Occupation Inflation in the Current Population Survey*

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Abstract

A common caveat often accompanying results relying on household surveys regards respondent error. There is research using independent, presumably error-free administrative data, to estimate the extent of error in the data, the correlates of error, and potential corrections for the error. We investigate measurement error in occupation in the Current Population Survey (CPS) using the panel component of the CPS to identify those that incorrectly report changing occupation. We find evidence that individuals are inflating their occupation to higher skilled and higher paying occupations than the ones they actually perform. Occupation inflation biases the education and race coefficients in standard Mincer equation results within occupations.

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Introduction

People are fallible. This statement holds in almost every walk of life, including people answering surveys. Consequently, researchers using survey data place a caveat regarding measurement error, and a large literature exists studying the forms of measurement error and how to correct for it.[1] For example, Bollinger (1998) finds that respondents overstate earnings in the Current Population Survey (CPS) by comparing reported earnings in the CPS to administrative earnings data. Low earners are more likely to overstate earnings.

In addition to overstating earnings, individuals may misrepresent their occupation. Abraham and Spletzer (2009) find that low earners over-report being in high skilled occupations when compared to employer data from the Occupational Employment Statistics (OES). Abraham and Spletzer find the same number of jobs held in the two datasets but find the distribution of occupations to be different, suggesting that at least 6.5 percent of one-digit occupations are misidentified in the CPS. Mellow and Sider (1983) find that there is disagreement between employee and employer on occupation at the three-digit occupation code for 42.4 percent of individuals and at the one-digit occupation code for 19.0 percent, when using a special supplement to the 1977 CPS that surveyed employers of CPS respondents. Mathiowetz (1992) finds that 24.3 percent of employees and their manufacturing employer disagree on 1-digit occupation. Thus, the magnitude of measurement error in occupation is conceivably large.

Little exists in the literature that identifies who is likely to misreport occupation. The literature identified a problem but provided no solution. Mellow and Sider (1983) examine the correlates with occupation measurement error. They find that high wage individuals are more likely to agree with their employers report while clerical and sales workers are less likely to match their employer's categorization. A methodology is needed that identifies misreporters independent of any gold standard dataset such as the OES or one that is tied to a report by employers.

We identify who is likely to misreport occupation by exploiting the panel component of the CPS. Respondents are interviewed eight times over sixteen months, and occupation and industry are asked in each interview. We identify potential misreporters by comparing occupation across the interviews. In the first and fifth interviews, respondents are asked two questions to identify occupation. In the other six interviews, individuals are asked whether the

[1] See Bound, Brown, and Mathiowetz (2001) for a review article.

job and occupation changed from the previous month. If either changed, the occupation questions are asked again. If neither changed, the previous month's response is carried forward, which we call dependent interviewing.

Dependent interviewing is crucial to our identification strategy. We argue that someone transitioning between occupations in the dependent interviewing months is a real occupation transition because the change of occupation was predicated on the individual stating that she changed job or occupation. Someone changing occupations in the fifth interview, when occupation is asked independently of the previous interview's occupation, is tagged as a potential occupation inflater. Occupation switching rates are considerably higher in the fifth interview than in the other months, suggesting our identification strategy is capturing occupation inflaters. Our method only identifies those that potentially correctly report occupation in one interview but misreport in a different interview. Research such as Macpherson and Hirsch (1995) and Bound and Krueger (1991) find that results are not harmed if there are two misreports of earnings, suggesting that two wrongs make a right. In our case, eight wrongs make one large but unidentified wrong.

Using panel data to identify measurement error has an established history. Bound and Krueger (1991) and Bollinger (1998) use repeat measures of earnings in the CPS matched to administrative earnings data to identify measurement error in earnings. Bollinger finds that there is less measurement error in the panel component of the CPS. Bollinger and David (2005) look at reported food stamp participation compared to administrative records in the Survey of Income and Program Participation and find that response accuracy was consistent over time: consistently good or consistently poor. Macpherson and Hirsch (1995) are concerned about measurement error in occupation using the Out-going Rotation Groups of the CPS and suggest that only those individuals that report changing industry and occupation should be treated as having changed occupation. The Macpherson and Hirsch (1995) method removes some occupation inflaters but also unnecessarily removes true occupation switchers.

We focus on two occupation categories in this paper: registered nurses and food service managers. RNs present a good, first test case for several reasons. People who identify as "nurse" may be RNs, but they could also be nurse's aides, licensed practical nurses (LPNs), or one of the other many related occupations. There are well-defined requirements to becoming an RN, mainly an education requirement, which will aid in identifying those that are not RNs.

Further, we gain a better idea of who is misreporting occupation because we have a comparison group that is known to be in the occupation. We compare the CPS RNs with another individual-level survey, the National Sample Survey of Registered Nurses (NSSRN). The only way for an individual to appear in the NSSRN is to be registered with a state as a nurse, which we use to benchmark the CPS RNs. Starting our examination with RNs is further supported with Abraham and Spletzer's finding that the hourly wage in the OES is 20.6 percent higher than the CPS hourly wage for healthcare practitioners, which includes RNs. This result suggests there may be some lower paid occupations which are incorrectly identified in the CPS as RNs.

