

Minimum Wage Non-Compliance in North Carolina

Report by Jake Barnes, Jenn Round, Daniel J. Galvin and Janice Fine

August 2024



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Contents

Executive Summary..... 1

Annual Trends, 2003-2022..... 2

 Chart 1. Estimated Minimum Wage Violations by Year, North Carolina, 2003-2022..... 2

Violation Rates by Industry and Occupation..... 3

 Chart 2. Estimated Minimum Wage Violation Rates by Industry, North Carolina, 2003-2022..... 3

 Chart 3. Minimum Wage Violation Rate by Select Detailed Occupation, North Carolina, 2003-2022..... 4

Importance of Individual and Job Factors..... 5

 Chart 4. Probability of Minimum Wage Violation by Demographic Group in North Carolina (Relative to Reference Group), 2003-2022 5

 Chart 5. Probability of Minimum Wage Violation by Age, North Carolina, 2003-2022 6

 Chart 6. Probability of Minimum Wage Violation by Other Characteristics (Relative to Reference Group), North Carolina, 2003-2022..... 6

Violation Rates by Metropolitan Area 7

 Chart 7. Probability of Minimum Wage Violation by Metropolitan Area (CBSA), North Carolina, 2003-2022 7

Statutory Limitations in North Carolina 8

Conclusion 9

About the Authors 10

About WJL@RU..... 10

Appendices..... 11

 Appendix I. CPS data 11

 Appendix II. Minimum Wage Violations by Year, North Carolina, 2003-2022..... 14

 Appendix III. Minimum Wage Violations by Industry, North Carolina, 2003-2022..... 15

 Appendix IV. Industry groups and examples of highly represented occupations..... 16

Executive Summary

Most workers in North Carolina are entitled to a minimum wage of \$7.25 either through state or federal law. Inflation has decreased the real value of the minimum wage by over 30 percent in the fifteen years since it was last raised in July 2009. Full-time workers earning \$7.25 an hour make \$15,080 a year, which today is just \$20 above the federal poverty guideline for a one-person household. Even within these realities, this report finds that thousands of North Carolinians are illegally paid below the minimum wage each year. Using Current Population Survey (CPS) Merged Outgoing Rotation Group data from the U.S. Census Bureau—considered to be among the best publicly available data on hours and earnings—the following memo breaks down minimum wage theft trends in North Carolina by geography, industry, occupation, job, and worker characteristics.

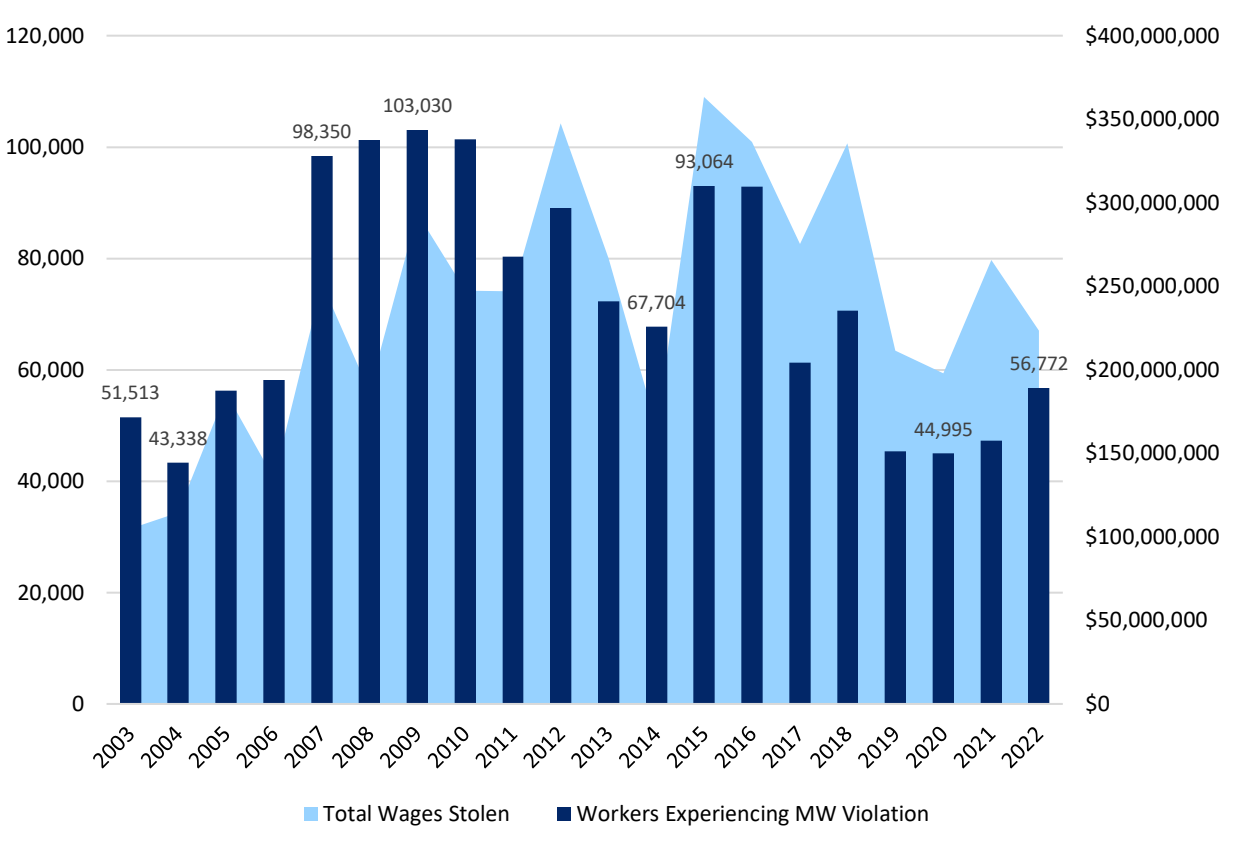
Among our key findings:

- An estimated 1.4 million workers in North Carolina—2.5% of those covered under state or federal law—suffered a minimum wage violation between 2003 and 2022, the period of the study.
- Those that were paid less than the minimum wage on average worked 34 hours a week and made just \$8,648 annually, or less than \$5 an hour. These workers were underpaid an average of \$3,312 each year, or 28% of entitled wages.
- Industries with the highest rates of minimum wage violations include food services and drinking places, personal and laundry services, and private households. Roughly 7 percent of covered workers were paid below the minimum wage in each of these industries.
- Nearly 14 percent of waiters and waitresses and over 10 percent of childcare workers in North Carolina were subject to a minimum wage violation.
- Workers of intersecting marginalized identities are more likely to experience wage theft—e.g., Black and Latina noncitizens are respectively 2.1 and 2.6 times more likely to experience a minimum wage violation than a white male citizen.
- Younger and older North Carolina workers are particularly likely to experience minimum wage theft.
- Non-hourly workers, part-time workers, service sector workers, and those that didn't graduate from high school each suffer disproportionately high rates of theft.
- Among metropolitan areas, Jacksonville has the highest minimum wage violation rate in North Carolina at 3.7 percent.
- **On average, we estimate nearly \$238 million in wages are stolen from North Carolinians each year as the result of minimum wage theft.**
- State lawmakers must act to eliminate the FLSA exemption that currently limits the applicability of North Carolina's wage and hour protections while ensuring the State's Wage and Hour Bureau (WHB) has sufficient resources and staffing to take on additional work.
- Other statutory changes including allowing a) WHB to initiate investigations without a complaint, b) increasing penalties to deter additional violations, and c) expanding collections powers to include recovery of back wages and other damages to workers will further help to bolster WHB's enforcement capabilities and are essential for addressing the high rates of minimum wage violations in North Carolina.

