9.16	9.37
Montana[1]	26	8.50	8.67	8.89	9.11	9.32
Florida[1]	27	8.46	8.63	8.84	9.07	9.28
Illinois	28	8.25	9.25	11.00	12.00	13.00
Nevada[1]	28	8.25	8.41	8.63	8.84	9.05
New Mexico	30	7.50	7.50	7.50	7.50	7.50
Pennsylvania	31	7.25	7.25	7.25	7.25	7.25
Other	31	7.25	7.25	7.25	7.25	7.25

Note: Over 50 localities have adopted a minimum wage above their state's minimum wage.

[1] All inflation adjustments in this table use IHS Markit's U.S. CPI-U year-over-year growth rate to estimate inflation adjustments for future years.

[2] The minimum wage in 2019 is $11/hour for employers with <26 employees and $12/hour for all others.

Source: The Economic Policy Institute. Minimum Wage Tracker (as of March 1, 2019).

Recent Minimum Wage Studies

The text that follows provides the main findings and results from prominent minimum wage studies that have been published recently. The studies appear in chronological order. In order to interpret the results, it is necessary to define the term "employment elasticity." The employment elasticity is the percentage change in employment divided by the percentage change in the minimum wage. For example, an elasticity of -0.1 implies that a 10.0 percent increase in the minimum wage would reduce employment by 1.0 percent (-1.0 / 10.0).

Congressional Budget Office (2014)[11]

Based on a review of a large body of research, the CBO determined an employment elasticity for teenagers from raising the federal minimum wage from $7.25 to $10.10. That parameter ranged from -0.2 to a small negative, with a central estimate of -0.1. The CBO then modified that estimate to (1) apply only to teenagers directly affected by a higher minimum wage (as opposed to all teenagers) and (2) take into account the actual wage distribution of those workers (as opposed to only the statutory minimum wage). The adjusted elasticity was higher at -0.45, but applied to a smaller group. For adult workers directly affected by the higher minimum wage, CBO used an elasticity that was one-third as large (-0.15). The CBO found that an increase in the federal minimum wage from $7.25 to $10.10 (39 percent) would reduce employment for all directly-affected workers by 2.9 percent (-500,000), and yield higher incomes for workers who retain employment (16.5 million). Workers slightly above the minimum wage would also receive a modest pay increase.

Neumark (2015)[12]

Based on a review of existing studies, this research note from the Federal Reserve Board of San Francisco finds that "the overall body of recent evidence suggests that the most credible conclusion is a higher minimum wage results in some job loss for the least-skilled workers — with possibly larger adverse effects than earlier research suggested." Neumark notes that "(a)mong the studies that find job loss effects, estimated employment elasticities of -0.1 to -0.2 are at the lower range but are more defensible than the estimates of no employment effects (p. 4)."

Dube et al. (2015)[13]

The authors use U.S. data for teens and restaurant workers from the Quarterly Workforce Indicators database and focus on the period from 2000 to 2011. The paper exploits differences between border counties in states that did and did not raise their minimum wage. The authors "find striking evidence that separations, hires, and turnover rates for teens and restaurant workers fall substantially following a minimum wage increase — with most of the reductions coming within the first three quarters of the higher minimum (p. 2)." For both teens and restaurant workers, the authors could not identify a statistically significant negative effect on employment from a higher minimum wage.

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[11] "The Effects of a Minimum Wage Increase on Employment and Family Income," Congressional Budget Office (February 2014).

[12] "The Effects of Minimum Wage on Employment," FRBSF Economic Letter 2015-37 (December 2015).

[13] Dube et al. "Minimum Wage Shocks, Employment Flows and Labor Market Frictions," Journal of Labor Economics, 34(3) (2016).

Institute for Research on Labor and Employment (2015)[14]

The authors examine recent studies and find general agreement on an employment elasticity for restaurant workers that ranges from -0.06 to 0.04, with consensus towards a small, negative value. However, they find substantial disagreement for teen employment. The authors make allowance for certain state-specific trends and find a negative bias in traditional minimum wage studies. The authors find that correction of that bias implies teen employment elasticities that are not significantly different than zero (i.e., no impact from a higher minimum wage).

Wolfson and Belman (2016)[15]

The authors perform a meta-analysis of 37 credible studies published from 2002 to 2015 on the impact of minimum wage on employment levels. They find that recent research has reduced the consensus estimate range of employment elasticities from -0.3 to -0.1 down to -0.12 to -0.05. For teens and restaurant workers, the estimates range from -0.11 to -0.08.

Upjohn Institute (2016)[16]

This study finds that the pass-through effect on prices from higher minimum wages is entirely concentrated in the month the new minimum wage becomes effective, and the impact on prices is smaller than estimated by existing research. While previous research had found that the entire cost was passed forward to con-sumers via higher prices, this study estimates that consumers bear roughly one-half of the cost from higher minimum wages. The authors also note that "large minimum wage hikes have clear positive effects on output prices (p. 35)" and the effects of a change in a federal, state or city minimum wage will differ. Finally, the authors find much stronger price effects from large "one shot" increases in the minimum wage versus a phased-in approach because "more predictable changes may allow business to better prepare for and take account of increases in labor costs" and "more moderate changes… could also allow firms to more easily absorb the increase in costs (p. 33)." Consistent with prior research, the study notes that two mod-erate minimum wage changes are not the same as a single large one, and moderation regarding the phase-in could temper the pass-through effect to consumer prices.

University of Washington I (2016)[17]

The first of three studies that examine the impact of raising the minimum wage in Seattle. The report analyzes the increase from $9.47 to $11.00 per hour for most employers.[18] The study finds that low-wage workers' median wage increased by $1.18, and that $0.73 was due to the higher minimum wage and $0.45 was due to favorable economic conditions. The 16.2 percent increase in the statutory minimum wage (or

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[14] Allegretto et al. "Credible Research Designs for Minimum Wage Studies: A Response to Neumark, Salas and Wascher," University of California Berkeley, IRLE Working Paper No. 116-15 (September 2015).

[15] Wolfson, Paul and D. Belman. "15 Years of Research on U.S. Employment and the Minimum Wage," Dartmouth College and Michigan State University (December 2016).

[16] MacDonald, D. and E. Nilsson. "The Effects of Increasing the Minimum Wage on Prices: Analyzing the Incidence of Policy Design and Context," Upjohn Institute for Employment Research, Upjohn Institute Working Paper 16-260 (2016).

[17] The Seattle Minimum Wage Study Team. "Report on the Impact of Seattle's Minimum Wage Ordinance and Wages, Workers, Jobs and Establishments Through 2015," University of Washington (July 2016).

[18] For employers with less than 500 employees who offer health insurance or the employees earn tips, the minimum wage increased to $10.00 per hour.

10.3 percent increase in the median affected wage of $9.97) resulted in a 1.2 percent reduction in employment, and a modest reduction in hours worked per quarter. (Note: the results apply to all affected workers, not just teens or restaurant workers.) The strength of this study is that it utilizes detailed administrative data that tracked actual wages, hours worked and outcomes for individual workers affected across all age groups and industries. However, the analysis only includes single location establishments and excludes multi-location establishments because it was not possible to determine the exact location of workers for multi-location firms (i.e., it was not clear if the workers were employed within the city limits). Those firms employed roughly 40 percent of the workforce in Seattle.

Center on Wage and Employment Dynamics (2017)[19]

This study also examines the increase in the Seattle minimum wage to $11.00 per hour, but uses the Quarterly Census of Employment and Wages (QCEW) dataset and only examines the food service/restaurant industry because it employs a high proportion of low-wage workers and the aggregated data cannot separately identify workers directly affected by a higher minimum wage. For all types of restaurants, the analysis finds employment elasticities that are not significantly different than zero (i.e., the higher minimum wage had no discernable impact on employment). The authors note several reasons for that outcome: (1) the labor market is not perfectly competitive (i.e., firms have wage-setting power), (2) higher wages increase productivity, (3) it is difficult to replace labor in low-paid service occupations, (4) affected workers comprised a relatively small portion of total employer costs and (5) lower-wage workers spend all extra income, thereby increasing overall demand.

