Changes to Our Methodology for Estimating Monthly Poverty Rates in 2024: A Technical Note

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Overview: In 2020, researchers at Columbia University's Center on Poverty and Social Policy introduced a framework for estimating monthly poverty rates in the United States (US) based on estimates of monthly resources (Parolin, Curran, Matsudaira, Waldfogel, and Wimer 2020, 2022; Parolin 2023). Monthly poverty estimates through 2023 are available at the [Center's website](#). For the monthly poverty series beginning in 2024, we are introducing two sets of changes to improve the conceptual soundness of our estimates. This document discusses the changes to be implemented and demonstrates how the changes affect levels and trends in monthly poverty rates. We demonstrate that the procedural changes, when applied to pre-2024 estimates, do not meaningfully affect poverty trends or conclusions produced in interpretations of our pre-2024 data, including prior estimates of policy impacts on poverty. Instead, the primary consequence of the changes is a small increase in levels of poverty across all months. We provide a series of monthly poverty estimates from 2020-2023 with the new changes applied so that users can consistently compare monthly poverty estimates before 2024 with those from 2024 onward.

CHANGES IN ESTIMATING MONTHLY POVERTY FOR 2024

We are introducing two changes to our monthly poverty estimates beginning in January 2024: updating the base ASEC data and revising our coding procedure. We also provide a consistent series of monthly poverty estimates with the revised coding procedure applied to all months from January 2020 to December 2023. We discuss these two alterations in turn, then show the consequences of these changes for monthly poverty estimates.

Updating the base ASEC data: The monthly poverty framework discussed in Parolin et al. (2022) proposes the use of the most recent version of the Current Population Survey's Annual Social and Economic Supplement (CPS ASEC) as the 'base' dataset for creating monthly poverty rates, before then imputing the monthly poverty rates into the monthly CPS files based on shared observative features between the two files. In certain contexts, however, changing the base dataset has proved infeasible: the 2022 CPS ASEC (covering 2021 calendar year), for example, featured an extraordinary set of government interventions (resulting from COVID-era policy changes) that were not possible to cleanly parse out of the reported income components in the ASEC. For example, separating reported income from Unemployment Insurance (UI) in the ASEC into 'standard' UI benefits versus the COVID-expanded UI benefits was not feasible. Had we used this 2022 ASEC for monthly poverty estimates in 2023 (when the COVID-expanded UI benefits were no longer available), our estimates would have thus been biased downward. As such, we continued to use our pre-pandemic ASEC file for the baseline data, with income information updated for inflation (and continuing to simulate year/month-specific policy changes into the ASEC, as described in our past work).

For the 2024 estimates, however, we will switch the base dataset to the 2023 ASEC (the latest available at the start of the year), consistent with the original proposed methodology. We will plan to update the base data annually, except in cases similar to the COVID-19 pandemic when, as described above, we are unable to use the ASEC to provide reasonably accurate estimates of current monthly income. Changing the base ASEC data should only affect our results when the conditional association of poverty with our observables changes over time for reasons not due to policy changes (given that we simulate policy changes every month). Below, we analyze how changing the base data to the 2023 ASEC, rather than using the 2019 ASEC, affects trends in monthly poverty in 2023.

Changing our Coding Procedure for Estimating Monthly Incomes:

We have also introduced a revised coding procedure for producing our monthly poverty estimates. We will apply the following changes moving forward, and we have also created a revised series of estimates from January 2020 to December 2023 with these changes applied:

1) *Earnings Imputation:* If an individual is currently employed when taking the Current Population Survey's Annual Social and Economic Supplement (CPS ASEC) survey in March, but was not employed in the prior year, the individual may report zero earnings despite being currently employed. This would bias our estimate of their monthly earnings. In our revised procedure for estimating monthly poverty rates, we now impute earnings for such individuals who are currently employed yet report no earnings. To do so, we estimate the median earnings for separate bins defined by state of residence, age groups spanning 5 years each, education (high school degree, more than high school, and college degree or more), and hours worked (1-20 hours, 21-30 hours, or 30-40+ hours). We apply the median of the respective bin to each employed adult who reported earnings. This adjustment affects 1 percent of respondents in the CPS ASEC.

2) *Work Intensity Adjustment*: We now adjust our calculation of monthly earnings based on whether an employed respondent's hours worked in the prior week are higher or lower than usual hours per week worked. When work intensity is lower than normal (hours last week are smaller than usual weekly hours), we adjust earnings downward proportionally. For example, we reduce monthly earnings for the individual by 50 percent if hours worked last week are 15, yet usual hours worked per week are 30. This assumes that hours worked last week are a reliable proxy for weekly hours worked throughout the calendar month. Similarly, when work intensity is higher than normal, we adjust earnings proportionately. The downward earnings adjustment applies to 5 percent of respondents in the CPS ASEC, while the upward earnings adjustment applies to 3 percent of respondents.

3) *FICA Taxes:* We now deduct FICA payroll taxes from monthly incomes of workers who are employed in the prior month. For individuals who are not employed in the prior

month, we do not deduct any FICA taxes, even if reported FICA amounts are positive in the prior calendar year.

CONSEQUENCES OF THE CHANGES

We first present the consequences of the base dataset change and the alternative coding procedure for our monthly poverty estimates in 2023. The purpose of this analysis is to understand the extent to which these two sets of changes affect our 2023 poverty estimates. Afterward, we present the implications of the alternative coding procedure when applied to monthly poverty estimates from 2020-2023. In doing so, we provide a consistent set of poverty estimates with the alternative coding procedure (but always with the original, year-specific base ASEC dataset) so that researchers can compare monthly poverty estimates from 2024 onward to the pre-2024 estimates.

