OCCUPATIONS AND THE STRUCTURE OF WAGE INEQUALITY IN THE UNITED STATES, 1980s-2000s

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ABSTRACT

Occupations have long been regarded as central to the stratification systems of industrial countries such as the United States. Thus, they should—but generally do not—play a prominent role in attempts to explain the well-documented increases in wage inequality that occurred in the United States in the 1980s and 1990s. Using data from the Current Population Survey from 1983-2005, we decompose the growth in overall wage inequality into three main components associated with occupations, those due to changes in: the size (composition) of occupations; the mean levels of occupational wages (between-occupational component); and the variance of wages within occupations. We find that the overall change in inequality from 1983-85 to 2000-02 is due primarily to between-occupation differences in average wages. We then show that 71% of the increase in overall wage inequality since 1983—and 97% of the increase since 1987—is attributable to changes in just 14 of the 496 three-digit census occupations we analyze, and suggest some reasons for why these occupations have contributed to wage inequality. We finally outline the contours of an agenda for future research on occupational inequality.

OCCUPATIONS AND THE STRUCTURE OF

WAGE INEQUALITY IN THE UNITED STATES, 1980s-2000s

Sociologists have long regarded occupations as the key indicators of persons' positions in the societal division of labor and stratification system. Occupations are groups of activities that describe the different kinds of work that people do; the categories used to classify occupational activities are the main way social scientists conceptualize and measure how labor is divided within an industrial society. Building on Weberian notions of class as defined by one's "market capacity," sociologists maintain that occupations are the basic components of stratification systems in industrial nations such as the United States (e.g., Parkin 1971). Moreover, being able to move from one occupation to another is generally seen as a necessary condition for experiencing upward social mobility.

The centrality of occupations to theoretical conceptions of the stratification system underlies sociologists' widespread use of occupational prestige, status or average earnings differences to represent the structure of inequality in society and the quality of jobs. Sociologists have generally assumed that between-occupational differences in wages—or in socioeconomic indicators such as occupational status or prestige—reflect the structure of opportunities that people have for social mobility.

In view of their emphasis on occupations, one might think that occupations have played a prominent role in sociological attempts to explain the well-documented increases in wage inequality that occurred in the United States in the1980s and 1990s. The increase in wage inequality United States from 1983-2005 is shown in Figure 1 using data from the Current Population Survey (CPS-ORG, described below):[1] wage inequality increased sharply in the 1980s, leveled off in the early 1990s, and then

[1] This trend is consistent with other analyses of the CPS-ORG data (Autor, Katz, and Kearney 2006; Card and DiNardo 2002; Lemieux 2006; Mishel, Bernstein, and Allegretto 2007). The time series can be extended back to 1963 using a combination of CPS-ORG and the March CPS demographic supplement (Autor et. al. 2006).

increased more modestly. Since much of the demand for labor takes place at the occupational level—i.e., many occupations constitute distinct labor markets within which supply and demand for a particular type of labor occurs—understanding which occupations are contributing to the increase in inequality should help to explain many of the factors that have generated these patterns of wage inequality.

-- Figure 1 about here –

A variety of explanations have been introduced to account for these patterns of wage inequality. Numerous sociologists and economists have identified differences in educational and work experiences as sources of economic inequality (see, e.g., the review by Morris and Western 1999). Economists have popularized the skill-biased technological change (SBTC) story which explains the growth of wage inequality by tying education and experience—as sources of work skills—to supply and demand forces operating in labor markets. Workers with more skills are assumed to be paid more because they are more productive (e.g., Levy and Murnane 1992). Economists tend to overlook occupations and do not generally consider them to be "real" structures that are consequential for explanations of inequality and wage determination (Bound and Johnson 1992; exceptions are Autor, Katz and Kearney 2006; and Goos and Manning 2007).

Sociologists, on the other hand, have emphasized more institutional differences—such as the decline in unionization (Nielsen and Alderson 2001) or changes in firm size (Hollister 2004)—as explanations of the growth of wage inequality. Surprisingly, sociological research on the role of occupations in generating these patterns of wage inequality is also conspicuously scarce. Sociologists have been preoccupied with issues related to social mobility—generally conceptualized as movement among occupations or classes—and have been much slower than labor economists to note and try to explain these trends in wage inequality (DiPrete 2007). A number of observers have noted the paucity of sociological analyses of the rise in inequality over the last two decades and have pointed to sociologists' concern with occupations as a measure of socioeconomic standing, rather than their impacts on wages, as the reason (DiPrete 2007; Morris and Western 1999; Myles 2003).

The relatively few sociological studies that have explicitly recognized how occupations generate economic inequality have tended to adopt rather uncritically[2] the Weberian assumption that occupations are the basis of stratification (e.g., Massey and Hirst 1998; Wright and Dwyer 2003; notable exceptions are the analyses by sociologists Raffalovich 1993; Kim and Sakamoto 2006; Weeden et al. 2007). The focus on between-occupational sources of inequality is consistent with the theory of "disaggregate structuration" (e.g., Grusky and Sørensen 1998). This theory maintains that members of detailed occupational categories are fairly homogenous in terms of their life chances and viewpoints, including stratification outcomes such as earnings and political attitudes, and so economic inequalities associated with occupations lie primarily between occupations, not within them. The paucity of research on how the occupational structure is related to aggregate economic inequality has meant that the veracity of the assumptions that occupations are relatively homogeneous and that most of the inequality in wages lies between rather than within occupations has not been extensively studied (Morris and Western 1999; DiPrete 2007).

Our goal in this paper is to understand better how changes in specific occupations have helped to generate inequality in wages during the past quarter-century in the United States. We seek to answer the question: what is the contribution of occupational differences to explaining the well-documented overall trends in wage inequality? Using data from the Current Population Surveys from 1983-2005, we explore more fully the sources of changes in occupation wage inequality during this period. Our analysis use specific detailed occupational categories, which enables us to explore concrete occupational labor markets. We first decompose the growth in overall wage inequality into three main components associated with occupations, those due to changes in: the size (composition) of occupations; the mean

[2] Some sociologists (e.g., DiPrete 2002) have challenged the assumption that an individual's occupation is an adequate measure of life chances in a society where family-related phenomena (such as stability, fertility, and work-family balance) and welfare state policies have profound effects on living standards and social mobility.

levels of occupational wages (between-occupational component); and the variance of wages within occupations. We then examine the specific occupations that are primarily responsible for the growth in wage inequality associated with these three components. We finally indicate some future directions for research on occupations and wage inequality.

HOW OCCUPATIONS GENERATE WAGE INEQUALITY: PREVIOUS RESEARCH

Changes in occupational structures can generate changes in wage inequality in three main ways. First, changes in the relative sizes of occupational groups (i.e., the number of men or women who are classified in the occupation) may affect the overall degree of inequality. Expansion (contraction) of high wage or low wage occupations, for example, may increase (decrease) wage inequality.

Second, changes in the relative average wage of an occupation can create differences in economic inequality. An increase in the wages of high-wage occupations relative to other occupations (such as an increase in the relative wages of managers and CEOs) will lead to more between-occupational differences in inequality. Likewise, a decrease in the wages of low-wage occupations will also increase between-occupation inequality.

Third, changes in the dispersion of wages within occupations can alter overall patterns of wage inequality. For example, the growing diversity of activities classified within the occupation of "secretaries" may lead to some secretaries being paid more than others.

These three mechanisms are conceptually distinct and provide a useful framework for summarizing previous research and framing our analysis. However, some studies do not fit neatly into one or the other of these categories, but may emphasize more than one of these determinants. Some researchers, for example, have argued that *both* within- and between-occupation differences help to account for changes in the structure of wage inequality and occupational opportunity in the United States.

Changes in the Sizes of Occupational Groups

Some analysts assume, at least implicitly, that changes in the sizes of particular occupations explain a large portion of the well-documented increases in earnings inequality that have occurred in the United States since the mid-1970s. For example, some sociologists (Massey and Hirst 1998; Wright and Dwyer 2003) and economists (Autor, Katz and Kearney 2006) have argued that the occupational structure has become increasingly polarized as both high- and low-paying occupations have grown in size, especially in the 1990s.

Massey and Hirst (1998) examine changes in the distribution of workers in occupations classified by their average occupational wage. They describe changes in the opportunity structure in the United States during the postwar period by summarizing patterns of growth and decline in the sizes of various "occupational wage" groups. Massey and Hirst find evidence for an "hourglass" pattern of growth characterized by an increase in both high- and low-paying occupations in the period 1969-89 for men (but not women). They argue that this represents an increase in occupational polarization with regard to wages, and reflects a change from the "escalator" pattern of the 1949-1969 period denoted by a growth of people working in progressively more highly paid occupations.

Wright and Dwyer (2003) find evidence of occupational polarization in the 1990s. They define jobs as the cells formed by cross-classifying occupational and industrial categories; the median hourly wages associated with these cells are the basis for their assumptions about the quality of these jobs. They use increases or decreases in the proportion of the labor force classified in high- and low-wage cells to draw conclusions about the growth and decline of jobs of varying quality during the economic expansions in the U.S. since the 1960s. They conclude that there has been a growth of jobs in the top and bottom quintiles in the 1990s, and a decline in the middle quintile.[3]

[3] Wright and Dwyer (2003) note that trends in income inequality are not necessarily related to job growth across job quality quintiles: e.g., increasing income inequality could be associated with flat growth since

Some economists have also argued that changes in the size of occupational categories may contribute to patterns of wage inequality. Autor, Katz and Kearney (2006), for example (see also Goos and Manning 2007) sort detailed occupations according to their median hourly wage and contend that the employment shares (shares of total hours worked by members of these occupations) of both high-wage and low-wage occupations increased during the 1990s, while the employment shares of middle-wage occupations declined. They explain this occupational polarization as due largely to the differential ability of employers to routinize and computerize occupations in the middle of the occupational wage distribution.

A broad overview of changes in the sizes of occupational categories in the United States is provided by the first set of columns in Table 1, which shows the percentage of people who worked in twelve major occupational groups in 1983-5 and 2000-2.

-- Table 1 about here –

Table 1 suggests that there has been a growth in both high- and low-wage occupations in the United States—at least as measured by broad occupational categories. These changes in the sizes of the labor force in various occupations reflect broader trends that have occurred in the restructuring of work and organizations.

At the high end of the wage structure, the proportion of managers has increased. This recalls Gordon's (1996) argument that despite attempts to trim the managerial component of organizations in the United States, they are still "fat and mean." Also at the high end of the occupational structure are increases in professional occupations, reflecting the growth in the knowledge economy and post-industrial (service) society. Occupations in these relatively high-paying professional occupation

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(1) the income spread between the best and worst jobs could be increasing even if they are growing at the same rate, and (2) increasing earnings inequality can occur within job types (p. 303).

categories that have grown in size during this period include: lawyers, architects, engineers, computer scientists, and bankers.

Some relatively low-paying occupations have also increased in size during this period. The expansion of the service sector of the economy has accelerated the shift from manual to white-collar and service workers, a trend that occurred over the twentieth century (Wyatt and Hecker 2006). The growth of low-paying sales and service occupations is not shown very well in Table 1 because the "sales" and "service" categories contain both high- and low-wage occupations. Low-paying service and sales occupations are found in industries such as: retail trade, temporary services, janitorial, home health aides and nursing home facilities, child day care, and restaurants and food service.

Other occupations have declined in size. These declining occupations are largely those in the "middle" between high- and low-paying occupations, and include administrative support occupations (such as secretaries and administrative assistants, typists, file clerks), which have decreased in part due to the downsizing of organizations and the offshoring of many white-collar technical and computer-related jobs, especially in the 1990s. Declining occupations also include various types of blue-collar occupations (such as mechanics, precision production, and operators), which shrunk in size due to a combination of trade and technology (e.g., the computerization and routinization of occupations such as operatives) and the more general decline in manufacturing industries.

Between-Occupation Wage Inequality

A substantial portion of wage inequality lies between occupations; this between-occupation inequality reflects significant aspects of the societal division of labor. Occupations vary in their skill, i.e., the degree of complexity of occupational activities and the amount of training time required to perform them adequately. Skills represent the amount of human capital required by the occupation and economists generally assume that more skilled jobs pay higher wages. Thus, differences in the skill levels of occupations are often seen as important sources of wage inequality. Moreover, occupations

differ in their educational requirements, which may or may not correspond fully to their skill requirements (see Berg 1970). We consider these as between-occupation explanations, since occupational skills and educational requirements are generally assumed to vary more from one occupation to another than within them.

Weeden et al. (2007) examine the extent to which overall wage inequality is due to differences among major occupational groups (which they call "big classes").[4] They argue that differences between these major groups reflect primarily differences in educational attainments. In addition, Weeden et al. examine differences between detailed occupations within these major occupational groups. Their analysis underscores the dependence of sources of occupational wage inequality on the level of aggregation used.

Sociological research has also demonstrated the importance of factors other than occupational skills or educational requirements for why some people earn more than others from their occupations. In particular, occupations also differ in the extent to which they are able to adopt mechanisms of social closure which restrict competition for who gets access to the occupation and stimulates demand for the occupational activities. Weeden (2002) develops a Weberian-based argument that some occupations succeed better than others in establishing social closure via institutional mechanisms such as licensing, educational credentialing, voluntary certification, association representation and unionization. These kinds of institutional mechanisms of social closure increase earnings by restricting the supply of workers, increasing demand and channeling it to the occupation, and signaling the quality of service. She finds support for this argument in the effects of these variables on between-occupational earnings net of skills and working conditions as measured by the *Dictionary of Occupational* Titles. Measures of occupational skills also had significant effects, suggesting that both technical complexity and social closure affect occupational earnings.