We provide more info on trends over time, across cities, and by industry, occupation, job and individual characteristics below.

Annual Trends, 2003-2022

Chart 1. Estimated Minimum Wage Violations by Year, North Carolina, 2003-2022



We estimate that over 1.4 million workers in North Carolina—2.5% of those covered by state or federal law—suffered a minimum wage violation between 2003 and 2022. Those that were paid less than the minimum wage on average worked 34 hours a week and made just \$8,648 annually, or less than \$5 an hour. These workers were underpaid an average of \$3,312 each year, or 28% of the wages they are entitled to under state or federal law. On average, nearly \$238 million in wages are stolen from North Carolinians each year as the result of minimum wage theft.

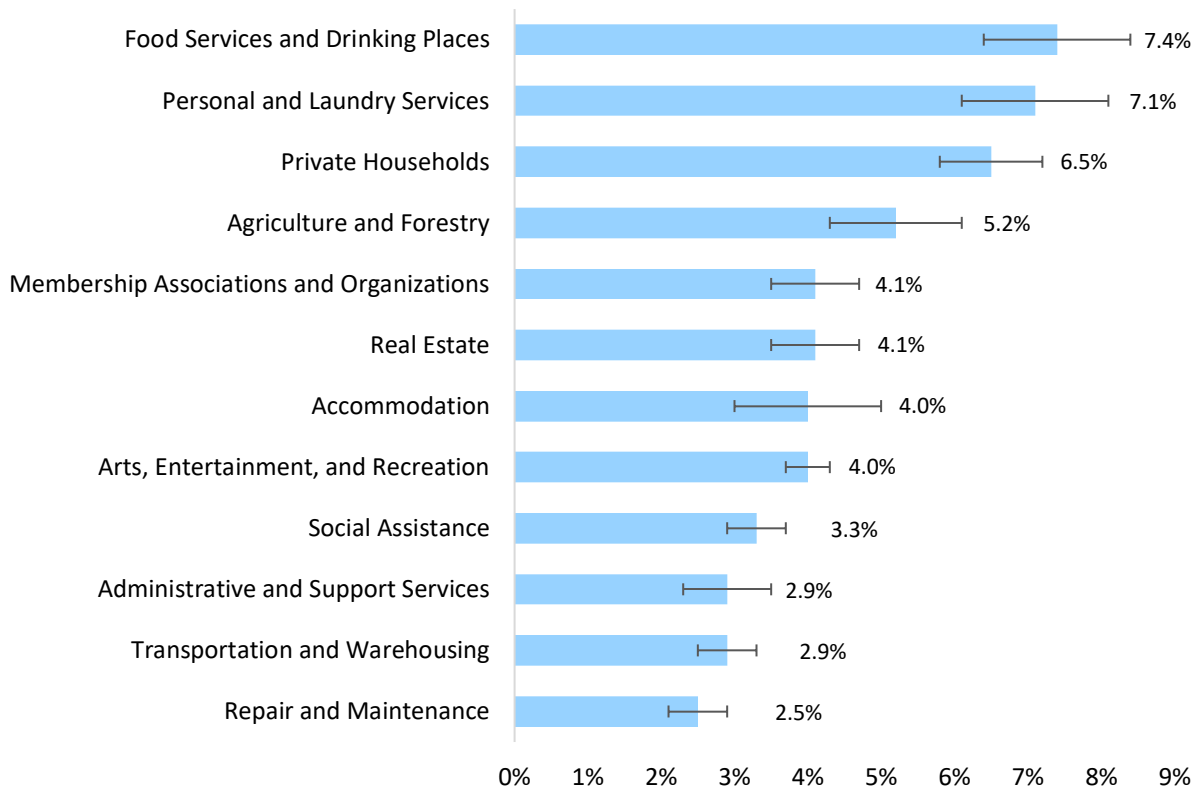
Chart 1 above shows both a) the number of North Carolinians estimated to have experienced a minimum wage violation each year (left axis) and b) the total estimated annual wages lost due to minimum wage violations (right axis). The number of workers experiencing minimum wage violations quickly rose from roughly 43,000 in 2004 to over 98,350 in 2007. This trend continued through the first years of the recession, with roughly 100,000 workers experiencing a violation each year from 2007 to 2010. The violation rate began to drop as the economy recovered, falling from a high of 3.7% of eligible workers in 2009 and 2010 to a low of 1.4% in 2019 (with a notable rise in 2015 and 2016). After reaching a 15-year low in 2019 and again in 2020, the downward trend has reversed as violation rates increased in 2021 and 2022. See **Appendix II** for more information on annual estimates.

Today, both the violation rate and number of workers impacted are similar to what they were at the beginning of our study period twenty years ago. Although some may expect a sharper rise in violation

rates during the COVID crisis, it is notable that a large proportion of jobs lost due to the pandemic were low-wage jobs, particularly in industries such as accommodation and retail.¹ While workers certainly continued to experience wage theft in its various forms during the pandemic, the disproportionate loss of employment during these years (among other factors) seems to have kept minimum wage violation rates relatively low.

Violation Rates by Industry and Occupation

Chart 2. Estimated Minimum Wage Violation Rates by Industry, North Carolina, 2003-2022



Note: Estimates represent predicted probabilities. 95% confidence intervals shown.

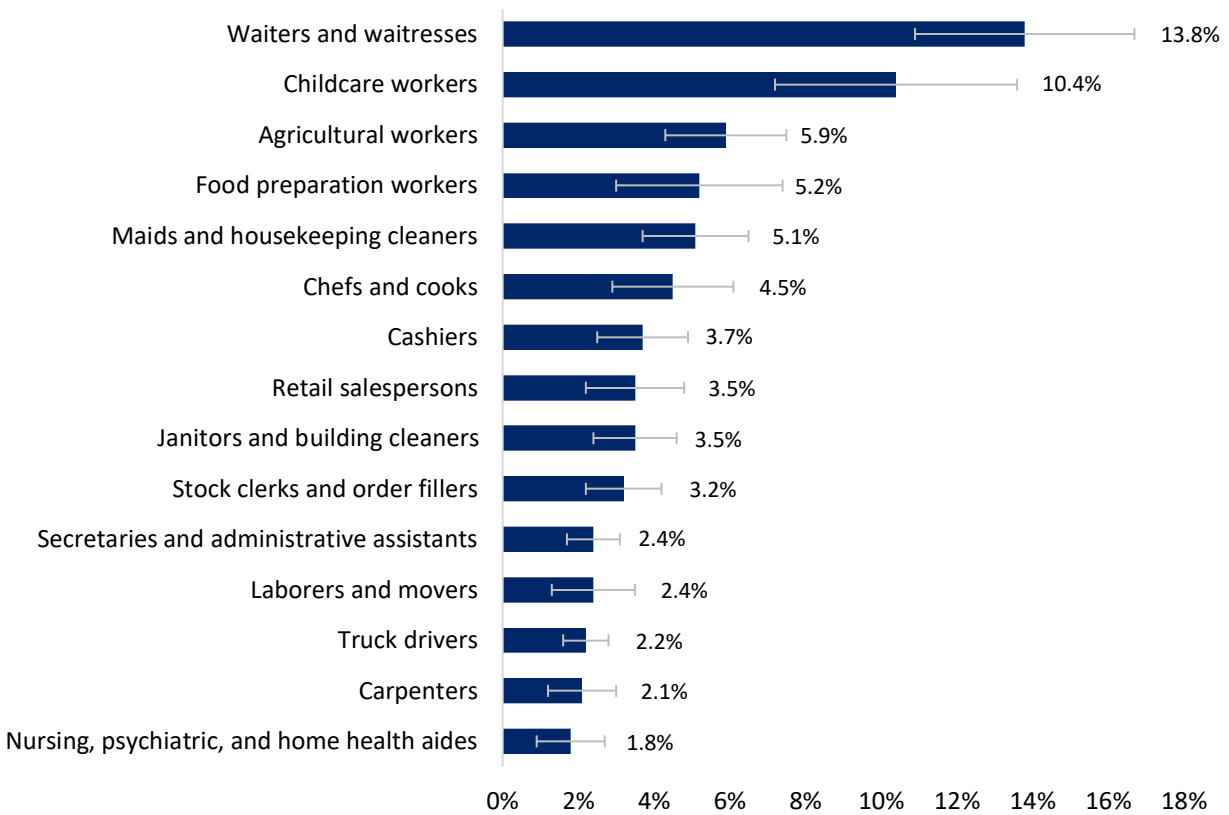
Chart 2 above shows estimated minimum wage violation rates for each industry group for which estimates could be derived.² Industries with the highest violation rates include food services and drinking places (7.4%); personal and laundry services (7.1%); and private households (6.5%). Full industry estimates can be found in **Appendix III**, and more information on each industry group is included in **Appendix IV**.

