PR Department of Labor & Human Resources

# Minimum Wage Analysis Puerto Rico
## General Minimum Wage

*Final Report*

ABEXUS™ ANALYTICS

# Table of Contents

# I. Introduction

In 2021, the Puerto Rican legislature enacted Act 47-2021, formally known as the Minimum Wage Law of Puerto Rico. This legislation establishes a comprehensive legal and policy framework aimed at implementing a minimum wage structure on the Island. The primary objective of Act 47-2021 is to address and mitigate significant challenges facing Puerto Rico, including mass migration, a declining population, historically low labor participation rates, and an increasing cost of living. These factors collectively shape the policy's goals and directives.

Act 47-2021 outlines a clear set of mandates designed to guide the establishment of Puerto Rico's minimum wage. Central to this process is the formation of a committee comprising experts and industry representatives. This committee is tasked with either conducting or commissioning research to inform public policy decisions regarding the minimum wage. This includes evaluations on whether to adjust the minimum wage, the extent of any such adjustments, and the rationale behind these decisions.

Accordingly, this report has been commissioned by the minimum wage committee to support policy-making efforts concerning a potential adjustment to the minimum wage effective July 2024. The scope of this report includes an analysis of the minimum wage across four distinct sectors: traditional employment, agriculture, tipped workers, and exempt employees. Crucially, any recommendations regarding the minimum wage must consider the cost of living in Puerto Rico.

This investigation is driven by the fundamental question of whether an adjustment to the minimum wage is warranted, and if so, what the optimal minimum wage should be for the forthcoming year. This analysis is grounded in a consideration of social welfare benefits (e.g., Earn Income Tax Credit and federal benefit transfers), economic development indicators, and a rigorous, transparent methodology. Furthermore, the findings of this report will be disseminated through the Department of Labor and Human Resources of Puerto Rico, ensuring that recommendations do not precipitate poverty among workers or unduly burden small and medium-sized enterprises (SMEs), while also reflecting the cost of living in Puerto Rico.

The context for this report includes an impending increase in the minimum wage to $10.50 per hour scheduled for July 1, 2024 as established in Act 47-2021. This adjustment is based on preliminary findings by the Governor's Advisory Group on the Minimum Wage conducted at the inception of Act 47-2021. The parameters for this raise are based on the achievement of certain metrics within economic growth, wage levels, and employment levels. While the initial recommendations provided a foundation, this report seeks to offer a more nuanced and comprehensive framework for determining the minimum wage. This includes employing advanced analytical methods such as microsimulations and administrative data analysis to ensure that the minimum wage settings do not only prevent worker poverty but also consider the potential impacts on employment within businesses (particularly SMEs) across the Island.

To provide a robust foundation for our analysis, this report incorporates a literature review on the impacts of minimum wage policies, both internationally and within Puerto Rico. It examines past studies and their findings on the employment effects, economic outcomes, and interactions with social assistance programs. Additionally, it leverages administrative data to gain insights into labor market dynamics and the real-world implications of minimum wage adjustments. The report also addresses specific considerations for tipped workers and white-collar exemptions, reflecting the diverse employment landscape of Puerto Rico.

In summary, this report aims to present a comprehensive, data-driven analysis to inform the minimum wage committee's decision-making process. The methodology takes into account historical trends, and current economic conditions, to recommend a minimum wage policy that balances the needs of workers with the economic realities of Puerto Rico. The analysis includes a detailed examination of historical minimum wage adjustments, cost of living, and inflation, as well as the broader economic implications of minimum wage changes on both individuals and businesses. The goal is to provide a sustainable and equitable framework for future minimum wage adjustments that supports both workers' welfare and economic stability.

# II. Estimating Minimum Wage Impacts: Brief Overview of the Literature

The task at hand for the Minimum Wage Commission in Puerto Rico parallels the responsibilities seen in many other countries where minimum wage commissions are a common practice for setting wage floors. An illustrative example is the United Kingdom (UK) Low Pay Commission (LPC) in 2019. To guide the LPC in its decisions regarding the National Living Wage (NLW), the UK Treasury requested Arindrajit Dube, one of the foremost scholars regarding the economic impact of minimum wages, an independent report aimed to review international evidence on minimum wage impacts. Dube, a distinguished economist and research associate at the U.S. National Bureau of Economic Research, holds a PhD in economics from the University of Chicago and was a postdoctoral scholar at UC Berkeley.

One key finding from Dube's report to the UK commission was that there is good evidence that the effect of minimum wages on employment is considerably modest, and usually coupled with the upside of significant increases in the earnings of low-paid workers. This finding is consistent across various countries, including the U.S., where research also indicates relatively modest overall impacts on low-wage employment. While the findings challenge traditional 20$^{th}$-century perspectives on minimum wage impacts, the report emphasizes they are much more aligned with real-world economics.

20$^{th}$-century models and perspectives usually assumed that market competition implies that firms do not possess wage-setting power. In other words, it was assumed that firms had no choice but to pay the wage that prevailed in the market. However, this is not what typically occurs in real-world competition in contemporary economies. On the contrary, firms have significant wage-setting power. As a result, higher minimum wages are more likely to reduce job vacancies and turnover than to cause job losses. Dube's report found that even in lower-wage U.S. counties where the minimum wage stood at up to 81% of the median wage, the impacts on employment were still modest. This observation underscores the importance of considering regional disparities and economic conditions when formulating minimum wage policies, especially in territories like Puerto Rico where the minimum wage may represent a significant proportion of average or median hourly wages.

Among its policy recommendations, Dube's report also highlights the importance of using administrative data for accurate policy analysis. Administrative data provides valuable insights into labor market dynamics and facilitates timely evaluation of policy interventions. The recommendation to incorporate such data becomes particularly pertinent for Puerto Rico. Administrative data's granularity and comprehensive coverage offer an unparalleled resource for accurately modeling the effects of minimum wage policies on various demographic and economic groups within Puerto Rico. This approach allows for a detailed assessment of how changes in minimum wage might

influence employment, earnings, and poverty levels, taking into account the unique socio-economic landscape of Puerto Rico.

As minimum wage policies aim to elevate the baseline earnings for the lowest-paid workers, they inevitably intersect with social assistance mechanisms designed to support individuals and families in need. There is also much literature that explores this critical interplay, shedding light on how changes in minimum wage levels can influence the efficacy, reach, and requirements of social assistance programs, and vice versa. This exploration is crucial for understanding the full spectrum of economic and social consequences associated with minimum wage adjustments, particularly in contexts like Puerto Rico where high uptake in social assistance programs add layers of complexity to policy implementation and outcomes. Various studies were identified that are relevant for Puerto Rico due to their focus on the interaction between minimum wage adjustments, employment effects, and programs or policies such as nutritional assistance or the Earned Income Tax Credit (EITC).

For example, research by Michael Reich and Rachel West (2015) at the UC Berkeley-Institute for Research on Labor and Employment, sheds light on the relationship between minimum wage increases and the Supplemental Nutrition Assistance Program (SNAP). Using regression analysis of Current Population Survey microdata, their study finds that a 10% increase in the minimum wage leads to a reduction in SNAP enrollment by 2.4% to 3.2%, and decreases program expenditures by an estimated 1.9%. This correlation underscores the potential of minimum wage policies to alleviate reliance on social assistance programs, thereby contributing to broader economic security for low-wage workers.

A study by David Neumark and William Wascher (2007) conducted for the National Bureau of Economic Research employs a reduced-form regression analysis, examining data on wages, employment, hours, and earnings, alongside state-level information on minimum wages and the EITC from 1996 to 2007. Their findings suggest that when disemployment effects occurred due to minimum wage increases in the U.S., they were predominantly concentrated among young minority men. Conversely, for young minority women, the evidence suggests that minimum wages have little impact on employment levels. Notably, the study highlights the EITC's role in boosting employment and earnings in general, and in particular for minority women. Their evidence suggests that coupling the EITC with a higher minimum wage, enhances this positive effect.

The synergy between state-level EITC enhancements and minimum wage increases is further explored in a report by Erica Williams, Samantha Waxman, and Juliette Legendre (2020) from the Center on Budget and Policy Priorities. Through a literature review and data analysis, they argue that increasing both policies simultaneously offers added support to working families most in need. This dual approach not only moves families beyond the poverty line but also contributes to their longer-term economic security. The report elucidates how a minimum wage boost can enhance the benefits of the EITC for some families, with the immediate impact of wage increases complementing the lump-

sum nature of state EITCs delivered at tax time. This combined approach addresses both routine and larger, one-time expenses, effectively supporting workers' financial stability.

Echoing these findings, the Economic Policy Institute's Jesse Rothstein and Ben Zipperer (2020) engage in a literature review and data analysis to examine the complementary roles of the EITC and minimum wage policies. They also conclude that when EITC expansions are paired with minimum wage increases, the two (2) policies collaboratively improve the economic situations of low-wage workers. This partnership between direct wage support and tax-based income supplements emerges as a critical strategy in reducing poverty and raising incomes among vulnerable populations.

Building on the literature on the impacts of minimum wage policies and their relationship with social assistance programs, it is imperative to contextualize these discussions within the current economic scenario, especially considering inflation during the current post-pandemic period. The stark realities of the current economic landscape, exacerbated by a persistent cost-of-living, demand a closer examination of how minimum wage levels relate with the purchasing power of low-wage earners.

For example, a recent analysis by Torsten Müller for the European Trade Union Institute (ETUI) in 2023, delves into the inadequacy of statutory minimum wages in maintaining the purchasing power of minimum-wage earners across the European Union amid soaring inflation. Müller's analysis revealed that in almost half of the EU Member States with a statutory minimum wage, these wages fell short of safeguarding the purchasing power of minimum-wage earners during the current cost-of-living.

This finding is particularly relevant as it underscores the pressing need for policy adjustments to address the widening gap between wages and living expenses. Müller advocates for prioritizing the criterion of "purchasing power taking into account the cost of living" among the criteria suggested by the EU Minimum Wage Directive for setting statutory minimum wages. This recommendation is grounded in the principle that in times of high inflation, ensuring that minimum wages retain their real value relative to the pre-inflationary period is crucial for preventing further erosion of workers' purchasing power. Such a focus on the cost of living as a primary criterion for adjusting minimum wages offers a tangible pathway to combat the adverse effects of the cost-of-living, thereby ensuring that minimum wage policies fulfill their intended purpose of providing economic security for low-wage workers. This European perspective serves as a pertinent example, illuminating the vital importance of aligning minimum wage adjustments with cost-of-living considerations to effectively support workers in navigating the challenges posed by inflation and the escalating cost of living.

Finally, there are also pioneering studies in the realm of minimum wage research that are worth discussing due to their methodological innovation. For example, Giannarelli and Werner (2022) exemplifies the application of microsimulation techniques, utilizing American Community Survey (ACS) data to explore the implications of a $15.00-per-hour minimum wage. Microsimulation stands out for its ability to model the effects of policy changes on individual incomes, accounting for a variety of factors. The authors use this

method to offer a detailed prediction of how a minimum wage increase could affect the Supplemental Poverty Measure (SPM) poverty rate and influence tax collections. The findings suggest that, even when acknowledging potential job losses resulting from the wage hike, raising the minimum wage to $15.00 per hour could potentially increase tax collections while having a substantial poverty-reducing effect. The innovative use of microsimulation in this study provides a valuable template for analyzing the complex interplays between wage policies, employment, and poverty rates, guiding the development of our report's methodology.

In another groundbreaking approach, the study by Cengiz et al. (2022) employs machine learning techniques to analyze Current Population Survey data, assessing the impact of 172 significant minimum wage changes between 1979 and 2019. By utilizing advanced computational methods to estimate the likelihood of individuals being minimum wage workers, this research offers a sophisticated analysis of how minimum wage policies affect a broad array of labor market outcomes. Notably, the study finds a significant increase in wages following policy changes, alongside a small, yet positive and statistically insignificant effect on employment. This result further challenges traditional assumptions about the adverse employment effects of minimum wage increases, suggesting that such policies can indeed boost worker incomes without necessarily leading to job losses. The innovative application of machine learning in this context enhances the accuracy and depth of the analysis, allowing for a more precise identification of affected workers and the subsequent impacts of minimum wage adjustments. By leveraging advanced analytical techniques and diverse datasets, these research efforts offer nuanced understandings of the impacts of minimum wage adjustments.

The following section presents an analysis of minimum wage studies specific to Puerto Rico. The aim is to provide a contextual understanding of the current minimum wage landscape, setting the stage for a deeper exploration of the potential impacts of wage policy adjustments.

# III. The Study of Past Minimum Wage Impacts in Puerto Rico

During most of the 20th century, minimum wages in Puerto Rico were set on an industry-by-industry basis by a Minimum Wage Board. Even though the Island was covered by the U.S Fair Labor Standards Act (FLSA), exemptions were granted so that these industry minimums remained below the federal minimum wage. In 1974, the FLSA was amended, and it was determined that industry minimums in Puerto Rico would see automatic annual increases until they all matched the federal minimum wage by the end of that decade. This sparked academic literature, such as Santiago (1986) and Castillo & Freeman (1992), studying the impact of matching Puerto Rico's minimum wage to that of the U.S mainland. In general, they found that raising the minimum wage in Puerto Rico had a negative impact on employment.