[4] Their goal is not to explain change in wage inequality, but rather to apportion the variance in wage inequality among detailed and major occupational groups.

The second set of columns in Table 1 provides an overview of changes in average wages of occupations from 1983-5 to 2002-3. Managerial, professional, and technical occupations saw average wage gains over this time period, while construction, precision production occupations and transport and moving occupations experienced wage declines. Service occupations, although the lowest paid in both time periods (except for agriculture), saw modest wage gains between 1983-5 and 2000-2.

Within-Occupation Wage Inequality

Jobs within an occupation may also differ widely in their skill, authority, and other characteristics; consequently, there are also likely to be within-occupation sources of variation in earnings. Prominent explanations of within-occupation wage inequality are based on differences in the organization of work: similar occupational activities may be organized quite differently depending on the strategies of the company, competitive pressures produced by product markets, and so on. How doctors and lawyers organize their work, for example, may differ from one medical practice or law firm to another. Within-occupation variation thus results from differences in the way that similar kinds of occupational activities are organized in particular workplaces (Baron and Bielby 1980).

Raffalovich (1993) and Kim and Sakamoto (2006) use data from the Current Population Survey (CPS) to examine between- and within-occupation sources of wage inequality during the years from 1967 to 1981 and 1983 to 2002, respectively. Both papers conclude that there is considerably more inequality in wages *within* occupations than *between* them. Kim and Sakamoto find that within-occupational inequality has increased more than between-occupational inequality over time in the United States. Their analysis calls into question the assumption that between-occupation differences are central to explaining changes in wage inequality (and thus the opportunity for upward mobility) during the past three decades and suggests—contrary to the assumptions made by the disaggregate structuration theory and the occupational class argument—that occupations may be less useful now than previously as indicators of peoples' positions in the stratification system.

Explanations of growing inequalities within occupations during the past three decades are generally rooted in organizational differences produced by corporate restructuring during the period from the mid-1970s to the 1990s; these organizational differences have widely been regarded as responsible for increasing earnings inequality. There were two main types of organizational responses, for example, to the growing competitive pressures produced by forces such as globalization and technology starting in the mid-1970s (e.g., Lindbeck and Snower 1996; Gordon 1996). Some organizations adopted "low road" (or "stick") strategies that emphasized cutting labor costs and paying workers low wages. Others utilized "high road" ("carrot") strategies that involved investments in training and developing their human resources. The growing gap between these two kinds of organizations is generally assumed to account for a substantial portion of the within-occupation inequality in wages during the past several decades (e.g., Levy and Murnane 1992: 1374). Consistent with this reasoning, Kim and Sakamoto (2006) suggest that wage inequality is now more dependent on firm differences and one's bargaining power within the firm. They hypothesize that the growing importance of organizational bases of stratification is reflected in the increasing significance of within-occupation sources of wage inequality.

That organizational restructuring has led to growing inequalities between organizations is also in line with Raffalovich's (1993)[5] use of industry variations to test hypotheses related to deindustrialization (i.e., that there has been a shift from employment in manufacturing industries with high-mean, low dispersion earnings distributions to employment in service industries with low-mean and high dispersion earnings distributions) and labor market segmentation (i.e., there has been an increase in earnings inequality between protected workers in concentrated industries and unprotected workers in competitive industries). Raffalovich (1993), however, did not find support for either hypothesis.

[5] Raffalovich (1993) used data from the 1968-1982 March CPS to examine between-structural sources of earnings change in the 1970s and 1980s (between 1967 and 1981), i.e., decreasing earnings inequality in the 1970s, increasing in 1980s.

The skill-biased technological change (SBTC) hypothesis can be formulated in terms of within-occupational wage differences. This is because it generally relies on demonstrating that there is residual wage inequality after controlling for human capital factors.[6] Bernhardt et al. (2001) point to the increase in the wage gap between college and high-school graduates as indicating the growing importance of skill in the American labor market and the plausibility of the SBTC argument. At the same time, they note that returns to observed skills can only be part of the story, since changes in the returns to education explain only about a third of the total increase in inequality. Rather, more than half of the increase in inequality has been *within* groups of workers with the same age, education, and experience. They point out that this residual has so far not been explained adequately (p. 7). This conclusion is consistent with findings by Kim and Sakamoto (2006), who found that changes in the distribution of education did not affect the growth of wage inequality within occupations. Recently, however, Lemieux (2006) measures changes in residual wage inequality after controlling for work experience and education and finds that there has been little increase in residual wage inequality since 1990, suggesting that recent increases in inequality have been the result changes in the composition of the labor force rather than an underlying process of skill-biased technological change. Competing interpretations of the trend in residual wage inequality has generated considerable debate in the economics literature regarding the validity of the SBTC argument (see Autor, Katz, and Kearney 2006).

The third set of columns in Table 1 provides an overview of changes in the variation of log wages within major occupational groups during the period 1983-2002, as a measure of inequality within each of these occupational categories. It is clear, for instance, that inequality increased among

[6] The SBTC hypothesis can be seen as a within-occupation explanation to the degree to which inequality within education levels or occupations represents increasing returns to unobserved skill—that is, unobserved by the researcher but not by the employer. However, to the extent that human capital factors vary from one occupation to another, one could argue that the SBTC hypothesis is a between-occupation explanation.

professional workers between 1983-5 and 2000-2. An even greater increase is evident among workers in sales occupations. However, the increase in within-occupation group inequality was not uniform; the variance in log wages of workers in managerial or service occupations, for example, was no greater in 2000-2 than it was in 1983-5.

Specific Occupational Sources of Changes in Wage Inequality

The vast majority of studies on how occupations affect inequality are fairly abstract. As we noted above, the extent to which inequality is generated by between- vs. within-occupational differences depends considerably on the categories used. There is much left unexplained by these approaches. Hence, we will also assess a number of hypotheses about how specific occupations have generated wage inequality. For example, a number of writers have argued that wage inequality has increased due to the growth of wages among managerial and professional occupations.

Managerial compensation

The growing wage gaps between managers and non-managerial employees have been amply documented (e.g., Herzenberg, Alic and Wial 1998). The ratio between the earnings of top managers and workers is unusually high in the United States: Orsberg and Smeeding (2005), for example, show that the pay of CEOs relative to production workers in manufacturing is higher in the U.S. than in the U.K., Australia, Japan, France, Sweden, Germany and Canada. The Labor Department reports that executive pay increased by 14.4 percent from 1976-1986 (in real dollars), compared to 11.1 percent for all white-collar occupations, 1.3 percent for blue-collar workers, and 1.4 percent for service workers (Norris 2006). Observers of the growing manager/worker wage gap generally explain this in terms of the increase in the average wages associated with managerial work relative to those of non-managers.

Professional occupations

The growth of the "new economy" or "post-industrial" society has placed a premium on knowledge and skills. The high skills associated with professional occupations—combined with their

ability to control their growth through mechanisms of social closure—have helped to enhance their earnings. The expansion of these relatively high-wage professional occupations—and the increase in wages associated with them—have been suggested to account for a considerable portion of the growth of occupational wage inequality.

At the bottom of the occupational wage distribution, wage inequality has been argued to have increased due to the expansion of relatively low-paying sales and service occupations.

Retail sector and personal service occupations

A number of analysts have pointed out that there has been an expansion of low-wage service occupations in the United States in recent years, especially in the 1990s (Wright and Dwyer 2003). The success of companies such as Wal-Mart has been responsible for much of this, as has been the increased demand for personal (as well as business) service occupations. The service occupations that have expanded rapidly have tended to pay relatively low wages (see Appelbaum, Bernhardt, and Murnane 2003). The relative stagnation of wages for these occupations (the federal minimum wage, for example, has remained at $5.15 since 1997), coupled with their rapid expansion, both contribute to increased occupational wage inequality.

Finally, increases in occupational wage inequality have been linked to the decline of "middle-level" white-collar and blue-collar occupations.

Administrative and blue-collar occupations

The increasing use of computers and the routinization of work, accompanied by the downsizing of white-collar occupations, have led to a decline of occupations such as secretaries and other administrative support occupations. Moreover, the decline of manufacturing in the United States has helped to decrease the size of blue-collar occupations. A "hollowing out" of the middle of the occupational wage distribution—particularly the decline of administrative and (especially) skilled and semi-skilled blue-collar workers—has increased inequality because it puts more weight on the extreme high- and low-wage occupations.

DATA

We use data from the merged outgoing rotation groups (ORG) of the Current Population Survey (CPS) from 1983-2005. Appendix A presents more detail on the sample that we use, including the Stata computer code necessary to replicate our sample. The term "outgoing rotation groups" refers to fact that households are in the CPS panel for four months, then rotate off for four months, then are back on for four more months. Wage data are only collected in the fourth and eighth months of participation, when the respondent is rotating out of the sample. The CPS-ORG has been used by many other researchers to study trends in wage inequality (e.g., Card and DiNardo 2002; Weeden et. al. 2007; Lemieux 2006; Kim and Sakamoto 2006). We follow established conventions by restricting the sample to workers between the ages of 18 and 65 who reported hourly wages between $1 and $100 in 1979 dollars ($2.69 and $269 in 2005 dollars). Wage information is only collected for workers who are not self employed.[7] As described in Appendix A, we merge six 1980 occupation categories that are combined in the 1990 Census codes, and drop one (waitresses, see the footnote below), leaving us with 496 3-digit occupations. All of the results presented below weight the data using the sampling weights multiplied by usual hours worked. Weighting by hours worked allows the inclusion of part-time workers without misrepresenting the data by counting part-time workers the same as full-time workers (Lemieux 2006).

We exclude workers with imputed wages. The Census Bureau imputes the wages of workers with missing wages using a "hot deck" procedure that replaces the missing wages with those of the last processed worker with non-missing wages and the same values on a set of match variables. The variables used for matching are sex, race, age category, and the "major occupation recode" (U.S. Census

[7] We exclude waiters and waitresses (1980 occupation code 435) from the analysis because of an unexplained jump in average (inflation adjusted) wages of $2.90 from 1988 and 1989, and $1.26 from 1993 to 1994. This likely reflects changes in recording of tips, but is not documented in the data.

Bureau 2002, p.76). As noted by Hirsch and Shumacher (2004), a downward bias is introduced when a researcher analyzes the wage effect of a variable that was not included in the matching process. In our case, because the major occupation recode, a set of 14 occupation categories, is used, the imputation process does not match workers at the detailed occupation level within their major occupation category. For example, the missing wages of a nuclear engineer may be imputed using the wages of a podiatrist, provided they had the same race, gender, age, and education because both occupations are classified under the major occupation recode "professional specialty occupations." As a result, using the imputed wages converts between-occupation inequality among occupations in the same major occupation recode into within-occupation inequality. The proportion of workers with imputed wages has increased over time (Hirsch and Shumacher 2004; Bollinger and Hirsch 2005), suggesting that any increase in within-occupation inequality may be at least partly due to the use of imputed wages using the "hot deck" procedure. We exclude 1994 from the analysis because no variable exists indicating whether or not wages were imputed.

The CPS used a consistent set of 1980 census occupational codes for the 1980-2002 data.[8] In 2003 the CPS switched to the 2000 census occupational codes, which do not map directly onto the 1980 codes. This breaks the occupational-level time series on wages, although some inferences can be made for certain groups of occupations, as we will discuss below. Our primary analysis consists of the decomposition of changes in inequality by occupation from 1983-2002, but we also extend our time series of between- and within- occupational inequality to 2005 using the new occupational codes. The Census Bureau released a set of CPS data from 2000-2002 that includes both the new and old occupational codes, which allows us to compare how changes in occupational coding affect the decomposition of between and within occupational inequality (see Table 2 below).

[8] In 1992 the CPS switched to the 1990 Census occupational codes, but the changes are minor and easily recoded. See Appendix A for details.

Although each year of wage data in the CPS-ORG includes about 100,000-160,000 cases, this can result in small cell sizes for relatively tiny 3-digit census occupations. In order to maximize the sample size by occupation without aggregating too many years together, we elect to combine three years of CPS data at a time from 1983-2002 (for a similar approach, see Kim and Sakamoto 2006). As a result, our baseline analysis of changes in inequality compares data from 1983-5 with 2000-2.

In order to adjust for changes in occupational size (see the Methods section below) we also construct 1-year panels from the CPS-ORG to generate data on occupational mobility. Because households are in the CPS for a total of 8 months spread over a 12 month period, it is possible to identify households in the survey in the same month across consecutive years, provided the members of the household have not moved during the intervening year (see Appendix A for more details on constructing the CPS-ORG panels). We use this matched data to calculate occupational mobility tables showing the inflow and outflow occupations for detailed 3-digit census occupations.

Trends in Within- and Between-Occupation Inequality

Table 2 breaks the trend in the variance of log wages, our measure of inequality, into within- and between-occupation components using the standard decomposition of variance formula (which is described in detail in the Methods section below). A key observation from Table 2 is that almost all of the increase in between-occupation inequality occurs after 1992. The between-occupation variance is .112 in 1983, rises to .129 in 1988, hovers around .119 or .120 between the years 1989-1992, and then rises steadily to .150 in 2005. It is possible that some of the increase in between-occupation inequality could be due to the use of the 2000 census occupational codes after 2002. However, by using the double-coded occupation data from 2000-2, we can see the effect of the changing occupation codes on between- and within-occupation inequality appears to be fairly minimal. For example, the between-occupation inequality is calculated as .139 in 2000 using the 1980 census occupation codes, and .140 using the 2000 occupation codes. What stands out in the period 2000-2005 is the increase in between-

occupation inequality, from .140 to .150 using the 2000 codes, while within-occupation inequality is relatively constant.