¹ See, e.g., Elise Gould and Melat Kassa, Low-wage, low-hours workers were hit hardest in the COVID-19 recession: The State of Working America 2020 employment report (Economic Policy Institute, May 2021): epi.org/224913.

² The colored bars and labels in charts 2,3,5, and 7 represent point estimates, while the black bars represent the upper and lower bounds of the 95 percent confidence intervals for each point estimate. For more on the CPS and our methodology, see Appendix I.

Minimum wage violation rates for select detailed occupations are shown in **Chart 3** below. Reliable estimates were unable to be obtained for a number of occupations given insufficient data; the chart therefore reflects the highest violation rates across occupations for which estimates could be reliably derived. While these results are generally consistent with the industry findings, they provide some important nuance to the otherwise broad categorizations. For example, roughly 1-in-6 waiters and waitresses and 1-in-10 childcare workers—including those working in daycares and preschools—experienced a violation. Above all else, Chart 3 further demonstrates the concentration of minimum wage violations in low-wage service jobs, as cooks, cashiers, couriers, and maids among others also suffered relatively high rates of theft.

Chart 3. Minimum Wage Violation Rate by Select Detailed Occupation, North Carolina, 2003-2022³



Note: Estimates represent predicted probabilities. 95% confidence intervals shown.

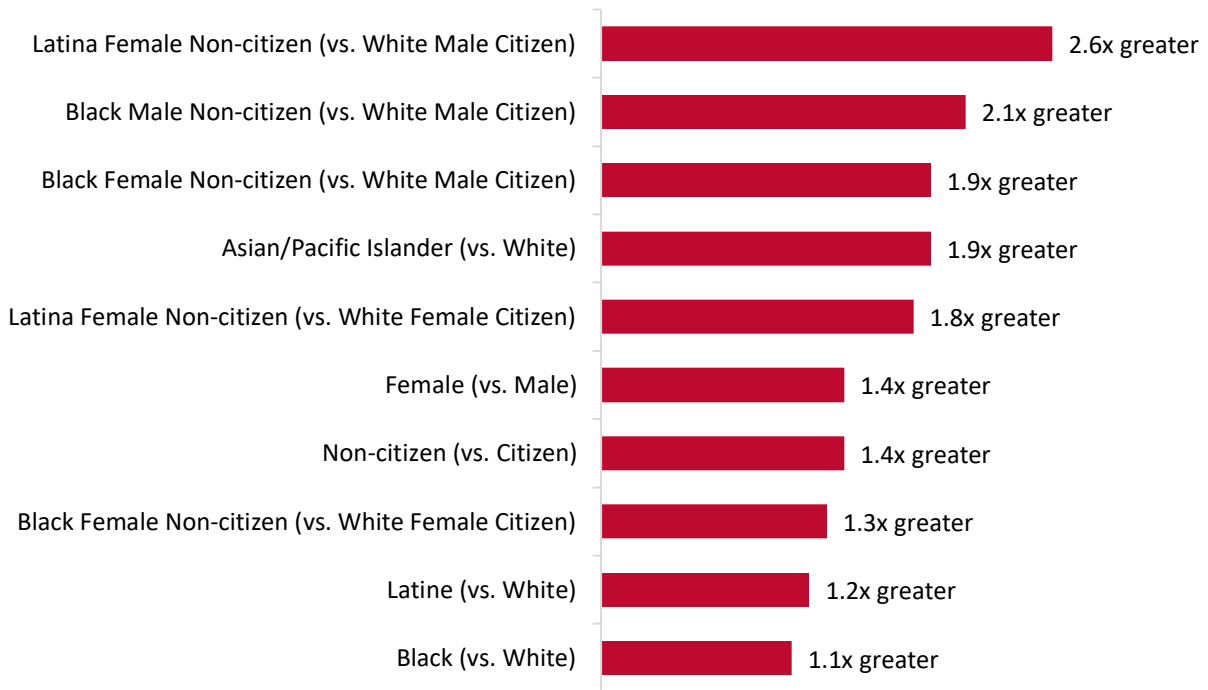
³ The Bureau of Labor Statistics (BLS) defines “Childcare workers” as “[Attending] to children at schools, businesses, private households, and childcare institutions” and “[performing] a variety of tasks, such as dressing, feeding, bathing, and overseeing play”; Industries with the highest employment of childcare workers include child day care services, elementary and secondary schools, other amusement and recreation industries, civic and social organizations, and individual and family services. “Laborers and movers” are defined as those who “manually move freight, stock, luggage, or other materials, or perform other general labor” (excluding construction laborers). Industries with the highest employment of laborers and movers include employment services, couriers and express delivery services, warehousing and storage, merchant wholesalers, and truck transportation (See U.S. Bureau of Labor Statistics Occupational Employment and Wage Statistics database, accessible at: <https://www.bls.gov/oes/current/oesosci.htm>)

Importance of Individual and Job Factors

These data do not tell us exactly *why* some industries and occupations have more or fewer violations. Still, it is worth noting that the industries with the highest estimated violation rates tend to employ many women, people of color, and immigrant workers, while industries with lower violation rates often employ more men and/or historically have been more unionized.

Chart 4 shows the probability that workers with particular identities experienced a minimum wage violation relative to reference group. As shown, non-citizens are 40 percent more likely to be paid below the minimum wage than citizens, while those identifying as female are 40 percent more likely than male-identifying workers to experience a minimum wage violation. While Black and Latine workers were just marginally more likely to experience a violation than white workers, Asian/Pacific Islanders were nearly twice as likely to experience minimum wage theft. The top of Chart 4 also shows how intersectionality relates to the experience of wage theft. Compared to White male citizens, Black and Latina female noncitizens are over twice as likely to face minimum wage violations.