Next, we extend our analysis to those in food service management. Abraham and Spletzer (2009) list management as another occupation with a significant amount of occupation inflation, and like registered nurses, there exits a lower-paying occupation homonym for food service management, namely first-line food service supervisors.

Correctly classifying occupation is important for many reasons. First, as shown in Abraham and Spletzer (2009), overstating occupation can lead to an underestimation on the returns to specific skills such as analytical skills. Understanding how, and for whom the returns to labor are maximized is a vital role for economic analysis and understanding income inequality.

Further, estimated wage gaps by occupation may be biased if certain groups are more likely to misreport than others.[2] Racial and gender wage gaps have serious implications for policy, and how people view themselves relative to others. Understanding what portion of the racial and gender wage gaps is due to measureable characteristics such as occupation is invaluable. Macpherson and Hirsch (1995) examine why jobs with high proportions of women pay less, finding that gender composition effects are reduced when skill-related occupational characteristics are considered. Hirsch and Schumacher (2011) evaluate whether CPS data understates or overstates wage gaps among nurses by applying job descriptors from the Occupational Information Network. If occupation is misclassified, then the results from these types of analyses may be biased.

[2] The CPS Interviewer Manual (U.S. Census Bureau, 2007) even goes as far to state "The information you collect is an important part of labor force data. It enables researchers to analyze occupational and industrial shifts in the employment patterns of major population groups (e.g., the movement of women out of the more "traditional" clerical and service occupations into professional jobs). In addition, the industry and occupation data are important in explaining differences in earnings and income among major population groups."

Finally, occupation is used to impute earnings in the CPS. Imputed earnings already have a host of problems (Bollinger and Hirsch, 2006, 2010). If occupation is overstated for a significant proportion of the sample, then the imputed earnings may be biased along another dimension.

Data and Sample Restrictions

We use two datasets, the Current Population Survey (CPS) and the National Sample Survey of Registered Nurses (NSSRN). This section provides a brief description of each survey, and the restrictions made in order to make the samples comparable.

Current Population Survey

We use the 2003-2009 Current Population Survey (CPS). Respondents are interviewed for four consecutive months; then they are not interviewed for eight months; and, then they are once again interviewed for four consecutive months. Interviews occur on a rotating basis, meaning that in a given month one-eighth of the respondents are in the first interview, one-eighth in the second interview, and so on. All eight CPS interviews are matched to create a panel of occupations. Because of changes in the coding of occupation in 2003 and 2010, we use the 2003-2009 CPS.

In the first and fifth interviews, respondents are asked to report occupation and industry. To obtain occupation, the respondent is asked about the kind of work she does and then asked about that job's usual activities or duties. CPS interviewers are prompted to inquire further about the kind of work done if one word answers, such as nursing, are provided. The CPS provides a handbook listing occupations that require extra care in classifying (U.S. Census Bureau, 2007). Among the troublesome occupations are nursing, accounting, sales, and supervisor.

In the other six interviews, the respondent is asked whether she works for the same company as last month, whether her usual activities are the same as last month, and if last month's report of the kind of work and usual activities is accurate.[3] If the answer to all three is yes, the occupation and industry questions are not asked again and the previous answers are

[3] The respondent is provided with her own response from last month's report of occupation, not the code that appears in the CPS data.

carried through from the previous interview. If one of the answers is no or if the respondent fails to answer one of the questions, the occupation and industry are asked anew.

To identify occupation changes, we need to match the CPS across interviews. Matching interviews across the CPS is an inexact science. The CPS does not create a unique individual-level identifier that would allow for easy matching. Households can be uniquely matched using a household identifier and the month-in-survey variable. To match individuals within a household, respondent line number is used. Line number is not fixed, meaning it can change within a household across interviews even if no one moves in or out, and line number is not always unique within a household and interview month. We follow Madrian and Lefgren (2000) in setting additional restrictions on the match. We only keep those individuals that have the same gender and race across the interviews and that have an age that changed by -1 year to +2 years. Madrian and Lefgren's argue it best balances the type 1 and type 2 errors that can occur with a non-unique match.

We create an unbalanced panel from those that appear in the interviews between 2003 and 2009. For analysis requiring wage, we use those that appear in the fourth and eighth interviews, the Out-going Rotation Groups. Earnings/wages are not asked in the other six interviews except for the one-eighth of the sample interviewed as part of the Annual Social and Economic Supplement (ASEC) around March.

National Sample Survey of Registered Nurses (NSSRN)

We also use the 2004 National Sample Survey of Registered Nurses (NSSRN), which is a national sample of individuals holding a registered nurse license and is conducted by the U.S. Department of Health and Human Services. The sample is derived from state registries of those holding an RN license. Respondents are asked about formal education and additional training and certificates received. To be consistent with the CPS, when referring to educational attainment, we use highest degree earned even if it is not a nursing degree. The typical labor market variables such as earnings, hours worked, and weeks worked, also appear in the NSSRN.