Changes Applied to 2023

Figure 1: Trends in 2023 monthly poverty estimates: baseline estimates versus alternative estimates
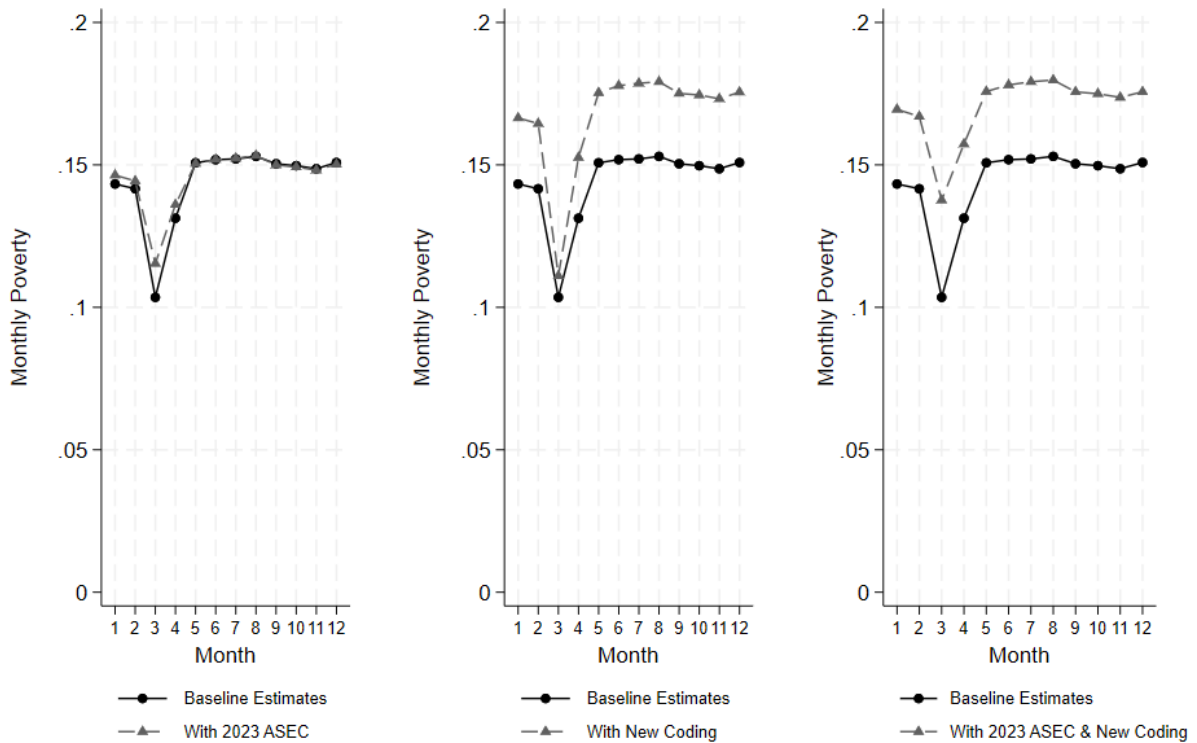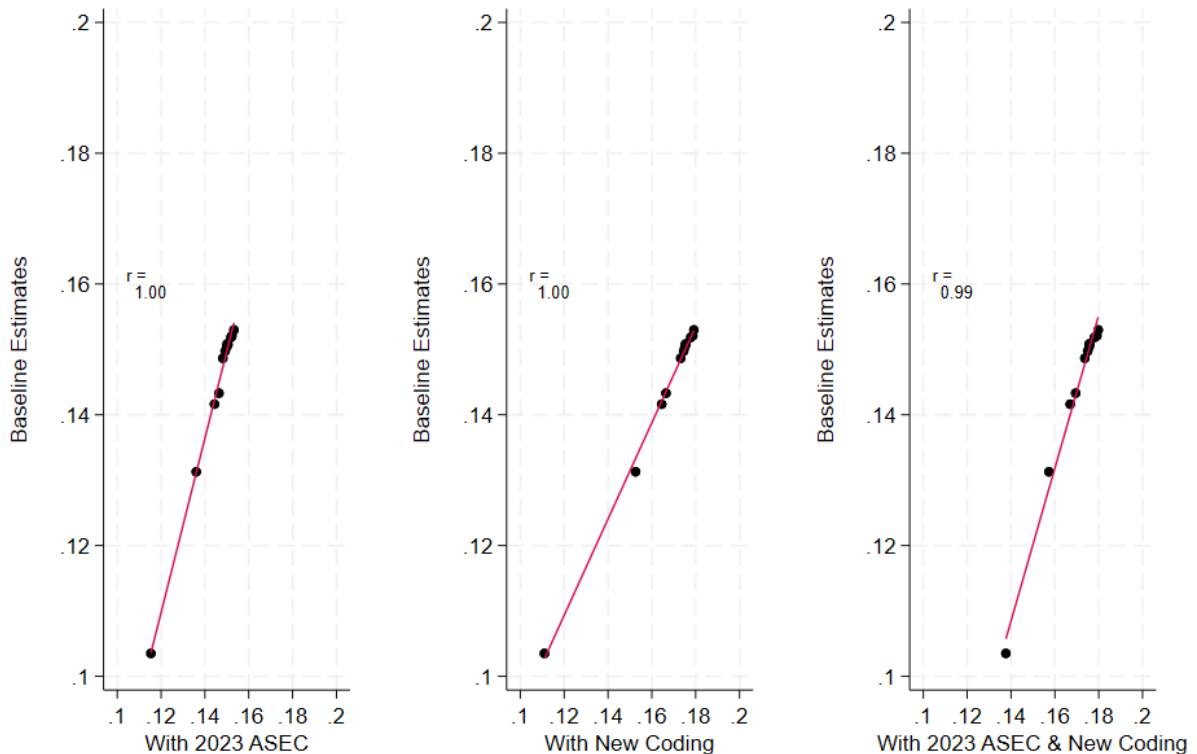

Note: Estimates of monthly poverty (using the Supplemental Poverty Measure framework and following Parolin et al. 2022) from January to December 2023. The "baseline" estimates use the original measurement framework, whereas the alternative estimates change the base ASEC data and alter the coding procedure for calculating monthly income, as detailed in this technical note.

Figure 1 displays estimates of monthly poverty when using our baseline estimates compared to our revised estimates (switching to the 2023 ASEC, applying the new coding scheme, and both) for the full population. We present trends for different age groups and racial/ethnic groups in the Appendix. The solid black lines represent trends with the original (pre-2023) estimate procedure, and the dashed lines represent trends with the revised procedure.

Applying the alternative ASEC file has very little effect on monthly poverty estimates (left panel). Our revised coding scheme slightly increases monthly poverty rates across all months in 2023, with the one exception being when refundable tax credits are paid out in March (see middle panel). Applying both the new ASEC and revised coding scheme (right panel), we see comparable trends in monthly poverty relative to our baseline rates, but with slightly higher levels in each month.

Figure 2: Correlations of baseline 2023 monthly poverty estimates with alternative estimates

Note: Correlation of 2023 monthly poverty (using the Supplemental Poverty Measure framework and following Parolin et al., 2022) from January to December 2023. The "baseline" estimates use the original measurement framework, whereas the alternative estimates change the base ASEC data and alter the coding procedure for calculating monthly income, as detailed in this technical note. "R=" refers to the correlation coefficient of the two measures' trends.