-- Table 2 about here --

Table 2 also shows time trends in the proportion of cases that had top-coded wages and the proportion with imputed wages. As mentioned above, we exclude imputed wages, but the fact that the proportion of wages that is imputed has risen over time raises questions concerning the long-term accuracy of the data. In addition to the problem posed by imputed wages, wages are truncated at the top of the distribution by "top-coding". The CPS top-codes wages above a certain level and the value of the top-code has changed over time.[9] Failure to adjust for top-coded wages results in a substantial increase in inequality between 1988 and 1989, when the top-code level was increased. In this paper, we follow standard practice (e.g., Card and Dinardo 2002) and replace top-coded wages with 1.4 times the top-coded value.[10] Because wages are "top-coded" the CPS is not capable of analyzing inequality in the upper tail of the income distribution.[11]

[9] The top code on edited weekly earnings is $999 from 1973-1988, $1,923 from 1989-1997, and $2,884 from 1998-2002.

[10] The reasonableness of this assumption can be verified by comparing the right tail of the wage distribution between 1988 and 1989 when the top code increased from $999 to $1,923. The mean weekly earnings of workers with wages greater than $999 (the top code in 1988) in 1989 is $1,351 (this includes the .005 who were top coded at the new top code of 1.4*$1,923), i.e., close to 1.4 times the original top code of $999.

[11] There is, for example, evidence that the proportion of income going to the top 1% has risen since 1990, at least as measured by tax data (Piketty and Saez 2006), although some of this seems to be due to changes in the tax code that moved certain components of business income onto individual tax returns (see Reynolds 2007, p.6) .

In Figure 2, we graph the trends in between- and within-occupation inequality depicted in Table 2. This figure shows that most of the increase in within-occupation inequality occurred before 1990, while between-occupation inequality has continued to rise since 1992 (see also Appendix Figure A1). Results suggest that the degree of between-occupational inequality has increased steadily since 1992, and that the overall magnitude of the increase in between-occupation inequality from 1983 to 2005 (.038) is larger than the increase in within-occupation inequality (.017).[12]

-- Figure 2 about here --

As noted above, Table 2 and Figure 2 show that between-occupation inequality has increased more than within-occupation inequality between 1983 and 2005. Appendix Figure A1 shows that the proportion of inequality explained by between-occupation wage differences has increased over this time period. These results suggest that conclusions of Kim and Sakamoto (2006), who argue that within-occupation inequality explains an increasing proportion of overall wage inequality, are premature. While Kim and Sakamoto are correct to point out that the bulk of wage inequality appears to be generated as a result of within-occupation wage inequality there is no evidence that proportion of overall inequality due to within-occupation inequality has increased over time. It is likely that the difference between their results and the results presented here in Table 2 and Figure 2 is due to the fact that they use the imputed earnings data. As noted above, the Census Bureau's hotdeck imputation procedure does not match on

[12] A significant decline in the within-occupation inequality occurs between 2002 and 2003. 2003 is the first year the CPS uses the 2000 occupation codes as the initial occupation codes. By contrast, the data for 2000-2002 are double coded after the initial survey by the Bureau of Labor Statistics. If there is a higher error-rate in coding of respondents' occupations in the 2000-2 data due to the fact that they are recoded after the fact, then this would increase the level of within-occupation inequality and reduce the level of between-occupation inequality.

detailed 3-digit occupations. In Appendix A, we re-estimate Tables 1 and 2 using the imputed data (see Figure A3) and show that this is the source of much of the increase in within-occupation inequality.[13]

METHODS

We attempt to identify the change in overall wage inequality attributable to changes in the size and wage distributions of specific occupations. Our measure of inequality is the variance of log wages (Varlog), which is used in many recent studies of trends in U.S. inequality (e.g., Lemieux 2006). It is particularly attractive for our purposes because it is easily decomposed by groups into within- and between-occupation inequality. The variance of log wages can be decomposed by occupation using the standard decomposition of variance:

$$Var[\ln wage] = Var[\ln wage \mid occ] = Var[E[\ln wage \mid occ]] + E[Var[\ln wage \mid occ]] \qquad (1)$$

In the right hand side of Equation 1, the first term—the variance of mean occupation wages—is the between-occupation component, and the second term is the within-occupation component. For each occupation, three parameters are needed to calculate the overall level of inequality: the proportion of workers who work in occupation i at time t, p_{it}, the mean log occupational wage, μ_{it}, and the within-occupation variance of log wages, σ_{it}^2. Using p_{it}, μ_{it}, and σ_{it}^2, Equation 1 can be rewritten as:

$$Var[\ln wage \mid occ] = \sum_i p_{it}(\mu_{it} - \overline{\mu}_t)^2 + \sum_i p_{it}\sigma_{it}^2 \qquad (2)$$

Where $\overline{\mu}_t$ is the overall mean log wage at time t.

In order to calculate the effect of changes in specific occupations on the overall level of wage inequality, we first estimate the counterfactual by substituting the time = t-1 values of p, μ, and σ^2 for

[13] Despite the problem with imputed wages, our results below show that Kim and Sakamoto's within-occupation inequality explanation is a more robust explanation than the wage or size change explanations for the increase in inequality (see Table 7, below)

occupation i while using the time = t values for the rest of the occupations.[14] In other words, the counterfactual is: "what would the overall level of inequality be if everything changed except for the size and wages of occupation i"? The change in wage inequality attributable to occupation i is then the difference between the actual level of inequality and the counterfactual:

Change in inequality due to occupation i =

$$\text{var}(\ln wage_{time=t}) - \text{var}(\ln wage_{time=t} \mid p_{it} = p_{i,t-1}, \mu_{it} = \mu_{i,t-1}, \sigma^2{}_{it} = \sigma^2{}_{i,t-1}) \qquad (3)$$

Table 3 presents a simple example of this calculation. In this example, overall wage inequality is 2 at time 1 and 7 at time 2. The increase in inequality is due to a decrease in the mean log wage of occupation A and an increase in the within-occupation inequality of occupation B. Table 3 shows that the time t=2 inequality would have been 5 if occupation B was held to its time t=1 levels, hence the increase in inequality attributable to occupation B is 7-5 = 2.

-- Table 3 about here --

In addition to the overall change attributed to a specific occupation, we can also pinpoint the effect due to changes in any one of the three key parameters for a specific occupation, p_{it}, μ_{it}, or σ^2_{it}, by simply holding that parameter to the time t=1 levels and calculating a modified form of Equation 3 with the other two parameters of occupation i set to the time t=2 levels.

In general, the effect of changes in p_{it}, μ_{it}, or σ^2_{it} on overall inequality is easy to depict. An increase in size (p_{it}) of a middle-wage occupation will decrease inequality, with the opposite being true for a low or high wage occupation. Increasing average wages for a high wage occupation will increase inequality, with the opposite being true for a low wage occupation. Increasing within-occupation inequality always increases overall inequality, regardless of the position of occupation in the occupation

[14] Weights are rescaled so that $\sum p_{it} = 1$ when estimating the counterfactual inequality.

wage distribution. Equation 3 is simply a way to quantify the magnitude of these changes on the overall level of inequality.

-- Figure 3 about here --

Figure 3 illustrates changes in these three components for three detailed occupations, secretaries, cashiers, and computer systems analysts. Here we plot the probability density of the distribution of log wages for each occupation in 1983-5 and 2000-2. As in the analysis below, all log wages are mean standardized by subtracting the overall mean log wage for each year.[15] The location of the middle of the distribution on the X-axis indicates average wages, the overall height of the distribution depicts the size of the occupation, and within-occupation inequality can be visualized by how "spread out" the distribution is. For example, secretaries are a large, middle wage occupation in 1983, but the occupation experiences a dramatic decline in size by 2002. A decline in size of a middle wage occupation increases overall inequality, everything else being equal, and this can easily be visualized using Figure 3 by noting that if one were to calculate the combined wage distribution of these three occupations in 1983-5 by adding the probability densities, a decrease in the number of secretaries would lend more weight to the low (cashiers) and high (computer system analysts) wage occupations, resulting in an increase in the variance. In contrast to secretaries, the wage distribution of cashiers shifts to the left (indicating a decline in relative wages) and spreads out (indicating an increase in within occupation inequality). Finally, computer systems analysts are a rapidly growing high-wage occupation, which would lead to an increase in between-occupation inequality, everything else being equal.

It is important to note that the decomposition of variance in Equation 3 is not additive. A change in p_i or μ_i affects the overall mean wage and hence the variance of mean occupational wages. As a

[15] This leaves the variance of log wages unaffected, but has an attractive feature for the analysis: An occupation that has constant wages over time while overall wages increase contributes to an increase in inequality because it doesn't keep up with the general change in average wages (see Equation 3 above).

result, the sum of changes in inequality attributable to each occupation separately will not necessarily add up to the actual change in inequality between two time periods. Instead, the decomposition should be thought of as the hypothetical change in inequality due to occupation i, holding everything else constant at the current levels.

HYPOTHESES

This simple methodological approach allows us to test the basic hypotheses about the role of the occupational structure on wages discussed above. Table 4 summarizes these hypotheses with reference to our data and methods.

-- Table 4 about here --

Hypothesis 1 (H1) argues that the increase in inequality between 1983-2002 has been the result of increasing inequality in mean occupation wages, with wages declining at the bottom and increasing at the top. We test H1 by using a modified version of Equation 3 that holds everything constant at the time=t level except for mean occupation wages, μ_i for all occupations. Here, the change in inequality due to mean occupation wage changes = $\text{var}(\ln wage_{time=t}) - \text{var}(\ln wage_{time=t} \mid \mu_{kt} = \mu_{k,t-1})$ for all occupations k.

Hypothesis 2 (H2) in Table 4 attributes the increase in inequality to changes in the size of occupations. An increase in the size of low wage and high wage occupations, and a corresponding decline in middle wage occupations would increase overall inequality without changing the structure of mean occupation wages. We test H2 using Equation 3 by estimating the counterfactual inequality if the p_i's were held to their time=t-1 levels.

Hypothesis 3 (H3) argues that within-occupation inequality is driving the increase in inequality. Similar to our tests of H1 and H2, we test H3 by calculating Equation 3 for changes in σ_i^2: The change

in inequality due to within-occupation inequality =

$\text{var}(\ln wage_{time=t}) - \text{var}(\ln wage_{time=t} \mid \sigma_{kt}^2 = \sigma_{k,t-1}^2)$ for all occupations k.

In contrast to H1-H3, Hypothesis 4 (H4) argues that the increase in inequality can be explained by changes in specific major occupational categories, such as the decline in blue-collar production occupations or the rise of professional occupations. We test H4 by calculating Equation 3 for major occupational groups.

RESULTS

Figure 4A presents descriptive evidence on Hypotheses 1 and 2. First, we graph the change in mean log wages for each occupation with the mean log wage in 2000-2 on the X-axis. The size of the dot for each occupation reflects weighting by the number of people in the occupation. As indicated by the upward slope of the plotted regression line, there is evidence in favor of H1, as wages increased more for high wage occupations than low wage occupations, but it is also clear that there is a lot of variation around the regression line that is not explained by H1.

To see the evidence on H2, we graph the log of the ratio of occupation size in 2000-2 divided by occupation size in 1983-5 ($\ln(p_{2000-2} / p_{1983-5})$) as a measure of changes in occupational size. If H2 is correct, then low and high wage occupations should have experienced faster growth than middle wage occupations. As with H1, there is visual evidence in favor of H2, and a predicted regression line with a linear and quadratic term for log wages in 2000-2 suggests a slight U-shape. At the same time, much of the change in occupational size appears to deviate from a simple polarization argument, as represented by the U-shaped regression line.

Finally, the evidence on H3 is presented in Figure 4B. The x-axis is within occupation inequality in 1983-5 and the y-axis is within occupation inequality in 2000-2. The diagonal line indicates no change between 1983-5 and 2000-2. To the degree that H3 explains the increase in overall inequality, we would expect to see occupations above the diagonal; visual inspection of the graph

indicates that this is generally the case, but that there are many occupations that saw a reduction in within-occupation inequality over this time period.

-- Figures 4A and 4B about here –

In order to test Hypotheses 1-3 more precisely, we use a modified version of Equation 3 where we focus on changes in one parameter at a time, as described above in the methods section. Table 5 presents a summary test of our first three hypotheses. We find that overall wage change from 1983-85 to 2000-2 (.0468) is due primarily to H1, between-occupation differences in average wages (.0190) and H2, size change (.0217). H3, within-occupation inequality, contributes a smaller amount (.0108). Overall, however, each hypothesis appears to be partially supported as an explanation of the change in wage inequality over this time period.

-- Table 5 about here --

While Table 5 indicates evidence in favor of Hypotheses 1-3, we know from Figures 4A and 4B that there is considerable variation among 3-digit occupations in the changes in average wages, size, and within-occupation inequality between 1983-5 and 2000-2. Before we conclude that inequality is due to "across-the board" changes in the occupational wage structure, as suggested by H1-H3, we analyze the effect of changes at the detailed occupational level. Is the increase in inequality from 1983-2002 due to a consistent pattern of changes in wages across all occupations, or do a handful of occupations stand out as the primary contributors to the growth in wage inequality? Because of the absence of descriptive studies of trends in inequality at the occupational level, we know little about the role that specific occupations may have played in the increase in inequality over the past two decades.

We applied Equation 3 to all 496 3-digit occupations in our data. Table 6 summarizes the top inequality-producing occupations from 1983-85 to 2000-2, based on this analysis. In addition to the top inequality producing occupations, Appendix Table A.2 shows the flip side: the top inequality-reducing occupations during this period, and Appendix B lists the values of p_{it}, μ_{it}, and σ_{it}^2 for each occupation

in 1983-5 and 2000-2. Table 6 uses Equation 3 to calculate the contribution that each occupation makes to changes in overall inequality between 1983-5 to 2000-2 based on changes in p_{it}, μ_{it}, and σ^2_{it},. In addition to the overall effect, we also calculate separate estimates due to each component individually. (To improve readability, each inequality effect in Table 6 is multiplied by 1000).