Restrictions

We restrict our sample to those ages 25-64, are not self-employed during one of the interviews, work at least 35 hours per week and 50 weeks per year, and have no imputed values for occupation, earnings, or hours worked. Other races besides black and white are aggregated into one group. In the NSSRN there are seven categories for race. In the CPS since 2003, individuals can report black alone, or a variety of combinations of black and up to two other races. For the purposes of this research we classify black to include only those that list black alone as their race in both the CPS and NSSRN.

Model and Identification Strategy

We assume there are two types of people, valid occupation reporters (*V*) and occupation inflaters (*I*) for occupation *j*. Inflaters report being in a different occupation that has a similar sounding name to the occupation they actually have: a licensed practical nurse (LPN) reports being a registered nurse (RN), or the bar manager reports being the manager of the entire restaurant. SOccupations with homonyms are more likely to have inflaters. Not many individuals may misreport being a legislator because no other occupations have a similar sounding title.

It is assumed that the inflaters choose to report jobs that have higher pay at the mean and median but the wage distributions of the two occupations overlap. Inflaters bring down the mean and median wage for the incorrectly reported occupation. Median wages for RNs was $31.71 in 2011 while the median wage for LPNs was $19.79, according to the Occupational Employment Statistics (OES).[4] There may also be mis-classification of occupation by the respondent or the coder. We assume mis-classification is random noise that would not bias the distribution of wages and would occur equally across dependent interviewing months and independent interviewing months.

We identify occupation inflaters in the CPS using the dependent interviewing. An individual is assumed to make a valid occupation transition if she reports a new occupation in interviews two through four or interviews six through eight. To report a new occupation in these interviews, the individual must report having a new job or a new employer. If the person reports having the same job and employer, the occupation is carried over from the previous interview. Assume an individual was an LPN but reports a new employer in interview seven. The individual

[4] http://www.bls.gov/oes/. The report of occupation in the OES is from the employer, not the employee.

reports being an RN in interview 7 and 8. We treat this person as a valid reporter. We obtain the 'true' occupation transition rates between any pair of occupations from occupation transitions that occur in these dependent interviewing months.

An individual is assumed to be a potential inflater if she changed occupations in interview five. Occupation questions in interview five are asked again and are not dependent on the previous interview. Assume an individual was an LPN but reports being an RN in interview five. We treat this person as a potential inflater and compare the occupation transition rates between any pair of occupations between interviews four and five to the true occupation transition rates between the other interviews.

Evidence in favor of occupation inflation would be that the occupation transition rates are higher in interview five than in the other interviews. We would also expect that the wage distribution of the higher paying job would increase when we remove occupation inflaters. We use these two pieces of evidence to argue for the existence of occupation inflation and for our identification of potential inflaters. Then we look for further evidence of occupation inflation by comparing regression coefficients from a basic Mincer equation.

Occupation Inflation among Registered Nurses

We begin the analysis focusing on registered nurses (RN). Abraham and Spletzer find that the hourly wage in the OES is 20.6 percent higher than the CPS hourly wage for healthcare practitioners, which includes RNs. Occupations with obviously similar titles also exist, such as licensed practical nurses (LPN), nurses' aides, and certified nursing assistants (CNA). In addition, RNs must have at least an associate's degree, which will aid in identifying occupation misreports. Lastly, the NSSRN provides a comparison group of those who are undoubtedly RNs. While we do not want to rely on a comparison survey to identify all inflaters, starting with an occupation that has a comparison survey remains helpful.

Descriptive Statistics

Table 1 compares the distribution of wages and demographic characteristics between our sample of female RNs in the CPS and NSSRN. With our restrictions described above, our samples include 5,557 female RNs in the CPS and 10,749 female RNs in the NSSRN. We present two types of respondents for the CPS data, those who report being an RN in interview 4,

and those who report being an RN in interviews 4 and 8, the only interviews with wage/earnings information. Including separate results for those that are RNs only in interview 4 and those that are RNs in both interviews 4 and 8 helps to identify potential occupation inflaters. Someone that reported being an RN in both interviews 4 and 8 confirmed being an RN in two separate interviews, while those just an RN in interview 4 only reported being an RN once. We expect those that are RNs in both interviews are more likely to be accurately reporting occupation.

Table 1 shows large differences in education. A registered nurse must receive at least a two-year associate's degree, a three-year diploma through a hospital, or a bachelor's degree.[5] Those nurses in the CPS reporting less than an associate's degree are likely to be incorrectly reporting occupation because of the licensing restriction. As expected fewer individuals that report being an RN in both interviews report having less than an associate's degree. Median wages for those who report being an RN in both interviews are higher than for those who only report being an RN in interview 4. The distribution of white and black individuals changes slightly between the two groups, where there are slightly fewer blacks when RN is listed in both interviews. The education distribution shifts slightly in favor of higher levels. Thus Table 1 presents some evidence that using the repeat report of occupation can help identify occupation inflaters as the distribution of characteristics of RNs in both CPS interviews is more similar to the NSSRN.