University of Washington II (2017/2018)[20]

The second (revised) study on the Seattle minimum wage examines raising the level from $11.00 to $13.00 per hour for certain employers. The authors find much larger negative employment effects from the second minimum wage hike and note that the effects appear to be non-linear: negative employment impacts become progressively stronger as the minimum wage increases. Similar to the first study, administrative data allow the authors to identify actual wages earned, hours worked and industry of employment, but the study excludes roughly 37 percent of workers employed by multi-location firms. The authors find that traditional employment elasticities are substantially understated, largely because previous studies based the percentage increase in the wage rate on the statutory floor (e.g., $7.25 for Pennsylvania) due to lack of specific data, versus what employees actually earned. The authors believe that the relatively high level of the minimum wage in Seattle, the smaller locality (i.e., a city and not a state) and inclusion of non-restaurant employees in the dataset also contributed to the much higher negative employment response. The authors conclude that the movement to a $13.00 minimum wage yielded lower incomes of $74 per month for the average low-wage worker (reflects lower employment and reduced hours). It should be noted that some researchers strongly disagree with these findings and believe methodological issues drive much of the result.

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[19] Reich et al. "Seattle's Minimum Wage Experience 2015-16," Institute for Research on Labor and Employment, Center on Wage and Employment Dynamics, University of California, Berkeley (June 2017).
[20] Jardim et al. "Minimum Wage Increases, Wages and Low-Wage Employment: Evidence from Seattle," NBER Working Paper 23532 (May 2018).

Economic Policy Institute (2017)[21]

This paper was released in response to the second University of Washington study (originally released June 2017). The authors raise concerns about the validity of the strong, negative employment response found in the second study because (1) the results were very different than existing research, (2) it found effects on high wage workers where there should be none, and (3) the study omits 37 percent of the Seattle workforce employed by larger multi-location firms.

University of Washington III (2018)[22]

The latest research from the Seattle Minimum Wage Study Team examines the minimum wage increase from $9.47 to $11.00 to $13.00 and follows workers based on their level of work experience. The analysis focuses on the impact of the wage increase from $11.00 to $13.00 for the first three quarters of 2016. Across all workers, the study finds that average hours worked declined by one-half to one hour per week and average pre-tax income increased by $8 to $12 per week. For more experienced workers that retained employment, the reduction in average hours worked was more modest and pre-tax income gains were roughly $19 per week. For inexperienced workers, the reduction in hours worked offset the increase in the hourly wage rate, yielding negligible income gains. The authors also find a relative and absolute reduction in the flow of new employees into Seattle's low-wage labor market. The authors believe this factor motivated their findings in previous research of an overall net negative impact on workers from the increase in the minimum wage to $13.00. Essentially, the inflow of new (inexperienced) minimum wage workers was considerably lower than the counterfactual level that should have been realized, as suggested by a control group. The authors note that the higher minimum wage appears to have successfully raised incomes for experienced workers but at the expense of the ability of new workers to enter the market (e.g., high school and college students). Finally, the paper finds an eight percent reduction in labor turnover rates for all employees, regardless of experience, due to the higher minimum wage.

Cengiz et al. (2019)[23]

The authors employ a new methodology to examine 138 state-level minimum wage changes from 1979 to 2016 where the mean real increase in the minimum wage was 10.1 percent. The dataset used is the same used for this analysis: the Merged Outgoing Rotation Group dataset from the U.S. Census Bureau's Current Population Survey. The authors discuss three main results. First, higher minimum wages do not appear to impact employment, assuming that the ratio of the new minimum wage to the state median wage does not exceed 55 percent. (Discussed further below.) The study found that job gains at or slightly above the new minimum wage closely matched those lost that were below the new minimum wage. Second, impacts varied across sectors: employment in the manufacturing and retail/wholesale trade sectors could be adversely impacted, while workers in other sectors are largely unaffected. Third, positive wage "spillovers" extend up to $3 above the new minimum wage and can account for up to 40 percent of the overall income gains from a higher minimum wage.

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[21] Zipperer, Ben and J. Schmidt. "The 'high road' Seattle labor market and the effects of the minimum wage increase," Economic Policy Institute (June 2017).

[22] Jardim et al. "Minimum Wage Increases and Individual Employment Trajectories," NBER Working Paper 25182 (October 2018).

[23] Cengiz et al. "The Effect of Minimum Wages on Low-Wage Jobs: Evidence from the United States Using a Bunching Estimator," NBER Working Paper 25434 (January 2019).

Take-Aways from Recent Studies and Events

Based on recent studies, the following points of emphasis are relevant for this updated analysis:

- Moderate increases in the minimum wage likely have a modest negative impact on employment levels. However, it is unclear how to define a "moderate increase." Nearly all research on the minimum wage examine values of the Kaitz index that do not exceed 55 percent, or real minimum wage increases that average roughly 10 percent. The Kaitz index is the ratio of the new minimum wage to the state median wage. The higher the ratio, the greater impact the new wage rate will have on the overall wage distribution, and hence employment. Based on the data used for this analysis, the IFO computed a median wage rate for all Pennsylvania workers of $19.70 (full- and part-time, all non-tipped workers). Therefore, the Kaitz index would equal $12.00 / $19.70, or 60.9 percent, which is just outside the range of most studies.[24] However, it is also the case that very few workers actually earn the statutory minimum wage ($7.25): the median (average) wage for non-tipped workers earning less than $12.00 per hour was $10.00 ($9.73), and the increase to $12.00 is 20.0 percent (23.3 percent), as opposed to the 65.5 percent relative to $7.25 per hour. For Pennsylvania, the statutory minimum wage is not "binding" because so few employers pay that wage. Therefore, one may presume that consensus elasticity estimates are generally relevant for Pennsylvania, but the employment response for an increase to $12.00 per hour would be on the high end of the plausible range of estimates.

- More moderate effects could be expected if a higher wage rate is phased-in. Research finds a greater impact on prices and employment from large "one shot" increases compared to smaller, phased-in changes.

- Similar to other states and cities, the Pennsylvania labor market for low-wage workers is not perfectly competitive. If the labor market were perfectly competitive, workers would realize wage gains from higher productivity and a higher minimum wage would largely be passed forward to consumers through higher prices. However, research suggests that firms have some degree of wage-setting power for low-wage labor. If that holds, then a higher minimum wage will, to some extent, reduce business profits rather than increase prices. It would also serve to moderate any negative employment response.

- Other factors that benefit employers should be included in an analysis. Recent studies generally confirm established research that finds higher minimum wages increase employee productivity and reduce turnover. Both factors should produce employer cost savings.

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[24] Some researchers use full-time jobs only, in which case the median wage for Pennsylvania is $21.15 and the Kaitz index is 56.7 percent. An alternative data source is the U.S. Bureau of Labor Statistics' Occupational Employment Statistics, which has a median wage of $18.12 for all Pennsylvania payroll workers, including part- and full-time and tipped workers (tips are included with wages). See https://www.bls.gov/oes/current/oes_pa.htm#00-0000.

- Pennsylvania does not resemble Seattle, or other large cities, that have recently enacted large minimum wage increases.   The Seattle labor market grew very rapidly during the phase-in to the $13.00 minimum wage, and that impact is difficult to separate from the impact of a higher minimum wage. Moreover, a much larger geographic region (such as a state) should generally be less sensitive to wage changes. However, rural areas and small employers will be more sensitive to higher wages. The IFO expects that rural areas would experience stronger negative employment effects than urban areas due to a higher Kaitz index and a lower cost of living.[25]

- A handful of large, national firms have recently increased wages for low-wage workers.   These national employers include Walmart, CVS, Costco, Amazon and Target. The most recent state data for 2018 may already reflect these changes as it shows a material decline in workers earning less than $10.00 per hour. A similar shift might also occur for 2019 if the significant wage hikes at those (and other) firms are not fully reflected in the 2018 data. As noted, low-wage workers are disproportionately affected by higher minimum wages compared to workers who earn a wage closer to the new minimum.

The subsections that follow utilize U.S. Census data to project the impact from the proposed $12.00 minimum wage on Pennsylvania workers, businesses, General Fund revenues and expenditures. The final subsections consider the implications for tipped workers and the six-year phase-in to a $15.00 minimum wage.

Workers Affected by a $12 per Hour Minimum Wage

This analysis uses data from the Merged Outgoing Rotation Group dataset from the 2018 Current Population Survey (CPS).[26] The CPS provides data on the labor force, employment levels, unemployment rates and various demographic characteristics. The monthly survey includes 60,000 U.S. households and is designed so that state specific observations can be weighted to yield population totals for individual states.