These studies share a major limitation. Their period of analysis coincides with a major structural transformation of the Puerto Rican economy that was reducing employment and labor participation. Most importantly, these reductions were occurring prior to the minimum wage increase. As economists at the time were already noting, Puerto Rico's growth model was faltering. Industrialization via U.S. manufacturing failed to create enough jobs to incorporate the surplus labor generated by the collapse of the agricultural sector, and even with the "escape valve" of outmigration, structural unemployment was rising while labor participation was falling. Keep in mind that policymakers at the time were hopeful the petrochemical sector would become a new engine of growth. However, even prior to its collapse, -due to the 1970s oil shocks-, it was clear that its capital-intensive nature substantially limited its potential to foster an increase in employment.

It was in this context of deteriorating socioeconomic conditions and rising social tension that the federal government decided to increase the minimum wage in Puerto Rico and expand federal social assistance for residents of the Island. Attributing lower employment to the minimum wage increase is problematic considering the sequence of events. Even though early studies attempted to isolate the impact of the oil shock recessions and distinguish it from the impact of the minimum wage, this was insufficient to account for the profound structural change that was occurring. In fairness to these early studies, it is with the benefit of hindsight that one may note that the period coincided with a major transition in Puerto Rico's economic history, and which was already considerably underway prior to the raise in the minimum wage. In addition, as noted by Caraballo Cueto (2016), later studies replicating the specification of the earlier generation with better data found a weak effect in minimum wage impacts.

Nevertheless, it is important to highlight this limitation considering the long-term impact these studies have had on how the minimum wage conversation is framed in Puerto Rico. The early studies created a narrative that determines a priori that U.S.

minimum wages are ‘high’ for Puerto Rico (or that social assistance is too generous) given the differences in the development levels for the U.S. and Puerto Rico. As Caraballo Cueto (2016) also notes, there are various international examples of why that may not necessarily be the case (i.e., Ireland and New Zealand). The empirically unsubstantiated stance, that the Puerto Rican labor market's structural problems are a result of the imposition of the minimum wage and social assistance of a much richer economy is still present, even in academic studies by reputable economists (e.g., Krueger et al., 2015). While critical historical analysis of the sequence of events should suffice to debunk it, it still permeates the debate.

Focusing on more recent increases (between 2007 and 2009), Caraballo-Cueto (2016) found that the minimum wage's effect on employment was minimal and sector-dependent, with only a few sectors experiencing negative impacts. The research proposes targeted government interventions to support adversely affected industries during minimum wage increases. In sum, Caraballo-Cueto (2016) concludes the increase in the minimum wage appeared to create small wage-led growth in employment in the majority of sectors.

On the other hand, looking at data from 2005 to 2011, Reyes Jové (2017) finds the minimum wage and social assistance have negative impacts on employment. His findings suggested it was social assistance rather than minimum wage itself that exhibited the most influence on employment. Hernández, Valdés & González (2018) also found social assistance has a negative impact, while echoing Caraballo Cueto’s (2016) findings on the mixed sectoral impact of the minimum wage increase. Omberg’s (2021) findings also support Reyes Jovés’s (2017) conclusion on the negative impact of the minimum wage.

This generation of studies, particularly Reyes Jovés (2017) and Omberg (2021), essentially share the same limitation of the earlier studies regarding the transitional character of the period of analysis. In other words, they share the problematic practice of attributing employment effects directly to minimum wage changes, during periods of economic downturns and structural shifts. This is acknowledged by Omberg (2021), who states that the largest limitation of his analysis is the inability to completely rule out the effect of confounding shocks to Puerto Rico’s labor market, which coincided with the minimum wage increase. For example, between 1996 and 2006, Congress gradually phased out various tax incentives, most notably the possession tax credit under U.S. Code Section 936, conferred to companies operating in Puerto Rico, increasing the tax burden for many entities. While this phase-out occurred during the pre-treatment period, it’s possible that its effects were not fully felt until after the minimum wage increase in 2007.

More recently, Padró & Rodríguez (2023) use Puerto Rico’s historical data and latest econometric techniques to update the analysis. They find that while the initial response to a minimum wage increase may be negative, the effects can become more positive over time. However, they stress that their findings suggest "the relationship between minimum wage increases and employment is complex and context-dependent" (Padró

& Rodríguez, 2023). This is perhaps the most relevant and crucial finding of the academic literature review on the minimum wage in Puerto Rico. Given the particular and historical set of conditions at hand (i.e., post-pandemic reconstruction with federal funds), along with Padró & Rodriguez's (2023) findings of the context-dependent character of the impact of the minimum wage, past experiences and studies will provide limited insight to gauge the potential impact of the current proposed increase.

There are also various public sector reports. In accordance with Executive Order 2017-027, the Planning Board (2018) prepared a report for the "Multi Sector Committee for the Increase in Minimum Wage." The Planning Board report estimated the number of impacted workers that would have been influenced by a higher minimum wage at the time, the industry's most likely to be, and potential impact on economic growth. Their analysis found employers in the retail sector and the accommodation and food services sectors were the most likely to see a substantial increase in their labor costs. On the other hand, their baseline forecast for economic growth from 2018 to 2020 was negative, and they found a moderate minimum wage increase would ameliorate the contraction.

In 2021, the Governor's Minimum Wage Advisory Group produced a report that once again estimated the number of workers who would potentially be impacted, the specific industries, and contextualized these within the literature and the economic conditions of the Island. The Advisory Group's report recommended a minimum wage increase to $8.50 in 2022, and two additional conditional increases in July 2023 ($9.50) and July 2024 ($10.50). The conditional increases would be contingent on pre-determined metrics related to total employment, the Economic Activity Index, and prevailing average wage. Finally, in 2023 the Planning Board published a report analyzing the impact of the increase to $9.50 that went into effect during July 2023. Their analysis suggested that this latest increase contributed positively to the economy with an estimated uptick in the real growth rate of up to 0.4% percentage points.

Similarly, a couple of local firms have also reviewed the minimum wage in Puerto Rico. They usually consist of descriptive data analysis coupled with an estimate of the number of workers that would be impacted and the increase in payroll costs this would imply for the private sector. These reports assume a substantial portion of these jobs would be lost, and therefore conclude minimum wage increases would be detrimental. The methodology employed in these reports is less rigorous than the ones outlined before. Unlike Giannarelli and Werner (2022), who were discussed earlier, they disregard that at least some laid off workers could potentially find new jobs. Similarly, these local reports disregard the possibility of countervailing wage-led employment growth, despite there is academic evidence that it has occurred in previous increases in Puerto Rico. It is also important to highlight that these reports are providing estimates of the number of potentially impacted workers, generated with aggregate labor market data that is publicly available. This is a limitation that can be overcome with the use of administrative data, as suggested in the expert report for the UK commission. This would provide more certainty regarding the number of workers that would be affected.

# IV. The Use of Administrative Data to Study Minimum Wage Impacts

The methodological approach of this study strongly relies in the use of administrative data at the individual and firm level. This is a relatively recent practice in this kind of research but is already becoming a common recommendation by leading experts. Minimum wage studies have long relied on survey data, particularly the Current Population Survey in the United States. A key drawback of survey data is the inability to track the income of individuals over time (Rinz & Voorheis, 2018). Surveys can also suffer from missing data issues as well as experience problems with sample selection and attrition (Einav & Levin, 2014). To overcome these limitations administrative data has been adopted to study the effects of the minimum wage in both the U.S. and internationally. By being more detailed and comprehensive, it enables improved calculations of economic effects and consequences, as well as innovative modeling of longstanding research questions in the field of economics (Einav & Levin, 2014). The following section reviews the literature on minimum wage that has utilized administrative data.

Giuliano (2013) used individual employee records obtained from a large U.S. retail firm with over 700 locations to study the impact of the federal minimum wage law enacted in 1996. The law raised the federal minimum wage by 21% in two steps – from $4.25 to $4.75/hour on October 1, 1996, and from $4.75 to $5.15/hour on September 1, 1997. The employment effects were analyzed with the aid of geographic variation in wage levels prior to the increase. Overall, the effect on the full-time equivalent level of employment was negative, but small and statistically insignificant. The study also aimed to demonstrate the importance of focusing on different subgroups of low-wage workers. Despite the overall impact being negative and statistically insignificant, Giuliano (2013) found that the increase in the relative wages of teenagers led to a statistically significant increase in teenage employment.

To study the impact of the minimum wage hike in Seattle from $9.47 to $13, Jardim and Van Inwegen (2019) linked extracts from two administrative databases from the State of Washington data on payroll records from the state's Unemployment Insurance program (which include quarterly earnings and hours worked) and business revenue data from the Department of Revenue. A difference-in-differences approach was used to study the impacts of the minimum wage increase on businesses by comparing two groups of firms – one with relatively lower adjustment costs and the other with relatively higher adjustment costs. Firms with four (4) or less workers were dropped from the analysis. Only single-location businesses were kept in the analysis (including franchises). Business data was divided into cohorts – the cohorts of interest were firms that were operational before and after the first minimum wage hike (from $9.47 to $11.00 in April 2015), and firms that were operational before and after the second minimum wage increase (to $13.00 in January 2016). These were designated the 'treated' cohorts and were compared

to control cohorts of firms that would have faced similar costs of compliance in the years leading up to the minimum wage increases (2005 to 2013). Due to the timing of the minimum wage increases, and to address seasonality, both treated cohorts had a starting point of the second quarter of the year and were followed for six consecutive quarter years. Control cohorts were set up in a similar fashion. The authors found businesses increased their labor costs and adjusted to the minimum wage by mildly reducing demand for low-wage jobs, but they largely did not pass the increase in labor costs to prices.

Dustmann, et al. (2022) used high quality, administrative data on the universe of workers and firms to conduct an individual-level analysis to study Germany's minimum wage increase in 2015. Individual-level worker data was obtained from the Federal Employment Agency's Statistics Department, which included the worker's employment status, education, the firm worked for, and place of residence and work. Information on earnings and hours were merged to the dataset, along with the start and end date of each job. The main findings were that the minimum wage reduced inequality both across individuals and regions, without decreasing employment. Furthermore, the upgrading of low-wage workers to better firms as a result of the minimum wage translated into an improvement in firm quality in regions hardest hit by the policy change versus geographic regions that were less affected by the minimum wage. The increased chance of business failure of firms with no more than two (2) employees is notable and aligns with the hypothesis that minimum wages may affect the least productive firms to a greater degree. It also aligns with the theory that the most labor-intensive firms suffer (or become more capital-intensive) as firms with relatively higher capital utilization expand. The authors note that despite an unchanged employment level, there were businesses that suffered or closed due to the imposition of the minimum wage, but that the overall allocation of labor became more efficient.

While not focused on employment effects, Drucker et al. (2021) used Israeli administrative records consisting of employee data, company records, and business owners obtained through the country's Tax Authority to study the distributional impact of the increase of Israel's minimum wage regarding firm profits. Employee data was used to calculate a variable referred to as the fraction affected (FMW), which refers to the proportion of full-year workers who at their primary job made at or below the minimum wage that stood during the post-policy change period. The obtained firm level data contained all companies active in Israel between 2003 and 2010. The year 2003 was excluded from the analysis as losses from a previous year were required to correctly determine firm profits. The pre-policy change period of 2004-2005 was compared to the post-policy period of 2009-2010. The government sector and non-profit organizations were excluded from the dataset, along with firms undergoing liquidation and companies that are likely to be holding companies. The study suggests that the minimum wage does reallocate income towards lower-income families. However, the source of this redistributed income is not from the top of the income distribution, but from business owners who employ greater shares of minimum wage workers. With the minimum wage

hike, these businesses see a greater reduction in their income relative to owners of firms who employ fewer low-wage workers.

The preceding papers demonstrate the detail of analysis that can be uncovered when using row-level, administrative, high-quality data on individual workers and businesses. This type of data has shown considerable promise in demonstrating in detail the effects of changes to, or an introduction of, the minimum wage at the firm and worker level. The rich location detail of this type of data also allows for the understanding of effects in relatively small geographical areas, which is not always possible using survey data. In short, using administrative data to analyze the proposed increase to $10.50 would represent a novel contribution to the minimum wage literature in Puerto Rico.

As previously noted, Giannarelli and Werner (2022) used microsimulation techniques to study the potential impact of an increase to a $15 per hour minimum wage in the United States. The use of microsimulations to study minimum wage impact is also becoming common practice. As early as 2008, Müller and Steiner used a microsimulation model to study the potential impact of a German minimum wage while accounting for the complex interactions between individual wages, the tax-benefit system and net household incomes. Alinagh et al. (2020) examined the potential effects on inequality and poverty of a minimum wage increase in New Zealand using a microsimulation model that captured the details of household composition and the income tax and welfare benefit system. More recently, Grünberger et al. (2022) analyzed the effects of a hypothetical minimum wage increase on social and fiscal outcomes in 21 European Union countries using a microsimulation approach.