Chart 4. Probability of Minimum Wage Violation by Demographic Group in North Carolina (Relative to Reference Group), 2003-2022

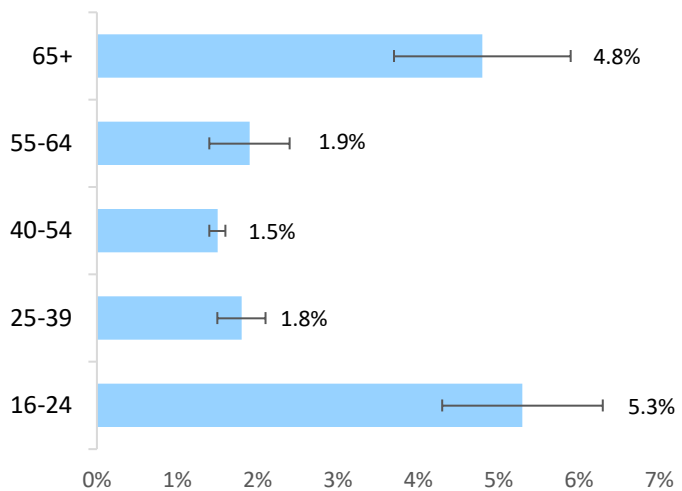


Note: Estimates represent predicted probabilities.

Minimum wage violation rates relative to age group are shown in **Chart 5**. Both the youngest and oldest workers are particularly likely to experience a violation; compared to workers between 25 and 64, those 16-24 or 65 and older are well over twice as likely to face minimum wage theft.

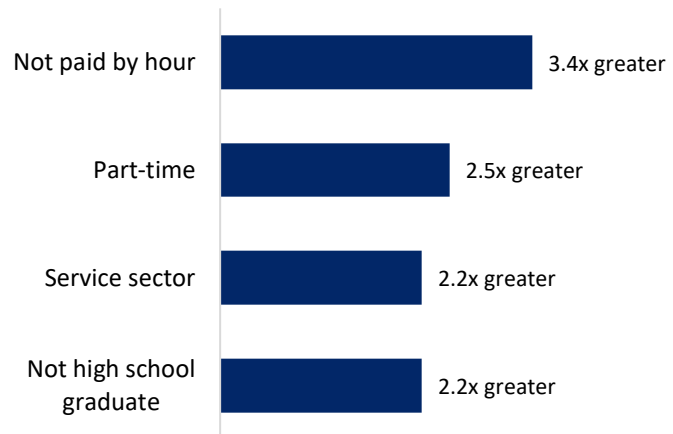
Chart 6 below provides a look into some other significant predictors of wage theft not reflected above. Workers that aren't paid by the hour are over three times as likely to experience minimum wage theft than hourly workers. This is likely due to violations stemming from the payment of flat or piece rates; when workers are paid a set amount per day/week they work or a fixed rate for every shirt they produce, it can be very difficult—for both the worker and the employer—to understand if regulations are being met. Part-time workers are nearly two and a half times more likely than full-time workers to experience a minimum wage violation. Workers who didn't graduate high school are over twice as likely to experience a violation than those with a diploma and, as evidenced in the sections above, those working in the service sector are over twice as likely to experience a violation as those in goods-producing industries.

Chart 5. Probability of Minimum Wage Violation by Age, North Carolina, 2003-2022



Note: Estimates represent predicted probabilities. 95% confidence intervals shown.

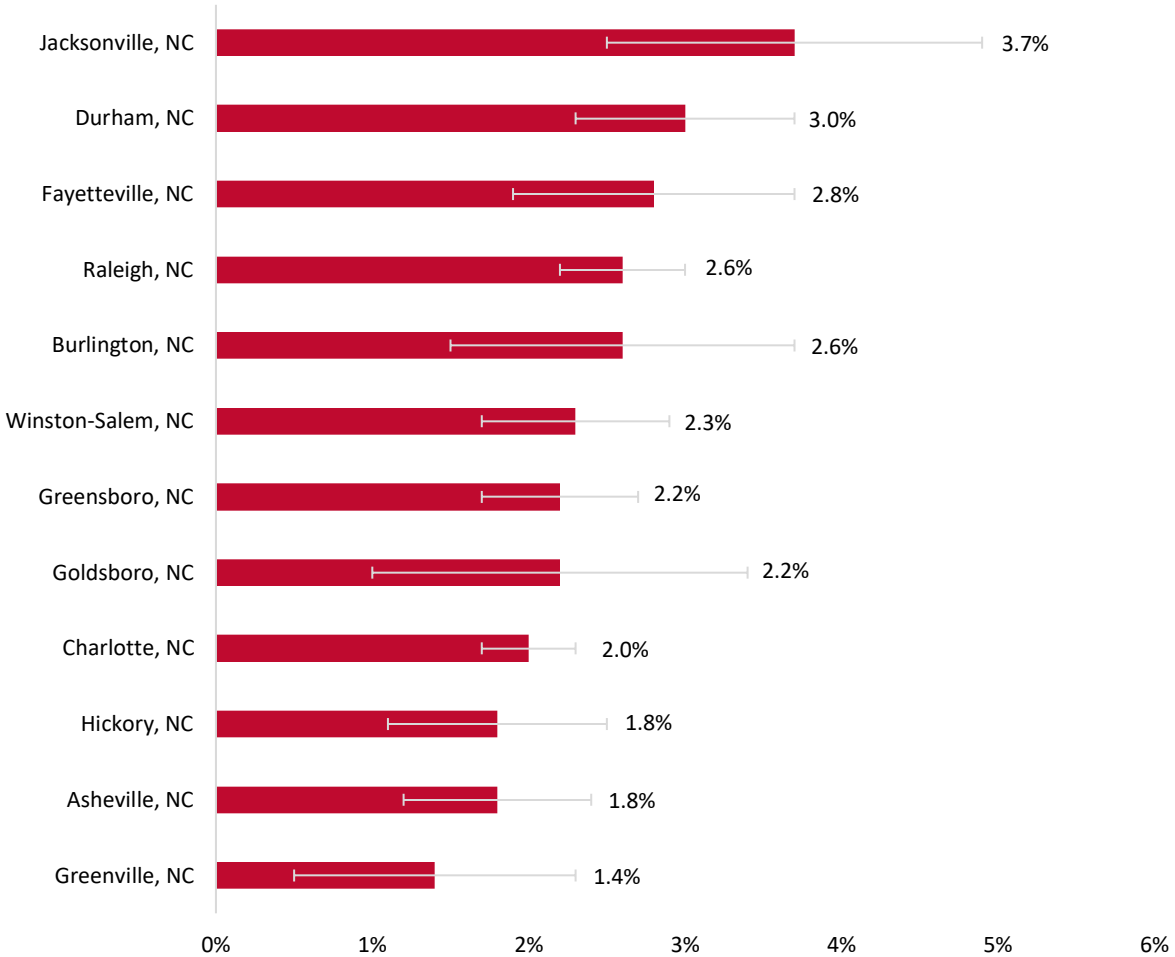
Chart 6. Probability of Minimum Wage Violation by Other Characteristics (Relative to Reference Group), North Carolina, 2003-2022



Note: Estimates represent predicted probabilities.

Violation Rates by Metropolitan Area

Chart 7. Probability of Minimum Wage Violation by Metropolitan Area (CBSA), North Carolina, 2003-2022



Note: Estimates represent predicted probabilities.
95% confidence intervals shown.