The CPS asks respondents to report their hourly wage or weekly salary, occupation, number of hours worked per week, age, gender and other demographic information. Many hourly-paid workers report compensation that falls below the federal minimum and most are employees who traditionally earn tips, such as food servers and bartenders. Employers may pay less than the federal minimum if a tipped worker earns at least $30 per month in tips or commissions and total compensation yields an hourly wage rate of $7.25 or more. For Pennsylvania, such employees can be paid a wage as low as $2.83 per hour.

For 2018, the CPS dataset for Pennsylvania represents 5.58 million workers: 3.43 million reported an hourly wage, and 2.15 million were salaried workers.[27] The majority of workers affected by an increase in the minimum wage are hourly-paid workers. However, the analysis includes certain salaried workers if their computed hourly wage was less than $12.00 per hour.[28] The data also contain 37,800 workers who reported

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[25] It is likely that rural employers are generally smaller than suburban and urban employers. Those smaller rural employers also likely have a lower wage distribution for their employees due to the lower cost of living. Hence, a given dollar increase in the mandatory minimum wage will have stronger implications for rural workers and employers.

[26] The Current Population Survey is a survey sponsored jointly by the U.S. Census Bureau and the U.S. Bureau of Labor Statistics.

[27] Excludes self-employed individuals and workers who were not paid for their labor.

[28] Following the convention used by the U.S. Congressional Budget Office (CBO), the analysis includes salaried workers who earn an effective hourly wage that is below the proposed $12.00 minimum wage. For respondents who reported weekly earnings instead of an hourly wage, an effective hourly wage was computed as their reported usual earnings

a wage less than $7.25 per hour and were employed in occupations that typically receive tips.[29] The impact of the higher minimum wage on those workers is discussed in a later subsection.

The CPS data only reflect primary jobs, and the data do not include secondary jobs. Hence, the dataset excludes a significant number of part-time jobs, and many would represent tipped workers employed in the food service sector and non-tipped workers in the retail sector. Other employment data from the Bureau of Labor Statistics include all payroll jobs, but do not include specific detail such as wage rates, hours worked, age and gender.[30] The more complete dataset suggests that the CPS dataset understates secondary jobs by roughly 430,000. For this analysis, those missing jobs are imputed and merged with data on primary jobs, and they appear in all tabulations in this section.

In order to impute secondary jobs to specific sectors and various worker characteristics (e.g., age and gender), the analysis reconciles the discrepancies between the two data sources and uses data from the CPS for part-time workers only. The analysis assumes that all secondary jobs are part-time. A comparison of the two data sources suggests that the majority of missing part-time jobs reside in the food service, retail, healthcare and administrative sectors. The analysis imputes jobs to those sectors and assumes that 100,000 of the jobs are tipped workers in the food service sector. It is noted that there is uncertainty regarding that figure: although a reconciliation of the two datasets suggests the sectors that have missing workers, the comparison cannot distinguish between tipped and non-tipped workers. For other characteristics of non-tipped secondary jobs, the analysis assumes that the imputed jobs have characteristics similar to primary part-time jobs. For example, the analysis assumes those secondary part-time jobs have a similar wage distribution as primary part-time jobs. The same assumption holds for other characteristics such as age and gender.

Table 2.2 provides a breakdown based on wage level for primary and secondary jobs for all non-tipped workers. For 2018, the analysis contains 5.39 million primary jobs and 330,000 secondary jobs. For primary jobs, 928,000 were part-time (less than 35 hours per week) and 4.46 million were full-time. However, for "directly affected" workers who earn less than $12.00 per hour, half of the primary jobs were part-time, and 56.6 percent were female workers. As noted, the analysis assumes that all secondary jobs are part-time, and they are distributed among wage groups and genders in a pattern that is similar to all primary part-time jobs.

For both categories, the analysis finds that 1.11 million non-tipped workers would be impacted by a $12.00 minimum wage (directly affected) and another 827,000 workers earning between $12.00 to $14.99 would likely also be affected due to wage compression or spillovers (indirectly affected).

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per week divided by their reported usual hours worked per week. See "The Effects of a Minimum Wage Increase on Employment and Family Income," CBO (February 2014).

[29] This figure is lower than a recent report issued by the Pennsylvania Department of Labor and Industry because the IFO analysis assumes that workers who reported a wage of $7.00 to $7.24 per hour misreported their wage and actually received the federal minimum. The approach follows the convention used by the CBO study. The adjustment applied to 8,800 workers, and the great majority were employed in occupations that did not receive tips. The analysis also corrected obvious errors in reported hourly wages, such as wage rates that were less than $1.00 per hour. For those cases, other reported data or an industry-wide average for the occupation were used to determine an hourly wage rate. See "Analysis of the Pennsylvania Minimum Wage," Pennsylvania Department of Labor and Industry (March 2019).

[30] This dataset is the state-level Current Employment Statistics published each month by the U.S. Bureau of Labor Statistics.

Table 2.2
Workers Affected by a $12 Minimum Wage for 2018

Primary Jobs	Employment Status (000s)		Employee Gender (000s)		
	Part-Time	Full-Time	Male	Female	Total
$7.25 to $7.99	66	26	41	50	91
$8.00 to $9.99	176	137	144	170	314
$10.00 to $10.99	143	170	136	177	313
$11.00 to $11.99	88	137	88	136	224
$12.00 to $14.99	151	621	354	419	773
$15.00 or more	304	3,368	2,034	1,638	3,672
Total	**928**	**4,459**	**2,797**	**2,590**	**5,387**

Secondary Jobs	Employment Status (000s)		Employee Gender (000s)		
	Part-Time	Full-Time	Male	Female	Total
$7.25 to $7.99	23	0	10	14	23
$8.00 to $9.99	63	0	25	38	63
$10.00 to $10.99	51	0	21	29	51
$11.00 to $11.99	31	0	12	20	31
$12.00 to $14.99	54	0	18	36	54
$15.00 or more	108	0	28	80	108
Total	**330**	**0**	**114**	**216**	**330**
Directly Affected	**641**	**470**	**477**	**634**	**1,110**
Indirectly Affected	**205**	**621**	**372**	**455**	**827**

Note: Data do not include tipped workers. Indirectly affected workers earn $12.00 to $14.99 per hour.

Source: U.S. Census Bureau, Current Population Survey and Merged Outgoing Rotation Group dataset (2018) compiled by the National Bureau of Economic Research.

Table 2.3 provides similar breakdowns based on age and marital/child status. The data show that 179,000 (3 percent) primary jobs were held by workers between the ages of 16 and 19 and 87 percent earned a wage under $12.00 per hour. College age workers (20 to 24) comprised 494,000 primary jobs, and 39 percent earned less than $12.00 per hour. For workers age 40 and older, most primary jobs (76 percent) earned $15.00 or more per hour.

The columns to the right provide detail on marital and child status. For primary jobs, roughly 60 percent of workers directly affected by a $12.00 minimum wage are single with no children. An additional 15 percent are married with no children.

Table 2.3
Workers Affected by a $12 Minimum Wage for 2018

Primary Jobs	Age (000s)				Type of Household (000s)			
	16-19	20-24	25-39	40+	Single no kids	Single kids	Married no kids	Married kids
$7.25 to $7.99	33	22	15	21	70	3	10	9
$8.00 to $9.99	77	70	69	97	208	25	37	44
$10.00 to $10.99	33	72	89	120	183	30	53	47
$11.00 to $11.99	12	28	74	110	105	23	54	42
$12.00 to $14.99	20	112	270	371	353	81	183	156
$15.00 or more	5	189	1,210	2,268	1,257	230	1,156	1,030
Total	**179**	**494**	**1,727**	**2,987**	**2,176**	**391**	**1,493**	**1,327**

Secondary Jobs	Age (000s)				Type of Household (000s)			
	16-19	20-24	25-39	40+	Single no kids	Single kids	Married no kids	Married kids
$7.25 to $7.99	12	5	1	5	21	0	1	1
$8.00 to $9.99	22	15	9	17	48	4	6	5
$10.00 to $10.99	8	13	8	22	32	3	10	6
$11.00 to $11.99	3	4	9	15	15	3	9	4
$12.00 to $14.99	4	10	14	26	26	6	14	9
$15.00 or more	0	6	29	73	32	7	37	32
Total	**49**	**53**	**70**	**158**	**174**	**23**	**76**	**57**
Directly Affected	**200**	**229**	**274**	**407**	**682**	**91**	**180**	**158**
Indirectly Affected	**24**	**122**	**284**	**397**	**379**	**87**	**197**	**165**

Note: Data do not include tipped workers. Indirectly affected workers earn $12.00 to $14.99 per hour.