Figure 2 displays the correlations of the baseline versus revised estimates across months in 2023. Consistent with the findings from Figure 1, the revisions to our framework do not meaningfully alter poverty trends. Month-to-month variation in baseline estimates are strongly correlated with

the estimates produced with the new coding scheme (r = 1.00), with the 2023 ASEC (r = 1.00), and when applying both the new coding scheme and 2023 ASEC (r = 0.99). In the Appendix, we document that these strong correlations are consistent across age groups and racial/ethnic groups.

Revised Coding Procedure Applied to 2020-2023 Estimates

Figure 3 presents the monthly poverty series from January 2020 to December 2023 when applying our revised coding procedure. Recall that we continue to use the original, year-specific base ASEC datasets; these 2020-2023 results are not produced using the 2023 ASEC.

Figure 3: Revised monthly poverty estimates from January 2020 to December 2023 when applying alternative coding scheme
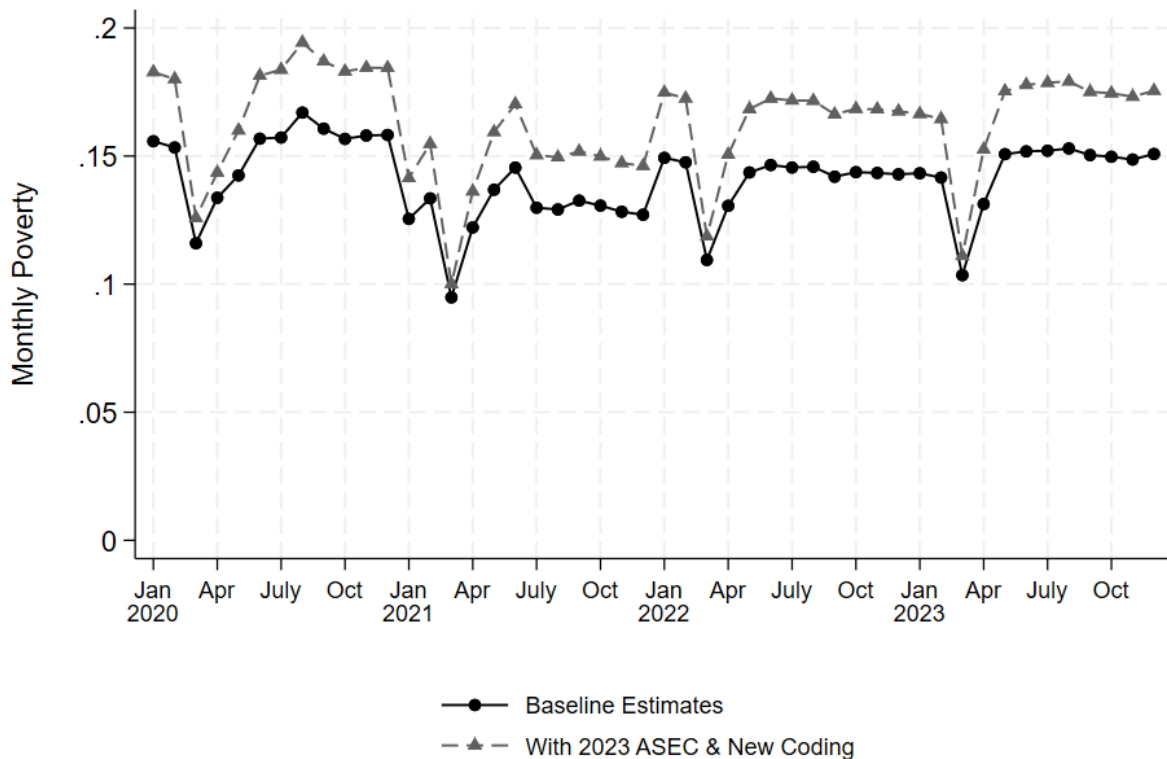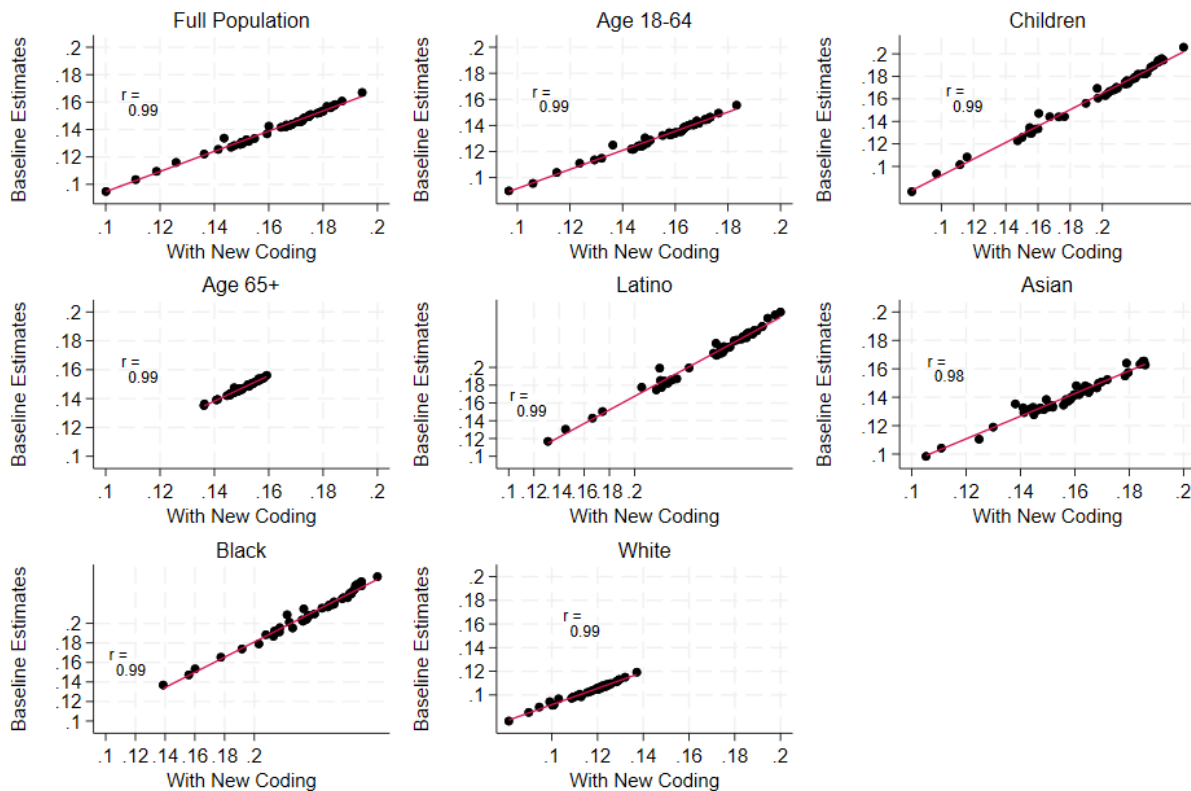

Note: Estimates of monthly poverty (using the Supplemental Poverty Measure framework and following Parolin et al. 2022) from January 2020 to December 2023. The "baseline" estimates use the original measurement framework, whereas the alternative alter the coding procedure for calculating monthly income, as detailed in this technical note.