-- Table 6 about here --

Table 6 shows, for example, that the occupation of "secretaries" contributed the most to overall inequality over this time period, +.005417. This is a large effect for a single occupation; everything else being equal, this represents about 11.5% of the overall change in wage inequality between 1983-5 and 2000-2 (.0468). The wage effect is not because secretaries were paid more than the average worker, but because it is a middle-wage occupation that declined in size. The effect of size changes alone for secretaries is very large, +.00325. As depicted above in Figure 3, this is due to a decline in the proportion of secretaries from 1983-2002 (from 4.04% to 1.746%--see Appendix B for information on all occupations).[16] The mean-standardized log wages of secretaries declined over this period, from -.141 to -.201, contributing to a .000358 increase in overall inequality. At the same time, the increase in the within-occupation variance of log wages from .117 to .151 had a +.000607 effect on inequality.

Overall, the list of occupations in Table 6 includes a number of occupations or groups of occupations that are the subjects of the prevailing wisdom about changes in inequality. We can link changes in the specific occupational groups to the theoretical discussions of occupational change and economic restructuring during the periods we are studying. We foreshadowed some of these in our discussion of hypothesized changes in specific broad occupations earlier. We see a decline, for example,

[16] Additional analysis indicates that the decline in size of secretaries reported here is consistent with Census data. The proportion of workers who worked as secretaries (weighted by sampling weights only) was .00401 in the 1980 Census, .00322 in 1990, and .00213 in 2000. (Source: IPUMS, results available upon request).

in the size of routine office occupations such as typists and bookkeeping clerks, in addition to secretaries (see Appendix B for information on size changes). It is possible that the introduction of personal computers reduces the demand for these occupations—while at the same time increasing the dispersion of wages for secretaries—as highly skilled, computer-literate secretaries may be able to command higher wages in modern, technologically complex offices. Thus, we find a large positive size effect for typists, secretaries, and bookkeeping clerks ("middle wage" occupations that decline in size), and a positive within-occupation inequality effect for secretaries.

Managers and administrators not elsewhere classified (1980 occupation code 19) are the second largest inequality-generating occupation between the years 1983-2002. This is due to an increase in size (5.2 to 6.4%) and wages (.378 to .471), not a change in within-occupation variance: within-occupation inequality decreased from .365 to .332. Additional analysis of the 2000 occupation codes (using the double coded 2000-2002 data) reveals that many of these "not elsewhere classified" managers in the 1980 codes are coded as "chief executives" in the 2000 codes (results available on request). Hence the absence of this code in the 1980 and 1990 codes may mask the rise in pay for the CEOs who show up in the CPS data (keep in mind, however, our earlier discussion about the limitations imposed by the CPS top-coding of wages). As shown below, other managers, except for "managers, marketing and advertising" contribute almost nothing to the change in inequality from 1990-2002.

The rise of computer and information technology occupations is represented by computer systems analysts (+.003384 effect), computer operators (+.000954), and computer programmers (+.000867). Note that the source of the effect of these three occupations is different. For computer analysts, the main contribution to increasing inequality stems from an increase in size, while computer programmers have a substantial mean wage and within-occupation inequality effect. At the same time, there has been a decline in the number of computer operators (a middle-wage occupation). Computer operators maintain the external hardware of computer systems (Strober and Arnold 1987), and it is a rapidly declining occupation as more tasks become automated (U.S. Department of Labor 2006).

Doctors, lawyers, and securities and financial sales occupations (occupation code 255) all have a substantial impact on overall inequality, and they might be taken as emblematic of the increase in high-paying professional occupations that are pulling away from the rest of the labor force. Doctors and lawyers are two high-paying professional occupations whose wages have increased during this time period. Stockbrokers (coded in the CPS as "securities and financial service sales occupations") were especially able to benefit from the stock market boom of the mid- to late-1990s. Note that because the CPS-ORG data only report hourly and weekly wages of workers who are not self-employed, we are only picking up a subgroup of doctors and lawyers in our data. In a separate analysis, we use the annual income data from the March CPS from 1983-2005 and find that the overall increase in log-income inequality over this time period is slightly higher when we include the earnings of self-employed doctors and lawyers, indicating that the results using CPS-ORG data in Table 6 certainly do not overestimate the impact of doctors and lawyers on overall inequality (results available on request).

Low-wage service occupations such as cashiers, janitors, and short-order cooks also show up on the list of top inequality-producing occupations. Their impact is due not to size changes, but to a decline in relative wages. Given the increase in wages in the upper half of the wage distribution during the boom of the late 1990s, these occupations fell further behind the average wage and because of their large relative size they show up high on the list in Table 6.

Assemblers (occupation code 785) are ranked as the 12th largest inequality generating occupation, due primarily to a decline in relative wages. At the same time, it is significant that relatively few blue-collar manufacturing occupations show up in Table 6. Production inspectors are #21, miscellaneous machine operators are #22, and packaging and filling machine operators are #24. (Again, Appendix B lists the inequality effect for all occupations). What stands out is that most blue-collar manufacturing occupations contributed very little to overall changes in inequality during this period. This casts doubt on sweeping generalizations about the role that the loss of blue-collar manufacturing occupations has played in overall trends in inequality, at least since 1983-5.

In order to see how sensitive Hypotheses 1-3 are to the handful of occupations listed in Table 6 that have a big impact on inequality, we estimated the combined effect of these occupations. We first calculated time trends in the combined effect of the top inequality-generating occupations listed in Table 6 on changes in overall inequality. Figure 5 graphs the changes in inequality from 1983-5 to 2000-2 holding the top 14 occupations in Table 6 constant (secretaries to computer programmers). The top line indicates the trend in the Varlog using all occupations, and the bottom line is the time trend holding the top-14 occupations constant (the "adjusted Varlog"). While overall inequality increases from .2888 to .3357 from 1983-5 to 2000-2, the increase is from .2888 to .3026 holding the p, μ, and σ^2 of the top 14 occupations listed in Table 6 constant. The difference between the heights of the two lines represents the change in inequality attributable to the top 14 inequality producing occupations. Overall, 71% of the increase in inequality over this time period is attributable to the top inequality-producing occupations in Table 6, which collectively represent 21.4% of the labor force in 1983-5 (and 21.02% in 2000-2).

-- Figure 5 about here –

In addition to the overall effect from 1983-2002, it is clear from Figure 5 that much of the increase in the adjusted Varlog occurs before 1988. Indeed, the adjusted Varlog is .3018 in 1987-9, which indicates that there has been little change in inequality between 1987-9 and 2000-2 holding constant the top 14 occupations at their 1983-5 levels. If we reestimate Figure 5 for the period 1987-9 to 2000-2 using the 1987-9 levels of these occupations, then the change in Varlog is 0.008 and we can explain away 97% of the overall change in wage inequality between 1987-9 and 2000-2. As a final—and perhaps simpler—test of the influence of these 14 occupations, we calculated the Varlog in 1987 and 2002 including, and then excluding, the top 14 occupations. With all the occupations, the Varlog increases from .3070 in 1987 to .3384 in 2002. Dropping the top-14 inequality producing occupations from the data, the Varlog actually declines, from .3002 in 1987 to .2988 in 2002, and we can "explain" all of the increase from 1987-2002 as the impact of these top-14 occupations (see the Stata syntax in Appendix A to replicate this result, and Table A1 for similar calculations for each year of data). An

interesting result in Figure 5 is that the pattern of change in the adjusted Varlog appears to be cyclical, with periodic increases and decreases, without any secular upward trend. Overall, Figure 5 suggests that the increase in inequality from 1983-2002 is not the result of sweeping changes occurring throughout the labor force, but changes that are affecting a handful of occupations acutely. Indeed, we find that, holding the top 14 occupations constant, or simply excluding them, results in virtually no change in inequality between 1987-9 and 2000-2.

In Table 7, we provide a more systematic test of the combined effect of various occupation categories. Here we show how controlling for the top 14 detailed occupations as well as the broad occupation groups affects the components of wage inequality change we showed in Table 6. The first column of Table 7 repeats the results presented in Table 5, and the second column shows the results for each hypothesis holding constant the top 14 inequality producing occupations identified in Table 6.

-- Table 7 about here --

The effect of Hypothesis 1, wage change, is reduced by 85% holding the top 14 occupations constant, from .0190 to .0028, while Hypothesis 2, size changes, is reduced to 0 (-.0040). These results suggest that both of these hypotheses are sensitive to changes in inequality generated by a handful of occupations rather than by across the board changes throughout the occupational structure. In contrast, Hypothesis 3, within-occupation inequality, is not substantially affected, suggesting that the increase in within-occupation variance in log wages is more widely distributed than the effect of wage or size changes. H3 appears to explain more of the increase in inequality than H1 or H2 when we hold the top 14 inequality producing occupations constant. This result is consistent with Kim and Sakamoto (2006). Overall, however, all three of these hypotheses are substantially smaller than the collective increase in inequality attributed to the top 14 inequality producing occupations (.0331).

Table 7 also shows the change in inequality due to broad occupational categories. In light of the results for individual 3-digit occupations presented in Table 6, the significance of this part of Table 7 is that it tests whether the effect for specific occupations is representative of changes for similar types of

occupations. In general, this does not appear to be the case. Noting the large effects of secretaries (occupation code 313) and managers and administrators not elsewhere classified (code 19), we see that the effect of managerial occupations and administrative support occupations in general is close to zero when we hold the top 14 occupations from Table 6 constant. Changes among managerial, professional and technical occupations, as well as blue collar occupations such as mechanics, precision production, and operators have small effects on overall inequality once we remove the effect of the top 14 inequality producing occupations. The significance of this result is that sweeping generalizations about the increase in inequality being the result of changes among broad categories of workers does not appear to be valid; it is, for example, not managerial occupations as a whole that are increasing inequality, but the grab bag of jobs that fall into the 3-digit occupation category of managers and administrators "not elsewhere classified." Excluding this 3-digit occupation, there is no evidence that managerial occupations as a whole contributed anything to the overall increase in inequality. Likewise, there is no evidence that professional occupations are increasing inequality, once we hold the effect of doctors and lawyers constant. Inspection of the results for all occupations presented in Appendix B reveals many professional occupations that have no effect (see occupation codes 43-199), or even a negative effect, on trends in inequality over this time period.

Adjusting for Occupational Mobility

A qualification of our method is due to the difficulty of identifying the effect of changes in occupation size. The problem is that changes in occupation size generate worker flows to and/or from other occupations. For example, if the number of computer programmers is increasing then these workers are being drawn from other occupations.[17] The implicit assumption of Equation 3 is that the relative size of the other occupations is unchanged by a change in the size of occupation i because the

[17] Or, in the case of new entrants to the labor market, they are being "pulled" from the occupations into which they would have gone.

p_{it} terms for all the other occupations are held to their time=t levels. This will not be true if workers who are leaving a declining occupation tend to go to other related occupations or if an expanding occupation pulls workers from a set of similar occupations.[18] If a low-wage occupation declines in size it will result in a decline in overall wage inequality based on Equation 3 (i.e., relatively fewer low-wage jobs). This would be a misleading result, however, if the workers in the declining low-wage occupation simply switched to another low wage occupation—in which case the net effect might be zero.

To account for possible bias in the effect of size changes, we use data on occupational mobility from matched samples of the CPS-ORG to estimate the changes in the size of other occupations attributable to fluctuations in the size of occupation i. Using data on occupational mobility from the matched CPS data from 1983-2002 we construct a matrix of occupational mobility $M_{a->b}$ where a is the occupation in time t-1 and b is the occupation in time t. In order to estimate what the size of the other occupations would be if we held the size of occupation i constant between time t-1 and t we use these data on inflow and outflow in $M_{a->b}$. If $C_{j->i}$ is the column vector from $M_{a->b}$ showing inflow occupations to occupation i (where each element of C shows the proportion of total inflow to occupation i that comes from occupation j), and $R_{i->j}$ is the corresponding row vector of destination occupations for workers leaving occupation i, then we can calculate the adjusted p's as follows:

$$p_j^{adj} = p_j + (p_{i,t} - p_{i,t-1})[\alpha \times c_{ji} + (1-\alpha) \times r_{ij}] \text{ for i} \neq \text{ j and } 0 \leq \alpha \geq 1 \qquad (4)$$

Where α represents the share of change in occupation i attributed to the inflow occupations (we set this to .5). In other words, if occupation i declined from time t-1 to t, then the adjusted p's for the counterfactual (i.e. if occupation i didn't decline in size) will decrease the size of other occupations,

[18] In an extreme case, an occupation may simply be reclassified to a different occupation code. The "decline" in size of a reclassified occupation may increase or decrease inequality, but the effect would be entirely spurious.

based upon their inflow and outflow rates to occupation i. For example, if all the inflow and outflow from secretaries is to typists, then a decline in the size of secretaries from .06 to .02 would be attributed to an increase in the number of typists, and the adjusted p for typists—i.e., the size of the occupation if the number of secretaries hadn't declined--would be reduced by .04.

As a consequence, we now estimate a modified form of Equation 3:

Change in inequality due to occupation i, using adjusted p's =

$$\text{var}(\ln wage_{time=t}) - \text{var}(\ln wage_{time=t} \mid p_j = p_j^{adj}, p_{it} = p_{i,t-1}, \mu_{it} = \mu_{i,t-1}, \sigma^2{}_{it} = \sigma^2{}_{i,t-1}) \quad (5)$$

where p_j^{adj} refers to the adjusted p for all occupations $j \neq i$.