Chart 7 shows important differences across state metropolitan areas.⁴ Jacksonville has the highest rate of minimum wage violations across cities analyzed at 3.7%, followed by Durham (3.0%), Raleigh (2.6%), and Burlington (2.6%). It is notable that Jacksonville has both the lowest median age among North Carolina metro areas and is one of the youngest cities in the U.S.⁵

⁴ Metropolitan area is defined here as the Census Core-Based Statistical Area (CBSA); the anchor city for each CBSA is listed.

⁵ U.S. Census Bureau, "Metropolitan and Micropolitan Statistical Area Population by Characteristics: 2020-2021." Available at <https://www.census.gov/data/datasets/time-series/demo/popest/2020s-metro-and-micro-statistical-areas-detail.html>.

Statutory Limitations in North Carolina

Minimum wage violations take a high toll on workers and society at large that goes beyond the dollar amount of wages stolen. Studies find that high rates of minimum wage violations increase the percentage of workers living in poverty.⁶ Likewise, as women, immigrants, and racial/ethnic minorities are more likely to suffer minimum wage violations in North Carolina, we can expect violations to perpetuate earning and income inequality.⁷ Violators also hurt law-abiding businesses as the latter are forced to compete with artificially low labor costs, giving employers who underpay their workers a competitive advantage while suppressed wages weaken consumer demand.⁸ Additionally, minimum wage violations affect state coffers. When employers fail to pay legally required wages, the public loses out on payroll and income tax revenue while also absorbing the cost of public assistance programs that low-wage workers are forced to rely on to supplement their decreased wages.⁹

North Carolina thus has a strong policy interest in effectively enforcing minimum wage protections. However, statutory limitations embedded in North Carolina's Wage and Hour Act largely preclude State enforcement of the North Carolina minimum wage and other key protections. Specifically, [G.S. 95-25.14\(a\)\(1\)](#) includes an exemption for workers who are covered by the Fair Labor Standards Act (FLSA).¹⁰ As a result of this provision, North Carolina's minimum wage protections do not apply to the vast majority of the State's workers.¹¹ This means that North Carolinians are largely reliant solely on the U.S. Department of Labor's Wage and Hour Division (US WHD) to investigate and enforce minimum wage violations.

Though North Carolina's minimum wage matches the federal rate, US WHD faces a resource deficit that limits its ability to enforce federal wage and hour protections. As of December 2023, US WHD employed 730 investigators to protect more than 143 million workers, staffing that equates to one investigator per 196,000 workers.¹² Consequently, the odds that US WHD will inspect any given

⁶ David Cooper and Teresa Kroeger, "Employers Steal Billions from Workers' Paychecks Each Year," *Economic Policy Institute*, May 10, 2017, <https://www.epi.org/publication/employers-steal-billions-from-workers-paychecks-each-year/>.

⁷ See Janice Fine, Daniel J. Galvin, Jenn Round & Hana Shepherd, "Maintaining Effective U.S. Labor Standards Enforcement Through The Coronavirus Recession," *Washington Center for Equitable Growth*, Sept. 16, 2020.

⁸ See Janice Fine & Jenn Round, "Federal, State, and Local Models of Strategic Enforcement and Co-Enforcement across the U.S.," *Center for Urban Economic Development: Worker Centers in Retrospect and Prospect*, 2021, <https://workercenterlibrary.org/wp-content/uploads/2022/03/Report-2-Federal-State-and-Local-Models-of-Strategic-Enforcement-and-Co-Enforcement-across-the-U.S..pdf>.

⁹ Cooper and Kroeger, "Employers Steal Billions".

¹⁰ North Carolina's Wage and Hour Act states that the minimum wage (and other) protections do not apply to "any person employed in an enterprise engaged in commerce or in the production of goods for commerce as defined in the [FLSA]." G.S. 95-25.14(a)(1). The FLSA's definition of this clause is notably expansive. It includes enterprises that have employees engaged in "interstate commerce" (such workers include those who regularly make telephone calls to persons located in other states or who do janitorial work in buildings where goods are produced for shipment outside the state); enterprises whose gross volume of sales or business is at least \$500,000; hospitals and businesses providing medical or nursing care for residents, and schools and preschools; as well as government agencies. See 29 U.S.C. § 203(s)(1)(A).

¹¹ North Carolina's overtime, youth employment, and record keeping requirements also do not apply to any person employed in an enterprise engaged in commerce or in the production of goods for commerce. G.S. 95-25.14(a)(1).

¹² The number of investigators WHD employed as of December 2023 is significantly fewer than the 1,000 investigators employed in 1948, when the division was responsible for safeguarding the rights of only 22.6 million workers. See Fine, Galvin, Round Shepherd, "Maintaining Effective Enforcement"

workplace is minuscule.¹³ This leaves scant enforcement resources to protect North Carolina's workers.

Accordingly, State enforcement capacity is needed to adequately address and remedy violations that take \$238 million out of the pockets of hardworking North Carolinians each year. State lawmakers must act to eliminate the FLSA exemption that currently limits the applicability of North Carolina's wage and hour protections while ensuring the State's Wage and Hour Bureau (WHB) has sufficient resources and staffing to take on additional work. Other statutory changes will further help to bolster WHB's enforcement capabilities. These include allowing WHB to initiate investigations without a complaint,¹⁴ increasing penalties to deter additional violations,¹⁵ and expanding collections powers to include recovery of back wages and other damages to workers.¹⁶ These legislative changes are essential for addressing the high rates of minimum wage violations in North Carolina.

Conclusion

In sum, an analysis of working North Carolinians over January 2003 to September 2022 reveals that minimum wage theft continues to be pervasive throughout North Carolina. We estimate that nearly \$238 million in wages are stolen from North Carolinians on average each year as the result of minimum wage theft. Violations are shown to be particularly concentrated within several industries and occupational groups, and to vary significantly based on job, place, and individual. Statutory changes and increased resources together hold the potential to strengthen enforcement, secure more wages for workers, and to deter future violations.

¹³ David Weil & Amanda Pyles, "Why Complain—Complaints, Compliance, and the Problem of Enforcement in the U.S. Workplace," *Comparative Labor Law and Policy Journal* 27(1) (2005), p. 59.

¹⁴ G.S. 95-25.15(A) states WHB shall have no authority to enforce the Wage Payment provisions as they apply to persons covered by the FLSA unless the agency has received a complaint from an employee of the covered establishment.

¹⁵ Courts, but not WHB, can order liquidated damages. See G.S. 95-25.22(a). Likewise, with the exception of youth employment violations, WHB can only assess civil penalties for recordkeeping violations, penalties that are limited to a total of \$2,000. See G.S. 95-25.23A.

¹⁶ WHB can file assessments for civil penalties—but not for back wages or other damages due to aggrieved workers—with the superior court clerk to obtain a judgement which WHB can use to pursue actions to collect. See G.S. 95-25.23B.

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About WJL@RU

The Workplace Justice Lab @ Rutgers University exists to address economic inequality through supporting and strengthening grassroots organizing and democratic governance. We do this through building dynamic communities of learning and practice, carrying out cutting edge research, and offering specialized training and in-depth one-on-one consultations.