Source: U.S. Census Bureau, Current Population Survey and Merged Outgoing Rotation Group dataset (2018) compiled by the National Bureau of Economic Research.

Businesses Affected by a $12 per Hour Minimum Wage

Table 2.4 displays the industries affected by a $12.00 minimum wage. The column labeled "Affected Workers" is an estimate of the total number of non-tipped workers who earned less than $12.00 per hour in 2018. As discussed in the previous subsection, this table assumes that secondary part-time jobs are distributed across the retail, food service, administrative and healthcare sectors. The analysis estimates that nearly one-third (348,000) of the total affected jobs reside in retail-wholesale trade sector. Other sectors with a substantial number of affected workers include the healthcare and social assistance (186,000 jobs) sector and the accommodation-food service (165,000 jobs) subsector (included with leisure-hospitality).

Table 2.4
Industry and Firm Size Impacted by a $12 Minimum Wage for 2018

Industry	Affected Workers (000s)	Number of Employees in Firm (000s)		
		<50	50 to 499	500+
Leisure-hospitality	199	112	71	14
Retail-wholesale trade	348	175	165	8
Healthcare and social assistance	186	57	70	58
Manufacturing	51	12	28	11
Construction	18	10	6	2
Admin. support and waste management	67	19	31	18
Transportation and warehousing	25	7	11	7
Professional and scientific	15	7	5	2
Educational services	61	8	12	41
Personal and other services	58	46	11	1
All other	82	36	27	20
Total	**1,110**	**489**	**437**	**182**

Source: U.S. Census Bureau, County Business Patterns, Current Population Survey and Merged Outgoing Rotation Group dataset (2018) compiled by the National Bureau of Economic Research.

The last three columns distribute workers earning under $12.00 per hour based on the size of the employer, as measured by the total number of employees. The affected workers are distributed based on the total number of employees in Pennsylvania firms with less than 50 employees, 50 to 499 employees and 500 or more employees by industry using data from the U.S. Census Bureau's County Business Patterns 2016. For example, if those data show that one half of all employees (regardless of wage rate) in the leisure-hospitality sector worked for a firm with less than 50 employees, then Table 2.4 assumes the same distribution for workers earning under $12.00 per hour. It is noted that the true distribution could deviate from this assumption. Overall, it is likely that this methodology could understate the share of workers earning under $12.00 per hour employed by small firms.[31] However, more detailed data are not available to inform the distribution of low-wage workers based on employer size.

Employment Impact from a $12 per Hour Minimum Wage

Table 2.5 displays the projected employment impact due to the enactment of a $12.00 minimum wage. The data are for 2018, and the analysis did not attempt to project those data forward to July 1, 2019. The top third of the table shows the average wage by wage group and part/full-time status, and the percentage change if the minimum wage increases to $12.00 per hour. For the lowest paid workers, the proposal increases the hourly wage by nearly two-thirds. For the highest paid workers affected, the increase is roughly seven percent. While not directly affected by the proposal, the analysis assumes that workers earning $12.00 to $14.99 per hour would also realize a modest wage increase of four percent.

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[31] The overall wage distribution for smaller firms is likely lower compared to larger firms in the same industry. As noted previously, smaller firms are more likely to be rural employers that pay a lower wage due to a lower cost of living.

Table 2.5
Employment Impact: $12 Minimum Wage in 2018

	Average Wage		Percent Change to $12	
	Part-Time	Full-Time	Part-Time	Full-Time
$7.25 to $7.99	$7.35	$7.49	63.3%	60.2%
$8.00 to $9.99	8.68	9.03	38.2%	32.9%
$10.00 to $10.99	10.15	10.22	18.2%	17.4%
$11.00 to $11.99	11.20	11.25	7.1%	6.7%
$12.00 to $14.99	12.93	13.29	4.0%	4.0%

	Number of Workers (000s)		Response Parameter	
	Part-Time	Full-Time	Part-Time	Full-Time
$7.25 to $7.99	89	26	-0.200	-0.150
$8.00 to $9.99	239	137	-0.125	-0.100
$10.00 to $10.99	194	170	-0.075	-0.050
$11.00 to $11.99	119	137	-0.025	-0.025
$12.00 to $14.99	205	621	0.000	0.000
TOTAL	**846**	**1,091**		

	Projected Reduction (000s)		Retain Employment (000s)	
	Part-Time	Full-Time	Part-Time	Full-Time
$7.25 to $7.99	-11	-2	78	24
$8.00 to $9.99	-11	-5	228	132
$10.00 to $10.99	-3	-1	191	169
$11.00 to $11.99	0	0	119	137
$12.00 to $14.99	0	0	205	621
TOTAL	**-26**	**-8**	**820**	**1,083**

Source: U.S. Census Bureau, Current Population Survey and Merged Outgoing Rotation Group dataset (2018) compiled by the National Bureau of Economic Research.

The middle portion of the table displays the number of workers and the employment response parameters, based on a review of minimum wage studies. For very low-wage workers who are mostly high school and college age, the analysis assumes an elasticity of -0.2, which implies a 2.0 percent employment reduction for a 10.0 percent increase in the (average) wage paid for that group. Research finds that employment of this age cohort is more sensitive to wage changes because they are part-time, are less experienced and have a high degree of turnover. Moreover, the percentage increase in the wage is very large for this group, and employers would be especially sensitive to their employment compared to other groups under a $12.00 minimum.

The analysis assumes that the elasticities (1) are slightly higher for part-time workers and (2) would decline for each group as the percentage increase in the wage paid declines. The projected employment impact is then equal to: number employed * percent change in wage * responsiveness parameter or elasticity. The analysis finds a reduction in part-time jobs of 26,000 (4.0 percent of directly affected part-time workers) and 8,000 for full-time jobs (1.8 percent), and an overall reduction of 34,000 (3.1 percent). The proposal

disproportionately affects part-time jobs because they comprise a greater share of low-wage workers. The analysis also assumes a reduction in total hours worked (discussed below), which was not included in last year's analysis. Recent studies find that some of the negative employment impact would manifest itself in shorter workweeks, as opposed to fewer jobs. This effect is included in the computation of the income gains in the subsection that follows. The net impact on labor is the same as reduced employment levels, but the manifestation is different.

It is noted that the projected employment contraction would not all occur at the same time and in the same manner. While some part-time workers might be released, other firms may simply defer filling vacant positions over an extended period of time. Research finds that new entrants to the labor market will be affected more than current employees.

Income Effects for Affected Workers

Table 2.6 provides the analysis for the projected impact on income levels from the higher minimum wage for affected workers. The top portion of the table displays the current wage distribution, number of workers and total income of those workers. For the income computations, the analysis assumes that part-time employees work 20 hours per week for 50 weeks per year while full-time employees work 40 hours per week for 50 weeks per year. Total wage income for all workers shown is $34.6 billion.

The middle portion of the table adjusts the minimum wage to $12.00 per hour and includes the projected employment contraction from Table 2.5. Based on recent studies, the computations also assume that workers who previously earned less than $11.00 per hour would work roughly six to seven hours less per quarter (0.5 hours per week). As noted, the analysis also assumes a four percent wage increase for workers earning between $12.00 to $14.99 per hour. Total wage income increases to $38.1 billion.

The bottom portion of the table displays the differential. Total wage income increases by $3.5 billion. If mandatory federal payroll tax is deducted (7.65 percent, employee share only), the increase declines to $3.2 billion. The bottom of the table shows an average annual net income gain of $1,856 for part-time workers ($38 per week) and $3,306 for full-time workers ($64 per week). (Note: these figures are for directly-affected workers only. They do not include the modest gains for indirectly-affected workers.)

It is noted that the presentation in Table 2.6 is an oversimplification because it assumes that all workers under $12.00 per hour would receive exactly $12.00 per hour under the proposal. In practice, while there would be some "wage compression" due to the higher minimum wage, employers would likely attempt to maintain some of the wage differentials that were effective prior to the higher minimum wage. Therefore, the estimates in Table 2.6 could be viewed as a lower bound. However, to the extent those wages are raised above $12.00 per hour, it would also imply a larger negative employment response.