Similar to the use of administrative data, using a microsimulation approach to analyze the proposed increase in Puerto Rico would also represent a novel contribution to the minimum wage literature on the Island. However, combining a microsimulation approach with the use of administrative data would represent a novel contribution, not only in the context of Puerto Rican studies, but for the international literature on the economics of minimum wage impacts as a whole. Subsequent sections of this report will delineate in detail the proposed methodology.

# V. The Case of Tip Workers

The FLSA amendments in 1966 broadened coverage to include workers in the hotel, restaurant, and other service industries who were previously not covered under the act. They also introduced a "subminimum wage" for employees who regularly earn tips. Employers were allowed to pay tipped workers at a rate of 50% of the federal minimum wage. In 1980, this tipped minimum wage was increased by Congress to 60% of the federal minimum wage, only to be reduced back to 50% in 1991. In 1996, Congress fixed the tipped minimum wage at $2.13, severing its link with the federal minimum wage for the first time. It has not increased for over thirty years, during which inflation has significantly eroded its value. A major limitation in the debates regarding tipped workers, as Azar (2020) notes, is that the literature on the economics of tipping is relatively small. The following section provides a brief overview of the literature and discussions related to tipped wages.

While tipping is frequently a subject of controversy, some authors have a nuanced view of the subminimum wage. For example, Azar (2020) believes many customers prefer the control of choosing a tip and have a positive feeling that they are showing generosity, that servers may earn more as a result, and find that busy shifts where they must work harder are rewarded with higher income while service quality may be higher. Neumark and Yen (2023) argue that historical data suggests that higher tipped minimum wages reduce jobs among tipped restaurant workers, without positive earnings effects on those who remain employed sufficiently large to raise total earnings in this sector. They argue that tipped minimum wage increases may not be well targeted to poor or low-income families or reduce the likelihood of being poor or very low income. For this reason, Neumark and Yen (2023) suggest that a general minimum wage increase, while preserving the tipped minimum wage, may be more beneficial to low-income families and workers than raising or abolishing the tipped minimum wage.

On the other hand, during the past decades research-focused organizations such as the National Employment Law Project (NELP) and the Economic Policy Institute (EPI) have been advocating for the gradual elimination of the subminimum tipped wage. The EPI (2014) delineates several reasons for increasing the wage base for tipped workers. The "tip credit" system transformed the nature of tipping from a simple gesture of appreciation into a partial subsidy for employers by the customers. Rising income inequality and a stagnation in the enhancement of American living standards have been marked by poor growth in hourly wages, a challenge most severe among low-wage earners. Tipped workers face a poverty rate almost double that of non-tipped workers and represent an expanding segment of the U.S. workforce. Similarly, NELP (2015) stresses that tipped workers face significant economic insecurity.

EPI (2014) has also emphasized that research refutes the idea that tips alone ensure sufficient income and economic stability for these workers. NELP (2015) adds that the complex tipped wage system fosters widespread noncompliance with the law.

Furthermore, both NELP and EPI argued that implementing the regular minimum wage for tipped workers did not negatively impact job growth in the leisure and hospitality sector in the seven states where tipped workers earned the full minimum wage. On the contrary, since 1995 these states experienced more robust sector growth compared to states where tipped workers earn a subminimum wage.

Researchers at the US Census Bureau used administrative records to estimate the effect of tipped minimum wages on the wages and hourly tips of servers, as well as server employment and hours worked (Jones, 2016). The study found evidence of "monopsony power" in the restaurant sector. When the cost of leaving a job is high, employers wield an advantage referred to by economists as monopsony power. This power enables businesses to offer lower wages, fewer benefits, and poorer working conditions. This situation arises because, when it is difficult to quit, employees are less likely to leave their positions even when they should, due to low pay or poor working conditions. As a result, workers may leave their jobs slowly or not at all, diminishing the competitive pressure on firms to address these poor conditions. Economists generally agree that higher minimum wages may—up to a point—induce employment in industries where employers have monopsony power.

For Ross and Welsh (2021), the tipped minimum wage should be abolished because it promotes precarious work and living conditions. However, according to these authors, it is important to distinguish the tipped minimum wage from the broader question of tipping in general. In other words, eliminating the tipped minimum wage does not entail an abolition of tipping. Eliminating the tip credit raises the income floor for those most vulnerable without removing the ceiling for tipped workers. For example, a recent survey conducted by the Food Labor Research Center at UC Berkeley highlighted how the pandemic may have worsened the precariousness of the working and living conditions of tipped workers. More than a third (34%) of workers reported a greater incidence of rights violations in 2021, the pandemic's second year, compared to the previous year. The report explains that annually, wage theft affects over 2.4 million workers, leading to a loss of around $8 billion due to minimum wage violations.

A major limitation in the literature, in addition to the scarcity of studies, is the absence of research that contrasts the scenario where the subminimum wage is a fixed percentage of the minimum wage (as was the case prior to the 1996 amendments to the FLSA) relative to the scenario where the subminimum wage is fixed at a dollar amount (the current case). In Puerto Rico, bills have been presented in the legislature proposing the elimination of the subminimum wage for tipped workers, as well as bills that would establish it as a fixed percentage of the minimum wage (50% or 75%). Unfortunately, if tipped minimum wage research is scant in the United States, it is virtually nonexistent in Puerto Rico.

# VI. White Collar Exemptions

Under the FLSA, "white collar" exemptions are specific provisions that exempt certain executive, administrative, professional, outside sales, and computer employees from overtime and minimum wage requirements. These exemptions are defined by both the duties these employees perform and their salary levels. To qualify for the white-collar exemption under the FLSA, employees must meet certain criteria related to their job duties and must be paid on a salary basis at not less than a specified minimum amount. The criteria include:

1. Salary Basis Requirement: Employees must be paid a predetermined and fixed salary that is not subject to reduction because of variations in the quality or quantity of work performed. This is known as the "salary basis test."
2. Salary Level Test: Employees must be paid at least a specified weekly standard salary level, which is periodically updated to reflect economic changes. As of the most recent update proposal by the Department of Labor (DOL), this threshold has been proposed to increase significantly, reflecting adjustments for inflation and changes in wage distribution patterns.
3. Duties Test: Employees must primarily perform executive, administrative, or professional duties as defined by the regulations. These duties include, but are not limited to, tasks such as managing a department, routinely exercising discretion, and independent judgment, or performing work that requires advanced knowledge in a field of science or learning usually acquired through prolonged specialized instruction.

The concept of white-collar exemptions originated to distinguish between workers eligible for overtime due to the non-manual nature of their work and their higher level of responsibility and decision-making authority. Over time, the DOL has periodically revised the regulations governing these exemptions to reflect the modern workplace and ensure that the FLSA's protections are extended appropriately more accurately.

One significant change proposed in the recent revisions by the DOL included raising the salary level threshold to capture the 35th percentile of weekly earnings of full-time salaried workers in the lowest-wage Census Region, or $1,059 per week. This adjustment aimed to modernize the salary threshold, which has lagged inflation and wage growth, inadvertently exempting lower-wage workers who perform duties that should qualify them for overtime pay. Additionally, the proposal included automatic updating of these thresholds, ensuring they keep pace with economic changes without requiring periodic regulatory action. This automatic adjustment mechanism is intended to prevent the erosion of protections due to stagnant thresholds in a changing economic landscape.

By raising the salary threshold and tightening the duties test, more workers will qualify for overtime, ensuring they are compensated for hours worked beyond the standard 40-hour workweek. According to the DOL, this shift not only enhances worker protections but also encourages fairer competition among businesses and reduces the incentive for employers to overburden salaried employees. Moreover, these changes reflect the DOL's attempts to adapt labor laws to contemporary employment practices, addressing disparities in compensation, and promoting a balanced work-life dynamic.

While there is a lack of extensive academic research specifically focusing on the impact of white-collar overtime regulations established by the DOL, research-oriented nonprofits like the Economic Policy Institute (EPI) and the National Employment Law Project (NELP) have provided thorough analysis and commentary. Their discussion argued in favor of including U.S. territories such as Puerto Rico in the proposed changes to ensure fair labor standards are uniformly applied.

The EPI strongly supported the DOL's proposal to update overtime exemptions for executive, administrative, professional (EAP), outside sales, and computer employees under the FLSA. EPI's comments to the DOL's RFI on the proposal argued that the increase in the salary threshold for overtime pay is not only reasonable but necessary to restore the protective intent of the FLSA. They point out that the proposed salary threshold, while a significant increase from previous levels, still falls below the inflation-adjusted values of thresholds set in the 1970s. EPI also strongly advocated for the inclusion of U.S. territories in the application of the new rules. They argued that the same standards should apply to territories that are subject to the federal minimum wage, which includes Puerto Rico, Guam, the U.S. Virgin Islands, and the Commonwealth of the Northern Mariana Islands. This uniform application would ensure no worker under U.S. jurisdiction is disadvantaged by lower thresholds, which is crucial for maintaining fairness and consistency in labor standards across all territories.

NELP emphasized that the new rules are a modest but vital step towards improving the lives of workers who are most in need of protection under the FLSA, particularly those in low-wage positions who often lack sufficient bargaining power in their workplaces. They commend the proposal for raising the salary threshold, which would extend overtime protections to millions more workers, and for planning to update these thresholds automatically to keep pace with inflation and wage growth. NELP specifically highlighted the importance of these changes for workers in U.S. territories. They argued that the application of consistent salary thresholds across all territories will prevent the erosion of worker protections and ensure that workers in these regions are not left behind as economic conditions evolve. By doing so, the DOL would reinforce the universality of labor rights under U.S. governance, ensuring that all workers receive fair compensation for overtime, regardless of where they live within U.S. territories.

Both EPI and NELP underscored the broader implications of the proposed changes. They argued that updating and equalizing overtime protections are crucial for promoting equity in the workforce, particularly in regions that have historically been marginalized

or overlooked in policy considerations. Their analyses suggested that such updates are not only about fairness but also about economic efficiency, as they encourage better workforce management and can stimulate economic activity by increasing workers' purchasing power. Furthermore, both contend that the proposed automatic updates to the salary thresholds will foster a dynamic regulatory environment that remains relevant and responsive to the needs of workers.

In Puerto Rico's case, PROMESA has previously impacted the application of FLSA rules, especially concerning minimum wage and overtime regulations. PROMESA introduced specific measures intended to address the economic crisis in Puerto Rico, including provisions that affected the enforcement of federal labor standards on the Island. For example, PROMESA included provisions that could allow for a lower minimum wage for workers under 25 years of age. While these measures were never implemented, their intention was to encourage hiring among younger workers by reducing labor costs. However, the non-implementation indicates that other considerations, possibly including public opposition or logistical challenges, prevented this aspect of the law from being activated.

On the other hand, PROMESA also included critical stipulations that altered the implementation of the DOL's 2016 Final Rule on overtime for white collar workers in Puerto Rico and which were implemented. The Final Rule, which was aimed broadly at increasing the salary threshold for overtime exemption nationwide, set a new standard that would have significantly raised the minimum salary required to classify executive, administrative, and professional employees as exempt from overtime pay. Specifically, the rule aimed to raise the threshold to $913 per week, or $47,476 annually. However, Section 404 of PROMESA specifically precluded the application of this rule in Puerto Rico until certain economic analyses were conducted. The law mandated that the Comptroller General complete a report examining the economic conditions of Puerto Rico and that the Secretary of Labor determine whether the implementation of the Final Rule would adversely affect the island's economy. Due to these stipulations, the enhanced salary threshold proposed by the DOL's Final Rule did not take effect in Puerto Rico as scheduled. Instead, Puerto Rico continued to enforce the previous threshold set at $455 per week, significantly lower than the new threshold proposed in 2016. This lower threshold meant that many salaried white-collar workers in Puerto Rico who would have been eligible for overtime pay under the new rules continued to be exempt, potentially leading to longer work hours without corresponding overtime compensation.

Regarding the possibility of being included in the latest proposed rules for overtime pay under the FLSA, the response within Puerto Rico was marked by significant concern and debate. The Puerto Rican Department of Labor and Human Resources (DTRH by its Spanish acronym) formally expressed concerns regarding the proposed rule's implementation in Puerto Rico in the DOL's Request for Information (RFI). The DTRH highlighted that in Puerto Rico's case, the proposed rule amounted to a significant increase in the minimum weekly salary for exempt employees, from $455 to $1,059. This 132% increase was viewed as potentially detrimental to Puerto Rico's recovering

economy and labor market. The DTRH emphasized the island's unique economic challenges and argued for a tailored approach that considers these factors rather than applying the same standards as the mainland U.S. without adjustments.

The DTRH's position was based on a report commissioned to a consulting firm. This report argued that the current $455 weekly threshold is outdated, yet the proposed increase to $1,059 was not aligned with the economic conditions of Puerto Rico. The report emphasized that the economic disparities between Puerto Rico and the mainland have increased since the last update in 2004, necessitating a more considerate approach to wage adjustments. They argued that such a significant increase as the one proposed could have unintended negative impacts on the local labor market, potentially stalling the fragile economic growth. Their report suggested an alternative approach, proposing that the standard salary level in Puerto Rico be set at 131% of the island's median weekly wage, which would equate to about $590 per week. This recommendation was based on benchmarking the salary level to a percentage of the median wage in the U.S. South, the lowest-wage Census Region, to maintain proportionality and fairness. DTRH also highlighted that the private sector in Puerto Rico has similarly voiced apprehensions regarding the potential changes. Business leaders expressed concerns that the dramatic increase proposed by the DOL could stifle economic growth by increasing labor costs significantly.

