Underreporting of Self-Employment Income by Sex and Race and Implications for Poverty Measurement: Insights from Comparing the Health and Retirement Study and Tax Data

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Abstract: Understanding how reporting income to tax authorities varies across demographic groups is important for accurately measuring income and poverty and assessing effects of policies on these outcomes as well as for informing tax enforcement approaches. This paper examines differences in reported self-employment earnings by sex and race and considering implications for measuring poverty rates using the 2004-2016 Health and Retirement Study (HRS) linked to the Social Security Administration (SSA)'s Detail Earnings File (DER). The HRS is valuable for such an analysis as, in contrast to other surveys, the HRS has been found to identify self-employment income at magnitudes in line with estimated IRS compliance rates. At the extensive margin, results show a larger gap in reporting any self-employment income on the DER among Blacks and a smaller gap among Hispanics, as compared to Whites. We also see smaller gaps for women than for men. Blacks are more likely to report only self-employment income on the HRS and have no income reported in the DER compared to Whites and Hispanics. Self-employed Whites, particularly business owners, are more likely to report self-employment income in the HRS and wage and salary income or a combination of self-employment income and wage and salary income in the DER. At the intensive margin, conditional on reporting any income, we see the smallest gaps in percentage terms for Whites, followed by Hispanics, and then Blacks. We also see smaller gaps for women than for men. We see the largest absolute gaps across the earnings distribution for Whites and men. Results show that estimated poverty rates for Whites and Blacks are higher using DER income data as compared to HRS income data, whereas we see the opposite pattern for Hispanics. Likewise, men's estimated poverty rates are lower using DER income data as compared to HRS income data, whereas we see the opposite pattern for women. Taken together, these findings highlight meaningful heterogeneity in differences across survey and administrative data that are important to understand for evaluating measurement of income and poverty.

Keywords: Tax avoidance, self-employment income, survey measurement, administrative data
JEL Codes: D3, H26, J21

1 Introduction

Correctly identifying work-related income in general and self-employment income in particular is important to understand the full picture of the labor market as well as to estimate levels and changes in wellbeing, inequality, and poverty. However, a challenge for exploring these questions is that different data sources lead to different estimates and trends. In particular, survey measures of self-employment often diverge from one another and administrative records provide yet another source of discrepancy.

While administrative data represent the gold standard in measuring certain outcomes, like program participation, they may provide a less reliable measure for measuring self-employment income. This is because much of self-employment income, especially at smaller amounts, is reported to the Internal Revenue Service (IRS) only at the discretion of filers. Tax filers may also have incentives to under-report self-employment income to tax authorities to reduce their tax burden or to over-report self-employment income to take advantage of tax incentives. Furthermore, less formal work arrangements may be shorter term and less stable, and as a result, may be less likely to be reported as taxable income and identified in administrative records.

In theory, surveys have the potential to better identify such income as survey respondents should not have economic incentives to misreport their income. However, a puzzle exists as a substantial literature has found that different survey data sources on self-employment income lead to different estimates of magnitudes and trends (e.g., Roemer (2000), Hurst, Li, and Pugsley (2014), Abraham et al. (2021), Imboden, Voorheis, and Weber (2023)). Using a variety of approaches, this research finds that self-employment income is underreported in several surveys (e.g., the Current Population Survey Annual Social and Economic Supplement, the Survey of Income and Program Participation, and the Panel Study of Income Dynamics), including in matched tax data. Given the potential large benefit of better identified self-employment income, it is valuable to better understand the nature of survey reports of self-employment income, how they relate to survey reports of wage and salary income, and how they compare to tax data.

Adding to this literature, Abramowitz (2025) examined a survey not yet considered in this context, the Health and Retirement Study (HRS), which focuses specifically on older workers and has been linked to the Social Security Administration (SSA)'s Detail Earnings File (DER). She found that in contrast to other surveys, the HRS identifies more self-employment income, at both the extensive and intensive margins, than administrative earnings records, at magnitudes in line with estimated IRS compliance rates. Her results suggest that while 29.4 percent of inconsistent HRS self-employment reports represent misreported wage earnings, more than double, 60.8 percent, represent true self-employment not captured in the administrative records, likely driven by strategic reporting of earnings (for example, to avoid taxation). Further results suggest these are disproportionately reported by respondents who consider themselves to be retired, likely reflecting more informal work that is not reported to tax authorities.

Building on Abramowitz (2025), this paper adds to the literature by examining differences in reported self-employment earnings by sex and race and considering implications for measuring poverty rates using the 2004-2016 HRS linked to the DER. Exploring patterns of reporting by sex and race is important for understanding how differences in work, tax avoidance, and

measured wellbeing vary by these characteristics. This paper first compares aggregate estimates of self-employment income and wage and salary income in the linked HRS and DER at both the extensive and intensive margins across demographic groups. Next, I consider sources for discrepancies by comparing patterns of reporting in both sources overall and by reported HRS work arrangements by race/ethnicity and sex. I further consider gaps in reporting across the income distribution across these demographic groups. Finally, I examine how using different income sources affects estimates of poverty rates by race/ethnicity and sex.

Results show substantially more self-employment income reported in the HRS than the DER across all demographic groups, but with distinctive patterns in the magnitudes of these gaps by race/ethnicity and sex. At the extensive margin, compared to White respondents, we see a larger gap in reporting any self-employment income in the DER among Blacks and a smaller gap in reporting any self-employment income among Hispanics. We see analogous but opposite patterns for reporting and wage and salary employment income, with more wage and salary employment income reported in the DER than the HRS, reflecting greater reporting in the DER among Hispanics and less reporting among Blacks as compared to Whites. We also see smaller gaps for women than for men. At the intensive margin, conditional on reporting any income, we see more wage and salary and self-employment income reported in the HRS than the DER, across all demographic groups, with the smallest gaps for Whites, followed by Hispanics, and then Blacks. We also see smaller gaps for women than for men.

Examining sources of discrepancies shows Blacks are more likely to report only self-employment income on the HRS and have no income reported on the DER compared to Whites and Hispanics, who are more likely to report self-employment income only in both sources. Self-employed Whites, particularly business owners, are more likely to report self-employment income in the HRS and wage and salary income or a combination of self-employment income and wage and salary income in the DER. Considering gaps in reporting across the earnings distribution shows small and stable gaps in self-employment income in the DER as compared to the HRS overall for the middle of the earnings distribution, with larger gaps in the tails of the distribution. We see the largest gaps for Whites and men. We also see divergent patterns examining total labor income across the two sources where positive gaps comparing the HRS to the DER become negative for Hispanics and women at higher percentiles of the earnings distribution. Results show poverty rates for Whites and Blacks are higher using DER income data as compared to HRS income data, whereas we see the opposite pattern for Hispanics. Likewise, men's poverty rates are lower using DER income data as compared to HRS income data, whereas we see the opposite pattern for women. These likely reflect the divergent reporting patterns related to wage and salary at different parts of the earnings distribution.