The revised trend in monthly poverty estimates (gray triangles) follows the ebbs and flows of the original trend, with poverty estimates in each month being slightly higher. The primary exception remains March of each month, when refundable tax credits paid out to tax units achieves comparable poverty estimates in the baseline and revised estimates. In January 2020, for example, the revised monthly poverty estimate for the full population is 18.2 percent, up from

our baseline estimate of 15.6 percent (2.7 percentage points, or 17 percent, higher with the revisions). This is comparable to the increase in the revised estimate for December 2023: at 16.6 percent, the poverty rate is 2.3 percentage points, or 16 percent, higher than the baseline estimate of 14.3 percent.

Figure 4: Correlation of baseline monthly poverty estimates with revised estimates using new coding scheme by subgroup (estimates from January 2020 to December 2023)

Note: Correlation of monthly poverty estimates (using the Supplemental Poverty Measure framework and following Parolin et al., 2022) from January 2020 to December 2023. The "baseline" estimates use the original measurement framework, whereas the alternative estimates alter the coding procedure for calculating monthly income, as detailed in this technical note. "R=" refers to the correlation coefficient of the two measures' trends.

Figure 4 documents the correlations of trends in the baseline and revised measure by subgroup (age bins and racial/ethnic group). For all subgroups the correlation in the two trends is between $r = 0.98$ (for Asian individuals) to $r = 0.99$ (for all other groups). Put differently, the revisions applied to the poverty estimates affect the levels in each month, but do not affect the trends.

Figure 5: Revised monthly poverty estimates from January 2020 to December 2023 by income measure
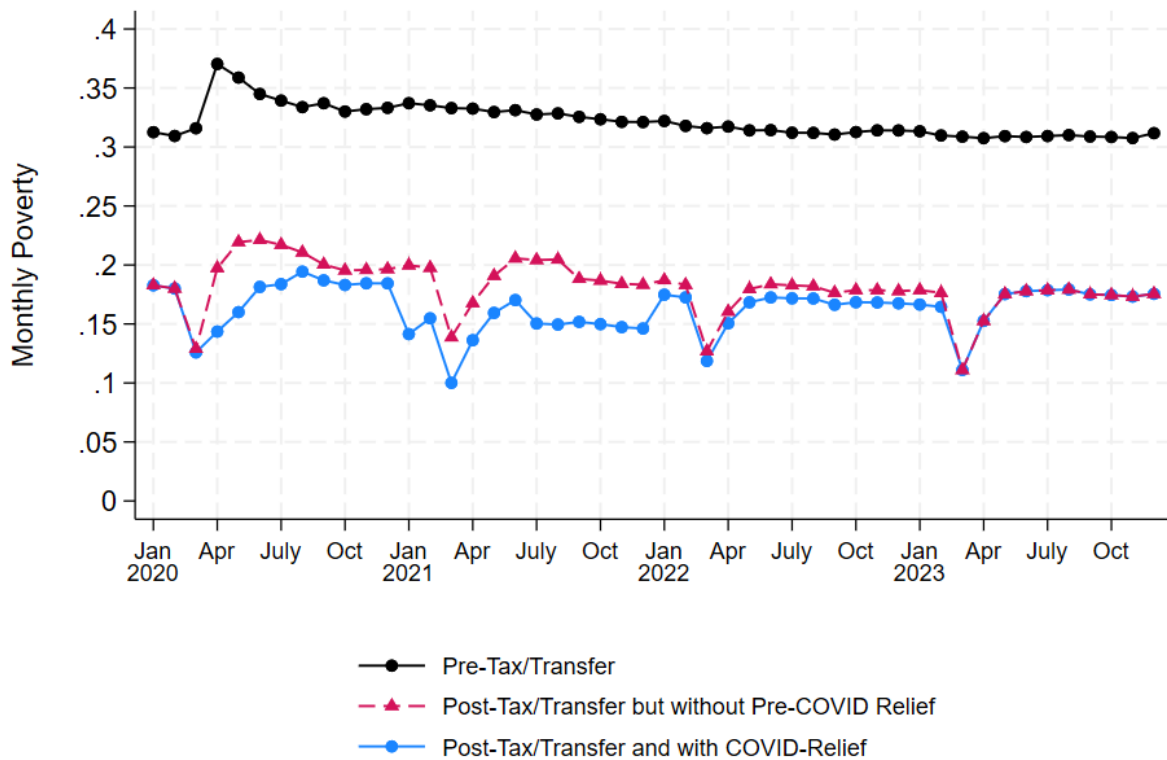
Note: Estimates of monthly poverty (using the Supplemental Poverty Measure framework and following Parolin et al. 2022) from January 2020 to December 2023. All estimates are presented with our revised coding procedure.

As a final step, Figure 5 provides trends in monthly poverty estimates from January 2020 to December 2023 applying our revised coding procedure, but broken out by pre-tax/transfer poverty rates, a post-tax/transfer poverty rate that excludes COVID-related relief, and a post-tax/transfer poverty rate that includes all COVID-related relief. Given that the levels for all measures increase slightly in each month, but the trends are generally unaffected, prior conclusions reached using our monthly poverty estimates should not be meaningfully affected when comparing to our revised trends.

For example, Parolin, Collyer, Curran, and Wimer (2021) found that COVID-related economic relief, including the first monthly Child Tax Credit (CTC) payments provided in July 2021, reduced that month's child poverty rate by 8.1 percentage points, or 40 percent. Using our revised series, we estimate the reduction in poverty that month was 10.5 percentage points, or 40 percent. The relative reductions in poverty due to the COVID relief are near-identical across the two series.

Similarly, Parolin (2021a) found that COVID-related relief reduced the child poverty rate in December 2021 by 6.8 percentage points, or 36 percent, relative to the pre-COVID-relief poverty

rate. Using our revised series, we estimate that COVID-related relief reduced the child poverty rate by 8.5 percentage points, or 36 percent, relative to pre-COVID-relief poverty rate. Put differently, the relative reductions in child poverty that month are near-identical whether using our baseline or revised series.