On April 23, 2024, the DOL announced its Final Rule, determining that the new standard salary level would not apply to the U.S. territories subject to the federal minimum wage. Therefore, the minimum weekly salary for exempt employees in Puerto Rico shall remain at $455. Nevertheless, DOL's Final Rule states that it will further address regulations for the U.S. territories in a future final rule.

# VII. Methodology – Minimum Wage Estimates

## VII.1. Data Gathering

As with any data driven project the first phase was an extensive data gathering process. Several data sources were requested, processed, standardized, anonymized, and merged into two main data sources. These were then used as inputs and to model the minimum wage and its impact on Puerto Rico's economy. The aim of the model was to determine the impact of an increase in the minimum wage from $9.50 to $10.50 based on the results of the previous two (2) minimum wage increases from $7.25 to $8.50 in 2022, to $9.50 in 2023.

Three (3) main data* sources were used in this study:

1. Department of Labor & Human Resources (PR) – Quarterly Unemployment Filings for 2019-Q1 to 2024-Q1.
2. Department of Labor & Human Resources (PR) – ES-202, a quarterly employment database for 2019-Q1 through 2023-Q4.
3. Department of the Treasury (PR) – Income by source and costs by type by industry (3-digit NAICS[1]). Extracted from tax returns for the years 2019-2022.

**All datasets were anonymized, and substituted unique identifiers were implemented to guarantee privacy of individuals and businesses. As such, only data and statistics that prescribes to US Bureau of Labor Statistics (BLS) confidentiality pledge and laws[2] are presented at this report.*

The first dataset, quarterly unemployment fillings by employers, includes the wages paid each month per employee. Such granular data allowed ABEXUS' team to construct a database of individuals and their salaried earnings per quarter throughout the years (this allowed employees with multiple jobs to be identified as well as the number of employees at the minimum wage). This also enabled the team to determine turnover by industry, average time minimum wage employees spent at the same job, among other key descriptive statistics.

This data was then combined with the ES-202 database, which is used to construct the *Quarterly Census of Employment & Wages* (QCEW). The merge of such datasets provided the specific industry (6-digit NAICS) for each employer, as well as the date of commencement of operations, date of end of operations, and location.

Finally, Department of Treasury data, extracted from business tax returns was utilized to "fill out" businesses revenues and costs for the years 2019-2022. For 2023 and 2024 costs and income were estimated in relation to real wage data based on the same business data from prior years. If it was a new business, costs and revenue estimates were based

[1] North American Industry Classification System
[2] https://www.bls.gov/bls/confidentiality.htm

on wages using average parameters from the same industry at a 3-digit NAICS level. For example, wages represent [X]% of total costs for businesses in the NAICS 455.

Business costs extracted from tax returns include utilities, material & equipment, inventory, services, administrative, and labor costs. Income variables extracted from tax returns includes incomes by source, such as service income, manufacturing income, sales of goods, and other income (interest, rent, etc.).

## VII.2. Data Analysis

### VII.2.1. Population Selection

The second phase of this project involved identifying the individuals that earned the minimum wage and businesses that pay the minimum wage. A bottom-up approach was employed for the identification process; that is, employees were identified first, followed by businesses.

First, employees earning the minimum wage or near the minimum wage (up to 115% of the minimum wage in effect) are identified. Only private non-farm employers are included in this analysis as the minimum wage applies only to private employees and excludes agricultural and public sector workers.

Then the businesses that pay these individuals were identified, based on the quarterly returns (colloquially known as "Trimestrales"), finally the industries and locations of these businesses were determined based on ES-202 data. This allowed the aggregation of the impacts of the minimum wage at an industry and geographical level (municipalities & Census Tracts[3]).

Since employers report monthly income per employee, not hourly wages, certain assumptions had to be used to identify employees that earn the minimum wage and exclude those that might have begun working late in the calendar month or earned the tipped worker's minimum wage ($2.13). As such, to be classified as a minimum wage employee the individuals must:

[3] Census tracts are outlined by the US Census Bureau after every decennial Census. They are small, relatively permanent statistical subdivisions of a county, with on average 4,000 inhabitants.

- Be employed a minimum of two quarters during the year with the same employer (4 months or more).
    - This reduces the impact of seasonal factors and employees that have a significant number of jobs within the period.
- Income greater than $500 in each of those months.
    - Reduces the impact on average and median incomes by removing those that worked only a short time in a period. Also reduces the number of tipped workers[4] (full-time monthly wage is $325) in the dataset.
- Income lower than the minimum wage in effect at the time at 35 hours a week.
    - 35 hours is the threshold used by the US BLS to determine full-time.

With the individuals identified, the model moves to identifying businesses that pay the minimum wage. After selecting the individuals, employers who have had at least one employee at the minimum wage for six months or more are identified.

These businesses were observed over time (2019 - 2024) to determine their response to the minimum wage changes implemented in 2022 and 2023. The purpose was to understand the measures taken to adjust to the increase in the minimum wage:

- Reduction of employees
- Reduction in workdays (or workweek)
- Increase in prices
- Business closures

The behavior of each business was evaluated based on the industry in which it was classified (NAICS).

### VII.2.2. Simulation & Estimates

Impacts of changes in the minimum wage were simulated for three (3) areas, individuals, businesses, and prices. That is, how will an increase in the minimum wage impact individuals, in terms of an increase in the average wage (potential layoffs). What will the impact be to businesses in terms of labor costs and closures and finally, how will the increase in labor costs for businesses impact prices of goods and services. To simulate several scenarios for minimum wage increases and their potential impact, a microsimulation model was used.

#### *Microsimulation Model*

A microsimulation model is a tool to estimate the impacts of changes in taxes, public policies, and/or economic conditions on tax collections, profitability of businesses, employment, and prices. These individual impacts are then aggregated to determine the overall economic impact of the proposed policy changes.

[4] Tipped workers are subject to a minimum wage of $2.13 per hour or $325 per month.

Microsimulation models, like all sophisticated economic tools, come with their own set of challenges and benefits. On the downside, these models require extensive, granular data on individuals and corporations, substantial computational resources, and a robust design to effectively simulate complex economic interactions, such as changes in income tax or a change in the minimum wage. Additionally, these models are time-intensive, diverging from the quicker setup associated with traditional econometric modeling.

Conversely, microsimulation models address a common limitation in economic modeling—the reliance on broad, sweeping assumptions. By minimizing the use of the "*ceteris paribus*" (all other things being equal) assumption, these models leverage vast amounts of data and computational power to individually simulate decisions of businesses and people.

This approach reduces the distortion caused by oversimplified assumptions that traditionally homogenize the responses of all economic actors, thus enhancing the accuracy and relevance of the results. In essence, a traditional econometric model would be forced to assume that all economic actors behave the same way. This is in large part to the aggregated datasets used.

There are two main types of microsimulations, static and dynamic. Dynamic models can age the population, applying demographic forecasts to the simulation to account for population changes. Static models maintain the same population independent of how many years or iterations are carried out.

In the case of businesses or corporations, a dynamic model assumes a certain number of businesses are “formed” and “closed” each year. Given the estimates required in this study, and the importance of demographics for Puerto Rico’s economy, a dynamic model was used.

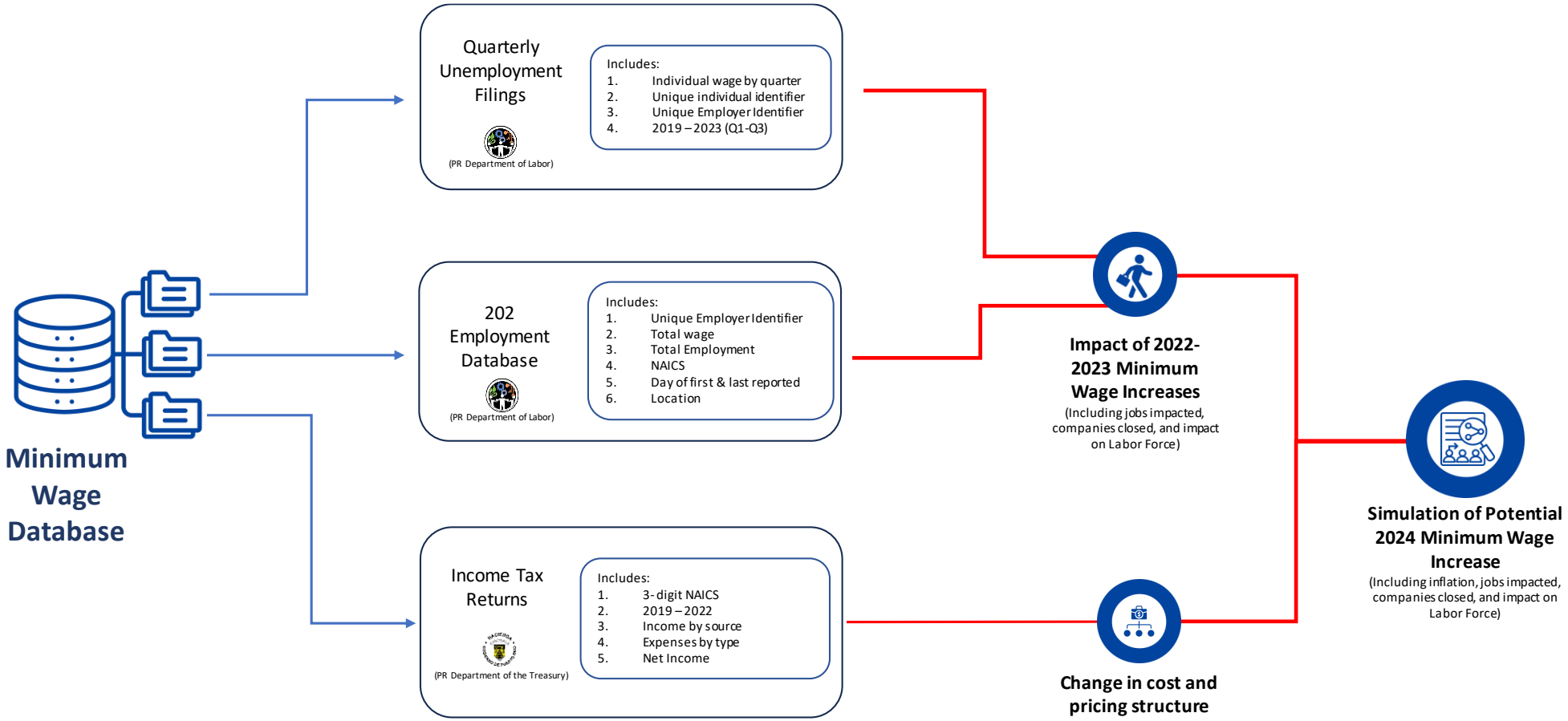
### *Two Stages*

A two-stage model was utilized to estimate the impact on individuals and businesses. The two-stage nature means two (2) areas will be modelled independently in the first stage, and then together in a second stage. In Figure 1 the data sources and modelling are presented.

The model simulates the behavior and characteristics of individual entities within a population, such as households, individuals, and/or businesses, to estimate how different economic scenarios will affect prices.

The model incorporates assumptions about how individuals or corporations might respond to changes in policies or economic conditions, such as an increase in the minimum wage, based on prior behavior. Specifically, how the same company responded to minimum wage increases in 2022 and 2023. If the company was not operating in any of the two years, the behavior of companies within the same industry (same 3-digit NAICS) was utilized.

*Figure 1 – Minimum Wage Data & Modelling*



*Interindustry Impact*

After modeling the direct impact on pricing in the first stage, a second microsimulation was conducted using the updated costs. As businesses would adjust their pricing based on the updated costs this would lead to an increase in prices for inputs of other goods and services used by businesses.