Across all individuals, median wages in the CPS are similar to those in the NSSRN. Differences exist by racial group. Among the "other race" category and blacks, median wages vary substantially by survey. Median wages for "other races" who list being an RN in interview 4 are 4% higher in the CPS than the NSSRN and 2% higher for those who list being an RN in interviews 4 and 8. Median wages are 12% lower for blacks who report being an RN in interview 4 and 7% lower for those who list being an RN in interviews 4 and 8. The basic results suggest that occupation inflation exists for non-white RNs. The CPS data show that white RNs earn more than black RNs, while the NSSRN shows the opposite.[6] If the majority of the

[5] It is unknown in the CPS if the individual received a diploma because it is not an option. It is also unknown how someone with a Diploma Degree from a hospital would respond to the education question. The individual could conceivably report having anywhere from a high school diploma to a bachelor's degree.

[6] Fisher and Houseworth (2011) also find that black female nurses earn 7 percent more than white female nurses using the NSSRN.

difference between the CPS and NSSRN is due to occupation inflation, then black women may be more likely to misreport occupation.[7]

Examining Earnings and Occupation between Surveys

Table 1 presents evidence for occupation inflation by showing that the characteristics of individuals that report being an RN in two interviews appear to look more like RNs than those that report being an RN in only one interview. Restricting the sample to individuals that report being an RN in both interviews is a blunt instrument and removes many valid occupation switchers. Table 2 presents the first evidence that those switching occupations in interview 5 are more likely to be occupation inflaters. Table 2 shows the percentage reporting a new job or occupation in each of the interviews among those that were an RN in the previous interview. Occupation transitions should be smooth across interviews because interviews are distributed evenly over calendar months. The average occupation transition rate across the dependent interviewing months is 1.02 percent. Over the nine months that occur between interviews 4 and 5, we would expect approximately 9 percent to transition to a new occupation. We observe an occupation transition rate of 13.16 percent between interviews 4 and 5, considerably higher than the expected transition rate, suggesting that almost one-third of individuals that reported being an RN in interview 4 were inflating their occupation.

We also posited that occupation inflation occurs among occupation homonyms. For RNs, that would include licensed practical nurses that are part of the healthcare practitioner occupation and nurses' aides that are part of healthcare support occupations. Table 3 shows the occupations RNs transitioned to or from by interview. For example of those that transition from RN to another occupation in interviews 6 through 8, 34.78 percent were in a Management occupation in interview 8. Columns would sum to one hundred if all occupations were shown, but occupations with low transition rates are not shown. The table breaks those two types of transitions into two groups, those who transition in interview 5 and those who transition in dependent interviewing months. If there is no occupation inflation, then we would expect that the occupation transition rates to be the same in interviews 6-8 and in interview 5 because the proportion of people

[7] It may not be that black individuals inflate occupation at a higher rate than whites. Consider that black individuals comprise a larger percentage of LPNs than they do of RNs. If 10 percent of all LPNs report occupation as RN instead of LPN and more black individuals are LPNs, then it will be manifested in the CPS that more black individuals mis-report being an RN.

switching between occupations should not depend on the wave of the CPS interview. If transitions are higher in interview 5, we take this as evidence in favor of occupation inflation because respondents in interview 5 have the opportunity to inflate the reported occupation even if they remained with the same employer and job.

Table 3 provides support that for higher transition rates in interview 5 among healthcare practitioners and healthcare support occupations. Those who move out of nursing into healthcare practitioner or support are about 4 percentage points more likely to move in interview 5. This four percentage point increase represents a 52 percent higher transition rate from RN to healthcare support than is seen in interviews 6-8. Those who transition out of nursing into healthcare practitioner or healthcare support are reporting a movement down in terms of occupation. While some of these individuals may be making non-monetary tradeoffs, it is still likely that these extra four percentage point of individuals inflated occupation when they reported being an RN.

For those who moved *into* management, almost 10 percentage points more switched in any interview other than interview 5. Because the total transitions must sum to 100 percent, any occupation inflation seen in healthcare practitioner and healthcare support must mean that a lower percentage of transitions are observed in other occupations. For RNs, it appears that most of the decrease is seen in management occupations. Because there are no homonyms for nursing in management, the lower transition rate in interview 5 supports our main results. The same is true for the other occupations listed in Table 3: education, food preparation; personal care; and, office and administrative support. Over 90 percent of those moving to management became a medical and health services manager, again suggesting a true occupation switch.

Table 4 gives more detailed information about wages for transitions within the two transition periods: interview 5 and interviews 6-8. Table 4 shows mean wages in interview 4 and 8. For those that transition in interviews 6-8 from RN to another healthcare practitioner occupation such as LPN, mean wages are higher in the new occupation, but mean wages are flat for those that transition in interview 5. If those who switch in interview 5 are more likely to be inflating their occupation, it makes sense that their wages would not change during the year as we believe they hold the same job in both interviews. For those that we believe actually

transition to a new job albeit one with a lesser title, we observe an increase in mean wages, suggesting that the individuals may have a job with a lesser title but received a pay increase for the job switch.