At the Lab, we go beyond talking about what government should do, to focusing on how government should do it. Through our strengthening labor standards enforcement program, we work to reimagine the public enforcement of workers' rights laws. By proactively targeting the sectors with the worst problems and involving those directly impacted in enforcement, we help agencies realize the intended impact of innovative labor standards legislation.

North Carolina graphic on front cover from Vecteezy.

Appendices

Appendix I. CPS data

The empirical literature on wage theft and its predictors remains limited due to the difficulty of obtaining accurate and reliable data. Employers that intentionally violate are unlikely to provide honest nor complete depictions of their practices. The hesitance of many aggrieved workers to submit a complaint to a public entity—whether due to immigration status, general distrust of government, or otherwise—leaves enforcement agency complaint data also unable to paint an accurate portrait of the complex and varied forms of wage and hour violations.

Wage theft must therefore be estimated using survey data. Most useful is the Current Population Survey’s Merged Outgoing Rotation Groups (CPS MORG) data, which the U.S. Department of Labor’s Wage and Hour Division has used to identify “priority industries” for investigations and which remains the top choice of every social scientist who has sought to develop national or industry-specific estimates of FLSA noncompliance since the 1970s.¹⁷

The CPS-MORG data has many advantages: it is gathered via extensive interviews with around 60,000 households per month; it is representative at the state and national levels (unlike other survey data, such as the Survey of Income and Program Participation [SIPP]); and its individual-level responses permit us to estimate earnings and minimum wage violations relatively easily. The biggest downside is measurement error, as with any survey.

The methodological approach we have employed here is fully consistent with previous research.¹⁸ CPS-MORG data from 2003 through 2022 were used to develop the minimum wage violation estimates presented. Data was limited to respondents who were currently employed at the time of the survey. While the North Carolina Wage and Hour Act (WHA) does provide for a state minimum wage (set to the federal minimum wage rate), the vast majority of workers subject to the federal rate under the Fair Labor Standards Act (FLSA) are exempt from state protections under G.S. 95-25.14.¹⁹ Many of the same workers excluded from FLSA protections are also excluded from North Carolina state law and were removed from the analysis, including bona fide executive, administrative, professional, and computer-related employees making over the salary threshold of \$455;²⁰ models, actors, and performers; outside sales employees; nannies (i.e., child care workers working in private households); and fishermen. Some exemptions were unable to be accounted for given the structure of the data,

¹⁷ Orley Ashenfelter and Robert S. Smith, “Compliance with the Minimum Wage Law,” *Journal of Political Economy* 87, no. 2 (1979); Ronald G. Ehrenberg and Paul L. Schumann, “Compliance with the overtime pay provisions of the Fair Labor Standards Act,” *The Journal of Law and Economics* 25, no. 1 (1982); Brigitte Sellekaerts and Stephen W. Welch, “Noncompliance with the Fair Labor Standards Act: Evidence and Policy Implications,” *Labor Studies Journal* 8 (1984); Eastern Research Group, *The Social and Economic Effects of Wage Violations: Estimates for California and New York*, Prepared for the U.S. Department of Labor (Lexington: Eastern Research Group, 2014); Daniel J. Galvin, “Deterring Wage Theft: Alt-Labor, State Politics, and the Policy Determinants of Minimum Wage Compliance,” *Perspectives on Politics* 14, no. 2 (2016); David Cooper and Teresa Kroeger, “Employers steal billions from workers’ paychecks each year,” *Economic Policy Institute*, May 10, 2017, <https://www.epi.org/publication/employers-steal-billions-from-workers-paychecks-each-year/>.

¹⁸ In particular, Galvin (2016); Eastern Research Group (2014); and Cooper and Kroeger (2017).

¹⁹ See “Statutory Limitations in North Carolina” on pg. 8 of this report.

²⁰ This rate was increased to \$684 per week effective January 2020; See <https://www.federalregister.gov/documents/2019/09/27/2019-20353/defining-and-delimiting-the-exemptions-for-executive-administrative-professional-outside-sales-and>

including some agricultural workers;²¹ “casual” (i.e., “irregular and intermittent”)²² domestic work; family members; volunteers; camp counselors; and those employed by outdoor dramas in a production role.

For hourly wages, we use variables that include wages earned from overtime, tips, and commissions (OTC) for both hourly and non-hourly workers.²³ Wage estimates are therefore conservative over-estimates that effectively downward-bias the estimated minimum wage violation rates. This is preferable to the alternative, however, which excludes OTC for hourly workers while including it for non-hourly workers (for whom different sources of wages are not distinguished). Efforts to estimate and subtract OTC from non-hourly workers adds unknown quantities of additional measurement error to this key variable, and is not recommended.²⁴ To ensure our estimates of wage violations are conservative *underestimates*, we follow Cooper and Kroeger (2017) in taking the higher of the reported wage (hourly wage or weekly pay divided by hours worked) for hourly workers who reported both.

To correct for measurement error, we follow ERG (2014), Galvin (2016), and Cooper and Kroeger (2017) and exclude all observations of workers not specifying weekly earnings, hourly/non-hourly status, usual hours worked; observations of non-hourly workers with weekly earnings less than \$10; and all observations of workers with hourly wages less than \$1.

Minimum wage violations are dichotomous measures of whether an individual’s estimated hourly wage was lower than the applicable legal minimum. We use North Carolina’s applicable statutory minimum wage rate as of the date effective for each respondent. All analyses, including population estimates, use survey weights suggested by Davern et. al (2007), which are necessary given the sampling method of the CPS.²⁵

Minimum wage violation estimates for “rental and leasing services,” “utilities” and “waste management and remediation services” were found to be non-significant, and were thus excluded from the industry analysis (note: these three industries together account for roughly 2% of employment in North Carolina).

To account for potential rounding errors biasing the data, a sensitivity test was performed where a minimum wage violation was instead defined as a case in which the calculated hourly wage was at least \$.25 lower than the applicable minimum wage. While these rates were slightly lower, the relative rates across industry and occupational groups were not significantly changed.

²¹ “If the employer did not employ more than 500 piece rate work days in any calendar quarter of the preceding calendar year, the employer’s hand harvesters and pruning laborers who are paid on a piece rate basis are exempt from minimum wage for the entire following year.” Oregon BOLI, “Minimum wage and overtime in agriculture,” <https://www.oregon.gov/boli/employers/Pages/minimum-wage-and-overtime-in-agriculture.aspx>.

²² Oregon BOLI, “Domestic Workers,” <https://www.oregon.gov/boli/workers/Pages/domestic-workers.aspx>.

²³ <http://ceprdata.org/cps-uniform-data-extracts/cps-outgoing-rotation-group/>.

See also Cooper and Kroeger’s 2017 preference for this method of estimating wages.

²⁴ U.S. Department of Labor 2014.

²⁵ Davern, Michael, et al, “Estimating Regression Standard Errors with Data from the Current Population Survey’s Public Use File,” *Inquiry* 44: 211-224 (Summer 2007).

There is reason to believe that the measurement error in the CPS may actually bias *downward* the reported estimates of minimum wage violations.²⁶ First, despite going to great lengths to reach them, both Latinx households and undocumented immigrants are underrepresented in the CPS.²⁷ Because workers in these groups are at higher risk of experiencing minimum wage violations, the estimates of violations reported here should in this sense be considered conservative estimates.²⁸ Second, in Bollinger's study of measurement error in the CPS, he finds a "high overreporting of income for low-income men" driven by "about 10% of the reporters who grossly overreport their income," thus potentially biasing estimates downward even further.²⁹ Third, CPS data have a shortage of low-wage workers and an excess of high-wage workers relative to comparable survey data like SIPP; one effect of this imbalance could be to underestimate minimum wage violations.³⁰ Roemer does find that the CPS reaches more "underground" workers than other large-scale surveys and is less biased than alternatives.³¹ These considerations notwithstanding, the fact that measurement error surely exists recommends using caution when working with the point estimates reported.