2 What We Know about Measuring Self-Employment Income in Surveys

A large literature finds self-employment income is under-identified in several major household surveys using a number of different approaches. At a high level, one can compare whether weighted survey estimates produce measures in link with those of aggregate administrative benchmarks. For example, Roemer (2000) established a methodology for deriving benchmarks from the National Income and Product Accounts (NIPAs) and compared them to weighted aggregates from the Current Population Survey Annual Social and Economic Supplement (CPS

ASEC) and Survey of Income and Program Participation (SIPP) over 1990-1996. Estimates showed that both surveys substantially under-identify self-employment income relative to the adjusted NIPA measure, which could reflect missing self-employment income reported in the surveys, incorrect calculations leading to the NIPAs overstating self-employment income, or both.

To identify the extent to which self-employment income in surveys is underreported, Hurst, Li, and Pugsley (2014) used reported expenditures to infer actual income of the self-employed based on the relationship between income and expenditures of wage and salary workers in the Consumer Expenditure Survey and the Panel Study of Income Dynamics. They found that, on average, the self-employed underreport their income by about 25 percent.

Using linked individual-level survey and administrative data, Abraham et al. (2021) used the CPS ASEC matched to the DER to compare the fraction with self-employment income. They found that a large and growing fraction of those reporting self-employment income in the DER reported no such income in the CPS ASEC, but not the reverse. The largest contributor to the increase in the gap is growth in the number of people who have both wage and salary income and self-employment income in the DER but only a wage and salary job in the CPS ASEC. Also contributing to the increase in the gap are growth in the number of people who have wage and salary income in the CPS ASEC but self-employment income in the DER and the number of people who have self-employment income in the DER but no employment income in the CPS ASEC. These findings suggest that the CPS ASEC data are not capturing a substantial share of self-employment activity and that the discrepancy is widening over time, raising the concern that the CPS ASEC in particular and survey data more broadly may not accurately measure either levels or trends in self-employment.

Shedding more light on these inconsistencies, Garin et al. (2022) attributed much of the discrepancy between the CPS ASEC and the DER identified by Abraham et al. (2021) to a growing share of individuals eligible for the Earned Income Tax Credit (EITC) reporting self-employment income on their tax forms in order to benefit from negative marginal tax rates. These findings suggest that a substantial share of the increase in discrepant reports can be attributed to this behavior, easing some concerns that the CPS ASEC and the DER show different trends and highlighting the potential for changes in reporting incentives to affect estimates of self-employment.

Adding to these findings, Imboden, Voorheis, and Weber (2023) examined reporting at the intensive margin in the CPS ASEC as compared to the DER. Among those reporting income in both sources, they found more income reported in the survey as compared to the DER for the self-employed as compared to the wage and salary employed. They also found evidence of bunching of self-employment income in the DER around EITC thresholds. Taken together with the work of Abraham et al. (2021), these findings suggest that while those who report self-employment income in both sources report more on the survey, many individuals do not report self-employment income on the survey that they report in tax filings.

Correctly identifying work-related income is all the more important because work-related income measures have also been used to identify the numbers and shares of individuals engaged

in different kinds of work arrangements due to limitations associated with survey questions asking respondents explicitly about the types of work they do. An ample literature documents that such questions may not capture the way individuals perceive their work, especially in less traditional work arrangements (Allard and Polivka, 2018; Bureau of Labor Statistics, 2018; Abraham and Amaya, 2019; Bracha and Burke, 2021; Abraham et al., 2024), and can produce divergent estimates based on sampling modes, methods, and timing (Katz and Krueger, 2019). Accordingly, disparate work-related income measures result not only in discrepancies in measurement of income, but in measurement of work as well.

This paper adds to this literature by comparing estimates in the HRS linked to the DER and considering how they vary across race/ethnicity and sex. Given that estimates are sensitive to survey and sample characteristics, using a different source of linked survey data is valuable to understand how the survey questions and methods of the HRS contribute to measuring self-employment and the nature of income that is not reported to tax authorities. Exploring how these vary across demographic groups is valuable to understand potential biases across data sources and their effects on estimates.

3 Data

To examine mismeasurement in self-employment income by race/ethnicity and sex among older workers, this analysis uses the 2004-2016 waves of the HRS linked to the DER. All income amounts are deflated to 2016 dollars using the annual Bureau of Labor Statistics' Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

3.1 HRS

The HRS is a longitudinal study of a representative sample of approximately 20,000 Americans over age 50 and their spouses. Since 1992 it has been conducted every two years with new cohorts added every six years. The HRS asks questions on a breadth of topics including work history, current employment, disability, retirement plans, net worth, income, health insurance and health status. This analysis includes the 2004-2016 waves of the HRS as these are the continuous waves for which applicable Social Security sample weights are available (Health and Retirement Study, 2021).

The HRS asks respondents about different types of income they received in the calendar year prior to the interview. Respondents are asked if they had any income of a particular type and are then asked for the amount of income. Respondents are first asked about income from self-employment (income and profits), then wage and salary income, then income from a professional practice or trade, then income from tips, bonuses, or commissions, and finally, any other income from work, all before taxes and other deductions. If a respondent indicated that they received income of a particular type but did not know the specific amount, they were asked to provide a range using unfolding brackets of standardized cutoff amounts. The question wording is presented in Appendix 1.

For this paper's analysis, I examine HRS respondents' reports of self-employment and wage and salary income. I classify respondents as having any self-employment income in the HRS if they

reported self-employment income of $400 or more in the calendar year prior to the interview. I use the $400 cutoff because individuals are required to file an income tax return if their net earnings from self-employment are $400 or more (IRS, 2022). I classify respondents as having any wage and salary income in the HRS if they report positive wage and salary income in the calendar year prior to the interview.

For extensive margin estimates, in cases where the respondent indicated that they received income of a particular type but did not provide an amount, I use imputed values from the 2018 RAND HRS Detailed Imputations File (Bugliari et al., 2022).[1] For intensive margin estimates, I drop respondents who do not provide either self-employment or wage and salary income amounts.