Table 2.6
Income Impact: $12 Minimum Wage in 2018

	Number of Jobs (000s)			Total Income ($ millions)		
	Part-Time	Full-Time	Total	Part-Time	Full-Time	Total
Current Minimum Wage						
$7.25 to $7.99	89	26	115	$654	$389	$1,044
$8.00 to $9.99	239	137	376	2,075	2,474	4,549
$10.00 to $10.99	194	170	364	1,969	3,475	5,444
$11.00 to $11.99	119	137	256	1,333	3,083	4,415
$12.00 to $14.99	205	621	826	2,651	16,506	19,157
Total	**846**	**1,091**	**1,937**	**8,681**	**25,927**	**34,608**
$12.00 Minimum Wage						
$7.25 to $7.99	78	24	101	896	556	1,452
$8.00 to $9.99	228	132	360	2,649	3,132	5,781
$10.00 to $10.99	191	169	360	2,250	4,004	6,254
$11.00 to $11.99	119	137	256	1,425	3,283	4,708
$12.00 to $14.99	205	621	826	2,757	17,166	19,923
Total	**820**	**1,083**	**1,903**	**9,977**	**28,141**	**38,118**
Change Based on Current Wage Levels						
$7.25 to $7.99	-11	-2	-14	241	167	408
$8.00 to $9.99	-11	-5	-16	574	658	1,232
$10.00 to $10.99	-3	-1	-4	281	529	810
$11.00 to $11.99	0	0	0	93	200	293
$12.00 to $14.99	0	0	0	106	660	766
Total	**-26**	**-8**	**-34**	**1,296**	**2,214**	**3,510**
Average Gain - Directly Affected Workers (in dollars)				**1,856**	**3,306**	**2,470**

Source: U.S. Census Bureau, Current Population Survey and Merged Outgoing Rotation Group dataset (2018) compiled by the National Bureau of Economic Research. Calculations by the IFO.

General Price Impact

The analysis projects that the net wage income of low-wage workers will increase by $3.5 billion under the proposal. A pertinent question is the source of that extra income and how it will impact consumers and businesses. Potential sources include higher consumer prices, lower business profits, reduced employee benefits and business savings due to reduced employee turnover and higher employee productivity.[32] As discussed further in the subsection that follows, the analysis assumes that 65 percent of the higher wages is passed forward to consumers through higher prices, or $2.3 billion of wage costs ($3.5 billion * 0.65).

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[32] The higher productivity would arise from the retention of more productive workers, the implementation of cost cutting and efficiency measures and greater job satisfaction of workers who retain employment.

Due to a lack of detailed data, it is not possible to estimate the exact increase in prices for the sectors and products/services that would be affected by a higher minimum wage. However, general data and reasonable assumptions can provide an order of magnitude regarding the potential impact on statewide price levels:

- For 2018, total wages paid to all Pennsylvania workers was $349 billion, and the analysis projects that will increase by $3.5 billion (1.0 percent) due to the higher minimum wage for non-tipped workers.[33]

- For 2018, total personal consumption expenditures (i.e., spending by all final consumers, excludes business and government) will be roughly $570 billion. If all higher wage costs were passed forward to consumer purchases, economy-wide price levels would increase by roughly 0.6 percent ($3.5 / $570 billion) if the same mix and quantity of goods and services were purchased. If higher employer payroll taxes are included, the figure increases to 0.7 percent.

- However, the analysis assumes that only 65 percent of the cost would be passed forward in higher prices, so the economy-wide price level would increase by 0.4 percent.

- Spending on other goods and services throughout the state economy would fall by a small amount because more spending would be directed towards goods and services affected by the higher minimum wage.[34] This would moderate price pressures for those goods and services and constrain the increase in statewide price levels.

This illustration is an oversimplification of the true price adjustment process, and is meant only to provide a general order of magnitude for the potential impact on statewide price levels in the year the higher minimum wage is enacted.

The impact on prices would vary across the state economy depending on the sector, consumer responsiveness to prices of specific goods and services and local market conditions. Due to the relatively high proportion of lower-wage workers, the food service and retail sectors would be most affected by a $12.00 minimum wage. Other data can be used to gauge the potential price implications for those sectors. For example, the analysis finds that roughly 16 percent of the higher wage income/costs ($3.5 billion) would flow to the food service sector, or $560 million ($3.5 billion * 0.16). Data from the U.S. Department of Labor show total wages for that sector of $7.2 billion, so that wages would increase by 7.8 percent ($560 million / $7.2 billion).[35] Federal tax data show that wage compensation comprises roughly one-quarter of total costs for the food service sector, and if so, prices would need to increase by 1.9 percent (0.078 * 0.25) if all higher wage costs were passed forward and quantity purchased did not change. If employer payroll taxes on the higher wages are included, the figure increases to 2.1 percent. Allowing for a reduction in sales due to higher prices roughly doubles the price increase required to fund higher wages to 4.2 percent. Finally, the analysis assumes that only 65 percent of the costs are passed forward, which implies a price increase across the entire sector of 2.7 percent.[36]

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[33] Wages include the U.S. Bureau of Economic Analysis adjustment for residence.

[34] This assumes that the price elasticity of demand for goods and services significantly impacted by the higher minimum wage (e.g., food services and general retail sales) is lower than -1.0, which is confirmed by research.

[35] These data are from the Quarterly Census of Employment and Wages.

[36] This example and the one that follows assume a general price elasticity of demand of -0.5 (i.e., quantity demanded falls by 5 percent if price increases by 10 percent). Both computations exclude any impact of a higher minimum wage

For the retail sector, the analysis finds that 27 percent of the higher wage income/costs would flow to that sector, or $950 million ($3.5 billion * 0.27). For 2018, total wages for the sector were $15.1 billion (excludes auto dealers and wholesalers), so that wages would increase by 6.3 percent ($950 million / $15.1 billion). Federal tax data show that wage costs comprise roughly 10 percent of total costs for the sector (most costs are related to purchases, since items are purchased for resale) so prices would need to increase by 0.6 percent (0.063 * 0.1) if all higher wage costs were passed forward and quantity purchased did not change. If employer payroll taxes are included, the figure increases to 0.7 percent. Allowing for a reduction in sales due to higher prices roughly doubles the price increase required to fund the higher wages to 1.4 percent. Finally, the analysis assumes that only 65 percent of wage costs are passed forward, which implies a price increase of 0.9 percent across the entire sector. If retailers purchase goods from other industries that are also affected by the higher minimum wage, those costs would also get pushed forward into final consumer prices and the price increase would be greater.

Due to higher price levels, all consumers would lose a small amount of real purchasing power to fund most of the higher wages paid to low-wage workers under a higher minimum wage. Research finds that other funding sources include lower business profits, reduced employee benefits, productivity gains and lower costs related to employee turnover.

Impact on General Fund Revenues

In order to estimate the impact from the higher minimum wage on General Fund revenues, the analysis must identify the source of the income gains to low-wage workers. Based on recent studies, this analysis makes the following assumptions regarding the source of the wage gains:

- 5 percent is from higher prices paid by tourists or out-of-state consumers;

- 10 percent is attributable to higher worker productivity and reduced turnover;

- 10 percent is from lower profits of pass-through entities (partnerships, S corporations and sole proprietors);

- 10 percent is from lower profits of C corporations; and

- 65 percent is from higher prices paid by Pennsylvania consumers.

The first and second bullets represent pure revenue gains because those effects do not need to be offset by less spending or lower incomes elsewhere in the state economy. Higher spending by tourists or visitors acts like a spending injection into the state economy, while higher worker productivity and lower turnover costs imply higher output and profits for the same number of workers.

However, the last three bullets do require offsets and the extra income that now flows to low-wage workers would have flowed to other residents or businesses instead. For pass-through entities, the lower profits would have been taxed at the personal income tax rate (PIT) of 3.07 percent. For C corporations, the lower profits would have been taxed at 9.99 percent, but the analysis assumes an effective rate of 8.0 percent

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for tipped workers. It is noted that the price increase would be higher for fast food establishments compared to the entire food service sector.

due to the treatment of losses and loss carryforwards.[37] [38] Finally, the $2.3 billion spending shift from higher prices (65 percent of the $3.5 billion in higher incomes for low-wage workers) would have been spent on other goods and services throughout the state economy, and much of that spending would have translated into taxable income. Overall, the net effect from the shift in spending patterns and income distribution yields $20 million in higher PIT revenues. The main causes of the increase are the higher productivity/reduced turnover from retained workers and the fact that most of the redirected spending is funneled to Pennsylvania labor, as opposed to spending on general goods and services where some amounts would flow to out-of-state residents or businesses.