Racial and ethnic categories are mutually exclusive. We follow CEPR and EPI in the construction of the race variable. "Black" includes those who identify as Black-white; Black-American Indian; Black-Asian; Black-Hawaiian/Pacific Islander; white-Black-American Indian; white-Black-Asian; white-Black-Hawaiian/Pacific Islander; Black-American Indian-Asian; and white-Black-American Indian-Asian. "Asian" includes those who identify as Asian & Hawaiian/Pacific Islander; white-Asian; white-Hawaiian/Pacific Islander; American Indian-Asian; American Indian-Hawaiian/Pacific Islander; Asian-Hawaiian/Pacific Islander; white-American Indian-Asian; white-American Indian-Hawaiian/Pacific Islander; white-Asian-Hawaiian/Pacific Islander; white-American Indian-Asian-Hawaiian/Pacific Islander. "Other" includes American Indian (only); white-American Indian; other 3 races; other 4 and 5 races. "Hispanic" includes those who identify as Mexican, Mexican-American, Mexicano/Mexicana, Chicano/Chicana, Mexican (Mexicano), Mexicano/Chicano, Puerto Rican, Cuban, Dominican, Salvadoran, Other Hispanic, Central/South American, Central American, (excluding Salvadoran), South American, and any of these categories *and* white, Black, Asian, or Other.

²⁶ For an excellent discussion of the advantages and limitations of using the CPS data to estimate minimum wage violations given the existence of measurement error and other issues, see Eastern Research Group (2014), Appendix B.

²⁷ As Bernhardt et al. (2009) write: ". . . standard surveying techniques—phone interviews or census-style door-to-door interviews—rarely are able to fully capture the population that we are most interested in: low-wage workers who may be hard to identify from official databases, who may be vulnerable because of their immigration status, or who are reluctant to take part in a survey because they fear retaliation from their employers. Trust is also an issue when asking for the details about a worker's job, the wages they receive, whether they are paid off the books or not, and their personal background." Annette Bernhardt et al., *Broken Laws, Unprotected Workers: Violations of Employment and Labor Laws in America's Cities* (New York: National Employment Law Project), 56.

²⁸ Bernhardt et al. (2009); Eastern Research Group (2014).

²⁹ Christopher R. Bollinger, "Measurement error in the Current Population Survey: A nonparametric look," *Journal of Labor Economics* 16, no. 3 (1998).

³⁰ Marc Roemer, Using administrative earnings records to assess wage data quality in the March Current Population Survey and the Survey of Income and Program Participation (Washington, DC: Center for Economic Studies, US Census Bureau, 2002); Eastern Research Group (2014).

³¹ Roemer 2002.

Appendix II. Minimum Wage Violations by Year, North Carolina, 2003-2022

Year	Total non-exempt workforce	% Experiencing MW Violation	Workers Experiencing MW Violation	Average Annual Underpayment	Total Estimated Wages Stolen
2003	2,711,203	1.9%	51,513	\$2,033	\$104,725,638.28
2004	2,708,639	1.6%	43,338	\$2,641	\$114,456,249.58
2005	2,813,000	2.0%	56,260	\$3,309	\$186,164,340.00
2006	2,906,980	2.0%	58,140	\$2,322	\$135,000,151.20
2007	2,809,988	3.5%	98,350	\$2,561	\$251,873,274.38
2008	2,894,442	3.5%	101,305	\$1,846	\$187,009,897.62
2009	2,784,603	3.7%	103,030	\$2,852	\$293,842,446.97
2010	2,740,651	3.7%	101,404	\$2,441	\$247,527,376.37
2011	2,675,509	3.0%	80,265	\$3,075	\$246,815,705.25
2012	2,872,687	3.1%	89,053	\$3,904	\$347,664,071.49
2013	2,890,348	2.5%	72,259	\$3,687	\$266,417,826.90
2014	2,943,654	2.3%	67,704	\$2,448	\$165,739,494.82
2015	3,102,132	3.0%	93,064	\$3,904	\$363,321,699.84
2016	3,203,226	2.9%	92,894	\$3,619	\$336,181,771.93
2017	3,228,293	1.9%	61,338	\$4,488	\$275,283,000.70
2018	3,212,379	2.2%	70,672	\$4,747	\$335,481,588.49
2019	3,236,987	1.4%	45,318	\$4,662	\$211,271,667.52
2020	2,999,693	1.5%	44,995	\$4,402	\$198,069,728.79
2021	3,153,659	1.5%	47,305	\$5,617	\$265,711,539.05
2022	3,154,009	1.8%	56,772	\$3,936	\$223,455,229.63

Appendix III. Minimum Wage Violations by Industry, North Carolina, 2003-2022

Industry	95% Confidence Interval (Low)	MWV Estimate	95% Confidence Interval (High)
Food Services and Drinking Places	6.2%	7.4%	8.6%
Personal and Laundry Services	4.2%	7.1%	10.1%
Private Households	3.8%	6.5%	9.3%
Agriculture and Forestry	4.3%	5.2%	6.1%
Real Estate	2.0%	4.1%	6.2%
Membership Associations and Organizations	2.9%	4.1%	5.2%
Arts, Entertainment, and Recreation	1.6%	4.0%	6.4%
Accommodation	2.2%	4.0%	5.9%
Social Assistance	2.4%	3.3%	4.3%
Transportation and Warehousing	1.9%	2.9%	3.9%
Administrative and Support Services	2.3%	2.9%	3.5%
Repair and Maintenance	1.5%	2.5%	3.5%
Retail Trade	1.7%	2.3%	3.0%
Finance and Insurance	1.4%	2.0%	2.6%
Professional, Scientific, and Technical Services	1.4%	2.0%	2.6%
Educational Services	1.2%	2.0%	2.9%
Information	0.7%	1.8%	2.8%
Health Care Services (Except Hospitals)	1.0%	1.4%	1.7%
Manufacturing	0.7%	1.3%	1.7%
Wholesale Trade	0.7%	1.3%	1.9%
Construction	1.0%	1.3%	1.7%
Hospitals	0.6%	0.9%	1.3%

Appendix IV. Industry groups and examples of highly represented occupations³²

Industry	Occupation examples (Occupation code)
<p>Agriculture (NAICS 11)</p>	<ul style="list-style-type: none"> • Farmworkers and laborers (45-2092) • Logging equipment operators (45-4022) • Agricultural equipment operators (45-2091) • Heavy and tractor-trailer truck drivers (53-3032) • Packers and packagers (53-7064) • Graders and sorters (45-2041)
<p>Construction (NAICS 23)</p>	<ul style="list-style-type: none"> • Pipelayers, plumbers, pipefitters, and steamfitters (47-2150) • Construction equipment operators (47-2070) • Helpers, construction trades (47-3010) • Painters and paperhangers (47-2140) • Cement masons, concrete finishers, and terrazzo workers (47-2050) • Secretaries and administrative assistants (43-6010) • Driver/sales workers and truck drivers (53-3030)
<p>Manufacturing (NAICS 31-33)</p>	<ul style="list-style-type: none"> • Metal workers and plastic workers (51-4000) • Assemblers and fabricators (51-2000) • Material moving workers (53-7000) • Installation, maintenance, and repair occupations (49-0000) • Business operations specialists (13-1000) • Inspectors, testers, sorters, samplers, and weighers (51-9061)

³² Information obtained from the U.S. Bureau of Labor Statistics Occupational Employment and Wage Statistics database, accessible at: <https://www.bls.gov/oes/current/oesrci.htm>.