In addition to the core HRS data, to examine characteristics of self-employment that might account for discrepancies, I identify those who report owning, running, or managing a business separately from those who do not, classified as engaged in independent self-employment. As described by Abramowitz (2021), this measure was derived for respondents reporting being self-employed on their current main job from internal HRS data on their narrative descriptions of the industry and occupation associated with their current main job. The narratives include answers to the following open-ended questions: "What industry do you work in? That is, what does your company do or make?" and "What sort of work do you do?" and tend to be 4-5 sentences long. Using the narrative responses to these questions and hand classifying a subset of observations to train a machine learning model to classify the remainder, each self-employed respondent's current main job was classified as one of three self-employment roles (own; manage; independent). Jobs were classified as "own" when a respondent explicitly claimed to own the business by using such terms as own, co-own, owner, proprietor, president, or chief executive officer (CEO) or to run the business by using such terms as director, officer, or "I run the business". Jobs were classified as "manage" when a respondent explicitly claimed a managerial or executive role by using such terms as boss, manager, supervisor, executive, chief financial officer (CFO), or vice president or expressed engaging in managerial or supervisory activity. Jobs were classified as "independent" when a respondent did not express owning or managing a business or managing or supervising people (all other cases). For this analysis, the "own" and "manage" categories are examined jointly. Because these measures are derived from the survey's employment questions, these represent point-in-time measures at the time of the survey, and accordingly, are only available for respondents reporting self-employment on their current main job at the time of the survey.

3.2 SSA Earnings Records

The analysis links the HRS to the DER. The DER is compiled from information provided to SSA by employers and the IRS through IRS Form W-2, quarterly earnings records, and annual income tax forms. SSA uses this information to calculate benefit amounts for all types of beneficiaries (Olsen and Hudson, 2009). The linked DER file contains annual earnings at the respondent-employer-year level, regardless of whether the job is covered by Social Security, back to 1978.

[1] Abramowitz (2025) examined the sensitivity of HRS extensive margin self-employment income estimates to the inclusion of other types of work-related income as well as different approaches to imputing missing income amounts and did not find substantial differences related to the choice of approach.

Earnings reported in this file are not top-coded, although numbers larger than $250,000 are masked with a range indicator ($250K-$300K, $300K-$500K, or $500K+). The self-employment earnings information examined in this analysis come from IRS Form 1040 Schedule SE (self-employment tax). The wage and salary earnings information examined in this analysis come from IRS Form W-2. HRS respondents report income for the calendar year prior to the interview and these reports are linked to the DER for the contemporaneous year (e.g., in the 2016 survey year, a respondent reports income in 2015, which is linked to their records covering the 2015 tax year).

For this paper's analysis, I classify respondents as having self-employment income in the DER if they have positive self-employment earnings. I classify respondents as having wage and salary income in the DER if they have positive Medicare wages and tips (W2 Box 5). Respondents may be classified as having only self-employment income, only wage and salary income, both, or neither. For the intensive margin analysis, I drop records with masked values in the administrative earnings records (larger than $250,000 in the DER).

The primary determinant of whether HRS respondents are matched to their earnings records is whether they consent to the study linking their data. SSA requires that respondents consent to the linkage, and the HRS has asked respondents to consent to link their survey responses with their administrative earnings and benefits records since its inception in 1992. Consent forms are provided during the interview, then completed and returned by respondents. SSA then provides earnings histories for consenting respondents including their latest available records. 55.8% of extensive margin sample records were matched to their contemporaneous earning record, and 56.7% of intensive margin sample records were matched to their contemporaneous earning record.

As previous research determined that the likelihood of having a matched record is not random (Olson, 1999; Haider and Solon, 2000; Michaud, Kapteyn, Smith and van Soest, 2011), the analysis uses the 2004-2018 Social Security Weights constructed by the HRS for respondents who have ever had a Social Security linkage to account for selection in the sample of individuals who consent and are matched to their administrative earnings records. The Social Security weights are provided by the HRS to be used to produce population-representative estimates accounting for the likelihood of having a matched record in either the SSA administrative earnings or benefits records. The Social Security weights are inverse probability weights that result from a logit model predicting the likelihood of being in the matched sample at each wave, accounting for demographic, health, work, and financial characteristics. Although the matched sample is not a random subsample of the entire HRS, Abramowitz et al. (2024) showed that the Social Security Weights produce sample characteristics that replicate those of the full sample using HRS sample weights.

4 Results

4.1 Aggregate Estimates

I first consider how overall rates of reporting self-employment income and wage and salary income vary in the HRS and DER by race/ethnicity and sex at both the extensive and intensive

margins. I examine both types of income because while the focus of this paper is on self-employment income, it is important to also consider wage and salary income reporting to understand the extent to which self-employment income may be misreported as wage and salary income, or vice versa. I compare HRS income reports to linked DER income reports by race/ethnicity in Table 1 and by sex in Table 2.[2] For each measure, each table shows the estimate using the HRS, the estimate using the DER, and the ratio of the DER estimate to the HRS estimate.

Before considering differences between demographic groups, I first consider overall patterns across demographic groups. Across all groups, at the extensive margin, we consistently see larger shares of respondents reporting self-employment income in the HRS than in the DER. Conversely, across all groups, at the extensive margin, we consistently see a larger share of respondents reporting wage and salary income in the DER than the HRS. At the intensive margin, across all groups, we see larger amounts of both self-employment income and wage and salary income reported in the HRS than in the DER, though the differences are substantially larger for self-employment income that for wage and salary income. These results are consistent with those of Abramowitz (2025) considering effects for the full HRS sample.

I next examine differences in reporting patterns by race/ethnicity in Table 1,. At the extensive margin, I find that Hispanics are the most likely to report both self-employment income (72.0%) and wage and salary income (117.1%) in the DER as compared to the HRS. In contrast, 59.4% of Whites report self-employment income and 108.0% of Whites report wage and salary income in the DER as compared to the HRS. A substantially lower share of Blacks report either type of income in the DER as compared to the HRS, with 50.5% reporting self-employment income and 106.4% reporting wage and salary income in the DER as compared to the HRS. At the intensive margin, Blacks' DER self-employment income amounts are lowest compared to their respective HRS amounts (42.0%), followed by Hispanics' (45.3%), and then Whites' (47.6%).