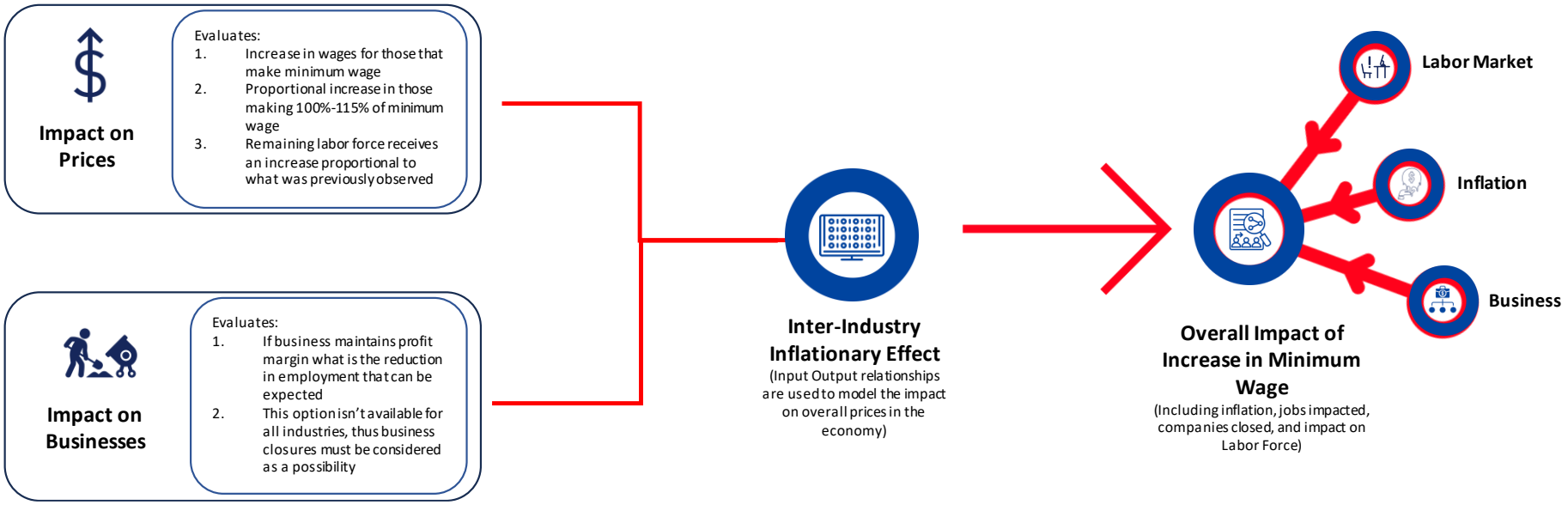
Microsimulation does not directly take into consideration interindustry multipliers, but interindustry relations were implemented to measure the impact of price changes in one industry on the rest of the economy. These interindustry relations, defined at the 3-digit NAICS level, are provided by the components of the input-output matrix, which include interindustry multipliers.

For example, an increase in labor costs can lead to an increase in prices of the goods and services of a particular industry. These prices are intermediate goods or services for other industries. Thus, price changes impact multiple areas of the economy, and the model accounts for these relationships. Consequently, this will affect the goods and services demanded by the initial industry.

Thus, this second stage must execute multiple iterations until results converge and the final overall impact on prices, the labor market, and businesses is determined. Based on the data gathered in the previous stage, this process takes anywhere from 9 months to a year for prices to stabilize.

All salaried individuals and businesses were incorporated in the microsimulation model, although only those with minimum wage employees saw a direct increase in their costs. All other businesses had an increase in their inputs in the “second-round” of the model, as the price of their intermediate goods increased (see Figure 2).

*Figure 2 – Minimum Wage Impact Model*



# VIII. Minimum Wage in Puerto Rico 2019-2023

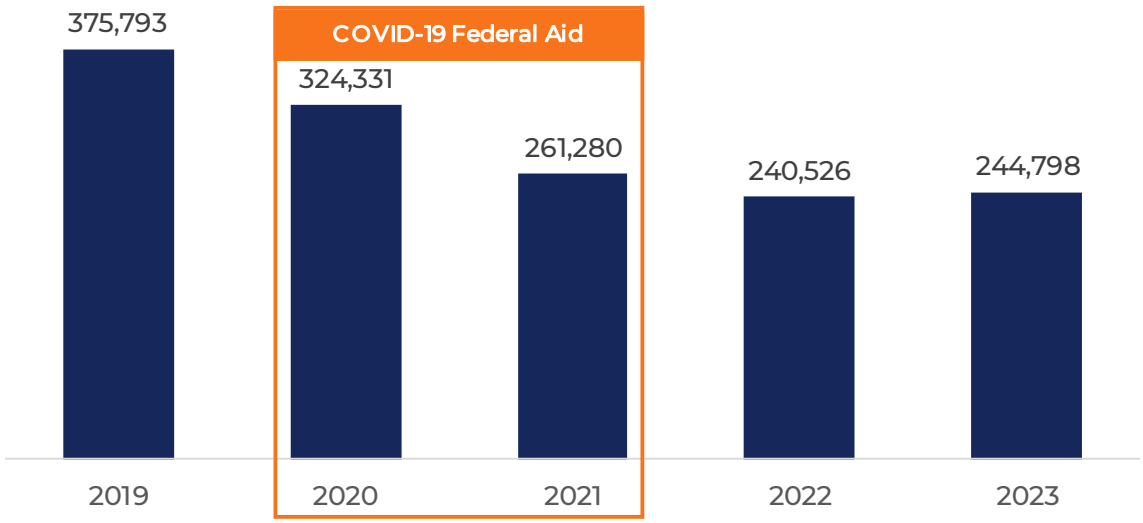
## VIII.1. Overall Impact of 2022-2023 Minimum Wage

After identifying the employers and employees who earn the minimum wage, the team proceeded to evaluate the minimum wage market and its transformation from 2019 to 2023. This analysis is particularly important considering the federal funds received for COVID-19 mitigation and the impact of programs such as the Pandemic Unemployment Assistance (PUA) and the Paycheck Protection Program (PPP) on the labor force.

The number of individuals earning the minimum wage decreased between 2019 and 2020, when over 375,000 earned the minimum wage (Figure 3) and declined to 324,331 in 2020. This can be attributed to the pandemic, yet the reduction between 2020 and 2021 was just as large.

This second reduction is associated with the COVID-19 pandemic, but also with the federal aid and federal programs, like PPP and PUA. These programs injected cash and helped increase demand from consumers for goods and services. This increase in demand along with a lack of workers is partially due to the increase in wages that has been observed in Puerto Rico and the US over the last couple of years.

*Figure 3 – Individuals Earning Minimum Wage*




Source: ABEXUS Estimates, PR Department of Labor & Human Resources data.

Employers appeared to have increased their wages in an effort to attract individuals back into the labor market as unemployment insurance payments (along with PUA) and direct incentives to individuals made it less attractive to work for the minimum wage. Essentially these programs increased their "expected wage". That is, employers needed to increase wages to compensate for the substantial benefits offered to individuals. This is reflected in labor market statistics, presented in Figure 4, as private employment, labor participation, and the average annual pay all increased between 2021-2023.

During the same period, the number of private establishments increased, indicating that despite the increase in the minimum wage, employment, labor force participation, and the number of businesses all experienced growth.

*Figure 4 – Puerto Rico Labor Market*


## VIII.2. Direct Impact of 2022-2023 Minimum Wage

### VIII.2.1. General Statistics

*Employees*

After the increase in the minimum wage in 2022 from $7.25 to $8.50, several transformations were taking place in the labor market. These were not necessarily caused by Act 47-2021 and the increase in the minimum wage but are nonetheless related.

Some 19,363 new workers came into the labor market, these are individuals that worked for the first time since at least 2019 and maintained this new job for at least 6 months in the 2021-Q4 to 2022-Q2 period. This period was selected for analysis because it encompasses the individuals hired when the minimum wage increase was enacted and immediately after the increase took effect. In other words, businesses hired these individuals with the understanding that a higher wage would need to be paid.

Another 10,543 individuals appear to have left the labor force, -at least salaried labor force-, between 2021-Q4 and 2022-Q2 and were not seen again in the database. The workers could have been displaced by the increase in the minimum wage, could have

migrated, or could have become self-employed. The fact that these individuals left the labor force cannot be directly attributed to the increase in the minimum wage.

A relevant finding was the overall change in the average salary of those that get paid the minimum wage. Since the vast majority are not full-time employees, the average work week is around 25-30 hours (instead of the full-time workweek 35-40 hours).

In Table 1 the employment and average annual pay for minimum wage workers is presented. The average annual minimum wage salary saw a significant increase in 2021, even prior to the enactment of Act-47-2021. Coupled with the decline in the number of minimum wage workers, -over 60,000-, this might indicate that businesses had already begun to increase wages in order to attract workers.

This is backed up by the almost trivial change in the average annual pay between 2021 and 2022. This also corroborates the hypothesis that wages increased to attract individuals back into the workforce as federal aid was higher than the average annual pay for minimum wage workers, as mentioned earlier.

*Table 1 – Minimum Wage Employment & Average Annual Pay*

| Minimum Wage | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Employment | 375,793 | 324,331 | 261,280 | 240,526 | 244,798 |
| Average Annual Pay | $10,415 | $9,518 | $12,721 | $12,842 | $13,757 |
| *Minimum Wage* | *$7.25* | *$7.25* | *$7.25* | *$8.50* | *$8.50-$9.50** |

Source: ABEXUS Estimates, PR Department of Labor & Human Resources data.

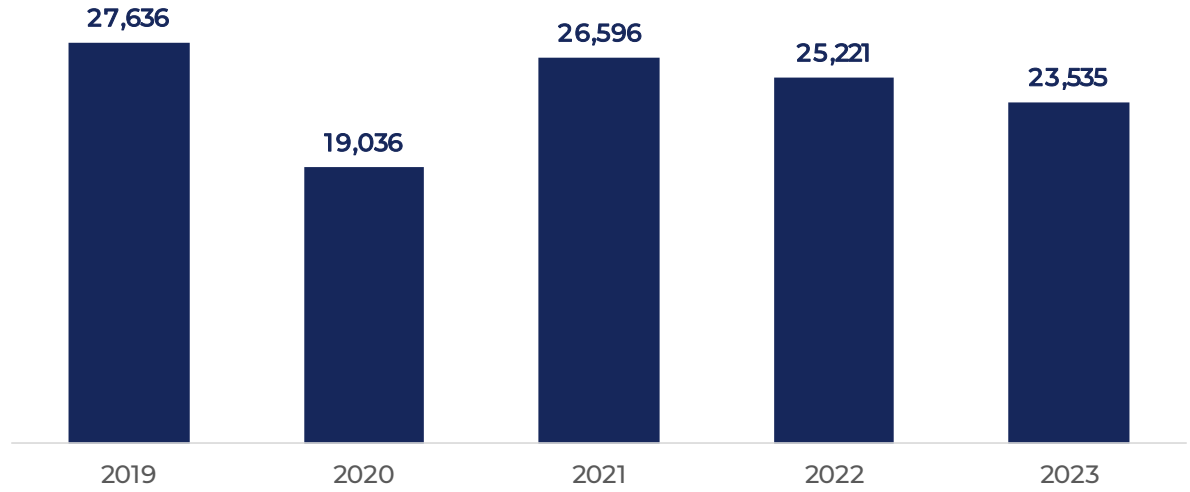
*Minimum wage increased to $9.50 in July of 2023.

The increase in the minimum wage from $8.50 to $9.50 resulted in a more pronounced rise in the average salary of workers, with an increase of nearly $1,000. Workers earning the minimum wage in areas outside the metropolitan region experienced this increase directly as a result of the enactment of the Act. Conversely, minimum wage employees in the metropolitan area had already been earning higher wages, at or above the rate set by the law, up to six months prior to its implementation

### *Multiple jobs*

Part of the analysis also considered the number of individuals earning the minimum wage or near it (up to 115% of the minimum wage) who hold multiple jobs for at least one quarter of the year. This number ranged between 20,000 and 28,000 in any given year. With the exception of the year 2020 and the pandemic, a rather consistent, although declining number of individuals worked multiple jobs and earned at or near the minimum wage.

*Figure 5 – Minimum Wage Workers with Multiple Jobs*




Source: PR Department of Labor & Human Resources

### *Establishments*

The impact on establishments of these minimum wage increases was also measured and analyzed for the 2021-Q4 to 2022-Q2 period. Just over 4,000 businesses closed during this period, for numerous different reasons. Yet, 2,102 businesses had characteristics that could indicate they were more susceptible to labor costs increases.

These 2,102 businesses had on average 5.7 employees of which 3.6 were making the minimum wage (63% of their labor). This is substantially higher than the average for the private sector in Puerto Rico that in 2022 had 34% of its workforce making the minimum wage. Therefore, the businesses that appeared to be negatively impacted by the increase in the minimum wage in 2022 were small businesses, mostly outside the metro area with a high reliance on minimum wage labor.

Businesses that closed, even if they employed a large number of minimum wage workers, could have ceased operations for various reasons. It cannot be definitively concluded that these closures were solely due to the increase in the minimum wage. This period was characterized by high inflation, supply chain disruptions, and labor shortages. However, it is likely that the increase in the minimum wage had a negative impact on these businesses.

Over the same period, over 4,100 new businesses with minimum wage workers began operations (2021-Q4 – 2022-Q2). These new businesses began with higher wage costs and with further minimum wage increases already enshrined in the law in 2023 and possibly in 2024.

When the minimum wage increases in 2023 ($8.50 to $9.50) was analyzed, over 4,700 businesses began operations between 2023-Q2 and 2023-Q4. At the same time another 2,927 businesses closed. The impact was slightly higher than what was observed in 2022. These businesses had similar profiles as well, small businesses, mostly outside the metro area, with a high reliance on minimum wage jobs.

### *Minimum Wage by Industry*

Not all industries utilize the minimum wage to the same degree. Some industries like retail or food services tend to have a higher reliance on the minimum wage to operate. In Table 2 the private employment and the employment receiving the minimum wage by industry (2-digit NAICS) is presented.

Agriculture is excluded as it has its own minimum wage and is omitted from this analysis. The table is sorted according to the highest concentration of minimum wage employment by industry (if sorted by size retail would be the largest).

Over 55% of accommodation and food services employment was paid the minimum wage in 2023, and over 50% of the administrative and support services[5] employment was also paid the minimum wage.