A more striking result is found when we examine those who move from nursing to healthcare support, mainly aides and assistants. Wages decrease substantially for both groups, 22% for those who transition in interview 5 and 63% for those who transition in interviews 6-8. If these are true job transitions, then we would expect a drastic reduction in wages. RNs earn three times as much as nursing aides. If those that transition in interview 5 includes those that actually transitioned and those that inflated occupation, then we would expect a smaller fall in mean wages among the interview 5 transitions than the interviews 6-8 transitions. The rationale is that half of those that reported a transition in interview 5 likely did not change jobs but instead reported their true occupation in interview 5 but inflated occupation in an earlier interview. The inflaters stayed in the same job in interview 5 and would not be expected to experience a wage decrease as those that actually went from being an RN to being an aide.

The bottom of Table 4 examines those that transition from another occupation to RN. Wages do not change much for those who move from healthcare practitioner to being an RN. For this group, the change in mean wages does not support our hypothesis of occupation inflation. However, mean wages increase for those moving from healthcare support. For those who transition in interviews 6-8, wages are 31% higher in interview 8 for RNs and wages are 7% higher for those who transition in interview 5. The increase in wage appears to follow a predicted wage change between the two occupations. However, the difference between the two growth rates indicates that some of those who transition in interview 5 are occupation inflaters, which would slow the expected increase in wages between the two occupations.

Those who move from nursing into management have higher wages in interview 8, where the majority of individuals do not experience a decrease in wages, again suggesting valid occupation transitions in interview 5 for those in management occupations. As management is a control occupation where we would not expect to find occupation inflation among RNs, we expect to see similar wage increases for those that transition in interviews 6-8 and those that

transition in interview 5. Table 4 shows that the mean wages increase by about $4 for both groups, though the percent increase is slightly higher for those that transition in interviews 6-8.

Magnitude of Potential Bias

With evidence that occupation inflation exists among nurses, we now investigate how occupation inflation biases standard Mincer equation results. Occupation inflaters come from occupations with lower pay, and their inclusion in a Mincer equation for registered nurses could bias the coefficients. For example, Fisher and Houseworth (2012) find that black nurses earn more than white nurses at the median using the NSSRN, while Table 1 indicates that black nurses in the CPS earn less than white nurses.

We estimate three Mincer equations with different specifications for those believed to be inflating occupation. Independent variables include education, a quadratic in potential experience, and race, and the dependent variable is the hourly log wage in interview 8. If there is occupation inflation, we would expect to see changingcoefficients when eliminating potential misreporters. A dichotomous variable is included to identify potential inflaters and is interacted with all independent variables. The magnitude and statistical significance of the interaction terms indicate the bias created through occupation inflation. Further, it is useful to compare how the original coefficients change across models.

Creating the dichotomous variable identifying potential inflaters is a difficult task. The best case is to create a bound of potential bias when misreporters exist. Three assumptions were made to isolate potential misreporters and group individuals accordingly. Group one assumes that anyone who reports being a nurse in interview 8 is a nurse and ignores the issue of occupation inflation. Group one is the way most research uses occupation in the CPS. Group two assumes that LPNs and CNAs (homonyms) in interview 4 that become RNs in interview 5 and are still RNs in interview 8 are inflating their occupation. Therefore group two excludes RN homonyms. Everyone else reporting being an RN in interview 8 is treated as an RN. This allows some individuals to change occupations in interviews 6 through 8. The third group includes only those who report being an RN in interview 4 and 8. The third group follows MacPherson & Hirsch (1995) in restricting valid reporters to being only those that report the same occupation in both interviews.

The Mincer equation results for each group are shown in Table 5. When excluding either definition of the inflaters, black RNs earn 6 percent less than whites (Group two and three), compared to 10 percent less when occupation inflation is not taken into account. The coefficient on blacks interacted with the indicator for inflaters is not statistically different from zero for group two, however, it is significant for group three. While we still find that black RNs earn less than white RNs in the CPS, the gap at least falls when we remove some likely occupation inflaters.

The education coefficients for nurses fall when excluding inflaters. The result supports our hypothesis that including misreporters will bias the return to education. The coefficients fall because the benchmark group is changing across specifications. The education coefficients are based upon the differences in earnings between the individuals in the sample with different levels of education. In Group one, LPNs and CNAs are included, and typically have no more than a high school diploma and the lowest earnings. They make up the majority of the benchmark education group in Group 1, and therefore, the return to higher education for the sample of RNs looks quite large.

When occupation inflaters are removed, looking now at Group two, we are no longer comparing the change in earnings for two vastly different groups. We are estimating the earnings differences by education for a more homogenous group of individuals. The omitted category becomes actual RNs with low levels of education, a group that typically has higher earnings than the LPNs and CNAs. The education coefficients fall because the earnings of the benchmark group increase.