Considering these patterns by sex in Table 2 shows that at both the extensive and intensive margins, women are marginally more likely than men to report self-employment income in the DER as compared to the HRS. At the extensive margin, 61.7% of women report self-employment income in the DER as compared to the HRS, compared to 58.0% of men, while 107.4% of women report wage and salary income in the DER as compared to the HRS, compared to 109.9% of men. At the intensive margin, women's DER self-employment income amounts are 49.8% of their HRS amounts, compared to 46.8% for men, while women's DER wage and salary income amounts are 94.3% of their HRS amounts, compared to 91.9% for men.

These results suggest that while general patterns are consistent across demographic groups, substantial variation exists, particularly by race/ethnicity, that warrants further understanding of the individual-level reporting leading to these estimates.

[2] The table shows weighted estimates. Unweighted estimates show similar patterns to the weighted estimates.

4.2 Sources of Discrepancies

4.2.1 Reporting Patterns

To understand how differences in reporting patterns potentially drive these differences in aggregate estimates, I examine combinations of reporting in the HRS and DER by race/ethnicity in Table 2 and by sex in Table 3.[3] Each panel shows reporting in the HRS presented in rows and reporting in the DER presented in columns. Each cell shows the share of respondents with the corresponding combination of income reported in the HRS and DER.

Examining the source of discrepancies by race in Table 2 shows distinctive patterns for Blacks. Of respondents reporting only self-employment income in the HRS, the majority of Black respondents, 52.8% (2.9%/5.5%), did not report any income in the DER. This compares to 35.0% (3.2%/9.0%) for Whites and 39.4% (2.6%/6.7%) for Hispanics. These estimates correspond to 72.4% (2.9%/4.0%) of Blacks' inconsistent HRS self-employment reports representing true self-employment not captured in the administrative records, compared to 58.0% (3.2%/5.5%) for Whites and 68.0% (2.6%/3.9%) for Hispanics. In contrast, for Whites and Hispanics, of respondents reporting only self-employment income in the HRS, we see larger shares reporting consistently. The finding for Black respondents reporting only self-employment income in the HRS is consistent with findings for Blacks overall, that they are the most likely to report no income in the DER across all HRS income reporting patterns.

Examining the source of discrepancies by sex in Table 3, we see generally similar patterns for men and women.

4.2.2 Work Characteristics

Seeing substantial misalignment between HRS and DER reporting of income, I next explore the extent to which income reports align with survey reports of work. To do this, I examine the shares of respondents with different income reporting patterns in the HRS and DER by current main job employment status reported at the time of the HRS survey interview following the classification of Abramowitz (2021). Table 4 shows results by race/ethnicity, and Table 5 shows results by sex. It is important to note that these employment status reports correspond to the time of survey and the self-employment income measures reflect the calendar year prior to the survey, so a minimal amount of discrepancy due to job changes over the two periods is expected.

In Table 4, we see distinct patterns by race across more informal and more formal self-employment. Among the independently self-employed, we again see that Blacks are more likely to report self-employment income in the HRS (either alone (30.2%) or in combination with wage and salary income (7.3%), and no income in the DER compared to Whites (23.0%; 1.7%) and Hispanics (24.8%; 5.2%). We also see that among the independently self-employed, Whites are somewhat more likely to report self-employment income in the HRS and wage and salary income in the DER (10.1%) compared to Blacks (8.3%) and Hispanics (5.7%). Considering business owners, we see a different pattern. We further see that White business owners are less

[3] The table shows weighted estimates. Unweighted estimates show similar patterns to the weighted estimates.

likely to report self-employment income alone in both sources (23.7%) as compared to Black (33.0%) and Hispanic (40.2%) business owners. In contrast, White business owners are much more likely to report self-employment income in the HRS, but wage and salary income in the DER (22.4%) as compared to Black (5.5%) and Hispanic (9.2%) business owners. Across both independent self-employment and business ownership, Whites are more likely to report only wage and salary income in the DER, but both wage and salary income and self-employment income on the HRS (7.0%; 15.0%) compared to Blacks (4.6%; 8.8%) and Hispanics (3.3%; 12.2%).

The finding that White business owners are more likely to report self-employment income in the HRS and wage and salary income in the DER could reflect more formalized ownership arrangements comprised of business owners who identify as self-employed but are actually compensated as employees.[4] We do not see these pronounced patterns for independent self-employed Whites or for Blacks or Hispanics.

Examining reporting by work arrangements by sex in Table 5, we again see generally similar patterns for men and women.

4.3 Gaps across the Earnings Distribution

To understand how magnitudes of differences in reported income vary across the earnings distribution, Figure 1 shows differences in reported income in the HRS as compared to the DER by DER earnings distribution percentiles. Panel A shows differences in reported self-employment income by race/ethnicity, and Panel B shows differences in reported total labor income (self-employment income and wage and salary income) by race/ethnicity. Likewise, Panel C shows differences in reported self-employment income by race/ethnicity, and Panel D shows differences in reported total labor income (self-employment income and wage and salary income) by race/ethnicity.

Considering differences in reported self-employment income by race/ethnicity in Panel A shows fairly stable differences in reported income between the 5th and 80th percentiles, with differences in self-employment income of on average about $4,000 for Whites and $2,000 for Blacks and Hispanics reported in the HRS as compared to the DER. For all race/ethnicity groups, we see very different patterns at the tails of the distribution. Below the 5th percentile, consisting mostly of respondents reporting no DER earnings, we see much larger amounts of self-employment income of, on average, $22,000 for Whites, $15,000 for Blacks, and $13,000 for Hispanics. In contrast, above the 80th percentile of the distribution, we see very different patterns by race ethnicity, with much larger gaps for Whites.

[4] This finding highlights a limitation of this study, that the DER self-employment earnings examined in this analysis come from IRS Form 1040 Schedule SE (self-employment tax). These data do not include income from owners of C or S corporations (or limited liability companies that elect to be taxed as C or S corporations), which could account for some of the underreporting and misclassification of self-employment in the administrative data. Nonetheless, C and S corporations represent a small share of tax filings: in 2016, 2.2 million C corporation returns were filed and 8.8 million S corporation or partnership returns were filed, compared to 148 million individual returns (IRS, 2017). Likewise, in the analysis data, the findings show that this limitation does not explain the discrepancies, as the self-employed who report owning or managing a business account for a small share of the self-employed.

Examining differences in reported total labor income by race/ethnicity in Panel B shows the same large gap below the 5th percentile of the earnings distribution of on average about $32,000 for Whites, $33,000 for Blacks, and $23,000 for Hispanics reported in the HRS as compared to the DER. At higher percentiles of the distribution, for Blacks and Hispanic, but not Whites, we see the direction of the gap reverses, with more total labor income reported in the DER as compared to the HRS.