*Table 2 – Minimum Wage Employment by Industry in 2023*

| NAICS | Industry Description | Minimum Wage Jobs | Private Employment | % of Jobs at Minimum Wage | % of Minimum Wage |
|---|---|---|---|---|---|
| 72 | Accommodation and Food Services | 48,821 | 87,482 | 55.8% | 19.9% |
| 56 | Administrative and Support and Waste Management | 41,384 | 82,548 | 50.1% | 16.9% |
| 61 | Educational Services | 12,266 | 26,270 | 46.7% | 5.0% |
| 44-45 | Retail Sales | 56,054 | 131,105 | 42.8% | 22.9% |
| 71 | Arts, Entertainment, and Recreation | 2,208 | 5,396 | 40.9% | 0.9% |
| 81 | Other Services (except Public Administration) | 5,812 | 16,230 | 35.8% | 2.4% |
| 23 | Construction | 8,990 | 34,657 | 25.9% | 3.7% |
| 48-49 | Transportation & Warehousing | 4,994 | 19,813 | 25.2% | 2.0% |
| 62 | Health Care and Social Assistance | 22,472 | 90,673 | 24.8% | 9.2% |
| 55 | Management of Companies and Enterprises | 4,290 | 17,515 | 24.5% | 1.8% |
| 21 | Mining, Quarrying, and Oil and Gas Extraction | 157 | 643 | 24.4% | 0.1% |
| 53 | Real Estate and Rental and Leasing | 3,478 | 15,688 | 22.2% | 1.4% |
| 54 | Professional, Scientific, and Technical Services | 7,559 | 40,236 | 18.8% | 3.1% |
| 31-33 | Manufacturing | 15,187 | 82,889 | 18.3% | 6.2% |
| 51 | Information | 2,689 | 14,866 | 18.1% | 1.1% |
| 42 | Wholesale Trade | 5,886 | 33,203 | 17.7% | 2.4% |
| 22 | Utilities | 261 | 2,946 | 8.9% | 0.1% |
| 52 | Finance and Insurance | 2,290 | 31,759 | 7.2% | 0.9% |
| | **Total** | **244,798** | **733,919** | **33.4%** | **100.0%** |

Source: ABEXUS Estimates. US BLS QCEW. Excludes employment in NAICS 11-Farming, as they are subject to a different minimum wage.

[5] NAICS 56 – Administrative, Support, and Waste Management Services includes: Janitors and cleaning services, security guards, temp agency, call centers among several others.

*Minimum Wage by Area*

As mentioned previously, the impact of changes in the minimum wage is felt differently across the geographic areas of Puerto Rico. In this section, data by municipalities and Census Tract is presented.

Figure 6 presents minimum wage employment as a percentage of total private employment by municipality (or Census Tract for the San Juan metro area). As observed, businesses in the central and western regions of the Island tend to have a higher percentage of workers paid the minimum wage compared to those in San Juan.

In Figure 7 the percent of establishments with at least one minimum wage worker is presented (as percent of private establishments). Similarly, the businesses in the center and west of the Island tend to have more establishments with minimum wage workers and a higher percentage of their labor is also paid the minimum wage.

The Census Tracts are presented for San Juan in Figure 6 to demonstrate the limitations of aggregated analysis as well. From a state level, the impact of the minimum wage increase appears to be minimal. But when segregated to municipalities, it appears as though the businesses impacted by the increase in the minimum wage will be mostly outside the metro area.

If the analysis is carried out at a more granular level, even in municipalities that overall appear to be less reliant on the minimum wage, there are pockets of businesses that are more susceptible to changes in the minimum wage that would be affected. Hence the importance of carrying out the analysis at the most granular level possible, to more closely simulate the “real” impact of the measure.

*Figure 6 – Minimum Wage as % of Employment*

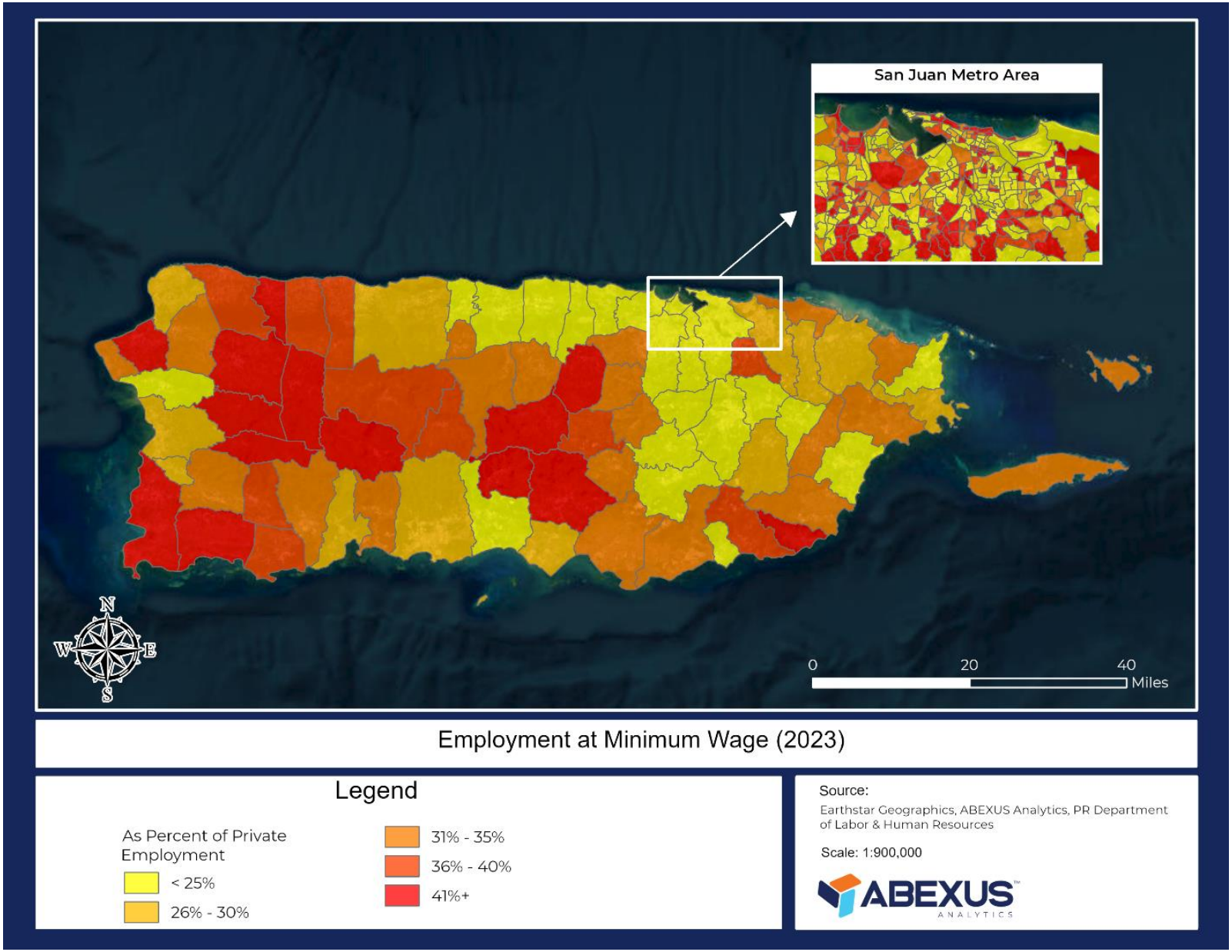
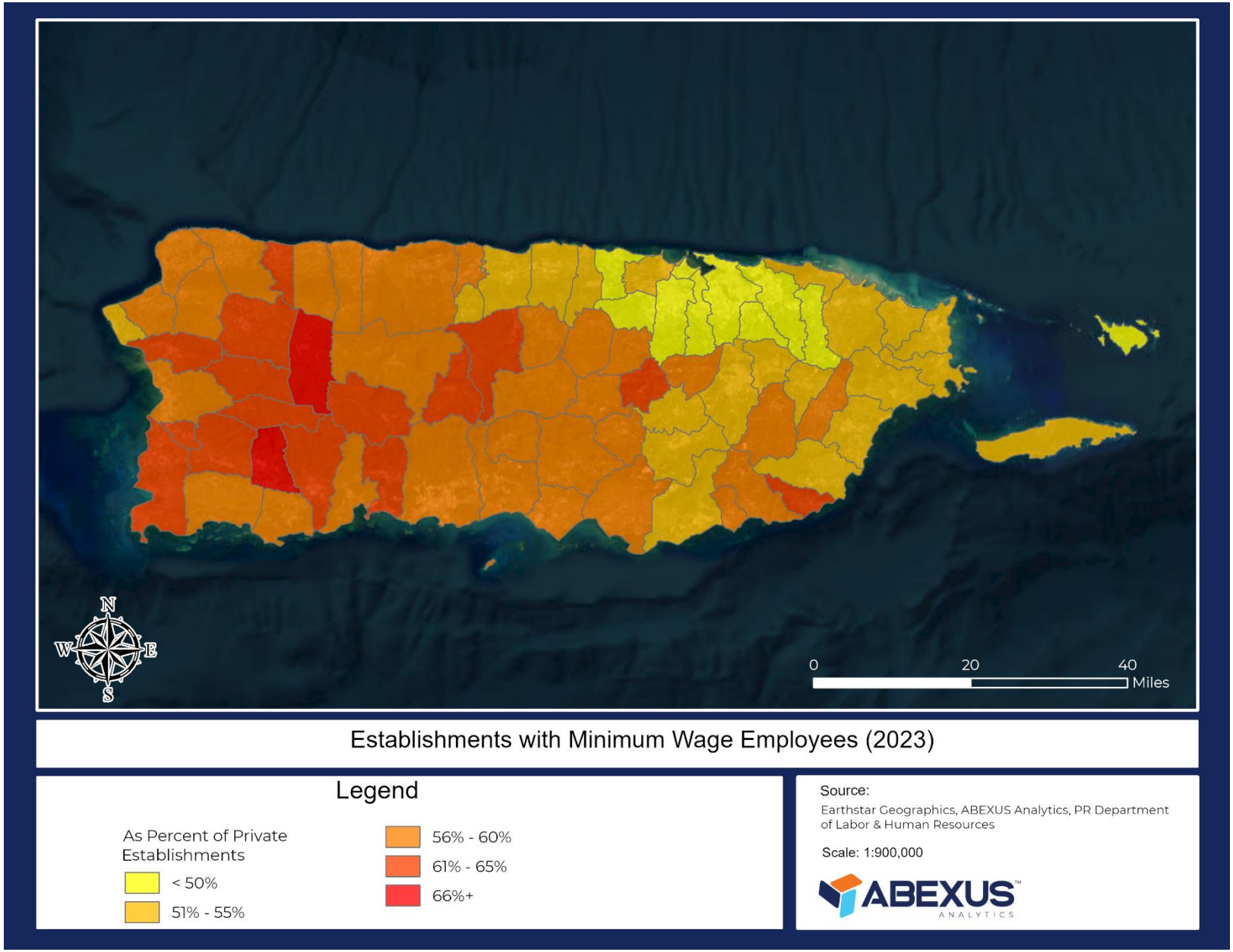


*Figure 7 – Minimum Wage as % of Establishments*



## VIII.3. Findings

Data from the most recent minimum wage increases seems to point to a net gain for the economy in terms of new businesses, higher employment, higher wages, and higher labor participation.

However, these positive effects should not be attributed to the minimum wage increase itself, but more to the unique circumstances and economic environment in which the minimum wage increase took place. Substantial federal funds were and are still influencing the local economy, funds associated with for COVID-19 mitigation and hurricane María reconstruction. The world economy has experienced an increase in demand by consumers, with considerably higher than average inflation, that has led to higher demand for labor as well.

In this economic environment, the negative effects usually associated with increases in the minimum wage (lower employment, higher prices, business closures, among others) appear to have been mostly absorbed by a growing economy.

# IX. Cost of Living

In this report, the cost of living is evaluated by examining the inflation-adjusted federal minimum wage since the 1970s. By adjusting historical federal minimum wage rates for inflation, in both the United States and Puerto Rico, we can assess whether these adjustments have kept pace with increases in the cost of living over time.

The primary assumption underlying this analysis is that minimum wages were originally set to ensure a certain standard of living. As prices increase, the purchasing power of stagnant wages diminishes, thereby eroding this standard of living. By analyzing the inflation-adjusted values of the minimum wage, we can determine whether recent increases have maintained their intended purchasing power and standard of living.