Table 8 shows the top 15 inflow and outflow occupations for secretaries, based on the aggregate mobility data from 1983-2002 from the CPS. The occupations in this table appear to be related to a common skill set. Secretaries are linked by high mobility rates to and from bookkeepers, receptionists, typists and other administrative support occupations. Because the relative density of secretaries decreased between 1983 and 2002 (as mentioned above, from 4.04% to 1.75%), the adjusted p's for these occupations will be smaller than their actual 2002 levels, reflecting our estimate of what their size would have been had secretaries not declined in size so precipitously between 1983-5 and 2000-2.

-- Table 8 about here --

Table 9 shows the top inequality producing occupations adjusting for occupational mobility. For secretaries, adjusting for occupational mobility dampens the estimated effect on overall inequality from .005417 to .004205, and for computer systems analysts the effect declines from .003384 to .002204. In general, as one might expect, the change is largest for occupations that experienced large changes in size between 1983-5 and 2000-2. At the same time, Table 9 indicates that the effects are still large even when we attempt to adjust for in and outflow mobility patterns. On average, the calculated effect of the top 14 inequality occupations declines 11% using the adjusted Varlog (.00209 average in Table 9 vs. .00234 in Table 6).

-- Table 9 about here –

DISCUSSION AND CONCLUSIONS

Wage inequality increased dramatically in the 1980s, leveled off in the 1990s, then increased more slowly. We have argued that occupational changes are important, yet under-studied, reasons for these changes in wage inequality. Our analysis has examined three mechanisms by which occupations contributed to these changes in wage inequality. We have turned the critique of the sociological focus on occupations on its head: instead of turning away from the study of occupations (because between-occupational differences in wages are declining), we argue that a renewed attention to the occupational structure—in particular to a handful of specific 3-digit occupations—may be the key to understanding the sources of the recent increase in wage inequality over the past generation.

We used a simple decomposition method to provide a descriptive analysis of changes in inequality at the detailed occupation level. This descriptive method is helpful to identify the extent to which occupations have contributed to the growth of wage inequality, and which specific occupations have been primarily responsible for this. Our analysis reveals the complexity of how occupations affect wage inequality. Our descriptive analysis provides the raw material that social scientists must explain in order to account for how occupational differences generate wage inequality.

While our findings are descriptive, the patterns we have identified are consistent with a number of theoretical arguments and conjectures about changes that have occurred in the structure of work and occupations during the past several decades. In particular, our results support the view that there has been a growing polarization of occupations, especially in the 1990s, reflected in the growth of high- and low-wage occupations and the decline of middle-level occupations. High-paying managerial and professional occupations have grown, for example, as have low-paying sales and service occupations. Moreover, middle-level occupations such as administrative and blue-collar occupations have declined, contributing further to the increase in occupational wage polarization.

A growing polarization of occupations at the top and bottom of the wage distribution—with a trough or hollowing out of the middle—has important implications for issues of social mobility and careers. For example, increased polarization could mean that there are fewer opportunities for those at the bottom to move into better-paying occupations. Similarly, there may be fewer chances for social mobility if the shape of the occupational wage structure more closely resembles a pyramid than if the shape of the wage distribution is better represented by an inverse pyramid.

Sociologists are well-positioned to explain these patterns and to build theories of occupational change that are based on political, institutional and organizational forces that shape the structure of work and the economy. The findings we present here represent empirical phenomena that economic sociologists and students of social stratification and occupations must take into account in their theoretical explanations of inequality and economic change.

Our finding that the changes in wage inequality during the past quarter-century are attributable to a relatively few detailed occupations underscores the utility of investigating changes in specific occupations. Unfortunately, the CPS data are limited for assessing the mechanisms generating within-occupation very precisely. They do not include information on organizational characteristics, for example. Moreover, the CPS data provide only information on cross-sections of the labor force, and do not permit the assessment of changes in inequality associated with a career or life course. Explaining how wage inequality is generated needs to disentangle mechanisms that are due to career-life cycle differences in wages (i.e., some people are better able than others to improve their wages over their careers) from those due to labor market segmentation (i.e., some people continue to receive relatively high or low wages throughout their careers). This requires the use of longitudinal panel data on individuals, so as to examine earnings mobility or changes in earnings over time. In order to investigate these mechanisms further, it would be useful to supplement the present analyses with longitudinal panel data such as the Panel Study of Income Dynamics or the National Longitudinal Surveys.

Understanding better the ways in which occupational differences generate wage inequality is a key topic on the research agenda for assessing how economic restructuring affects social stratification,

and is central to theories and policies related to labor market segmentation. The linkages between occupations and inequality are also a fertile area for integrating economic and sociological approaches to studying labor markets and inequality.

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Table 1: Changes by Occupation Category

	Size		Mean Wage		Varlog[1]	
Occupation category	1983-5	2000-2	1983-5	2000-2	1983-5	2000-2
Managerial	0.111	0.159	23.20	25.58	0.320	0.319
Professional	0.131	0.172	21.19	24.78	0.285	0.313
Technical	0.035	0.037	18.45	20.04	0.204	0.243
Sales	0.101	0.107	14.98	17.75	0.350	0.413
Administrative Support	0.171	0.142	13.38	14.05	0.162	0.177
Service	0.113	0.113	10.32	11.42	0.241	0.244
Agriculture	0.020	0.016	8.98	10.00	0.227	0.192
Mechanics	0.046	0.039	17.25	17.99	0.194	0.202
Construction	0.043	0.042	18.32	17.46	0.217	0.217
Precision Production	0.043	0.031	17.39	16.70	0.207	0.210
Operators	0.092	0.059	13.19	13.25	0.189	0.193
Transport and Moving	0.094	0.084	13.57	13.11	0.223	0.202

Note: [1]Variance of log wages.
Wages are adjusted for inflation using 2003 dollars.
Occupational category codes (1980 Census 3-digit codes): Managerial (1-37), Professional (43-199), Technical (203-235), Sales (243-285), Administrative Support (303-389), Service (403-469), Agriculture (473-499), Mechanics (503-549), Construction and Extraction (553-628), Precision production (633-699), Operators (703-799), Transport and Moving (803-889).

Table 2: Trends in Wage Inequality by Year

		Variance of Log Wages				
Year	Occupation codes used	Overall	Between occupations	Within occupations	Top-coded wages	Imputed wages
1983	1980	0.286	0.112	0.167	0.019	0.138
1984	1980	0.295	0.115	0.172	0.023	0.147
1985	1980	0.303	0.121	0.175	0.028	0.143
1986	1980	0.311	0.122	0.182	0.032	0.107
1987	1980	0.314	0.126	0.181	0.037	0.135
1988	1980	0.319	0.129	0.182	0.043	0.144
1989	1980	0.307	0.119	0.187	0.005	0.132
1990	1980	0.306	0.119	0.185	0.006	0.140
1991	1980	0.304	0.119	0.183	0.007	0.159
1992	1980	0.305	0.120	0.184	0.008	0.151
1993	1980	0.309	0.123	0.184	0.008	0.168
1995	1980	0.320	0.134	0.188	0.013	0.233
1996	1980	0.324	0.135	0.189	0.014	0.222
1997	1980	0.323	0.133	0.190	0.016	0.222
1998	1980	0.322	0.131	0.190	0.007	0.236
1999	1980	0.325	0.135	0.189	0.007	0.276
2000	1980	0.330	0.139	0.190	0.008	0.298
2001	1980	0.335	0.141	0.193	0.009	0.309
2002	1980	0.338	0.141	0.196	0.011	0.304
2000	2000	0.330	0.140	0.189	0.008	0.298
2001	2000	0.335	0.139	0.195	0.009	0.309
2002	2000	0.338	0.145	0.193	0.011	0.304
2003	2000	0.326	0.143	0.184	0.001	0.320
2004	2000	0.328	0.146	0.184	0.001	0.316
2005	2000	0.332	0.150	0.184	0.001	0.309

Source: Current Population Survey, outgoing rotation groups.

Table 3: Example of Inequality Calculations

	Time 1			Time 2		
Occupation	$p_{i,1}$	$\mu_{i,1}$	$\sigma^2_{i,1}$	$p_{i,2}$	$\mu_{i,2}$	$\sigma^2_{i,2}$
A	.5	2	1	.5	0	1
B	.5	4	1	.5	4	5

Time t=1 inequality:

$$Var(\ln wage_{time=1}) = Var(\mu_i) + mean(\sigma_i^2) = [.5(2-3)^2 + .5(4-3)^2] + [.5*1 + .5*1] = 1 + 1 = 2$$

Time t=2 inequality:

$$Var(\ln wage_{time=2}) = Var(\mu_i) + mean(\sigma_i^2) = [.5(0-2)^2 + .5(4-2)^2] + [.5*1 + .5*5] = 4 + 3 = 7$$

Counterfactual:

$$\text{var}(\ln wage_{time=2} \mid occ\_B\_unchanged) = [.5(0-2)^2 + .5(4-2)^2] + [.5*1 + .5*1] = 4 + 1 = 5$$

$$\Delta inequality \mid due\_to\_B = 7 - 5 = 2$$

Table 4: Hypotheses

Hypothesis	Prediction
1. Wage change	Average occupational wages are becoming more unequal. Wage decline for the lowest paid occupations and wage increase at the highest paid occupations.
2. Size change	An increase in the relative size of high and low paid occupations and a decline in the middle.
3. Within inequality	Inequality within occupations has increased.
4. Broad occupational categories	The overall increase in inequality can be explained by changes in broad occupational categories, such as in increase in sales occupations or a decline in production occupations.

Table 5: Change in Wage Inequality 1983-5 to 2000-2 Attributable to Competing Hypotheses

	Δ in Varlog, 1983-1985 to 2000-2002
Overall change in Varlog	.0468
Hypothesis:	
1. Wage Change: Increase in occupational average wages at top, decline at the bottom (see Figure 4 panel A).	.0190
2. Size Change: increase in relative size of occupations at the top and bottom (see Figure 4 panel B).	.0217
3. Within Inequality Increase in within occupation inequality	.0108
5. Increase driven by 14 occupations	--
4. Increase due to specific occupational categories:	
Managerial	.00561
Professional	.01145
Technical	.00073
Sales	.00625
Administrative Support	.00904
Service	.00489
Agriculture	-.00070
Mechanics	.00090
Construction	-.00115
Precision production	.00089
Operators	.00680
Transport	.00333

Table 6: Top inequality Producing Occupations, 1983-5 to 2000-2
(Shaded occupations are the top-14 inequality producing occupations)

		Change in overall inequality attributable to changes in the size, mean wage, or within occupation inequality of a specific occupation (x 1000).			
Occupation	3-digit 1980 census code	Total [1]	size effect (p)	mean wage effect (m)	Within-occupation inequality effect (v)
Secretaries	313	5.417	3.252	0.358	0.607
Managers and administrators	19	5.318	2.816	5.142	-2.140
Physicians	84	3.640	1.939	1.719	1.097
Computer systems analysts	64	3.384	3.173	0.084	0.863
Cashiers	276	2.729	0.091	3.107	-0.409
Lawyers	178	2.622	1.543	1.624	-0.013
Registered nurses	95	1.634	-0.116	1.155	0.849
Janitors and cleaners	453	1.605	-0.059	1.439	-0.053
Securities and financial	255	1.322	1.045	0.051	0.474
Bookkeeping, accounting	337	1.236	1.153	-0.003	0.054
Short-order cooks	437	1.112	0.154	0.813	0.222
Assemblers	785	0.977	0.159	0.608	0.089
Computer operators	308	0.954	0.703	0.000	0.080
Computer programmers	229	0.867	0.026	0.566	0.299
Typists	315	0.862	0.861	-0.070	0.070
Welfare service aides	467	0.808	0.716	0.496	0.019
Managers, marketing, advert.	13	0.802	0.780	-0.123	0.159
Laborers, except construction	889	0.770	0.080	0.986	-0.383
Teachers, secondary schools	157	0.750	0.166	0.063	0.450
Financial managers	7	0.731	0.579	-0.074	0.340
Production inspectors	796	0.667	0.512	0.076	0.011
Miscellaneous machine operatives	777	0.647	0.273	0.294	0.018
Pharmacists	96	0.642	0.075	0.600	0.038
Packaging and filling machinists	754	0.616	0.009	0.377	-0.003
Sales occupations, other	257	0.616	0.184	0.177	0.442
Stock handlers and bagger	877	0.598	0.044	0.992	-0.409
Other financial officers	25	0.558	0.184	0.086	0.381
Health aides, except nurses	446	0.518	0.011	0.231	0.152
Maids and housemen	449	0.503	-0.072	0.466	0.044
Automobile mechanics	505	0.496	0.209	0.056	0.155

Notes: [1]The change in overall wage inequality that results from changes in the size (p), mean wage (m), and within-occupation inequality (v) of occupation i, holding all other occupations constant. See text for further explanation.
Log wages are mean standardized by year. The mean log wage is 2.62 in 1983-5 and 2.72 in 2000-2, and the mean wage is $15.96 in 1983-5 and $18.23 in 2000-2.