Next estimating differences in reported self-employment income by sex in Panel C again shows fairly stable differences in reported income between the 5th and 80th percentiles, with differences in self-employment income of on average about $6,000 for men and $2,000 for women reported in the HRS as compared to the DER. We see much larger amounts of differences in self-employment income at the tails of the distribution. Below the 5th percentile, we see differences of, on average, $29,000 for men and $9,000 for women. Likewise, above the 95th percentile of the distribution, we see differences of, on average, $35,000 for men and $24,000 for women.

Finally considering differences in reported total labor income by sex in Panel D shows the same large gap below the 5th percentile of the earnings distribution of on average about $43,000 for men and $18,000 for women reported in the HRS as compared to the DER. At higher percentiles of the distribution, for men we see a persistent gap, but for women, we see the direction of the gap reverses, with more total labor income reported in the DER as compared to the HRS.

4.4 Poverty Rates

Having identified differential income reporting across the HRS and DER across demographic groups, it follows that using different sources of income would result in different estimates of poverty rates, which might vary systematically across demographic groups. To consider that extent to which the source of data affects estimates of poverty rates, Table 7 presents estimates of poverty rates by race/ethnicity using (1) HRS self-employment income and wage and salary income, (2) DER self-employment income and HRS wage and salary income, and (3) DER self-employment income and wage and salary income. For this analysis, I only include respondents with reported (not imputed) self-employment and wage and salary income in both the HRS and DER.

Using different sources of income to calculate poverty rates in Table 7 shows distinctive patterns by race/ethnicity and sex. Poverty rates for Whites and Blacks are higher using DER income data as compared to HRS income data, whereas we see the opposite pattern for Hispanics. For Whites, we see a poverty rate of 5.8% in the HRS data, which increases to 6.1% using DER self-employment income and wage and salary income and to 6.4% using DER self-employment income only. For Blacks, we see a poverty rate of 25.4% in the HRS data, which increases to 25.6% using DER self-employment income and wage and salary income and 26.2% using DER self-employment income only. For Hispanics, we see a poverty rate of 26.5% in the HRS data, which increases to 26.8% using DER self-employment income only but falls to 24.5% using DER self-employment income and wage and salary income.

Likewise, men's poverty rates are lower using DER income data as compared to HRS income data, whereas we see the opposite pattern for women. For men, we see a poverty rate of 10.9% in the HRS data, which falls to 10.7% using DER self-employment income and wage and salary income, but increases to 11.2% using DER self-employment income only. For women, we see a poverty rate of 8.1% in the HRS data, which increases to 8.7% using DER self-employment income and wage and salary income and to 9.2% using DER self-employment income only.

5 Discussion

This paper used the 2004-2016 HRS linked to the DER to examine differences in reported self-employment earnings by sex and race and considered implications for measuring poverty rates. The paper's results showed substantially more self-employment income reported in the HRS than the DER across all demographic groups, but with distinctive patterns in the magnitudes of these gaps by race/ethnicity and sex. At the extensive margin, compared to White respondents, we saw a larger gap in reporting any self-employment income in the DER among Blacks and a smaller gap in reporting any self-employment income among Hispanics. We saw analogous but opposite patterns for reporting and wage and salary employment income, with more wage and salary employment income reported in the DER than the HRS, reflecting greater reporting in the DER among Hispanics and less reporting among Blacks as compared to Whites. We also saw smaller gaps for women than for men. At the intensive margin, conditional on reporting any income, we saw more wage and salary and self-employment income reported in the HRS than the DER, across all demographic groups, with the smallest gaps for Whites, followed by Hispanics, and then Blacks. We also saw smaller gaps for women than for men.

Examining sources of discrepancies showed Blacks are more likely to report only self-employment income on the HRS and have no income reported on the DER compared to Whites and Hispanics, who are more likely to report self-employment income only in both sources. Self-employed Whites, particularly business owners, are more likely to report self-employment income in the HRS and wage and salary income or a combination of self-employment income and wage and salary income in the DER. Considering gaps in reporting across the earnings distribution showed small and stable gaps in self-employment income in the DER as compared to the HRS overall for the middle of the earnings distribution, with larger gaps in the tails of the distribution. We saw the largest gaps for Whites and men. We also saw divergent patterns examining total labor income across the two sources where positive gaps comparing the HRS to the DER become negative for Hispanics and women at higher percentiles of the earnings distribution. Results showed poverty rates for Whites and Blacks are higher using DER income data as compared to HRS income data, whereas we see the opposite pattern for Hispanics. Likewise, men's poverty rates are lower using DER income data as compared to HRS income data, whereas we see the opposite pattern for women. These likely reflect the divergent reporting patterns related to wage and salary at different parts of the earnings distribution.

Taken together, these results show substantial heterogeneity in reporting across demographic groups, both in the reporting patterns across demographic groups and aggregate estimates. While many reporting patterns varied only in magnitude across groups but showed similar signs, we do see some instances were the direction of the gap varied across groups.

One limitation of this analysis is that gaps in reporting across the HRS and DER could reflect differential reporting on the HRS, DER, or both. To the extent that the differences in reporting across demographic groups are limited to the DER, we could apply these findings to patterns on other surveys. However, to the extent the differences in reporting across demographic groups are associated with the HRS, we do not know the extent to which such differences are specific to the HRS or are applicable to other surveys more broadly. Future work could compare reporting on different surveys linked to the DER, like the CPS ASEC and SIPP, by demographic to see how estimates compare across surveys.

These findings highlight meaningful heterogeneity in differences across survey and administrative data that are important to understand for evaluating measurement of income and poverty. Understanding this heterogeneity is important because estimates of income and poverty are only as good as the underlying data used to calculate them, and we see that these vary in systematic ways. Furthermore, these differences in reporting may reflect underlying differences in work characteristics or tax filing behavior that sheds light on the labor market and understanding tax reporting, respectively.