Parolin, Collyer, and Curran (2022b) found that the monthly child poverty rate increased by 4.9 percentage points, or 41 percent, from December 2021 to January 2022 as a result of the monthly CTC expiration. Our revised estimates suggest an increase of 6.7 percentage points, or 45 percent, instead. The differences are similar when comparing changes from December 2021 to February 2022, as in Parolin, Collyer, and Curran (2022c).

CONCLUSION

The changes applied to our estimation strategy for producing monthly poverty rates increase the conceptual validity of the models, with the effect of slightly increasing poverty rates in most months, but with no meaningful effects on trends. We have shown that prior conclusions regarding the efficacy of policy interventions on monthly poverty rates still hold, as should be expected given that near-identical trends in poverty when using our baseline or revised estimates.
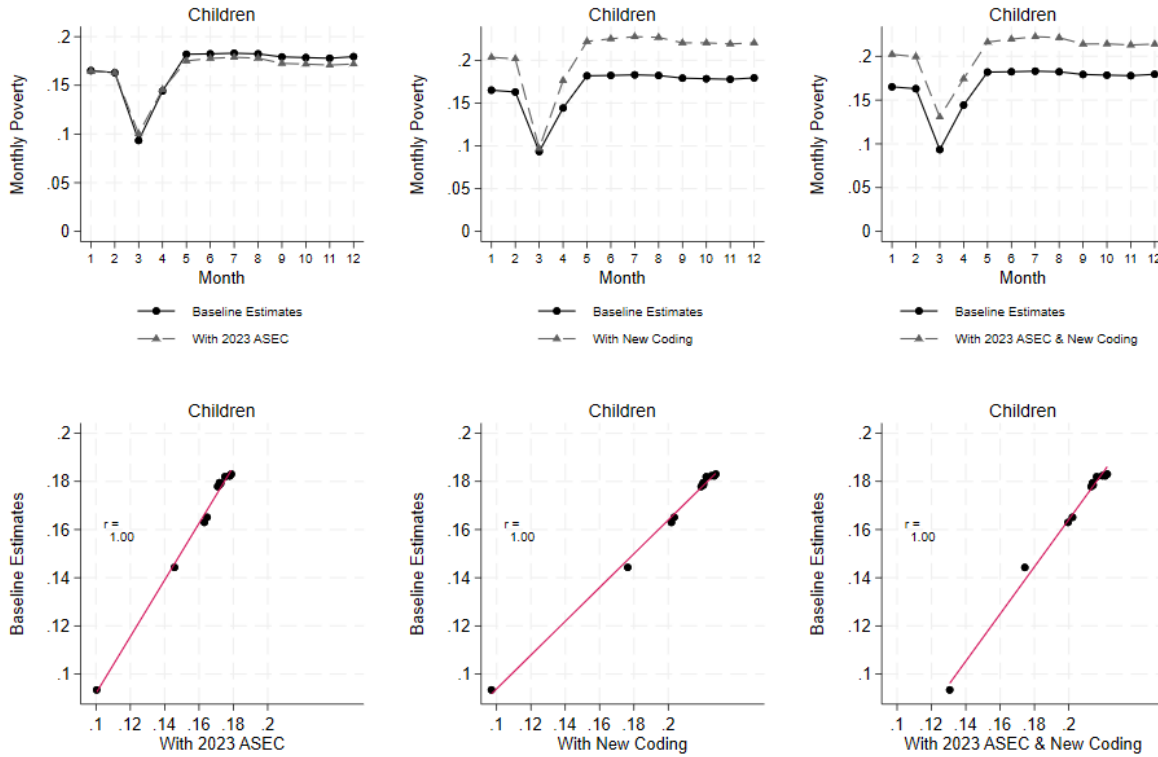
Our monthly poverty estimates from January 2024 will apply these revised methods. We have also produced a revised series of monthly poverty estimates from January 2020 to December 2023 using our new coding scheme, so that users of the data can consistently compare pre-2024 estimates with those produced from 2024 onward.

REFERENCES

Parolin, Zachary, Megan A. Curran, Jordan Matsudaira, Jane Waldfogel and Christopher Wimer. (2020). "Monthly Poverty Rates in the United States during the COVID-19 Pandemic." Poverty and Social Policy Discussion Paper. New York, NY: Center on Poverty and Social Policy. www.povertycenter.columbia.edu/news-internal/2020/covid-projecting-monthly-poverty

Parolin, Zachary, Sophie Collyer, Megan A. Curran, and Christopher Wimer. (2021). "Monthly Poverty Rates among Children after Expansion of the Child Tax Credit." Poverty and Social Policy Brief. Center on Poverty and Social Policy, Columbia University. Vol. 5, no. 4. www.povertycenter.columbia.edu/news-internal/monthly-poverty-july-2021.

Parolin, Zachary, Megan A. Curran, Jordan Matsudaira, Jane Waldfogel and Christopher Wimer. (2022). "Estimating monthly poverty rates in the United States." Journal of Policy Analysis and Management 41 (4), 1177-1203.

Parolin, Zachary, Sophie Collyer, and Megan A. Curran. (2022a). "Sixth Child Tax Credit Payment Kept 3.7 Million Children Out of Poverty in December." Poverty and Social Policy Brief. Vol. 6, No.1. Center on Poverty and Social Policy, Columbia University. Access at: https://www.povertycenter.columbia.edu/publication/monthly-poverty-december-2021

Parolin, Zachary, Sophie Collyer, and Megan A. Curran. (2022b). "Absence of Monthly Child Tax Credit Leads to 3.7 Million More Children in Poverty in January 2022." Poverty and Social Policy Brief Vol 6., no. 2. Center on Poverty and Social Policy, Columbia University. Access at: www.povertycenter.columbia.edu/publication/monthly-poverty-january-2022

Parolin, Zachary, Sophie Collyer, and Megan A. Curran. (2022c). "Monthly Poverty in 2022 Remains Elevated in February" Poverty and Social Policy Brief Vol 6., No. 4. Center on Poverty and Social Policy, Columbia University. Access at: povertycenter.columbia.edu/publication/monthly-poverty-february-2022.

Parolin, Zachary. (2023). "Poverty in the Pandemic: Policy Lessons from COVID-19." Russell Sage Foundation.