Table 7: Change in Wage Inequality 1983-5 to 2000-2 Attributable to Competing Hypotheses

	Δ in Varlog, 1983-1985 to 2000-2002	Δ in Varlog excluding top14 occupations
Overall change in Varlog	.0468	.0150
Hypothesis:		
1. Wage Change: Increase in occupational average wages at top, decline at the bottom (see Figure 4 panel A).	.0190	.0028
2. Size Change: increase in relative size of occupations at the top and bottom (see Figure 4 panel B).	.0217	-.0040
3. Within Inequality Increase in within occupation inequality	.0108	.0088
5. Increase driven by 14 occupations	--	.0331**
4. Increase due to specific occupational categories:		
Managerial	.00561	-.00160
Professional	.01145	.00068
Technical	.00073	.00010
Sales	.00625	.00301
Administrative Support	.00904	.00047
Service	.00489	.00233
Agriculture	-.00070	.00035
Mechanics	.00090	-.00103
Construction	-.00115	-.00172
Precision production	.00089	-.00079
Operators	.00680	.00169
Transport	.00333	.00151

Note: **71% of the increase in inequality is explained by the top 14 inequality producing occupations, representing 21.7% of the labor force.

Table 8. Occupational mobility for secretaries: Top 15 inflow and outflow occupations, 1983-2002

Occupation Year 1	Occupation Year 2	Mobility Rate
	Outflow occupations	
Secretaries	Bookkeeping, accounting,	0.0977
Secretaries	Typists	0.0856
Secretaries	Managers and administrators	0.0849
Secretaries	Receptionists	0.0659
Secretaries	General office clerks	0.0521
Secretaries	Management related occupation.	0.0484
Secretaries	Administrative support occupations.	0.0384
Secretaries	Information clerks, n.e.c	0.0224
Secretaries	Computer operators	0.0197
Secretaries	Data-entry keyers	0.0191
Secretaries	Legal assistants	0.0183
Secretaries	Supervisors and proprietors	0.0169
Secretaries	Investigators and adjusters	0.0132
Secretaries	Cashiers	0.0126
Secretaries	Supervisors, general office	0.0125
	Inflow occupations	
Typists	Secretaries	0.0956
Bookkeeping, accounting,	Secretaries	0.0908
Receptionists	Secretaries	0.0781
Managers and administrators	Secretaries	0.0744
General office clerks	Secretaries	0.0574
Management related occupations	Secretaries	0.0428
Administrative support occupations	Secretaries	0.0331
Cashiers	Secretaries	0.0241
Information clerks, n.e.c	Secretaries	0.0217
Computer operators	Secretaries	0.0207
Data-entry keyers	Secretaries	0.0179
Legal assistants	Secretaries	0.0171
File clerks	Secretaries	0.0154
Investigators and adjusters	Secretaries	0.0123
Supervisors and proprietors	Secretaries	0.0122

Table 9. Top Inequality producing occupations, adjusting for occupational mobility.

Occupation	3-digit census code	Effect on overall change in inequality (Varlog)		Occupation size (%)	
		Unadjusted	Adjusted for Mobility	1983-5	2000-2
Secretaries	313	5.417	4.205	4.044	1.746
Managers and administrators	19	5.318	5.294	5.187	6.441
Physicians	84	3.640	3.422	0.352	0.585
Computer systems analysts	64	3.384	2.204	0.358	1.624
Cashiers	276	2.729	2.715	1.865	1.908
Lawyers	178	2.622	2.544	0.430	0.645
Registered nurses	95	1.634	1.673	1.439	1.653
Janitors and cleaners	453	1.605	1.561	1.858	1.538
Securities and financial	255	1.322	1.209	0.210	0.400
Bookkeeping, accounting,	337	1.236	1.010	1.743	1.076
Short-order cooks	437	1.112	1.018	1.474	1.595
Assemblers	785	0.977	0.836	1.169	0.992
Computer operators	308	0.954	0.726	0.750	0.238
Computer programmers	229	0.867	0.851	0.567	0.583
Typists	315	0.862	0.440	0.860	0.363
Welfare service aides	467	0.808	0.643	0.069	0.383
Managers, marketing, advertising	13	0.802	0.586	0.475	0.765
Laborers, except construction	889	0.770	0.686	1.132	0.986
Teachers, secondary school	157	0.750	0.651	1.466	1.284
Financial managers	7	0.731	0.553	0.420	0.738
Production inspectors	796	0.667	0.449	0.809	0.448
Miscellaneous machine operators	777	0.647	0.479	1.100	0.915
Pharmacists	96	0.642	0.642	0.142	0.159
Packaging and filling machinists	754	0.616	0.534	0.460	0.282
Sales occupations, other	257	0.616	0.519	0.417	0.600
Stock handlers and bagger	877	0.598	0.592	0.731	0.770
Other financial officers	25	0.558	0.475	0.586	0.732
Health aides, except nursing	446	0.518	0.515	0.347	0.262
Maids and housemen	449	0.503	0.535	0.547	0.484
Automobile mechanics	505	0.496	0.371	0.806	0.591
Secretaries	313	5.417	4.205	4.044	1.746

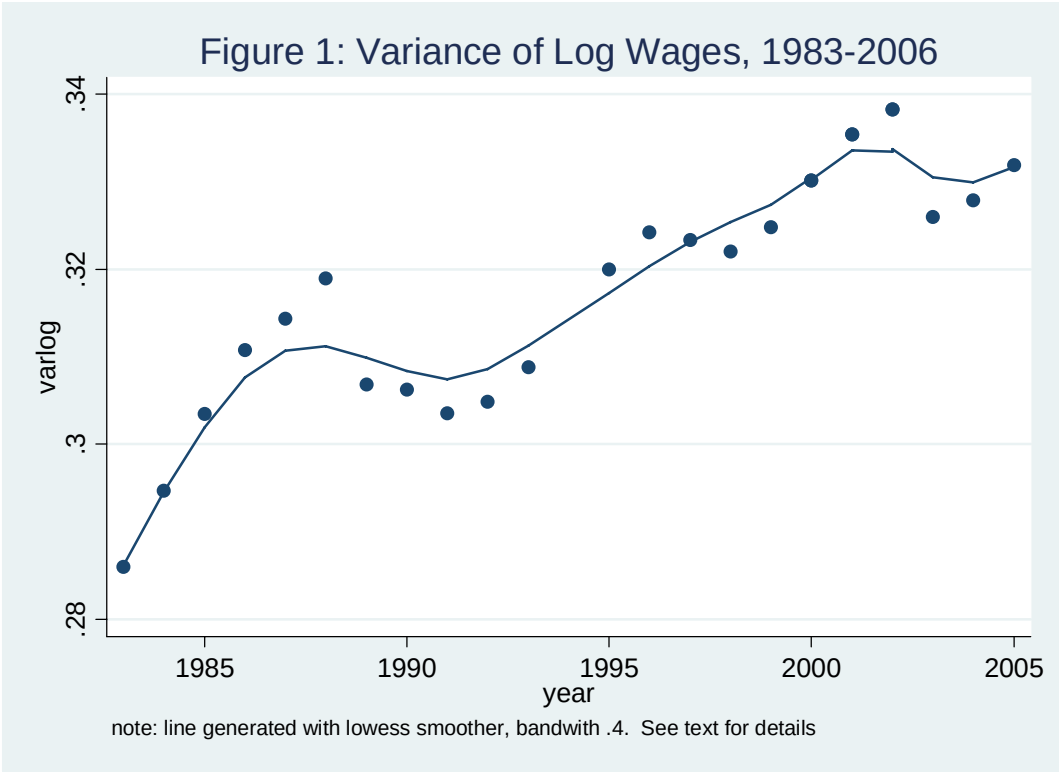


Figure 1: Variance of Log Wages, 1983-2006
varlog
.28
.3
.32
.34
1985
1990
1995
2000
2005
year
note: line generated with lowess smoother, bandwith .4. See text for details

Figure 2:

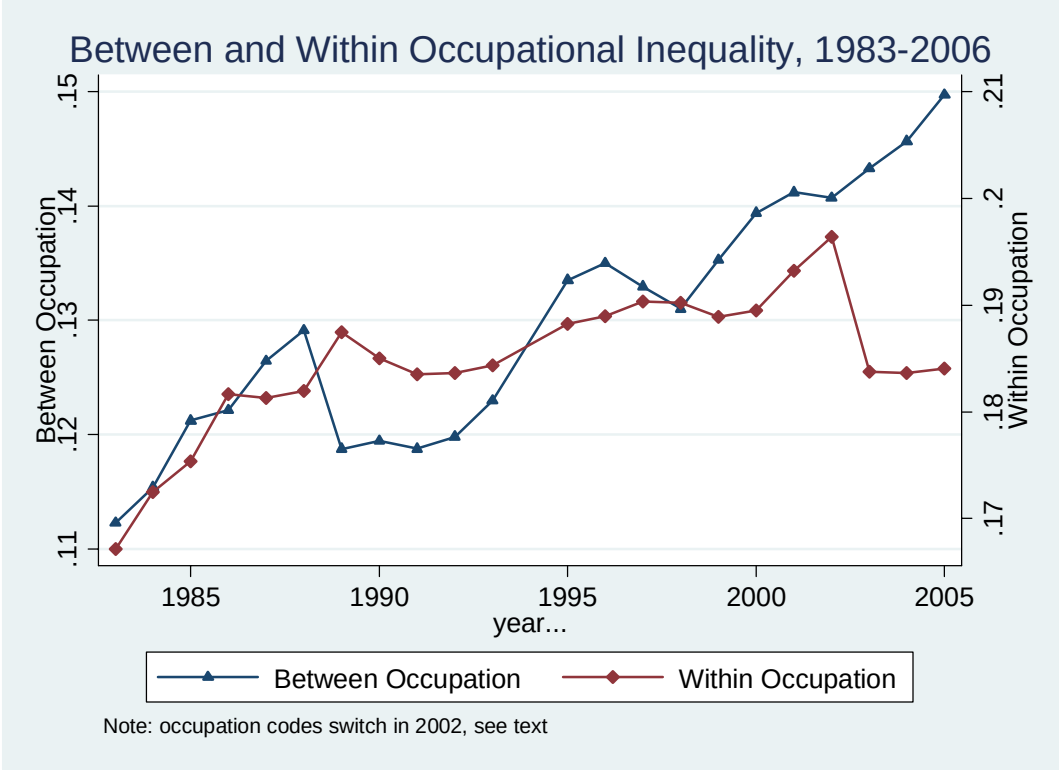
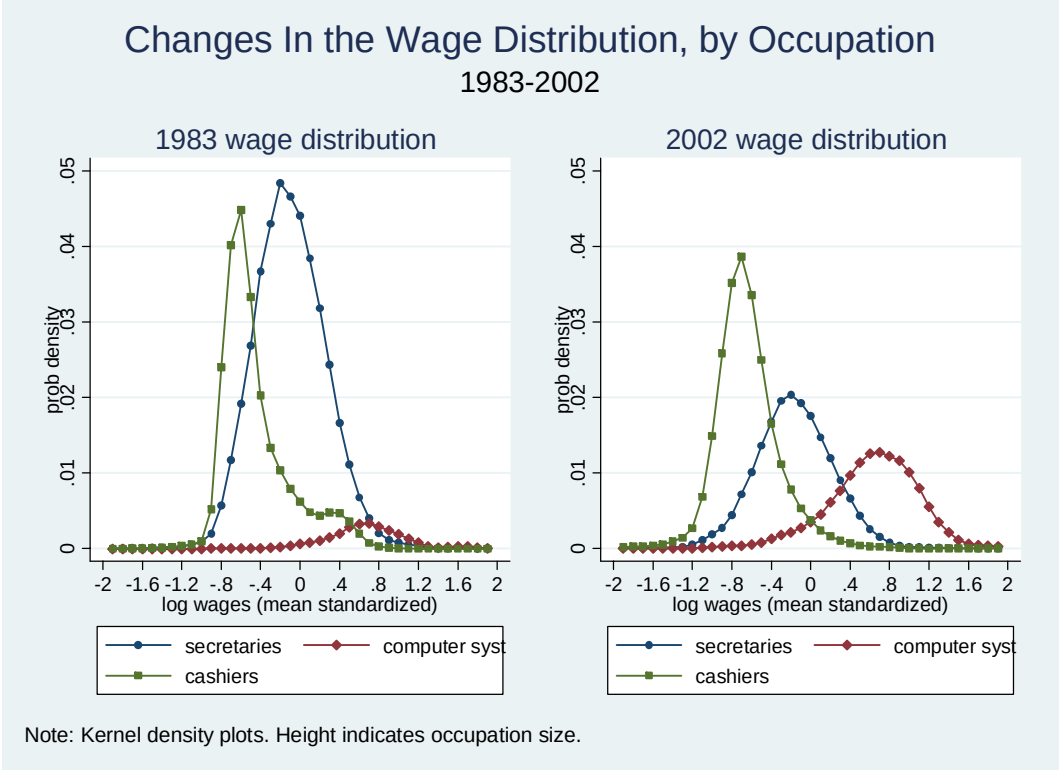

Between and Within Occupational Inequality, 1983-2006
Between Occupation
.11
.12
.13
.14
.15
Within Occupation
.17
.18
.19
.2
.21
1985
1990
1995
2000
2005
year...
Between Occupation
Within Occupation
Note: occupation codes switch in 2002, see text

Figure 3



Note: Kernel density plots. Height indicates occupation size.