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Tables

Table 1: Self-Employment and Wage and Salary Income in the HRS and DER by Race/Ethnicity

	Whites			Blacks			Hispanics		
	HRS	DER	DER/HRS	HRS	DER	DER/HRS	HRS	DER	DER/HRS
Extensive margin									
Percent with any SE income (>$400)	14.3%	8.5%	59.4%	9.3%	4.7%	50.5%	10.0%	7.2%	72.0%
Percent with any WS income	45.1%	48.7%	108.0%	43.7%	46.5%	106.4%	39.1%	45.8%	117.1%
Percent with any SE (>$400) or WS income	54.1%	53.6%	99.1%	49.1%	49.1%	100.0%	45.8%	50.5%	110.3%
SE rate (% = SE/SE+WS)	26.5%	15.9%	60.0%	18.9%	9.5%	50.3%	21.7%	14.4%	66.4%
Extensive margin observations	51,388	51,388		10,996	10,996		7,448	7,448	
Intensive margin									
Avg. SE income - conditional (000's)	44.5	21.2	47.6%	26.2	11	42.0%	29.8	13.5	45.3%
Avg. WS income - conditional (000's)	52.5	49.5	94.3%	41.5	35.6	85.8%	35.8	31.3	87.4%
Avg. SE and WS income - conditional (000's)	55.3	48.3	87.3%	41.7	34.6	83.0%	36.9	30.4	82.4%
Intensive Margin Observations	48,779	48,779		10,105	10,105		7,063	7,063	

Notes: The sample includes all respondents in the 2004–2016 HRS who were linked to the DER in the calendar year prior to the survey and have a positive Social Security weight for respondents who have ever had a Social Security linkage, and these estimates are calculated using these weights. Intensive margin estimates include only respondents with reported values for both self-employment income and wage and salary income in both sources. Source: 2004-2016 RAND HRS Detailed Imputations File, 2016 Social Security Administration Summary Earnings File and Detail Earnings File, and 2004-2018 HRS Cross-Wave Social Security Weights. Abbreviations: WS, wage and salary; SE, self-employment.

Table 2: Self-Employment and Wage and Salary Income in the HRS and DER by Sex

	Male			Female		
	HRS	DER	DER/HRS	HRS	DER	DER/HRS
Extensive margin						
Percent with any SE income (>$400)	18.1%	10.5%	58.0%	9.4%	5.8%	61.7%
Percent with any WS income	47.4%	52.1%	109.9%	42.0%	45.1%	107.4%
Percent with any SE (>$400) or WS income	58.8%	58.4%	99.3%	47.9%	48.3%	100.8%
SE rate (% = SE/SE+WS)	30.8%	18.1%	58.8%	19.5%	11.9%	61.0%
Extensive margin observations	31,083	31,083		40,684	40,684	
Intensive margin						
Avg. SE income - conditional (000's)	51.3	24	46.8%	26.5	13.2	49.8%
Avg. WS income - conditional (000's)	58.1	53.4	91.9%	42.2	39.8	94.3%
Avg. SE and WS income - conditional (000's)	62.3	52	83.5%	42.2	38.7	91.7%
Intensive Margin Observations	29,211	29,211		38,532	38,532	

Notes: The sample includes all respondents in the 2004–2016 HRS who were linked to the DER in the calendar year prior to the survey and have a positive Social Security weight for respondents who have ever had a Social Security linkage, and these estimates are calculated using these weights. Intensive margin estimates include only respondents with reported values for both self-employment income and wage and salary income. Source: 2004-2016 RAND HRS Detailed Imputations File, 2016 Social Security Administration Summary Earnings File and Detail Earnings File, and 2004-2018 HRS Cross-Wave Social Security Weights. Abbreviations: WS, wage and salary; SE, self-employment.

Table 3: Consistency of HRS and DER Income Reports by Race/Ethnicity

Panel A: Whites

	DER				
HRS	Self-Employment Income Only (%)	Wage and Salary Income Only (%)	Self-Employment and Wage and Salary Income (%)	No Self-Employment or Wage and Salary Income (%)	Total
Self-employment income only (%)	3.6%	1.7%	0.6%	3.2%	9.0%
Wage and salary income only (%)	0.4%	36.9%	1.2%	1.2%	39.8%
Self-employment and wage and salary income (%)	0.4%	2.9%	1.8%	0.3%	5.3%
No self-employment or wage and salary income (%)	0.6%	3.6%	0.1%	41.7%	45.9%
Total	4.9%	45.1%	3.7%	46.4%	100%

Panel B: Blacks

	DER				
HRS	Self-Employment Income Only (%)	Wage and Salary Income Only (%)	Self-Employment and Wage and Salary Income (%)	No Self-Employment or Wage and Salary Income (%)	Total
Self-employment income only (%)	1.5%	0.9%	0.2%	2.9%	5.5%
Wage and salary income only (%)	0.3%	36.3%	0.9%	2.4%	39.8%
Self-employment and wage and salary income (%)	0.4%	1.9%	0.6%	1.0%	3.8%
No self-employment or wage and salary income (%)	0.5%	5.4%	0.3%	44.6%	50.9%
Total	2.7%	44.5%	2.0%	50.9%	100%

Panel C: Hispanics

	DER				
HRS	Self-Employment Income Only (%)	Wage and Salary Income Only (%)	Self-Employment and Wage and Salary Income (%)	No Self-Employment or Wage and Salary Income (%)	Total
Self-employment income only (%)	2.8%	1.0%	0.3%	2.6%	6.7%
Wage and salary income only (%)	0.5%	32.3%	1.3%	1.8%	35.8%
Self-employment and wage and salary income (%)	0.4%	1.7%	0.7%	0.6%	3.3%
No self-employment or wage and salary income (%)	1.0%	8.3%	0.4%	44.5%	54.2%
Total	4.7%	43.3%	2.6%	49.5%	100%

Notes: The sample includes all respondents in the 2004–2016 HRS who were linked to the DER in the calendar year prior to the survey and have a positive Social Security weight for respondents who have ever had a Social Security linkage. HRS income categories are presented in rows while DER categories are presented in columns. Each cell shows the share of respondents with the corresponding combination of income reported in the HRS and DER. Estimates are calculated using Social Security weights for respondents who have ever had a Social Security linkage. Source: 2004-2016 RAND HRS Detailed Imputations File, 2016 Social Security Administration Summary Earnings File and Detail Earnings File, and 2004-2018 HRS Cross-Wave Social Security Weights.