Other General Fund revenue effects from the higher minimum wage include the following:

- The higher incomes for low-income filers would reduce net claims for Tax Forgiveness (+$10 million).[39]

- Employers must remit the employer share of payroll tax (7.65 percent) on the higher employee wages, which reduces taxable profits. The analysis assumes half would be paid by pass-through entities and half by corporations (-$10 million).

- Overall spending and economic output will increase under the proposal because low-wage workers have a higher marginal propensity to spend any income they receive. This result is noted in nearly all minimum wage studies. This extra spending also has "multiplier effects" that increase the size of the state economy and increases PIT, SUT and other consumption tax revenues (+$30 million).

- A general cutback due to a potential shift to underground economic activity. Given the higher wage rate, some firms might elect to pay employees under the table (negative, but not quantified).

Overall, the analysis finds a $50 million increase in General Fund revenues. However, it is noted that the revenue impact from the multiplier effects would not materialize fully in the first year following enactment.

Impact on State and Local Government Expenditures

Due to the increase in the minimum wage, many low-income families would be pulled above the federal poverty level (FPL) and would be eligible for less state assistance. **Table 2.7** details the number and share of families at various ratios of income to FPL in 2017. For that year, the FPL was $16,240 for a family of two; $20,430 for a family of three; $24,600 for a family of four; and an extra $4,180 for each additional dependent. The top half of the table shows that roughly eight percent (255,788) of all Pennsylvania families have income below the FPL and likely qualify for certain state and federal programs. An additional 13 percent (413,050) of families fall between 100 and 200 percent of the FPL and likely also qualify for certain state programs (e.g., subsidized childcare). The lower half of the table details the number of families within various income groups. Roughly 11 percent of all Pennsylvania families (364,041) make less than $25,000 and most likely qualify for state and federal subsidy programs depending on the number of family members.

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[37] It is noted that the corporate profit reduction due to higher wages may not directly translate to the taxable base due to the sales-only apportionment factor.

[38] Lower profits would mainly impact firms with a high proportion of minimum wage workers, but it would also be dispersed throughout the state economy as overall spending shifts to lower-wage sectors and declines in other sectors.

[39] The simulation used the 2016 Personal Income Tax micro data file for filers who claimed Tax Forgiveness and reported compensation income.

Table 2.7
Families in Pennsylvania by Poverty Level and Income (2017)

	Number of Families	Share of Families
Income to Poverty Level Ratio		
Under 0.50	107,205	3.4%
0.50 to 0.74	72,115	2.3
0.75 to 0.99	76,468	2.4
1.00 to 1.24	94,883	3.0
1.25 to 1.49	96,387	3.0
1.50 to 1.74	104,731	3.3
1.75 to 1.84	48,544	1.5
1.85 to 1.99	68,505	2.2
2.00 to 2.99	483,821	15.2
3.00 to 3.99	472,154	14.9
4.00 to 4.99	392,096	12.3
5.00 and over	1,160,380	36.5
Total	**3,177,289**	**100.0**
Family Income		
Less than $10,000	107,530	3.4%
$10,000 to $14,999	71,234	2.2
$15,000 to $24,999	185,277	5.8
$25,000 to $34,999	235,700	7.4
$35,000 to $49,999	363,428	11.4
$50,000 to $74,999	603,234	19.0
$75,000 to $99,999	494,944	15.6
$100,000 to $149,999	592,473	18.6
$150,000 to $199,999	255,489	8.0
$200,000 or more	267,980	8.4
Total	**3,177,289**	**100.0**

Source: U.S. Census Bureau. 2017 American Community Survey.

Impact on State Safety Net Programs

For the *2019-20 Executive Budget*, the Department of Human Services (DHS) estimated the budgetary impact of a $12.00 minimum wage. All savings and costs presented in this section pertain to the state, additional federal net savings for Medicaid, TANF and SNAP are not presented. For FY 2019-20, DHS projects that the department would realize net savings of $36 million. Due to staggered eligibility screenings and payment processing timeframes, the FY 2019-20 estimate does not represent a full year of savings. For FY 2019-20, DHS estimates that roughly 17,000 adults and 6,300 children would no longer qualify for Medicaid based on income eligibility criteria, yielding savings of $63 million. Those savings are offset by higher program costs related to reimbursement rates to childcare and direct care providers ($21 million). The Children's Health Insurance Program (CHIP) costs also increase by $6 million due to 6,300 children moving from Medicaid to CHIP coverage.

For FY 2020-21, DHS projects net state savings of $119 million. A decline in eligible Medicaid enrollees (68,800 adults, 25,500 children) produces state savings of $256 million. Those savings are offset by children moving from Medicaid to CHIP ($23 million) and higher reimbursement rates to childcare and direct care workers. For community-based programs for persons with physical disabilities and seniors, DHS assumed that (1) direct care workers receive an average wage of $11.51 per hour, (2) each program participant receives an average of 5.8 hours of personal care services per day and (3) there are 80,000 participants in these programs. Estimated costs for these community-based programs are $40 million in state funds. For the childcare subsidy program, the estimated cost to the state is $74 million. This assumes that (1) the average wage of childcare workers is $10.42 and (2) 40 percent of children in childcare receive a subsidy.

Other Costs and Savings to State and Local Governments

In July 2018, the Governor issued an executive order that increased the minimum wage for state employees and contracted employees to $12.00 per hour. Hence, the proposed higher minimum wage would not impact direct costs for state employees or contractors.[40]

The analysis also reviewed potential costs to school districts if the minimum wage increased to $12.00 per hour. Unlike teachers and professional staff for which detailed micro-level salary data are readily available, there is much less detail for school district support staff such as custodial staff, bus drivers and cafeteria workers. This analysis reviewed nearly 50 school district collective bargaining agreements throughout the commonwealth. The review suggests that the great majority of contracts pay educational and support staff at least $12.00 per hour. Hence, the proposal would likely impact only a small portion of districts across the state, and for those contracts, the impact would be minimal.

State prison costs could also be affected by a higher minimum wage. A recent study uses administrative prison release records from nearly six million offenders released between 2000 to 2014 and more than two hundred state-level increases in the minimum wage during that time period.[41] The authors find that the average minimum wage increase of 50 cents reduces the probability that men and women return to prison within one year by 2.8 percent, and within three years by 2.2 percent. The higher minimum wage draws those recently released into the legal labor market, and away from illegal activity.[42] The authors note that their results pertain only to minimum wages up to $9.50 per hour, and that it would be difficult to project their findings to minimum wages that increase up to $15.00 per hour. The IFO analysis does not attempt to project or include any potential savings from reduced recidivism that might result from the proposed higher minimum wage.

Other research notes the tradeoff between higher minimum wages, employment effects and lower youth crime rates. A recent study finds that for very large minimum wage increases, the negative employment effects dominate the positive incentive effects of higher wages for youth to avoid illegal activities (i.e., property crimes).[43] The study concludes by noting that minimum wages as high as $15.00 per hour "lead

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[40] Commonwealth of Pennsylvania, Governor's Office, Executive Order 2016-02 Amended (June 28, 2018).
[41] Agan, A. and M. Makowsky. "The Minimum Wage, EITC and Criminal Recidivism," NBER Working Paper 25116 (September 2018).
[42] The authors note two main limitations to their data. First, the data cannot capture those who reoffend in a different state and they will appear as one who does not reoffend. Second, the data only reflect a return to state prison, and not rearrest or prosecution. Their results apply only to property and drug crimes, not violent crimes.
[43] Braun, C. "Crime and the Minimum Wage," University of California Santa Clara (October 2017).

to minimum to median wage ratios for young and uneducated workers well above not only welfare max-imizing levels, but also crime minimizing levels (p. 36)." The negative employment effect dominates be-cause young, inexperienced workers have a more difficult time entering the job market at the higher min-imum wage.

Income Mobility of Low-Wage Workers

A concern noted by minimum wage advocates is that many low-wage workers have not received pay raises that facilitate upward income mobility. Instead, incomes stagnate and those workers remain at the low end of the income distribution. Conversely, opponents note that minimum wages are intended to be "starter" wages for inexperienced high school and college students who work limited hours. Over time, those indi-viduals will receive higher wages commensurate with their education and experience. Opponents believe that higher minimum wages will prevent students from obtaining employment and gaining valuable work experience.