Figure 4A: Hypotheses 1 and 2

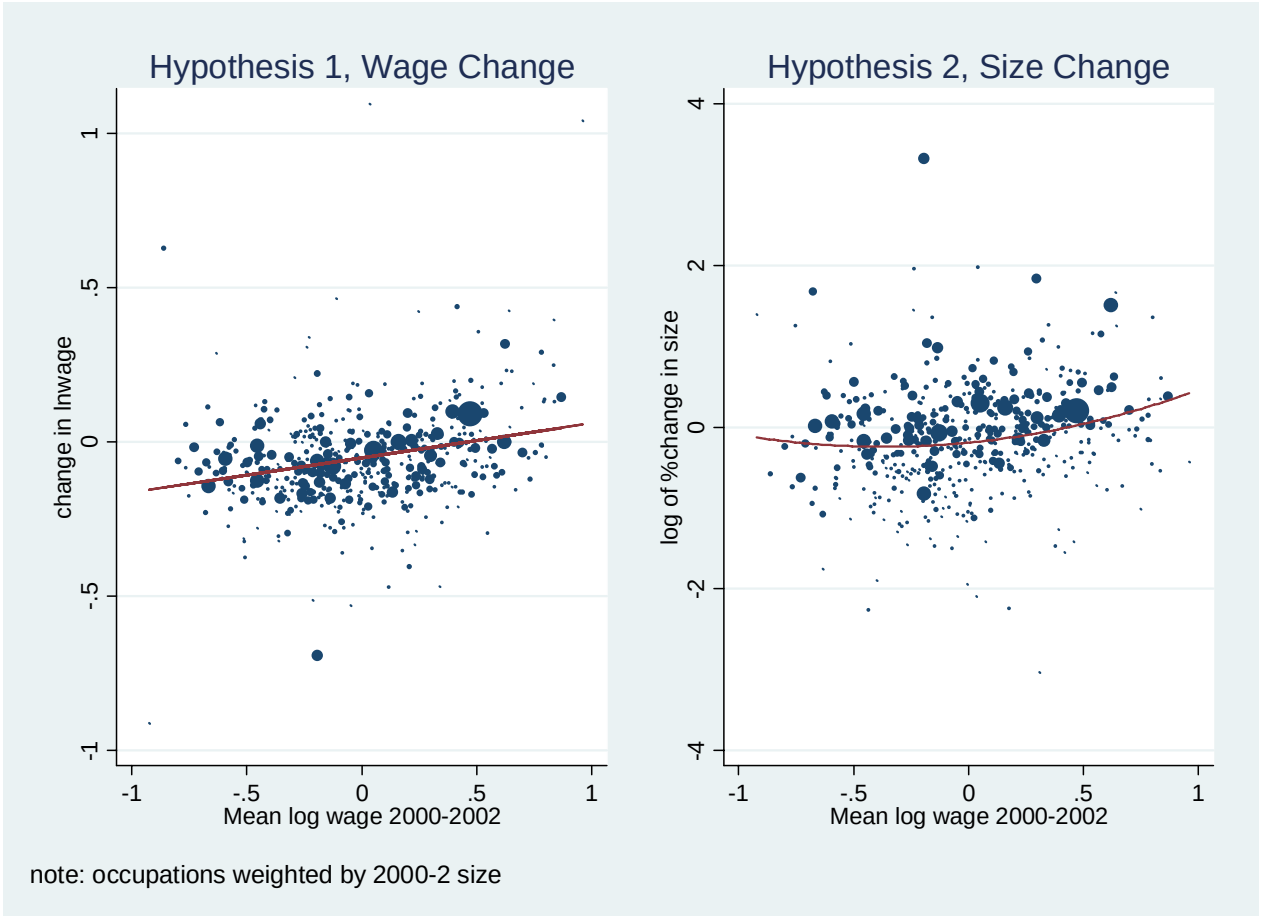


Figure 4B: Hypothesis 3

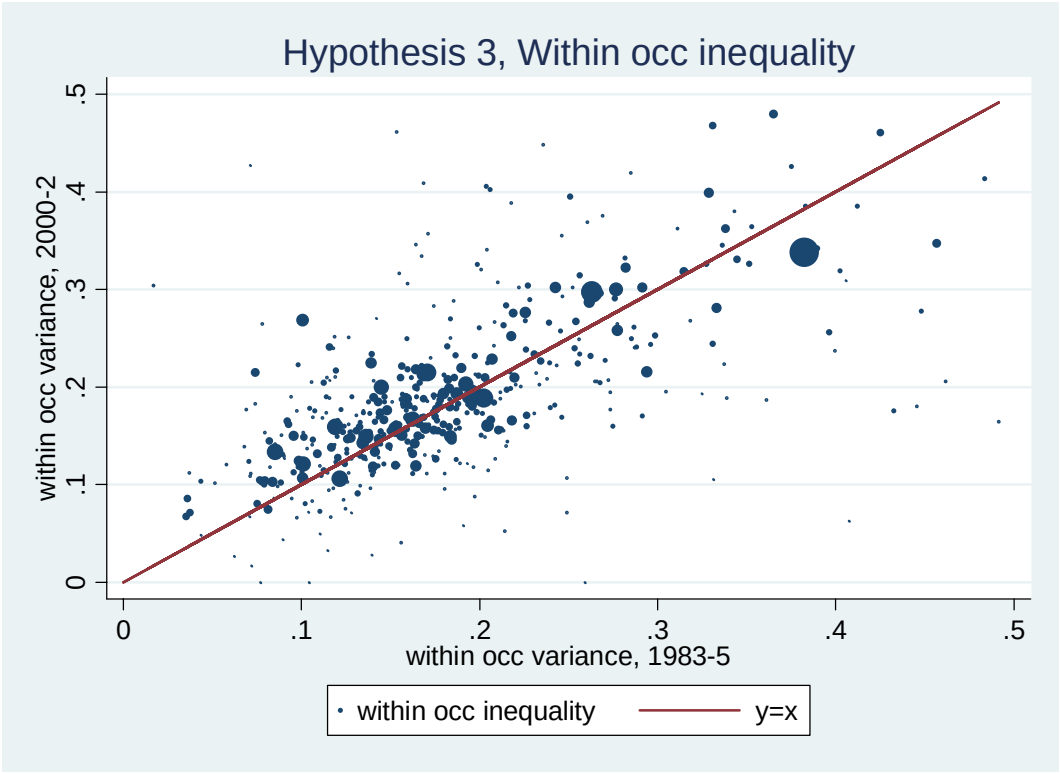
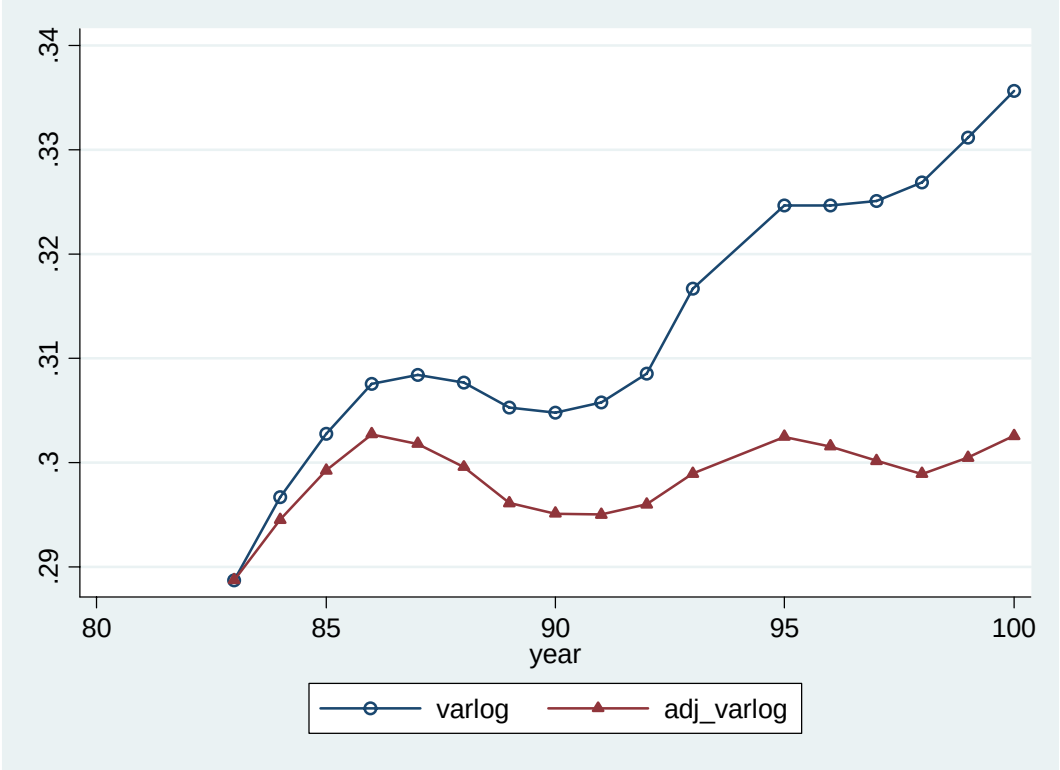


Figure 5: Change in Inequality from 1983-5 to 2000-2, holding constant the Top 14 inequality producing occupations



Add explanatory note

APPENDIX A

Technical Appendix: Constructing the CPS-ORG sample.

The Current Population Survey-Merged Outgoing Rotation Groups (CPS-ORG) data that we use in this paper was obtained through the National Bureau of Economic Research (NBER). The NBER provides an extract of the CPS-ORG data with consistent variable names and labels from 1979 on. In this appendix we provide the basic computer code needed to replicate the sample specifications that we use. This Stata do-file will extract the data for 2002, as an example, using the NBER supplied CPS-ORG data. See the online documentation at http://www.nber.org/data/morg.html for details on the variable names and labels. [This appendix as well as the complete computer code and programs used in the analysis of this paper will be moved to the first author's website in the final version of the paper]. Table A1 shows the results of this check on the results for each year.

------ begin Stata code-----"checkresults.do"

```
* Stata code to check the basic results.
clear
set mem 40m
use  uhour* year I* age paidhre earnhre earnwke occ* ind* sex state /*
*/ hhid lineno race earnwt weight* grade* using c:\papers\cpsorg\data\morg02

replace earnhre=earnhre/100
if year>1991 & year<2003  {
          do recode9080
          * this do-file recodes 1990 census occupations to 1980 occupations
          * see text for more details
          }
* topcode for earnhre = 99.99 (after dividing by 100)
gen topcode_a=earnhre==99.99
gen topcode_b=earnwke==999 if year>=1979 & year<=1988
replace topcode_b=earnwke==1923 if year>=1989 & year<=1997
replace topcode_b=earnwke==2884 if year>=1998
replace earnhre=1.4*earnhre if topcode_a==1
replace earnwke=earnhre*uhourse if topcode_a==1
* do this only to correct topcoded earnings for hourly workers
* otherwise use earnwke, which already includes hourly wages * hours worked
* topcodes for earnwke (from cpsx_morg.pdf at www.nber.org)
* 999 for 79-88
* 1923 for 89-97
* 2884 for 98+
tab topcode_b
```

```
replace earnwke=earnwke*1.4 if topcode_b==1 & topcode_a==0
capture gen wage=earnwke/uhourse
drop if wage==.
sum wage
replace wage=. if uhours<=0
sort year
merge year using cpi2
* cpi2.dta has the consumer price multiplier, cpi.  Omitting this does not
* affect the inequality results.
tab _merge
keep if _merge==3
gen wage_04=wage*cpi
gen wage_re=wage_04
if year~=1994 {
        replace wage_re=. if I25d~=0
        replace wage_re=. if I25c>0 & paidhre==1
        * this drops any wage with imputed weekly or hourly earnings
        * see the cps-org documentation at www.nber.org for more details
}

if year==1994 {
        replace wage=.
        }
sum wage* [w=weight]
recode uhours -100/0=0  100/300=99
recode occ80 21=19
capture drop if occ80==435
* drop waiters from the data (see paper for details)
gen weight2=earnwt*uhourse
* weight by the earnings weight x # of hours worked
gen lnwage_re=ln(wage_re)
lab var lnwage_re "log wage"
gen lnwage_04=ln(wage_04)
lab var lnwage_04 "log wage including imputed wages"
drop if wage_04<2.6 | wage_04>260
* using 2004 dollars, this drops wages less than $1/hr or more than $260/hr in 1979 dollars
gen topocc=0
foreach num of numlist 19 64 84 95 178 255 276 308 313 337 437 453 785 {
        replace topocc=1 if occ80==`num'
        }
* Test for change in lnwage excluding top inequality "producing" occupations
sum lnwage_re [aw=weight2]
di r(Var)
sum lnwage_re if topocc==0 [aw=weight2]
di r(Var)


* to repeat this for 1983 (or 1987)...substitute "morg83" (“morg87”) in the second line from the top.

----end Stata code---
```

After 1991, the CPS uses 1990 occupation codes. The 1990 Census occupation codes were recoded to match the 1980 occupation codes using the following syntax in Stata:

```
recode occ90 353=349 368=369 436=437 674=673 795=794 804=805 16=17 18=16
19=18 461=463 462=464 463=465 464=466 465=467 628=633 864=863 865=864 866=865
867=866 868=867 874=873 21/22=19
```

1980 occupation were merged together if the 1990 codes contained only the merged code. For example, the 1980 codes “truck drivers, light” and “truck drivers, heavy” were merged into “truck drivers” in the 1990 codes. The following Stata syntax merges these 1980 occupations:

```
recode occ80 805=804 436=437 179=178 795=794 368=369 353=349
```

Table A1: Robustness Check: Results of Running "checkresults.do" for Each Year

	Variance of log wages	
Year	All occupations	Excluding the top 14 inequality producing occupations
1983	0.2800	0.2739
1984	0.2881	0.2807
1985	0.2962	0.2881
1986	0.3033	0.2959
1987	0.3070	0.3002
1988	0.3110	0.3022
1989	0.3062	0.2934
1990	0.3052	0.2915
1991	0.3032	0.2879
1992	0.3046	0.2871
1993	0.3080	0.2892
1994	0.3270	0.3060
1995	0.3209	0.2919
1996	0.3249	0.2962
1997	0.3241	0.2982
1998	0.3227	0.2918
1999	0.3253	0.2907
2000	0.3306	0.2946
2001	0.3358	0.2981
2002	0.3384	0.2988

Additional Descriptive Analyses

Figure A1 shows the proportion of the variance in log-wages explained by the 3-digit occupation categories in this data. This is the between occupation Varlog divided by the overall Varlog (it is also, obviously, the R-squared of a regression of log wages on 3-digit occupations). Note that this has gone up over time, meaning that 3-digit occupations explain a higher % of the variation in wages than they did in 1983-5.