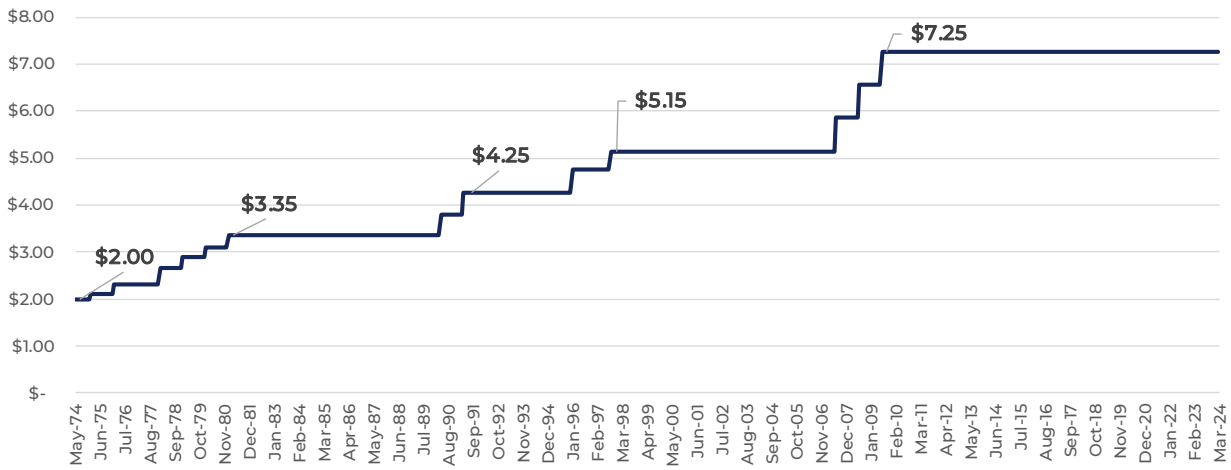
In Table 3 the federal minimum wage since 1974 is presented. As can be observed the minimum wage tended to be increased in "blocks" of 2 to 4 yearly increments in a row (1974-1976, 1978-1981, etc.). These increases are also presented in Figure 8. Adjustments have been made regularly every decade since the 1970s and with greater periodicity in periods of higher inflation (1970s-1980s), see Figure 9 for US and PR inflation.

*Table 3 – Federal Minimum Wage since 1974*

| Date Implemented | Hourly Minimum Wage |
|---|---|
| 1-Mar-74 | $2.00 |
| 1-Jan-75 | $2.10 |
| 1-Jan-76 | $2.30 |
| 1-Jan-78 | $2.65 |
| 1-Jan-79 | $2.90 |
| 1-Jan-80 | $3.10 |
| 1-Jan-81 | $3.35 |
| 1-Apr-90 | $3.80 |
| 1-Apr-91 | $4.25 |
| 1-Oct-96 | $4.75 |
| 1-Sep-97 | $5.15 |
| 24-Jul-07 | $5.85 |
| 24-Jul-08 | $6.55 |
| 24-Jul-09 | $7.25 |

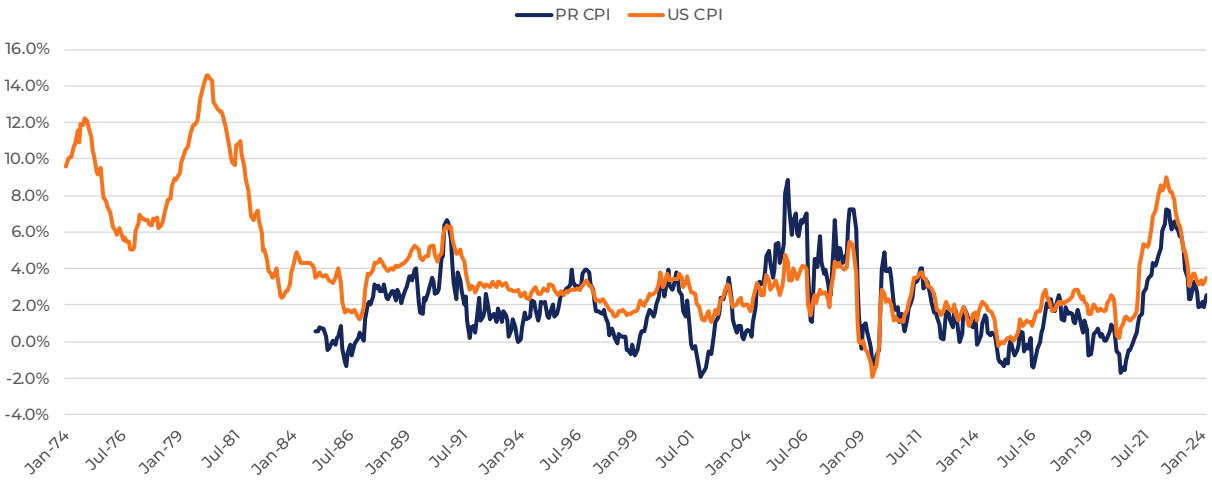
Source: US Department of Labor

*Figure 8 – Federal Minimum Wage since 1974*




Source: US Department of Labor, PR Department of Labor & Human Resources

*Figure 9 – US & PR Inflation*




Sources: FRED, US BLS, PR Department of Labor & Human Resources.

All these minimum wages were adjusted for inflation to determine how they have kept up with increases in the cost of living. The US Consumer Price Index[6] (US-CPI) and the Puerto Rico Consumer Price Index (PR-IPC) for all goods were used to adjust for inflation. Table 4 presents the inflation adjusted federal minimum wage using the US-CPI and the PR-IPC from the month the minimum wage came into effect up until March of 2024.

The most recent and current federal minimum wage was implemented in 2009 and would be equivalent to around $10.54 per hour in March 2024 if it was adjusted using the US-CPI. If adjusted using the PR-CPI, it would be equivalent to $9.11 in March 2024 dollars.

[6] Consumer Price Index for All Urban Consumers: All Items US City Average

The Puerto Rico Consumer Price Index (PR-IPC) has presented several issues that have led to inflation values being consistently lower than expected, particularly since the onset of the pandemic. This discrepancy is unlikely given that Puerto Rico imports nearly all the goods consumed on the island, which should reflect higher inflation rates similar to those in the United States.

Furthermore, the PR-IPC data is only available from 1984 onward, limiting its utility for long-term analysis. Due to these inconsistencies and limitations, the analysis was conducted using the US Consumer Price Index (US-CPI). The US-CPI is considered to be a more accurate representation of the inflation experienced in Puerto Rico, as it likely aligns more closely with the economic conditions and import-based consumption patterns on the Island.

As can be observed in Table 4, cost of living as measured by inflation, has consistently outpaced increases in the minimum wage since the 1990s. Prior to this decade the minimum wage in 2024 dollars would be $12 or higher, since the 1990s it lies between $9.80 and $10.50. Meaning Puerto Rico's current legislation is poised to at minimum keep up with the recent historical trend of the last three decades.

If the minimum wage is adjusted according to US inflation, in order to keep up with the most recent increase in the federal minimum wage of 2009, the minimum wage should stand at $10.54 per hour. If it were adjusted according to PR inflation, considering PR-CPI is usually considered as underestimating the actual inflation, it would stand at $9.11.

*Table 4 – Inflation adjusted Federal Minimum Wage*

| | | Inflation Adjusted March 2024 Value | |
|---|---|---|---|
| Year | Minimum Wage | US-CPI | PR-IPC |
| 1974 | $2.00 | **$12.85** | |
| 1978 | $2.65 | **$13.20** | |
| 1982 | $3.35 | **$12.00** | |
| 1991 | $4.25 | **$9.82** | $7.99 |
| 1997 | $5.15 | **$9.98** | $8.63 |
| 2009 | $7.25 | **$10.54** | $9.11 |

Source: US Department of Labor, FRED, PR Department of Labor & Human Resources

## IX.1. Impact of the Minimum Wage on Federal Assistance Programs

Since Federal aid to individuals is determined mainly through income and household composition, the ABEXUS team looked to determine what impact an increase in the minimum wage would have on these programs. The negative impact of an increase in the minimum wage to programs like the Earn Income Tax Credit (EITC) should be limited and could actually be beneficial.

Even if a full-time wage is assumed under a $10.50 minimum wage ($21,840 annual wage), some households could receive a higher tax credit, while the majority would remain at the same amount of tax credit (see Table 5). As such, this tax credit would continue to incentivize work and see little if any negative impact.

In the case of the Nutritional Assistance Program (NAP), the vast majority of workers earning the minimum wage have incomes above the threshold for NAP qualification. Even workers with a 20-hour workweek typically have incomes too high to qualify for NAP, unless they belong to a very large household (6+ members). Therefore, an increase in the minimum wage would negatively impact only a small proportion of workers who work less than 10 hours a week.

The public assistance program that could be affected the most is public housing assistance programs like Section 8. This program has “hard limits” that could cause beneficiaries to lose access or see a substantial reduction in assistance due to small increases in incomes. This problem has been discussed in various fiscal plans and is discussed in the literature review of this report.

However, it should be noted that in 2022 and 2023 incomes didn’t increase proportionately to the hourly wage increase for minimum wage workers. This is especially true for those making the minimum wage but working few hours. This is likely due to a reduction in work hours, although it is unknown if this is at the request of the employer or the employee. Hence their incomes didn’t change much as a result of the increase in the minimum wage.

*Table 5 – Earned Income Tax Credit for Individuals & Couples at or Below Annual Minimum Wage*

| | EITC by Dependants (Single) | | | |
|---|---|---|---|---|
| Income | 0 | 1 | 2 | 3+ |
| $10,000 | **$1,500** | **$3,398** | **$4,000** | **$4,483** |
| $12,500 | **$1,656** | **$3,864** | **$5,000** | **$5,604** |
| $15,000 | **$1,656** | **$3,864** | **$6,000** | **$6,725** |
| $17,500 | **$1,656** | **$3,864** | **$6,072** | **$7,173** |
| $20,000 | **$1,306** | **$3,829** | **$6,072** | **$7,173** |
| $22,500 | **$931** | **$3,156** | **$6,072** | **$7,173** |

Source: ABEXUS Estimate, Schedule CT of 2023 Individual Tax Returns.

| | EITC by Dependants (Couple) | | | |
|---|---|---|---|---|
| Income | 0 | 1 | 2 | 3+ |
| $10,000 | **$1,500** | **$3,398** | **$4,000** | **$4,483** |
| $12,500 | **$1,656** | **$3,864** | **$5,000** | **$5,604** |
| $15,000 | **$1,656** | **$3,864** | **$6,000** | **$6,725** |
| $17,500 | **$1,656** | **$3,864** | **$6,072** | **$7,173** |
| $20,000 | **$1,637** | **$3,864** | **$6,072** | **$7,173** |
| $22,500 | **$1,262** | **$3,864** | **$6,072** | **$7,173** |

Source: ABEXUS Estimate, Schedule CT of 2023 Individual Tax Returns.

# X. Microsimulation Results

## X.1.Assumptions

### X.1.1.General

Every simulated minimum wage increase was accompanied by a proportional rise in the wages of those earning up to 115% of the minimum wage. The 115% threshold was selected because this range typically reflects wage adjustments directly resulting from minimum wage increases in 2022 and 2023.

For all the wages above 115% they received increases similar to what was observed in 2022 and 2023. To control for external factors that led to increase in overall wages during the period, the wage increases for those above 115% were implemented proportional to inflation.

The microsimulation model assumes an underlying inflation of 3.0%. That is the overall increase in prices expected based on current inflation numbers. For each business, the increase in wages (for workers above 115% of minimum wage) in 2022 and 2023 was calculated for each percentage point of inflation observed in the period. This was then applied based on expected underlying inflation.

*Example, in 2023 inflation was 5% and company X increased wages of workers (that are above 115% of minimum wage) by 5%. Meaning for each percentage point of inflation, the company adjusted wages by 1%.*

### X.1.2. Other Assumptions

Several scenarios for minimum wage increases were modelled, each with three (3) separate assumptions. This means the model was executed on three (3) different occasions. The three (3) assumptions were as follows:

1. Businesses will try to maintain the same profit level as prior to the minimum wage increase. If no changes in labor costs (reducing employment or work hours) were to take place, businesses would increase prices until their profit margin equals the margin prior to the wage increase.
2. Businesses will reduce employment or work hours to maintain the same labor costs and profit margin as prior to the increase in the minimum wage.
3. Businesses are assumed to behave as they did during the most recent minimum wage increase, which may involve raising prices, reducing labor costs, or a combination of both strategies.

Assumptions 1 and 2 are the least likely, as not all businesses can pass all costs to consumers, particularly if under a contract for services for example. And many businesses cannot operate with fewer employees, therefore reducing labor to this extent

is unlikely. These two scenarios are still important because they provide key information regarding the most severe cases that could take place.

Assumption 1, for example, provides the highest price increase that could be expected. Following a rise in labor costs, businesses would increase their prices, leading to an increase in the prices of all intermediate goods and services. This would result in an economic adjustment period that could take between nine months to a year for prices to stabilize.

Assumption 2 provides the maximum number of jobs that could be affected. That is, how many jobs could be at risk if the minimum wage increases. Demand from these individuals would then decline and thus businesses revenues would fall. This would impact the entire market, occurring over a slightly shorter timeframe, approximately six months.

Assumption 3 is the most likely case. Businesses behave as they had on prior occasions, if no data is available for the business (it's a new business) it behaves as the industry (according to its NAICS) behaved on average in the prior minimum wage increase.

## X.2. Scenarios

Two (2) scenarios are presented in this section of the several that were developed as part of the study. First, an increase in the minimum wage to $10.00 per hour, second an increase in the minimum wage to $10.50 per hour. For all scenarios if labor costs are increased, so are the costs associated with labor, additional payroll taxes, administrative costs, and so on.