APPENDIX A: ALTERNATIVE ESTIMATES FOR 2023

Figure A1: Trends and correlations across baseline versus alternative monthly poverty estimates for children
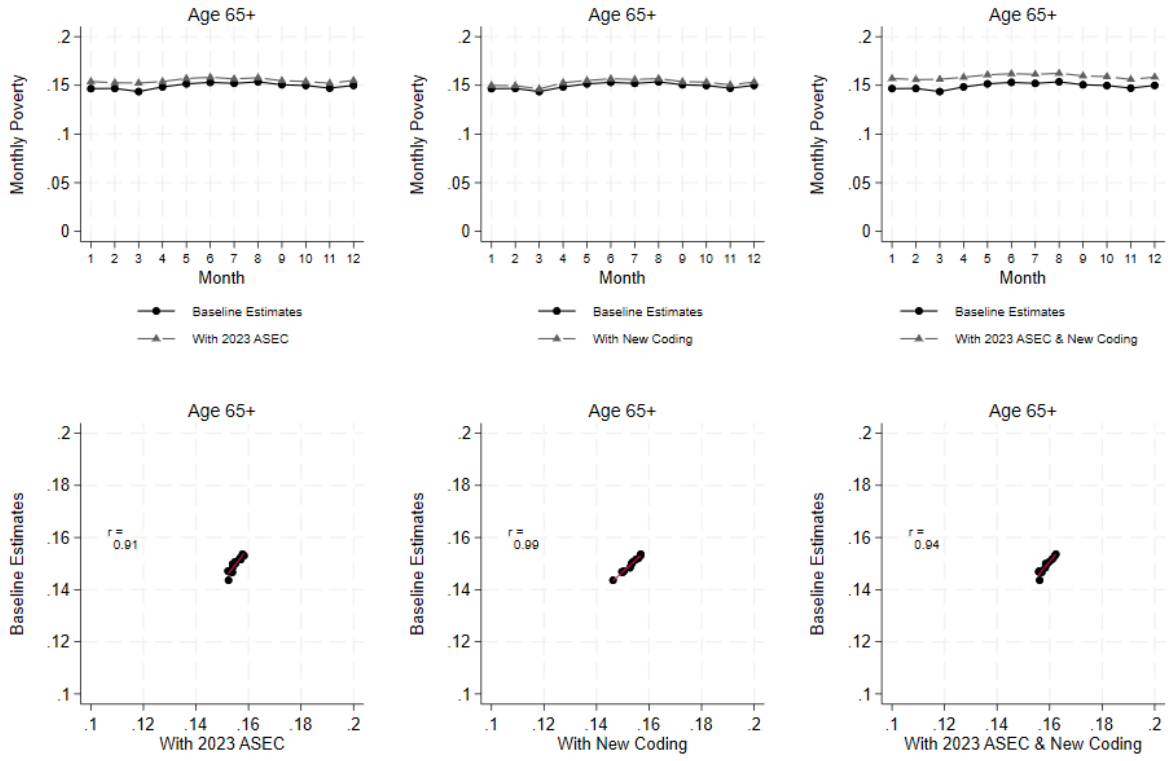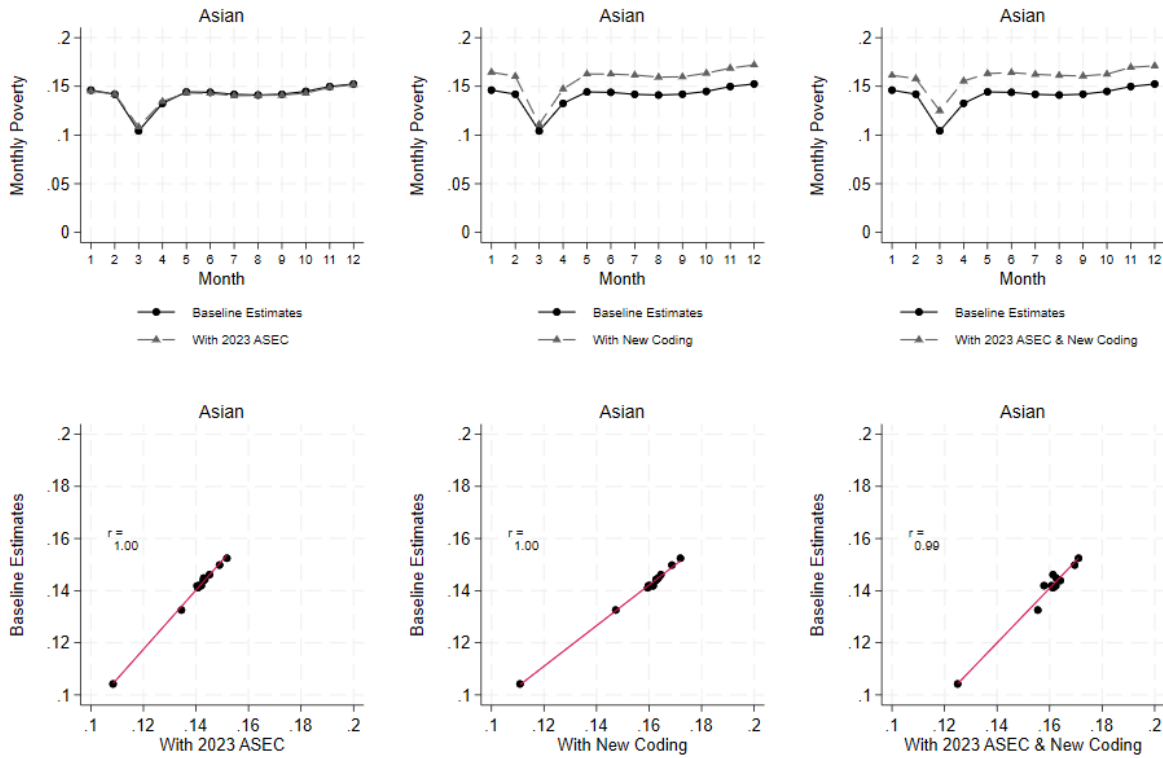

Note: Estimates of monthly poverty (using the Supplemental Poverty Measure framework and following Parolin et al. 2022) from January to December 2023. The "baseline" estimates use the original measurement framework, whereas the alternative estimates change the base ASEC data and alter the coding procedure for calculating monthly income, as detailed in this technical note.