Occupation Inflation in Food Service Management

Occupational homonyms are not unique to nursing. The CPS Interview Manual (U.S. Census Bureau, 2007) provides a list of occupations that have homonyms in its list of 'occupations for which special care is required,' including accounting, engineer, mechanic, sales, and supervisor/manager. Management occupations fall within the broad category of occupations that the CPS believes require extra care. Abraham and Spletzer (2009) find evidence for occupation inflation in management occupations, finding 4.6 million more management jobs in the CPS than the OES. Evidence of occupation inflation is examined among those reporting being a food service manager within the broad Management category. The homonyms for food

service managers (e.g., restaurant manager excluding fast food; banquet manager) are first-line managers of food preparation (e.g., fast food manager; cafeteria manager) or food service workers.

Descriptive Statistics

Table 6 compares the distribution of wages and demographic characteristics between those that reported being a food service manager in only interview 4 with those that reported being in the same occupation in interviews 4 and 8. As found for nurses, mean and median wages are higher among those that are in food service management in both interviews, and a lower percentage of black individuals report being in the occupation in both interviews. Education also plays an important role. Those with just a high school degree are more likely to be in food service management in just interview 4, and a higher percentage of those with some college are in food service management in both interviews.

Examining Earnings and Occupation between Surveys

Table 7 presents evidence that those switching occupations in interview 5 are more likely to be occupation inflaters. Table 7 shows the percentage reporting a new occupation in each of the interviews among those that were in food service management in the previous interview. As with Table 2, occupation transitions should be smooth across interviews because interviews are distributed evenly over calendar months. The average occupation transition rate across the dependent interviewing months is 2.81 percent. Over the nine months that occur between interviews 4 and 5, we would expect approximately 25 percent to transition to a new occupation. We observe an occupation transition rate of 47 percent between interviews 4 and 5, considerably higher than the expected transition rate, suggesting that almost half of individuals that reported being in food service management in interview 4 were inflating their occupation.

Table 8 shows the occupations food service managers transitioned to or from by interview, with the three highest occupations shown. As with nurses if there is no occupation inflation, then we would expect that the occupation transition rates to be the same in interviews 6-8 and in interview 5 because the proportion of people switching between occupations should not depend on the wave of the CPS interview. Of those that transition from food service manager to another occupation in interviews 6 through 8, 23.8 percent were in a food preparation

occupation in interview 8, which includes the homonym of interest first-line supervisor of food workers. More than twice that amount switched to the homonym occupation in interview 5, a strong indicator of occupation inflation among these two occupations. A similar story is seen in the transition from food preparation to food service managers.

Table 9 provides the contextual information regarding wages for these occupation transitions. For those that transition in interviews 6-8, mean wages increase when moving from food manager to food preparation, while mean wages decrease for those that make the same transition in interview 5.

Magnitude of Potential Bias

With evidence that occupation inflation exists among food service managers, we now investigate how occupation inflation biases standard Mincer equation results, following what was done for nurses. Designation of the three groups follows the methodology described above for RNs . Group one assumes that there is no occupation inflation and that anyone who reports being a food service manager in interview 8 is in that occupation. Group two assumes that first-line supervisors of food workers in interview 4 that become food service managers in interview 5 and are still food service managers in interview 8 were never food service managers. Everyone else who reports being a food service manager in interview 8 is treated as correctly reporting occupation. The third, and most restrictive, group excludes anyone who reported being a food service manager in interview 8 but was not a food service manager in interview 4. Therefore, group three only includes those individuals who reported being a food service manager in interview 4 and 8.

Table 10 presents the Mincer equation results. As with nurses, the education coefficients for food service managers generally fall excluding inflaters. This result provides additional evidence that when misreporters are included in wage equations, the education coefficients are biased upward.

There is also evidence that the black and white wage gap is affected when misreporters are included in wage estimates. When including all food service managers, black individuals earn 15.5 percent less than white individuals, but when excluding either definition of the inflaters the wages of black food service managers are not statistically different from white food service

managers.

Conclusions

Much research relies on occupation being accurately measured. Previous research, such as Mellow and Sider (1983) and Abraham and Spletzer (2009), shows that occupation is potentially mis-measured for a significant proportion of individuals in the CPS. The previous research has not attempted to provide a method to identify which individuals have misreported occupation. We provide the first evidence for the types of individuals that are likely to inflate occupation, those individuals in lesser-skilled occupations with similar sounding titles, such as licensed practice nurses and registered nurses. Further, we identify the potential inflaters as those that transition in the independent interviewing month of the CPS.

Our findings represent a cautionary tale for researchers when using the occupation data in the Current Population Survey. Any research that examines occupation or job switching should be wary of using changes between interviews 4 and 5. In addition, research that relies on occupation being correct should be interpreted cautiously, particularly within occupations with common homonyms such as healthcare support/practitioners and management occupations. Restricting to those that report the same occupation in interviews 4 and 8 is one method to decrease measurement error, but this restriction throws out true occupation switchers. Excluding those in homonym occupations that switch occupations between interviews 4 and 5 is less restrictive and balances throwing out data with potentially keeping those in the wrong occupation. Ignoring occupation inflation also potentially inflates the education coefficients within occupations and overstates the racial wage gap.