For each scenario the following results are provided:

1. Employment – the number of employees at the minimum wage.
2. Wages – the average annual pay of minimum wage employees.
3. Labor Force – change in the labor force as a result of the increase.
4. Inflation – change in price after two-stage model converges.
5. Business Closures – number of establishments that could close as a result of an increase in costs.
6. Unemployment – temporary or transitional unemployment caused by business closures.

Inflation is estimated as the aggregate price increase after labor costs increase and subsequent price stabilization (intermediate goods and services increase because of labor costs changes). This inflation includes an underlying trend of 3%, meaning that if underlying inflation were to increase, so would the impact of the minimum wage increase.

The labor force is estimated based on demographic forecasts and the increase in demand for employment from within the model. This incorporates the trend already present in 2024 of an increase in labor force participation, observed since January of this year.

Business closures occur in the model when, after behaving as they had on prior occasions, they complete both stages of the microsimulation with a negative profit margin (loss). Meaning, two (2) things must occur: after increasing prices as in previous minimum wage increases and/or reducing employment as previously, they report a loss. Subsequently in the second stage[7] of the model, where interindustry impacts are included, they once again adjust prices and costs but remain at a loss.

Temporary unemployment is related to business closures. The employees of the businesses that closed are left temporarily unemployed, often referred to as transitional unemployment. Based on 2022 and 2023 data, transitional unemployment can vary from 15,000-30,000 due to both business closures and individuals changing jobs.

## X.3. Results

The results of the scenarios are presented in Table 6. These scenarios incorporate the previously mentioned assumptions. Should the Minimum wage commission decide to not increase the minimum wage, the average salary and the number of minimum wage employees should remain similar to what was observed in 2023.

With respect to the cost of living, the results show that in order to keep up with the most recent increase in the federal minimum wage of 2009, the minimum wage should stand at $10.54 per hour (per U.S. CPI). As noted in the report, the analyses performed have relied on U.S. CPI data, given the potential underestimation of PR's CPI.

[7] In the second stage of the model, business behavior is adjusted to allow businesses to either act once again as they had in prior occasions or as the average of the industry. The model selects the most beneficial behavior prior to executing the second stage, selecting which ever most positively impacts profit margin. That behavior is sustained until the second stage converges.

*Table 6 – Minimum Wage Estimates*

| | Hourly Rate | | | |
|---|---|---|---|---|
| **Minimum Wage** | **$8.50** | **$9.50** | **$10.00** | **$10.50** |
| Employment | 240,526 | 244,798 | 248,156 | 261,118 |
| Average Annual Pay | $12,842 | $13,757 | $14,274 | $15,107 |
| Increase in Labor Force* | 94,000 | 42,000 | 22,703 | 28,242 |
| Inflation Estimate** | 4.4% | 3.1% | 3.4% | 4.8% |
| Business Closures | 2,102 | 2,927 | 748 | 2,197 |
| Temporary Unemployment | 15,574 | 16,113 | 5,283 | 12,267 |

Source: ABEXUS Analytics Estimates

* Measured as growth year over year in the month the minimum wage came into effect

** Assumes a 3.0% underlying inflation for the implementation of a $10.00 or $10.50 minimum wage

Historic impacts of minimum wage increases

Simulation of potential minimum wage increase

*NOTE*

This analysis does NOT contemplate the negative impact of implementing a minimum wage in a short time span (July 1st, 2024). Any increase in the minimum wage should include sufficient time for businesses to adjust, plan, and prepare for it. This is particularly important in the case of Puerto Rico, given that the businesses most likely to be negatively impacted by the minimum wage are smaller businesses in rural areas that often have small profit margins and burdened administrative structures.

### X.3.1. Final Remarks

The results of this analysis provide crucial insights for the minimum wage committee's decision-making process. The key findings indicate that the cost of living has consistently outpaced increases in the minimum wage, suggesting that the purchasing power of minimum wage earners has been eroded over time. The analysis also highlights the limitations of the PR-IPC and the rationale for using the US-CPI as a more accurate measure of inflation in Puerto Rico.

Our analysis suggests that while there has been an overall positive impact on employment, wages, and labor participation -given the most recent minimum wage increases-, these effects are largely influenced by unique economic circumstances, including substantial federal funds for COVID-19 mitigation and hurricane reconstruction efforts.

The results presented in the last table of this report offer crucial insights into the potential impacts of increasing the minimum wage to $10.00 and $10.50 per hour, or maintaining its current level.

An increase to $10.00 per hour shows a moderate impact on employment, wages, and the overall economy. Specifically, this scenario forecasts an increase in average annual pay for minimum wage employees to $14,274 and a rise in the labor force by 22,703 individuals. The estimated inflation above the underlying trend is 3.4%, with 748 business closures and 5,283 temporary job losses. This increase is sufficient to help mitigate the

erosion of purchasing power and maintain a stable standard of living for minimum wage earners, while also minimizing adverse effects on businesses and employment.

On the other hand, raising the minimum wage to $10.50 per hour projects an average annual pay increase for minimum wage employees to $15,107, with a larger labor force increase of 28,242 individuals. The estimated inflation above the underlying trend is 4.8%, with 2,197 business closures and 12,267 temporary job losses. While this higher increase could pose greater challenges for businesses, particularly small ones, it also offers a more forward-looking approach. By establishing a higher minimum wage, the need for frequent future adjustments may be reduced, thereby providing a longer-lasting solution to wage stability.

The committee should weigh these considerations carefully to determine the best course of action that aligns with both current economic conditions and long-term stability goals. When interpreting these results, the committee should consider the broader economic context and the varying impacts across different regions and industries within Puerto Rico. While there has been growth in employment and the number of businesses, it is essential to recognize that smaller businesses, particularly those outside metropolitan areas, may be more adversely affected by minimum wage increases.

A phased or gradual approach to implementing any potential minimum wage increases may allow businesses more time to adjust, thereby mitigating some of the negative impacts. The goal should be to ensure that minimum wage policies effectively support a basic standard of living for workers while fostering a stable and thriving economic environment in Puerto Rico.

This report serves as a vital tool for the minimum wage committee to make informed decisions that balance the needs of workers with the realities of the economic landscape.

# XI. References


Allegretto, S., & Cooper, D. (2014). Twenty-three years and still waiting for change. Economic Policy Institute and Center for Wage and Employment Dynamics Briefing Paper. Washington, DC: Economic Policy Institute.

Azar, O. H. (2020). The economics of tipping. Journal of economic perspectives, 34(2), 215-236.

Caraballo-Cueto, J. (2016). Is there a minimum wage biting in Puerto Rico? Updating the debate. Industrial Relations Journal, 47(5-6), 513-529.

Castillo-Freeman, A., & Freeman, R. B. (1992). When the minimum wage really bites: the effect of the US-level minimum on Puerto Rico. In Immigration and the work force: Economic consequences for the United States and source areas (pp. 177-212). University of Chicago Press.

Cengiz, D., Dube, A., Lindner, A., & Zentler-Munro, D. (2022). Seeing beyond the trees: Using machine learning to estimate the impact of minimum wages on labor market outcomes. Journal of Labor Economics, 40(S1), S203-S247.

Cueva, A., Villamil, J., & Fortin, C. (1976). A Summary of" Problems and Perspectives of Dependency Theory". In (Vol. 3, pp. 12-16): Sage Publications Sage CA: Thousand Oaks, CA.

Drucker, L., Mazirov, K., & Neumark, D. (2021). Who pays for and who benefits from minimum wage increases? Evidence from Israeli tax data on business owners and workers. Journal of Public Economics, 199, 104423.

Dube, A. (2019). Impacts of minimum wages: review of the international evidence. Independent Report. UK Government Publication, 268-304.

Economic Policy Institute. (2023). EPI comments on DOL's proposed overtime rule https://www.epi.org/publication/epi-comments-on-dols-proposed-overtime-rule/

Einav, L., & Levin, J. (2014). Economics in the age of big data. Science, 346(6210), 1243089.

Giannarelli, L., & Werner, K. (2022). Simulating the Effects of a $15 an Hour Federal Minimum Wage on Poverty and Resources. Washington, DC: Urban Institute.

Giuliano, L. (2013). Minimum wage effects on employment, substitution, and the teenage labor supply: Evidence from personnel data. Journal of Labor Economics, 31(1), 155-194.

Goderis, B., & Vlekke, M. (2023). Tax and benefit policies to reduce poverty in the Netherlands: a microsimulation analysis. International Journal of Microsimulation, 16(1), 108-133.

Grünberger, K., Narazani, E., Filauro, S., & Kiss, Á. (2021). Social and fiscal impacts of statutory minimum wages in EU countries: a microsimulation analysis with EUROMOD. IZA Journal of Labor Policy, 12(1).

Grupo Asesor del Governador sobre Salario Mínimo. (2021). Informe del Grupo Asesor del Gobernador sobre Salario Mínimo. https://aldia.microjuris.com/wp-content/uploads/2021/08/Informe-del-Comitee%CC%8C-de-Salario-Mie%CC%8Cnimo-17-de-agosto-de-2021.pdf

Hernández, J. C., Valdés, A. M., & González, K. P. (2018). El efecto de los cambios en el salario mínimo sobre el empleo industrial en Puerto Rico. Fórum empresarial, 23(1).

Jardim, E., & Van Inwegen, E. (2019). Payroll, revenue, and labor demand effects of the minimum wage.

Jones, M. R. (2016). Measuring the effects of the tipped minimum wage using W-2 data. US Census Bureau, May, 26.

Junta de Planificación de Puerto Rico (Planning Board of Puerto Rico). (2018). Estudio de Impacto Económico Sobre Aumento en el Salario Mínimo.

Krueger, A. O., Teja, R., & Wolfe, A. (2015). Puerto Rico–A way forward. San Juan: Government Bank for Puerto Rico. http://www. bgfpr. com/documents/FinalUpdatedReport7-13-15. pdf.

Ley de Salario Mínimo de Puerto Rico. (2021). Ley Núm. 47, 21 de septiembre de 2021.

Müller, K.-U., & Steiner, V. (2008). Would a legal minimum wage reduce poverty? A microsimulation study for Germany.

Müller, T. (2023). Minimum Wage Developments in 2022: Fighting the Cost-Of-Living Crisis. ETUI Research Paper-Policy Brief, 2.

National Employment Law Project. (2015). Minimum Wage Basics: Overview of the Tipped Minimum Wage

National Employment Law Project. (2023). COMMENTS ON THE PROPOSED RULE TO UPDATE EXEMPTIONS IN OVERTIME COVERAGE https://www.nelp.org/publication/comments-on-the-proposed-rule-to-update-exemptions-in-overtime-coverage/

Neumark, D., & Wascher, W. (2011). Does a higher minimum wage enhance the effectiveness of the Earned Income Tax Credit? ILR Review, 64(4), 712-746.

Neumark, D., & Yen, M. (2023). The employment and redistributive effects of reducing or eliminating minimum wage tip credits. Journal of Policy Analysis and Management, 42(4), 1092-1116.

Omberg, R. T. (2021). Puerto Rico's minimum wage: Revisiting a price floor with bite. IZA Journal of Labor Policy, 11(1).

Padró, G. R., & Rodriguez, C. A. (2023). Minimum Wage, Unemployment and Macroeconomic Fluctuations in an Integrated Economy: The Case of Puerto Rico. Unemployment and Macroeconomic Fluctuations in an Integrated Economy: The Case of Puerto Rico (September 21, 2023).

Reich, M., & West, R. (2015). The effects of minimum wages on food stamp enrollment and expenditures. Industrial Relations: A Journal of Economy and Society, 54(4), 668-694.

Reyes Jove, T. (2017). Clustering Around the Wage Floor: the Effects of the Federal Minimum Wage on Employment In Puerto Rico Georgetown University].

Rinz, K., & Voorheis, J. (2018). The distributional effects of minimum wages: Evidence from linked survey and administrative data. US Census Bureau, Working Paper CARRA-WP-2018-02.

Ross, J., & Welsh, J. (2021). Understanding the 'tipped minimum wage': critical directions for US policy research. Social Policy and Society, 20(2), 192-210.

Rothstein, J., & Zipperer, B. (2020). The EITC and minimum wage work together to reduce poverty and raise incomes.

U.S. Department of Labor. (2016). Fact Sheet: Impact of the Puerto Rico Oversight, Management, and Economic Stability Act (PROMESA) for Employees in Puerto Rico https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/WHDfsPROMESA.pdf

U.S. Department of Labor. (2024). Final Rule: Defining and Delimiting the Exemptions for Executive, Administrative, Professional, Outside Sales, and Computer Employees. Federal Register Retrieved from https://www.federalregister.gov/public-inspection/2024-08038/defining-and-delimiting-the-exemptions-for-executive-administrative-professional-outside-sales-and

Wage, O. F. (2021). No Rights, Low Wages, No Service. Food Labor Research Center: UC Berkley.

Williams, E., Waxman, S., & Legendre, J. (2020). State earned income tax credits and minimum wages work best together. Center on Budget and Policy Priorities, updated February, 8.

Advantage Business Consulting. (2018). Análisis del Impacto de un Aumento en el Salario Mínimo en Puerto Rico.

Inteligencia Económica. (2021). Economic impact of a minimum wage increases in Puerto Rico.