Minimum Wage Non-Compliance in North Carolina

	<ul style="list-style-type: none"> • Material recording, scheduling, dispatching, and distributing workers (43-5000)
Wholesale trade (NAICS 42)	<ul style="list-style-type: none"> • Sales representatives (41-4010) • Laborers and material movers (53-7060) • Driver/sales workers and truck drivers (53-3030)
Retail trade (NAICS 44, 45)	<ul style="list-style-type: none"> • Retail salespersons (41-2031) • Cashiers (41-2010) • Laborers and material movers (53-7060) • Stockers and order fillers (53-7065) • Driver/sales workers and truck drivers (53-3030) • Counter and rental clerks and parts salespersons (41-2020) • Customer service representatives (43-4051)
Transportation and warehousing (NAICS 48,49)	<ul style="list-style-type: none"> • Heavy and tractor-trailer truck drivers (53-3032) • Laborers and freight, stock, and material movers, hand (53-7062) • Postal service mail carriers (43-5052) • Light truck drivers (53-3033) • Passenger vehicle drivers, except bus drivers, transit and intercity (53-3058) • Industrial truck and tractor operators (53-7051) • Stockers and order fillers (53-7065) • Flight attendants (53-2031)
Information (NAICS 51)	<ul style="list-style-type: none"> • Software and web developers, programmers, and testers (15-1250) • Business operations specialists (13-1000) • Sales representatives (41-3000) • Media and communication workers (27-3000) • Radio and telecommunications equipment installers and repairers (49-2020)

	<ul style="list-style-type: none"> • Customer service representatives (43-4051) • Actors, producers, and directors (27-2010)
Finance and insurance (NAICS 52)	<ul style="list-style-type: none"> • Customer service representatives (43-4051) • Tellers (43-3071) • Securities, commodities, and financial services sales agents (41-3031) • Insurance sales agents (41-3021) • Loan officers (13-2072) • Insurance claims and policy processing clerks (43-9041) • Claims adjusters, appraisers, examiners, and investigators (13-1030) • Secretaries and administrative assistants (43-6010)
Real estate (NAICS 531)	<ul style="list-style-type: none"> • Real estate brokers and sales agents (41-9020) • Property, real estate, and community association managers (11-9141) • Office clerks (43-9061) • Secretaries and administrative assistants (43-6014)
Professional, scientific and technical services (NAICS 54)	<ul style="list-style-type: none"> • Software developers and software quality assurance analysts and testers (15-1256) • Accountants and auditors (13-2011) • Lawyers (23-1011) • Management analysts (13-1111) • Paralegals and legal assistants (23-2011) • Computer systems analysts (15-1211) • Bookkeeping, accounting, and auditing clerks (43-3031) • Civil engineers (17-2051)
Administrative and support services (NAICS 561)	<ul style="list-style-type: none"> • Janitors and cleaners, except maids and housekeeping cleaners (37-2011) • Security guards (33-9032) • Laborers and freight, stock, and material movers, hand (53-7062)

Minimum Wage Non-Compliance in North Carolina

	<ul style="list-style-type: none"> • Landscaping and groundskeeping workers (37-3011) • Customer service representatives (43-4051) • Office clerks (43-9061) • Packers and packagers (53-7064)
Waste management and remediation services (NAICS 562)	<ul style="list-style-type: none"> • Refuse and recyclable material collectors (53-7081) • Heavy and tractor-trailer truck drivers (53-3032) • Office and administrative support occupations (43-0000) • Hazardous materials removal workers (47-4041) • Laborers and freight, stock, and material movers, hand (53-7062) • Installation, maintenance, and repair occupations (49-0000) • Construction trades workers (47-2000) • Septic tank servicers and sewer pipe cleaners (47-4071)
Educational services (NAICS 61)	<ul style="list-style-type: none"> • Elementary and middle school teachers (25-2020) • Teaching assistants (25-9040) • Secondary school teachers (25-2030) • Secretaries and administrative assistants (43-6010) • Special education teachers (25-2050) • Education and childcare administrators (11-9030) •
Health care (NAICS 621, 622, 623)	<ul style="list-style-type: none"> • Registered nurses (29-1141) • Nursing assistants (31-1131) • Medical assistants (31-9092) • Home health and personal care aides (31-1120) • Medical secretaries and administrative assistants (43-6013) • Dental assistants (31-9091)

<p>Social assistance (NAICS 624)</p>	<ul style="list-style-type: none"> • Home health and personal care aides (31-1120) • Preschool teachers (25-2011) • Childcare workers (39-9011) • Social and human service assistants (21-1093) • Teaching assistants, except postsecondary (25-9045) • Child, family, and school social workers (21-1021)
<p>Arts, entertainment, and recreation (NAICS 71)</p>	<ul style="list-style-type: none"> • Amusement and recreation attendants (39-3091) • Exercise trainers and group fitness instructors (39-9031) • Food preparation and serving related occupations (35-0000) • Office and administrative support occupations (43-0000) • Arts, design, entertainment, sports, and media occupations (27-0000)
<p>Accommodation (NAICS 721)</p>	<ul style="list-style-type: none"> • Maids and housekeeping cleaners (37-2012) • Hotel, motel, and resort desk clerks (43-4081) • Waiters and waitresses (35-3031) • Maintenance and repair workers, general (49-9071) • Cooks (35-2014) • Gambling dealers (39-3011) •
<p>Food services and drinking places (NAICS 722)</p>	<ul style="list-style-type: none"> • Fast food and counter workers (35-3023) • Waiters and waitresses (35-3031) • Cooks (35-2014) • Food preparation workers (35-2021) • Bartenders (35-3011) • Dishwashers (35-9021) • Hosts and hostesses (35-9031) • Cashiers (41-2011) • Dining room and cafeteria attendants and bartender helpers (35-9011)

Minimum Wage Non-Compliance in North Carolina

	Driver/sales workers (53-3031)
Repair and maintenance (NAICS 811)	<ul style="list-style-type: none"> • Automotive service technicians and mechanics (49-3023) • Cleaners of vehicles and equipment (53-7061) • Automotive body and related repairers (49-3021)
Personal and laundry services (NAICS 812)	<ul style="list-style-type: none"> • Hairdressers, hairstylists, and cosmetologists (39-5012) • Manicurists and pedicurists (39-5092) • Laundry and dry-cleaning workers (51-6011) • Animal caretakers (39-2021) • Parking attendants (53-6021) • Receptionists and information clerks (43-4171) • Massage therapists (31-9011) • Skincare specialists (39-5094) • Funeral attendants (39-4021) • Morticians, undertakers, and funeral arrangers (39-4031)
Membership associations and organizations (NAICS 813)	<ul style="list-style-type: none"> • Labor relations specialists (13-1075) • Secretaries and administrative assistants, except legal, medical, and executive (43-6014) • Office clerks (43-9061) • General and operations managers (11-1021)