Figure A2: Trends and correlations across baseline versus alternative monthly poverty estimates for ages 18-64
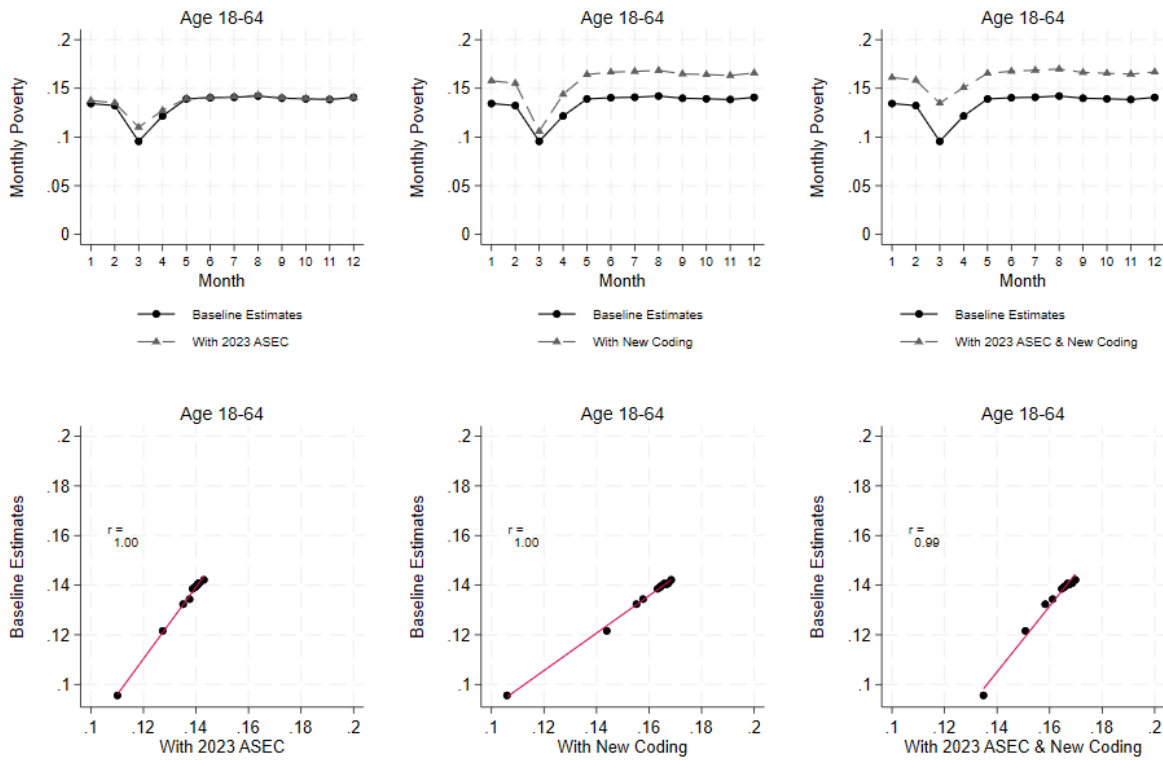
Note: Estimates of monthly poverty (using the Supplemental Poverty Measure framework and following Parolin et al. 2022) from January to December 2023. The "baseline" estimates use the original measurement framework, whereas the alternative estimates change the base ASEC data and alter the coding procedure for calculating monthly income, as detailed in this technical note.

Figure A3: Trends and correlations across baseline versus alternative monthly poverty estimates for ages 65+
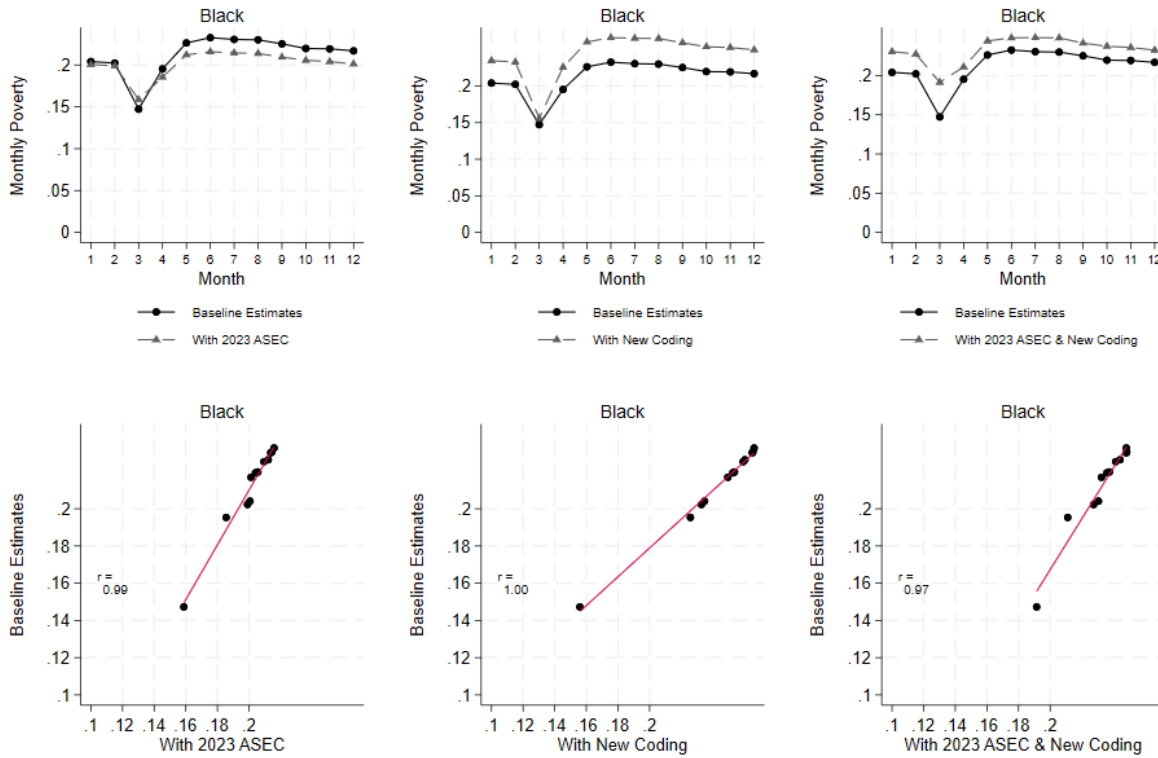

Note: Estimates of monthly poverty (using the Supplemental Poverty Measure framework and following Parolin et al. 2022) from January to December 2023. The "baseline" estimates use the original measurement framework, whereas the alternative estimates change the base ASEC data and alter the coding procedure for calculating monthly income, as detailed in this technical note.