Table 4: Consistency of HRS and DER Income Reports by Sex

Panel A: Males

	DER				
HRS	Self-Employment Income Only (%)	Wage and Salary Income Only (%)	Self-Employment and Wage and Salary Income (%)	No Self-Employment or Wage and Salary Income (%)	Total
Self-employment income only (%)	4.4%	2.2%	0.8%	4.0%	11.4%
Wage and salary income only (%)	0.5%	37.3%	1.4%	1.5%	40.7%
Self-employment and wage and salary income (%)	0.6%	3.6%	2.0%	0.6%	6.7%
No self-employment or wage and salary income (%)	0.8%	4.7%	0.2%	35.6%	41.2%
Total	6.3%	47.8%	4.3%	41.6%	100%

Panel B: Females

	DER				
HRS	Self-Employment Income Only (%)	Wage and Salary Income Only (%)	Self-Employment and Wage and Salary Income (%)	No Self-Employment or Wage and Salary Income (%)	Total
Self-employment income only (%)	2.3%	1.0%	0.4%	2.3%	5.9%
Wage and salary income only (%)	0.3%	35.9%	1.0%	1.4%	38.5%
Self-employment and wage and salary income (%)	0.2%	1.9%	1.1%	0.3%	3.5%
No self-employment or wage and salary income (%)	0.5%	3.8%	0.1%	47.8%	52.1%
Total	3.2%	42.5%	2.6%	51.7%	100%

Notes: The sample includes all respondents in the 2004–2016 HRS who were linked to the DER in the calendar year prior to the survey and have a positive Social Security weight for respondents who have ever had a Social Security linkage. HRS income categories are presented in rows while DER categories are presented in columns. Each cell shows the share of respondents with the corresponding combination of income reported in the HRS and DER. Estimates are calculated using Social Security weights for respondents who have ever had a Social Security linkage. Source: 2004-2016 RAND HRS Detailed Imputations File, 2016 Social Security Administration Summary Earnings File and Detail Earnings File, and 2004-2018 HRS Cross-Wave Social Security Weights.

Table 5: Reporting Patterns by Work Arrangements and Race/Ethnicity

Panel A: Whites

HRS	DER	Employee	Self-Employed - Independent Role	Self-Employed - Owner/Manager Role	Not Working
SE	SE	0.4%	29.4%	23.7%	0.5%
SE	WS	0.3%	10.1%	22.4%	0.3%
SE	SE+WS	0.2%	4.2%	5.1%	0.0%
SE	0	0.4%	23.0%	13.0%	1.3%
SE+WS	SE	0.2%	2.7%	2.3%	0.0%
SE+WS	WS	4.5%	7.0%	15.0%	0.3%
SE+WS	SE+WS	3.2%	3.9%	3.8%	0.1%
SE+WS	0	0.1%	1.7%	1.7%	0.2%
WS	Any	87.7%	4.8%	5.7%	9.8%
0	Any	3.0%	13.1%	7.3%	87.5%

Panel B: Blacks

HRS	DER	Employee	Self-Employed - Independent Role	Self-Employed - Owner/Manager Role	Not Working
SE	SE	0.2%	18.9%	33.0%	0.2%
SE	WS	0.7%	8.3%	5.5%	0.3%
SE	SE+WS	0.0%	2.4%	5.5%	0.1%
SE	0	0.5%	30.2%	18.5%	1.7%
SE+WS	SE	0.4%	3.7%	2.1%	0.0%
SE+WS	WS	3.5%	4.6%	8.8%	0.3%
SE+WS	SE+WS	0.9%	2.4%	5.6%	0.0%
SE+WS	0	0.9%	7.3%	6.1%	0.4%
WS	Any	87.3%	5.9%	3.4%	9.2%
0	Any	5.6%	16.2%	11.6%	87.8%

Panel C: Hispanics

HRS	DER	Employee	Self-Employed - Independent Role	Self-Employed - Owner/Manager Role	Not Working
SE	SE	0.4%	29.5%	40.2%	0.4%
SE	WS	1.1%	5.7%	9.2%	0.2%
SE	SE+WS	0.3%	1.3%	3.7%	0.1%
SE	0	0.2%	24.8%	11.6%	1.3%
SE+WS	SE	0.1%	4.5%	2.4%	0.0%
SE+WS	WS	3.2%	3.3%	12.2%	0.3%
SE+WS	SE+WS	1.2%	1.7%	6.7%	0.0%
SE+WS	0	0.4%	5.2%	0.0%	0.1%
WS	Any	80.6%	8.1%	14.0%	8.8%
0	Any	12.5%	15.9%	0.0%	88.8%

Notes: The sample includes all respondents in the 2004–2016 HRS who were linked to the DER in the calendar year prior to the survey and have a positive Social Security weight for respondents who have ever had a Social Security linkage. The rows present different combinations of income in the HRS and DER. The estimates show the share of respondents reporting different income reporting patterns across different work arrangements for their current main job at the time of the survey. Estimates are calculated using Social Security weights for respondents who have ever had a Social Security linkage. Source: 2004-2016 RAND HRS Detailed Imputations File, 2016 Social Security Administration Summary Earnings File and Detail Earnings File, and 2004-2018 HRS Cross-Wave Social Security Weights. Abbreviations: WS, wage and salary; SE, self-employment.

Table 6: Income Reporting Patterns for Respondents Reporting HRS Self-Employment Income by Work Arrangements and Sex

Panel A: Males

HRS	DER	Employee	Self-Employed - Independent Role	Self-Employed - Owner/Manager Role	Not Working
SE	SE	0.6%	29.2%	24.6%	0.7%
SE	WS	0.5%	10.6%	21.5%	0.4%
SE	SE+WS	0.3%	4.6%	3.8%	0.1%
SE	0	0.5%	24.4%	13.3%	1.8%
SE+WS	SE	0.2%	3.2%	3.7%	0.1%
SE+WS	WS	5.2%	7.0%	15.7%	0.5%
SE+WS	SE+WS	3.3%	3.4%	4.4%	0.2%
SE+WS	0	0.4%	2.5%	1.5%	0.3%
WS	Any	84.8%	4.0%	4.9%	10.8%
0	Any	4.2%	11.0%	6.5%	85.3%

Panel B: Females

HRS	DER	Employee	Self-Employed - Independent Role	Self-Employed - Owner/Manager Role	Not Working
SE	SE	0.2%	27.2%	23.5%	0.3%
SE	WS	0.4%	8.4%	18.6%	0.2%
SE	SE+WS	0.1%	2.8%	8.3%	0.1%
SE	0	0.3%	22.8%	13.1%	1.0%
SE+WS	SE	0.2%	2.1%	0.6%	0.0%
SE+WS	WS	3.4%	6.1%	10.5%	0.2%
SE+WS	SE+WS	2.1%	4.1%	2.5%	0.1%
SE+WS	0	0.1%	2.2%	2.2%	0.1%
WS	Any	89.2%	6.9%	9.2%	8.8%
0	Any	4.1%	17.5%	11.4%	89.3%

Notes: The sample includes all respondents in the 2004–2016 HRS who were linked to the DER in the calendar year prior to the survey and have a positive Social Security weight for respondents who have ever had a Social Security linkage. The rows present different combinations of income in the HRS and DER. The estimates show the share of respondents reporting different income reporting patterns across different work arrangements for their current main job at the time of the survey. Estimates are calculated using Social Security weights for respondents who have ever had a Social Security linkage. Source: 2004-2016 RAND HRS Detailed Imputations File, 2016 Social Security Administration Summary Earnings File and Detail Earnings File, and 2004-2018 HRS Cross-Wave Social Security Weights. Abbreviations: WS, wage and salary; SE, self-employment.