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Table 1: Descriptive Statistics by Survey for Registered Nurses

	NSSRN		CPS-RN in Interview 4		CPS- RN in Interview 4 & 8	
	Mean/ Frequency	**Median Wage**	**Mean/ Frequency**	**Median Wage**	**Mean/ Frequency**	**Median Wage**
Hourly Wage	25.91	25.00	25.91	24.77	25.88	25.00
Age	45.55	----	44.76	----	44.86	----
Potential Experience	23.81	----	23.42	----	23.46	----
White (%)	88.35	25.00	84.88	24.73	86.08	24.79
Black (%)	5.91	25.83	7.94	22.67	6.77	24.02
Other Race (%)	5.75	26.67	7.18	27.80	7.15	27.07
Urban (%)	79.52	25.98	77.08	25.00	76.43	25.25
Union (%)	13.82	27.69	16.91	27.97	17.65	27.84
Highest Education						
High School Drop-Out (%)	N/A	N/A	0.27	11.38	0.13	11.00
High School (%)	N/A	N/A	1.40	17.35	0.87	21.00
Associate (%)	50.34	24.04	41.28	22.12	40.06	23.00
Bachelor (%)	37.42	25.18	46.00	26.00	47.63	26.00
Graduate (%)	12.24	27.69	11.05	30.00	11.31	30.00
Number of observations	10,749		5,557		3,103	

Source - National Sample Survey of Registered Nurses, 2004, Current Population Survey 2003-2009
Notes: In the NSSRN, we placed those with a nursing Diploma in the associate degree category. Diploma degree is a 3-year degree program run by a hospital.

Weekly earnings for NSSRN =Annual earnings divided by number of weeks worked

Table 2: % of RNs Reporting Different Occupation by Interview Month

	New Occupation
Interview 2	1.25%
Interview 3	0.85%
Interview 4	0.77%
Interview 6	1.23%
Interview 7	1.08%
Interview 8	0.96%
Average	1.02%
Interview 5	13.16%

Source: Current Population Survey 2003-2009

Table 3: Occupation Transition Rates by Interview, Register Nurse (RN)

	From RN to Other Occupation		From Other Occupation to RN	
	Transitioned in Interviews 6-8	Transitioned in Interview 5	Transitioned in Interviews 6-8	Transitioned in Interview 5
Management Occupations	34.78	25.28	15.22	19.88
Healthcare Practitioner	30.43	34.81	17.39	38.21
Healthcare Support	8.70	13.30	17.39	14.62
Food Preparation and Serving	----	----	10.87	0.39
Office & Administrative Support	8.70	8.43	10.87	9.94

Source: Current Population Survey 2003-2009

Column totals do not sum to 100 because not all occupation categories are shown.

Table 4: Detailed Wage Information by Transition Interview, Registered Nurse (RN)

	Transitioned in Interviews 6-8		Transitioned in Interview 5	
	Mean Wage in Interview 4	Mean Wage in Interview 8	Mean Wage in Interview 4	Mean Wage in Interview 8
From RN to Other Occupation				
Management	24.08	28.73	26.93	30.97
Healthcare Practitioner	27.94	29.52	21.42	21.58
Healthcare Support	35.13	12.79	20.58	15.69
Office & Admin. Support	26.25	28.24	20.59	19.95
From Other Occupation To RN				
Management	24.62	31.00	27.75	28.74
Healthcare Practitioner	20.11	20.85	19.45	20.84
Healthcare Support	12.85	16.86	16.03	17.93
Office & Admin. Support	15.00	15.10	17.91	23.24

Source: Current Population Survey 2003-2009

Table 5: Mincer Equation with and without Controls for Inflaters: Registered Nurses

Dep var: log wage in interview 8	Group 1 All RNs in Interview 8			Group 2 Excluding RN homonyms			Group 3 Excluding Non-RNs in Interview 4		
	Coef.		*SE*	*Coef.*		*SE*	*Coef.*		*SE*
Black	-0.100	*	0.021	-0.067	*	0.021	-0.061	**	0.024
Other race	0.117	*	0.020	0.126	*	0.020	0.124	*	0.023
Some College	0.259	*	0.036	0.256	*	0.041	0.030		0.057
College	0.402	*	0.036	0.388	*	0.041	0.149	*	0.057
Graduate	0.508	*	0.038	0.498	*	0.043	0.289	*	0.059
Experience	0.011	*	0.002	0.011	*	0.002	0.010	*	0.002
Experience squared*100	-0.015	*	0.004	-0.016	*	0.004	-0.014	*	0.005
Constant	2.765	*	0.040	2.787	*	0.044	3.038	*	0.061
Inflater Interaction Terms									
Black	-----			-0.044		0.065	-0.112	**	0.050
Other race	-----			-0.067		0.074	-0.107	**	0.052
Some College	-----			-0.199	*	0.074	0.144	***	0.075
College	-----			-0.320	*	0.087	0.216	*	0.077
Graduate	-----			-0.210	***	0.111	0.144	***	0.083
Experience	-----			-0.019	*	0.007	-0.007		0.005
Experience squared*100	-----			0.035	**	0.015	0.014		0.011
Constant	-----			0.197	**	0.097	-0.270	*	0.086

Source - Current Population Survey 2003-2009. n=5,448.