The need for a higher minimum wage, to some extent, depends on which of these outcomes occur. Greater income mobility of low-wage workers would generally imply less need for a higher minimum wage because lower wages are temporary and appropriate due to the lower productivity and uncertainty that surrounds new hires, especially inexperienced new hires. However, if many low-wage workers remain stuck at those wage levels, then a higher minimum wage could alleviate the lack of real income gains and improve quality of life.

To examine income mobility for low-wage workers, the analysis used the personal income tax micro data file for tax years 2010 and 2016. The files contain data on all income tax returns filed for those tax years. The analysis used single filers reporting $15,000 to $24,999 of wage compensation and married filers reporting $15,000 to $34,999 of wage compensation in tax year 2010. Most of those filers likely earned a wage that paid $12.00 or less per hour.[44] Moreover, the income thresholds should eliminate the great majority of dependents, college students and part-time low-wage workers. The analysis used only "wage earners" where wage compensation comprised at least 90 percent of taxable income reported on the tax return. Those filers were matched to the 2016 dataset to examine outcomes six years later. Because filers must be wage earners in both years, the upward (or downward) mobility must generally be due to changes in wage compensation.[45] [46]

Table 2.8 lists the results of the match. Results for singles are displayed in the top portion of the table and they are sub-divided into two groups. For the first group that reported between $15,000 to $19,999 of wage compensation in 2010, 106,602 filers were matched to a return in 2016, and they reported median wage compensation of $17,461 in 2010 and $26,141 in 2016, an average growth rate of 7.0 percent per

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[44] For example, a single worker earning $7.50 an hour who works 40 hours per week for 50 weeks would earn $15,000 for the year, while one earning $12.00 per hour would earn $24,000. For married filing joint filers, if one assumes that on average 1.5 persons work full-time, then the figures are $22,500 and $36,000, respectively. A single filer working 30 hours per week at $10.00 per hour would earn $15,000, while a married filer would earn $22,500.

[45] For the purpose of the match, filers must maintain the same filing status (i.e., single or married filing joint) and must be full-year residents in both tax years.

[46] All filers that reported more than a 50 percent drop in wage compensation were removed from the matched dataset. It is likely those filers experienced a major life event, such as entering retirement or a temporary layoff from a job. This exclusion reduced the matched dataset by 8 to 10 percent.

annum. The columns that follow place filers into three groups based on the average annual growth rate realized during the six years: less than 2.0 percent per annum, 2.0 percent to 9.99 percent and 10.0 percent or more. A 2.0 percent cut-off is used for the bottom group because inflation during that time period was roughly 1.5 percent per annum, and a conservative estimate for productivity gains for low-wage workers could be 0.5 percent per annum. Hence, the 2.0 percent per annum increase is what could be expected if workers received pay raises to compensate them for inflation and a small raise for higher productivity.

Table 2.8
Pennsylvania Wage Earner Income Mobility (2010 to 2016)

	Matched Filers	Median Compensation			Average Annual Growth Rate		
		2010	2016	AAGR	<2%	2.00% - 9.99%	10%+
Singles							
$15,000 to $19,999	106,602	$17,461	$26,141	7.0%	26,878	41,291	38,433
					25.2%	38.7%	36.1%
$20,000 to $24,999	103,398	$22,456	$29,639	4.7%	30,893	49,291	23,214
					29.9%	47.7%	22.5%
Married							
$15,000 to $24,999	32,448	$20,480	$28,488	5.7%	10,112	11,419	10,917
					31.2%	35.2%	33.6%
$25,000 to $34,999	44,309	$30,400	$39,403	4.4%	14,655	18,440	11,214
					33.1%	41.6%	25.3%

Note: Matched filers are filers that (1) filed a PA income tax return in both 2010 and 2016, (2) were a full-year Pennsylvania resident, (3) did not change filing status, (4) reported gross compensation that did not decline more than 50% between the two years and (5) were wage earners (i.e., a tax filer whose gross compensation income is greater than 90% of their total taxable income).
Source: Pennsylvania Personal Income Tax micro data file for 2010 and 2016.

For the first group, the data show that 25.2 percent of filers realized average wage gains of less than 2.0 percent per annum. Conversely, 36.1 percent of filers realized very strong wage gains that exceeded 10 percent or more per annum. This latter group would include filers who received promotions, switched jobs for better pay and individuals working more hours. It may also include college students transitioning to a profession in their primary field of study, but they must have earned at least $15,000 in 2010 to be included, and that would eliminate most who held temporary jobs during the school year.

Data for the second group of single filers show similar results, although a higher proportion of filers remain in the lower group by 2016 because they start from a higher absolute income level. There is also a smaller share that realize very large income gains in the top group.

Data for married filing joint filers also show similar patterns, as just under one-third of filers realize average wage gains of less than 2.0 percent per annum, and between one-quarter to one-third of filers realize very strong wage gains.

Overall, these data suggest that some low-wage workers had significant income mobility, while others reported very limited wage gains. Unfortunately, the personal income tax data do not identify age, wage

rates or profession that would facilitate a more detailed analysis. The analysis cannot identify the reasons for the gains or stagnant incomes. Despite these limitations, the data demonstrate that there is considerable variation for filers even within narrow income ranges. Although average gains may appear strong, it masks a broad spectrum of outcomes where many filers report solid or very strong wages gains, while a smaller group reports minimal gains or even income reductions.[47]

Impact on Tipped Workers

Table 2.9 details the minimum wages for tipped workers by state as of January 1, 2019. The table contains three groups of states:

- Seven states (California, Washington, Oregon, Alaska, Minnesota, Montana and Nevada) set their tipped minimum wage at the regular state minimum wage and do not allow employers to include tips in the calculation of the minimum wage. For those seven states, four have a lower tipped wage for small businesses (California, Minnesota and Montana) and/or businesses that provide health insurance to their employees (Nevada).

- Twenty-five states and Washington D.C. have tipped minimum wages above the federal minimum cash wage of $2.13, including Pennsylvania and all border states except New Jersey.[48] All of these states require employers to pay a cash wage between $2.23 (Delaware) and $9.35 (Hawaii). Nineteen states and Washington D.C. require a tipped plus cash wage greater than the federal minimum wage of $7.25 per hour.

- The remaining 18 states only require employers to pay the federal minimum tipped cash wage ($2.13). Three states (Nebraska, New Jersey and New Mexico) have a combined cash and tipped minimum wage greater than the federal minimum of $7.25 per hour.

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[47] It is noted that the matched dataset may reflect more successful outcomes compared to all filers in those income groups because it would exclude filers who dropped out of the labor force or had to transition to temporary jobs where wage income declined by more than 50 percent.
[48] New Jersey recently passed legislation that will increase their tipped minimum cash wage to $2.63 on July 1, 2019.

Table 2.9
State Minimum Wages for Tipped Employees (as of January 1, 2019)

Jurisdiction	Combined Cash & Tip Min. Wage	Min. Cash Wage	Notes
State requires employers to pay tipped employees full state minimum wage before tips			
California	$12.00	$12.00	Employers with <26 employees, min. cash wage is $11.00/hr.
Washington	12.00	12.00	
Oregon	10.75	10.75	
Alaska	9.89	9.89	
Minnesota	9.86	9.86	Employers with annual gross revenue <$500,000, min. cash wage is $8.04/hr.
Montana	8.50	8.50	Employers with gross annual sales of $110,000 or less, min. cash wage is $4.00/hr.
Nevada	8.25	8.25	Employers that provide health insur. to employees, min. cash wage is $7.25/hr.
State requires employers to pay tipped employees a minimum cash wage above the federal minimum cash wage ($2.13/hr)			
Hawaii	10.10	9.35	
Colorado	11.10	8.08	
Arizona	11.00	8.00	
New York	11.10	7.50	For tipped service employees, minimum cash wage is $9.25/hr.
Connecticut	10.10	6.38	For bartenders who receive tips, minimum cash wage is $8.23/hr.
Maine	11.00	5.50	
Florida	8.46	5.44	
Vermont	10.78	5.39	
Illinois	8.25	4.95	
North Dakota	7.25	4.86	
South Dakota	9.10	4.55	
Iowa	7.25	4.35	
Missouri	8.60	4.30	
Ohio	8.55	4.30	Employers w/ ann. gross rec. <$305k, combined cash & tips min. wage is $7.25/hr.
Washington D.C.	13.25	3.89	
Rhode Island	10.50	3.89	
Massachusetts	11.00	3.75	
Maryland	10.10	3.63	
Michigan	9.45	3.59	
Idaho	7.25	3.35	
New Hampshire	7.25	3.26	
Pennsylvania	7.25	2.83	
Arkansas	9.25	2.63	
West Virginia	8.75	2.62	State min. wage law applies only to employers with 6+ employees.
Wisconsin	7.25	2.33	Employees <20 years old & employed <91 days, min. cash wage is $2.13/hr.
Delaware	8.75	2.23	
State minimum cash wage payment is the same as the federal Fair Labor Standards Act ($2.13/hr)			
Nebraska	9.00	2.13	
New Jersey	8.85	2.13	
New Mexico	7.50	2.13	
Other	7.25	2.13	

Note: Other includes Alabama, Georgia, Indiana, Kansas, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Utah, Virginia and Wyoming.