Figure A4: Trends and correlations across baseline versus alternative monthly poverty estimates for Asian individuals
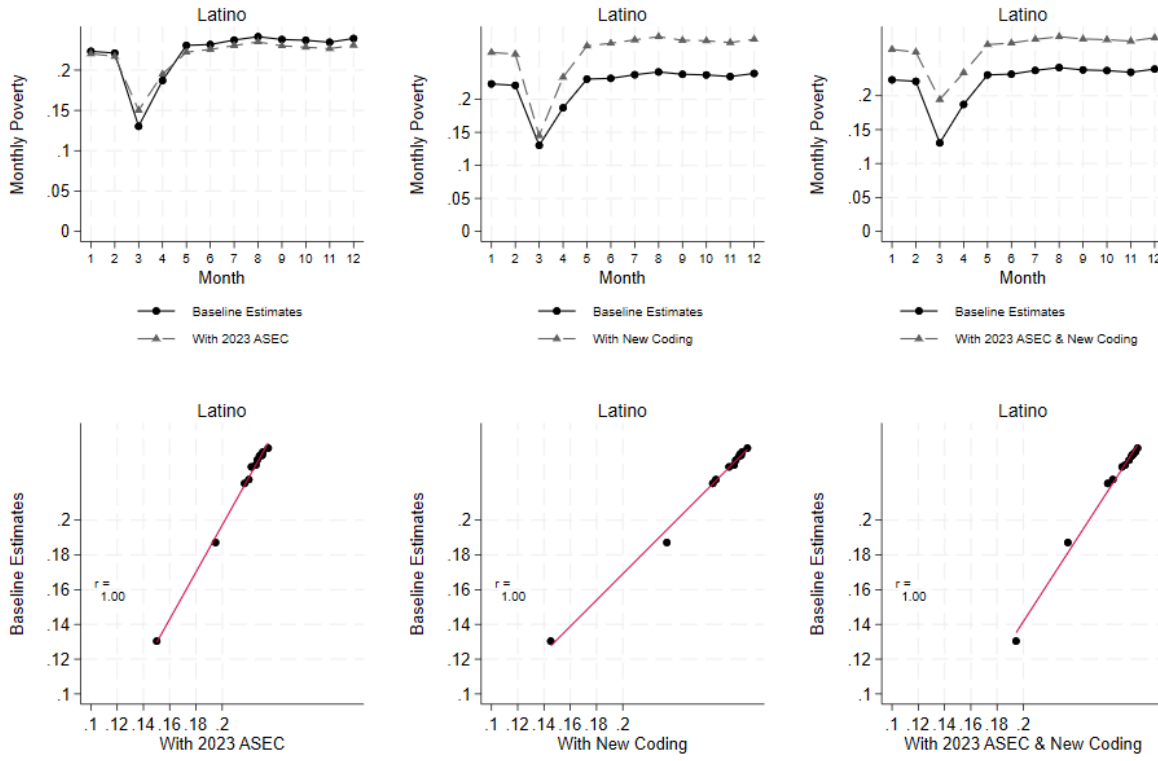

Note: Estimates of monthly poverty (using the Supplemental Poverty Measure framework and following Parolin et al. 2022) from January to December 2023. The "baseline" estimates use the original measurement framework, whereas the alternative estimates change the base ASEC data and alter the coding procedure for calculating monthly income, as detailed in this technical note.

Figure A5: Trends and correlations across baseline versus alternative monthly poverty estimates for Black individuals
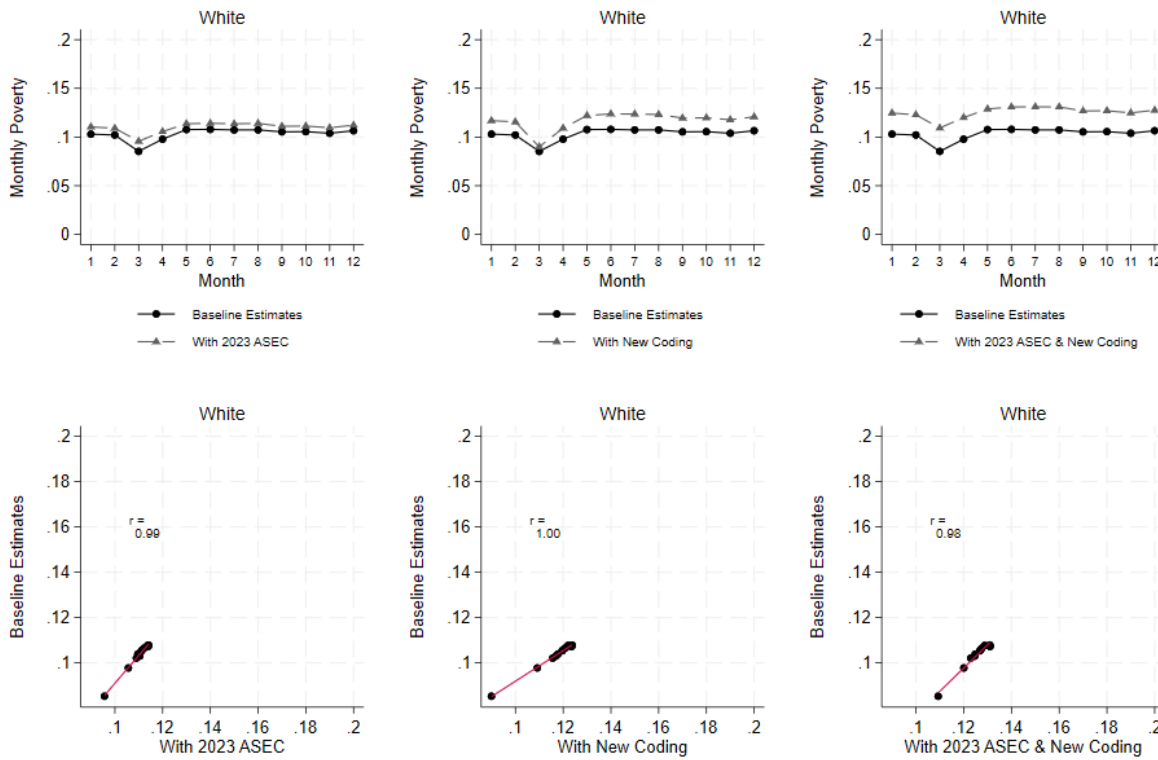

Note: Estimates of monthly poverty (using the Supplemental Poverty Measure framework and following Parolin et al. 2022) from January to December 2023. The "baseline" estimates use the original measurement framework, whereas the alternative estimates change the base ASEC data and alter the coding procedure for calculating monthly income, as detailed in this technical note.

Figure A6: Trends and correlations across baseline versus alternative monthly poverty estimates for Latino individuals

Note: Estimates of monthly poverty (using the Supplemental Poverty Measure framework and following Parolin et al. 2022) from January to December 2023. The "baseline" estimates use the original measurement framework, whereas the alternative estimates change the base ASEC data and alter the coding procedure for calculating monthly income, as detailed in this technical note.

Figure A7: Trends and correlations across baseline versus alternative monthly poverty estimates for White individuals

Note: Estimates of monthly poverty (using the Supplemental Poverty Measure framework and following Parolin et al. 2022) from January to December 2023. The "baseline" estimates use the original measurement framework, whereas the alternative estimates change the base ASEC data and alter the coding procedure for calculating monthly income, as detailed in this technical note.