*, **, *** Denotes sig at 1%, 5%, or 10% level.

Table 6: Descriptive Statistics for Food Managers

	Food Manager in Interview 4		Food Manager in Interviews 4 & 8	
	Mean/ Frequency	**Median Wage**	**Mean/ Frequency**	**Median Wage**
Hourly Wage	17.09	14.25	18.04	15.00
Age	39.30	----	39.51	----
Potential Experience	19.73	----	19.87	----
White (%)	85.93	14.24	88.19	15.10
Black (%)	5.89	13.50	3.67	13.91
Other race (%)	8.19	15.00	8.15	13.94
Urban (%)	79.54	14.42	82.86	15.00
Union (%)	1.82	16.29	1.46	15.43
High School Drop-Out (%)	6.29	11.25	5.70	12.88
High School (%)	36.20	12.99	31.77	13.50
Some College (%)	34.71	14.75	40.73	15.00
College (%)	20.30	16.83	19.96	17.69
Graduate (%)	2.50	26.56	1.83	20.66
Male	51.01	15.40	53.36	16.83
Number of Observations	1,478		491	

Source: CPS 2003-2009

Table 7: % of Food Managers Reporting Different Occupation by Interview Month

	New Occupation
Interview 2	3.22%
Interview 3	2.59%
Interview 4	2.58%
Interview 6	3.38%
Interview 7	2.10%
Interview 8	2.96%
Average	2.81%
Interview 5	47.22%

Source: Current Population Survey 2003-2009

Table 8: Occupation Transition Rates by Interview, Food Managers

	From Food Manager to Other Occupation		From Other Occupation to Food Manager	
	Transitioned in Interviews 6-8	Transitioned in Interview 5	Transitioned in Interviews 6-8	Transitioned in Interview 5
Management Occupations	28.57	17.19	43.33	21.91
Food Preparation and Serving	23.81	56.88	31.67	54.78
Sales and Related	14.29	7.81	8.33	8.99

Source: Current Population Survey 2003-2009

Column totals do not sum to 100 because not all occupation categories are shown.

Table 9: Detailed Wage Information by Transition Interview, Food Managers

	Transitioned in Interviews 6-8		Transitioned in Interview 5	
	Mean Wage in Interview 4	Mean Wage in Interview 8	Mean Wage in Interview 4	Mean Wage in Interview 8
From Food Manager to Other Occupation				
Management	14.32	16.75	22.12	23.20
Food Preparation	18.40	19.35	14.96	12.64
Sales & Related	16.47	19.00	15.20	16.82
From Other Occupation To Food Manager				
Management	20.02	16.84	23.64	23.97
Food Preparation	12.79	13.85	13.04	16.13
Sales & Related	32.49	19.35	14.62	17.37

Source: Current Population Survey 2003-2009

Table 10: Mincer Equation with and without Controls for Inflaters: Food Service Managers

	Group 1 All Food Service Managers in Interview 8			**Group 2** Exclude Food Preparation Manager Homonyms			**Group 3** Excluding non-Food Service Managers in Interview 4		
Black	-0.155	**	0.073	-0.140		0.090	-0.097		0.156
Other race	-0.059		0.058	-0.074		0.063	-0.079		0.111
Some College	0.166	*	0.039	0.147	*	0.044	0.103		0.072
College	0.466	*	0.047	0.485	*	0.053	0.434	*	0.091
Graduate	0.645	*	0.107	0.637	*	0.117	0.168		0.212
Experience	0.027	*	0.005	0.028	*	0.006	0.025	**	0.011
Experience squared*100	-0.038	*	0.013	-0.041	*	0.014	-0.038		0.025
Male	0.182	*	0.034	0.180	*	0.038	0.168	*	0.063
Constant	2.146	*	0.060	2.127	*	0.068	2.195	*	0.124
OI Interaction Terms									
Black	-----			-0.112		0.172	-0.155		0.190
Other race	-----			-0.010		0.238	0.105		0.146
Some College	-----			0.050		0.123	0.104		0.098
College	-----			-0.231		0.147	0.101		0.118
Graduate	-----			-0.308		0.347	0.583	**	0.269
Experience	-----			0.008		0.016	0.002		0.014
Experience squared	-----			-0.026		0.036	0.001		0.032
Male	-----			-0.031		0.046	0.065		0.085
Constant	-----			0.073		0.111	-0.126		0.156

Source - Current Population Survey 2003-2009. n=1,064.

*, **, *** Denotes sig at 1%, 5%, or 10% level.