Source: U.S. Department of Labor. Wage and Hour Division. Minimum Wages for Tipped Employees.

Table 2.10 lists the cash wage rate, employment status and gender for all tipped Pennsylvania workers. For the purpose of the table, tipped workers include the following occupations: bartenders, wait staff, food servers, barbers, hairdressers, miscellaneous personal appearance, miscellaneous personal care and service workers, baggage handlers, gaming service workers and taxi drivers. It is noted that the figures do not include independent contractors, such as those working for Uber or Lyft, and the wage rates do not include any tips earned. Other workers may also receive tips (e.g., counter service workers), but those jobs are included with non-tipped workers. Various sales personnel who may receive commissions are also included with non-tipped workers because the data do not allow the analysis to separately identify those workers.

Table 2.10 Tipped Workers Affected by a $12 Minimum Wage for 2018					
Primary Jobs	**Employment Status (000s)**		**Employee Gender (000s)**		
	Part-Time	**Full-Time**	**Male**	**Female**	**Total**
$2.83 to $2.99	13	3	3	13	16
$3.00 to $7.24	15	7	5	17	22
$7.25 to $11.99	65	29	29	65	94
$12.00 or more	29	35	19	44	63
Total	**122**	**73**	**55**	**140**	**195**
Secondary Jobs	**Employment Status (000s)**		**Employee Gender (000s)**		
	Part-Time	**Full-Time**	**Male**	**Female**	**Total**
Total	**100**	**0**	**28**	**72**	**100**

Source: U.S. Census Bureau, Current Population Survey and Merged Outgoing Rotation Group dataset (2018) compiled by the National Bureau of Economic Research.

As noted, the analysis imputed 100,000 secondary jobs into the tipped worker dataset based on discrepancies between the Census Bureau CPS and Bureau of Labor Statistics data. It is likely that nearly all of those jobs are wait staff jobs, and many would pay a cash wage of $2.83. Due to lack of data, the analysis did not attempt to apportion those jobs among wage groups.

The IFO did not perform a formal analysis for the increase in cash wages for tipped workers from $2.83 to $12.00 per hour (324 percent) because no research exists on which to model the proposed change. The food service industry has a relatively low profit margin, and a cost increase of this magnitude and immediacy has potential to cause material reductions in employment and higher prices. Wait staff might also receive lower tips if patrons factor in the much higher cash wage, and a significant portion of the higher wage could be reflected in higher prices. Employers would also be liable for the increase in payroll taxes due to the higher wage.

Recently, New York City increased the cash wage for tipped food service workers from $7.50 per hour in 2017 to $8.65 in 2018 and $10.00 for 2019. When combined with the credit for tips received, the overall wage rate was $11.00 (2017), $13.00 (2018) and $15.00 (2019).[49] The minimum wage for non-tipped

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[49] Applies to employers with 11 or more employees.

workers also increased from $13.00 (2018) to $15.00 (2019). Tipped food service workers are generally employed by full-service restaurants and preliminary data from the U.S. Bureau of Labor Statistics reveal an employment reduction for that subsector in New York City starting in May 2018.[50] Through the fourth quarter of 2018 and January 2019, the data show an approximate four percent employment contraction for that subsector. However, there are several caveats that should be noted regarding the employment contraction in the city:

- The most recent data since September 2018 are survey data and they are preliminary. They have not been benchmarked to the full universe of employers and they will be revised.

- A simple year-over-year employment comparison disregards the true counterfactual scenario, or what could be expected if wage rates had not changed.

- Although the data for New York City show an employment decline for full-service restaurants, they show solid gains for limited-service restaurants that employ fast food workers. For 2018, wages for fast food workers in New York City increased from $12.00 to $13.50 per hour. For 2019, the wage increased to $15.00 per hour.

Similar to Seattle, the labor market and cost of living for New York City is very different than Pennsylvania, and any results from those two urban areas will not fully translate to the state.

Moving from a $12 to $15 per Hour Minimum Wage

Following the enactment of a $12.00 minimum wage, the proposal increases the minimum wage by 50 cents per annum beginning July 1, 2020. By July 1, 2025, the minimum wage reaches $15.00 and is indexed to inflation annually thereafter. There is no research available on states that have raised the minimum wage to that level, so it is not possible to assess the potential implications for Pennsylvania. However, a few items can be noted:

- For 2018, there were 1.94 million positions that paid less than $15.00 per hour (includes secondary jobs). That figure represents 32.2 percent of all payroll jobs (tipped and non-tipped) in the state.

- For those workers, the phased-in increase would represent a significant real wage gain. For example, for the first year the increase would be 4.2 percent ($0.50 / $12.00). By the final year, the increase would be 3.4 percent ($0.50 / $14.50). By comparison, most economic forecasting firms project a long-term inflation rate of roughly 2.0 percent per annum.

- Similar to the increase to $12.00, much of any negative employment impact would likely be borne by new entrants to the labor market, and existing workers would reap most of the gains.

- At a rate of $15.00 per hour, the value of the Kaitz index (ratio of minimum wage to state median wage) referred to previously would exceed results from all previous minimum wage studies. At those levels, results from existing minimum wage studies are no longer relevant. At least one study has found rapidly accelerating negative impacts from high minimum wages, but further research is necessary to corroborate those results.

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[50] See https://www.bls.gov/sae/. Data are for non-seasonally adjusted payroll employment.

- Firms might also respond to higher wages through a reduction in benefits such as healthcare and retirement plans. Low-wage workers earning under $12.00 per hour likely receive few benefits, but workers who currently earn $12.00 to $14.99 per hour likely receive some form of healthcare or retirement savings benefits.

Summary

Similar to other policy changes, policymakers face tradeoffs from a higher minimum wage. There will be many who benefit from the change, but a smaller group will be adversely impacted too. Policymakers will need to decide whether the projected gains outweigh the drawbacks.

The analysis found the following gains from a $12.00 per hour minimum wage for non-tipped workers:

- Roughly 1.08 million payroll jobs would receive a higher wage.

- Net wage income for low-wage workers would increase by $3.5 billion, roughly $38 per week for part-time workers and $64 per week for full-time.

- The overall size of the economy would expand because low-wage workers will spend nearly all of the new income they receive.

- General Fund revenues would increase by roughly $50 million per annum once all economic multiplier effects have been fully realized.

- The Department of Human Services projects that expenditures would decline, largely due to reduced Medicaid enrollment, by $119 million in FY 2020-21 as a result of a $12.00 minimum wage. Fewer families would also fall below the current federal poverty level.

- Although businesses would incur higher labor costs, they should also realize cost savings through an increase in worker productivity and reduced labor turnover.

- There would be wage spillover effects for workers earning $12.00 to $15.00 per hour. The analysis assumes a four percent pay increase, and some research finds that figure could be higher.

The analysis also found the following drawbacks from the proposal:

- An employment reduction of 34,000 positions, 26,000 part-time and 8,000 full-time.

- A reduction in the average workweek for all affected workers of roughly one-half hour per week.

- More difficult entry into the labor market for inexperienced workers, especially part-time high school and college students.

- Higher price levels for sectors affected by the higher minimum wage, in particular the food service and retail sectors.

- Stronger effects for rural areas that have a lower cost of living and a greater share of small, regional employers.

- Lower profit levels that can be reinvested in business operations.