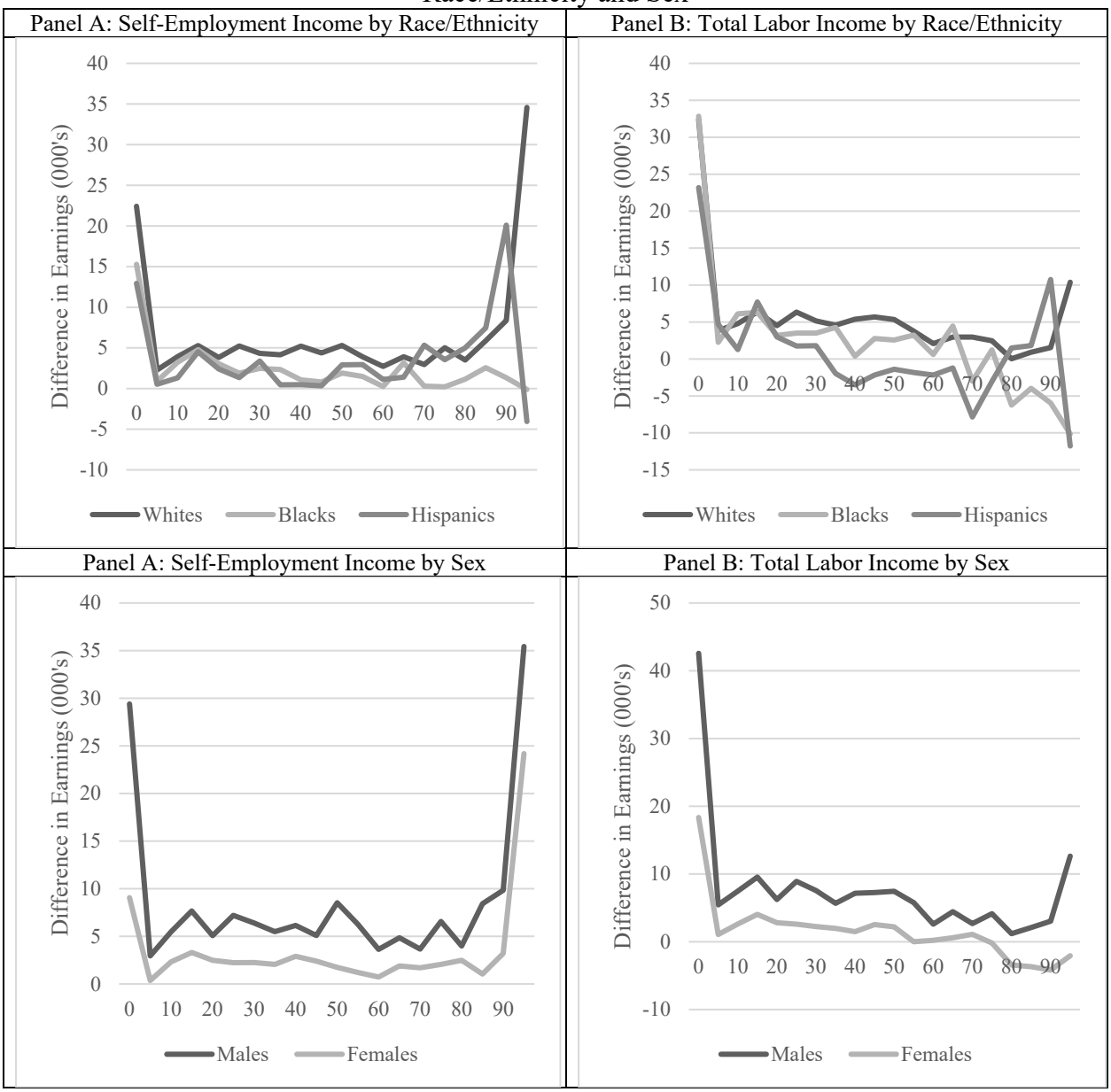
Table 7: Poverty Rates by Race/Ethnicity and Sex

	Whites	Blacks	Hispanics	Males	Females
Poverty Rate – HRS SE + WS	5.8%	25.4%	26.5%	10.9%	8.1%
Poverty Rate – DER SE + HRS WS	6.4%	26.2%	26.8%	11.2%	9.2%
Poverty Rate - DER SE + WS	6.1%	25.6%	24.5%	10.7%	8.7%

Notes: The sample includes all respondents in the 2004–2016 HRS who were linked to the DER in the calendar year prior to the survey, have a positive Social Security weight for respondents who have ever had a Social Security linkage, and have reported values for both self-employment income and wage and salary income in both sources. The estimates show the share of respondents with household incomes below the poverty line using HRS income reports, DER self-employment income reports, and DER self-employment and wage and salary income reports. Estimates are calculated using Social Security weights for respondents who have ever had a Social Security linkage. Source: 2004-2016 RAND HRS Detailed Imputations File, 2016 Social Security Administration Summary Earnings File and Detail Earnings File, and 2004-2018 HRS Cross-Wave Social Security Weights. Abbreviations: WS, wage and salary; SE, self-employment.

Figures

Figure 1. Difference in Reported Income HRS-DER across the DER Earnings Distribution by Race/Ethnicity and Sex



Notes: The sample includes all respondents in the 2004–2016 HRS reporting positive self-employment or wage and salary income in either the HRS or the DER who were linked to the DER in the calendar year prior to the survey, have a positive social security weight for respondents who have ever had a Social Security linkage, and reported values for both self-employment income and wage and salary income in both sources. Estimates are calculated using Social Security weights for respondents who have ever had a Social Security linkage. Source: 2004-2016 RAND HRS Detailed Imputations File, 2016 Social Security Administration Summary Earnings File and Detail Earnings File, and 2004-2018 HRS Cross-Wave Social Security Weights.