Figure A2 shows the proportion of variance explained by 3-digit occupations including the cases with imputed wages. Note that including imputed wages results in a decline in the R-squared. Figure A3 shows the trends in between and within occupation inequality including the imputed wages.

Table A2 presents the top inequality reducing occupations. This is similar to Table 6 in the paper. Comparing the magnitude of the effect to the occupations in Table 6, it is clear that there are fewer occupations that have a large negative impact on the change in inequality.

Figure A1. R-squared of log wages on 3-digit occupation codes

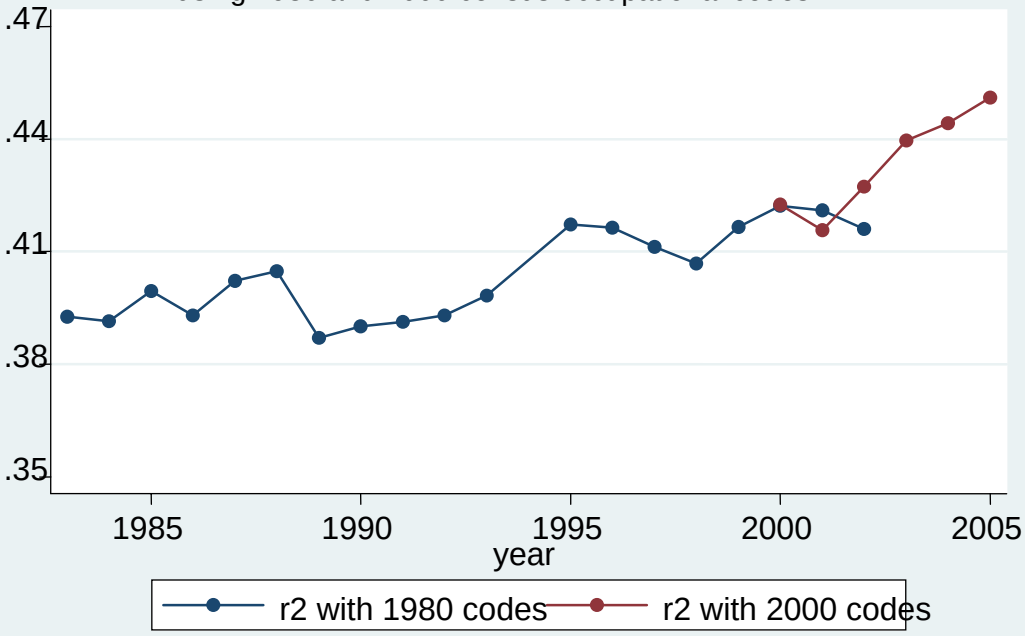


Figure A2: R-squared of log wages on 3-digit occupation codes

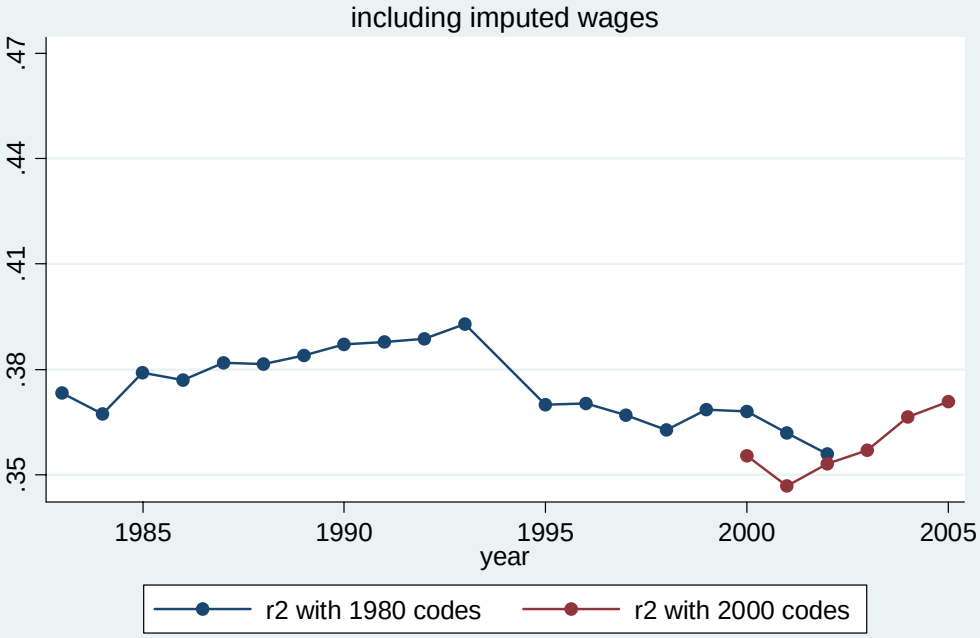


Figure A3

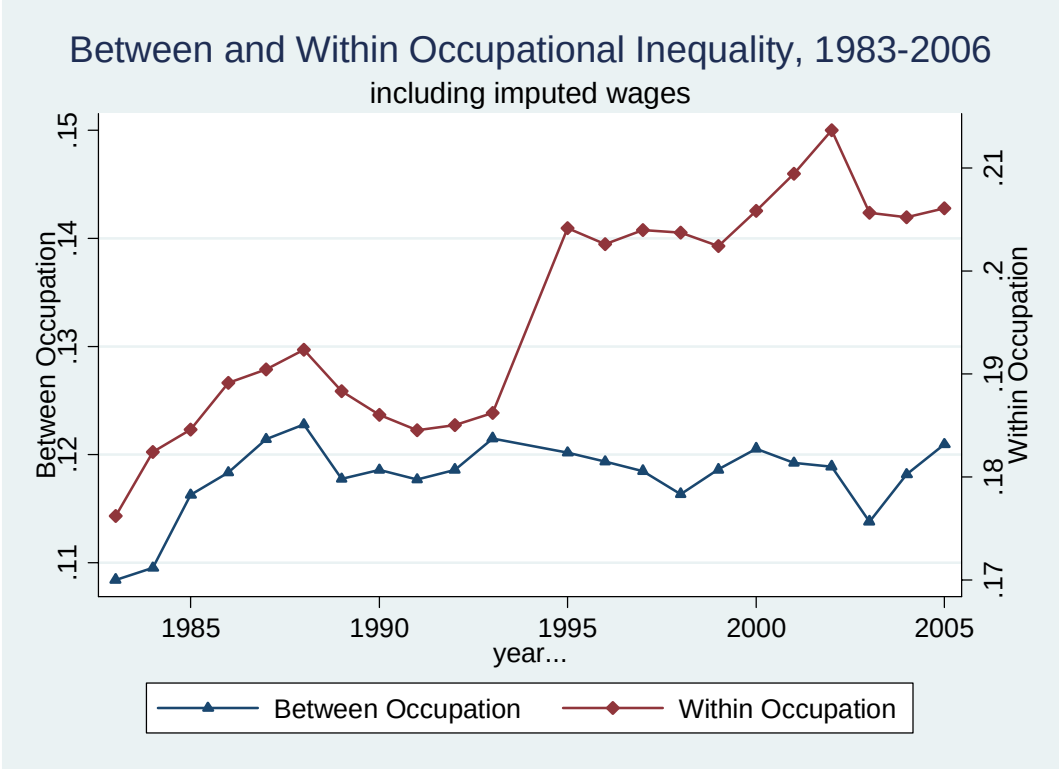

Between and Within Occupational Inequality, 1983-2006
including imputed wages
Between Occupation
.11
.12
.13
.14
.15
Within Occupation
.17
.18
.19
.2
.21
1985
1990
1995
2000
2005
year...
Between Occupation
Within Occupation

Table A2: Top Inequality Reducing Occupations, 1983-5 to 2000-2

		Change in overall inequality attributable to changes in the size, mean wage, or within occupation inequality of a specific occupation (x 1000).			
Occupation	3-digit 1980 census code	Total [1]	size effect (p)	mean wage effect (m)	Within-occupation inequality effect (v)
Farm workers	479	-1.138	-1.309	0.237	-0.141
Investigators and adjusters	376	-1.065	-1.006	0.181	-0.339
Child care workers, private	406	-0.952	-0.043	-0.888	0.063
Postmasters and mail supervisors	17	-0.633	-0.610	-2.040	1.415
Management related occupations	37	-0.555	-0.350	-0.219	-0.125
Health technologists and	208	-0.552	-0.608	0.162	-0.007
Social workers	174	-0.519	-0.462	-0.057	-0.031
Private household cleaner	407	-0.396	-0.514	-0.058	0.118
Supervisors--production occupations	633	-0.395	0.753	-0.647	-0.092
Mechanical	57	-0.360	0.016	-0.359	-0.029
Personnel, training, and	27	-0.351	-0.120	-0.278	-0.073
Supervisors, n.e.c.	558	-0.350	-0.037	-0.364	0.027
Operations and systems re	65	-0.318	0.029	-0.471	0.006
Clergy	176	-0.313	0.006	-0.222	-0.075
Geologists and geodesists	75	-0.304	-0.021	-0.170	-0.032

Appendix B.

This table presents complete results for all occupations.
Key:
“occ” is the 3-digit 1980 census code.
“dif” : change in overall inequality attributable to changes in the occupation, multiplied by 1000
“dif_adj” : mobility adjusted change in inequality, multiplied by 1000
“m1983” and “m2000” : mean occupation log wages in 1983-5 and 2000-2, standardized by subtracting the mean log wage for each time period.
“v1983” and “v2000” : within-occupation variance in log wages in 1983-5 and 2000-2.
“p1983” and “p2000” : the proportion of the labor force (x 100, weighted by hours worked) in 1983-5 and 2000-2.

[Note: this appendix will be placed online for the final version of the paper]

	A	B	C	D	E	F	G	H	I	J
1	occ80	occ	dif	dif_adj	m1983	m2000	v1983	v2000	p1983	p2000
2	Legislators	3	-0.026	-0.026	0.237		0.622		0.008	
3	Chief executives and general administrators,	4	-0.030	-0.030	0.336	0.291	0.408	0.285	0.019	0.016
4	Administrators and officials, public administ	5	-0.230	-0.234	0.427	0.420	0.275	0.217	0.502	0.659
5	Administrators, protective service	6	-0.058	-0.061	0.417	0.332	0.287	0.258	0.060	0.051
6	Financial managers	7	0.731	0.553	0.504	0.494	0.226	0.272	0.420	0.738
7	Personnel and labor relations managers	8	-0.005	-0.034	0.501	0.439	0.234	0.225	0.130	0.232
8	Purchasing managers	9	-0.090	-0.095	0.583	0.425	0.182	0.243	0.110	0.131
9	Managers, marketing, advertising, and publi	13	0.802	0.586	0.580	0.566	0.262	0.282	0.475	0.765
10	Administrators, education and related fields	14	-0.266	-0.338	0.407	0.348	0.264	0.245	0.538	0.798
11	Managers, medicine and health	15	-0.237	-0.420	0.409	0.294	0.207	0.221	0.109	0.690
12	Managers, properties and real estate	16	0.069	-0.006	-0.034	0.031	0.435	0.420	0.219	0.339
13	Postmasters and mail superintendents	17	-0.633	-1.170	0.489	-0.184	0.101	0.240	0.036	1.016
14	Funeral directors	18	0.040	0.035	0.032	0.091	0.204	0.342	0.026	0.043
15	Managers and administrators, n.e.c.	19	5.318	5.294	0.378	0.471	0.365	0.332	5.187	6.441
16	Accountants and auditors	23	-0.213	-0.211	0.335	0.301	0.191	0.202	1.205	1.367
17	Underwriters	24	0.057	0.058	0.226	0.309	0.168	0.224	0.062	0.095
18	Other financial officers	25	0.558	0.475	0.393	0.408	0.243	0.295	0.586	0.732
19	Management analysts	26	0.416	0.239	0.645	0.571	0.254	0.264	0.087	0.278
20	Personnel, training, and labor relations speci	27	-0.351	-0.362	0.340	0.258	0.219	0.207	0.371	0.565
21	Purchasing agents and buyers, farm products	28	0.011	0.012	0.112	0.065	0.208	0.266	0.014	0.008
22	Buyers, wholesale and retail trade, except fa	29	0.043	0.042	0.091	0.040	0.218	0.238	0.191	0.174
23	Purchasing agents and buyers, n.e.c.	33	-0.171	-0.173	0.288	0.143	0.162	0.146	0.236	0.229
24	Business and promotion agents	34	0.051	0.068	0.064	0.259	0.285	0.419	0.044	0.020
25	Construction inspectors	35	0.005	0.005	0.262	0.263	0.158	0.164	0.057	0.056
26	Inspection and compliance officers, except c	36	0.010	0.014	0.354	0.347	0.145	0.160	0.192	0.210
27	Management related occupations, n.e.c.	37	-0.555	-0.503	0.233	0.024	0.156	0.125	0.244	0.411
28	Architects	43	0.071	0.038	0.445	0.473	0.187	0.181	0.081	0.159
29	Aerospace	44	-0.082	-0.061	0.783	0.787	0.140	0.106	0.092	0.077
30	Metallurgical and materials	45	-0.041	-0.041	0.712	0.569	0.161	0.181	0.025	0.025
31	Mining	46	-0.003	0.001	0.596	0.551	0.155	0.316	0.009	0.005
32	Petroleum	47	-0.162	-0.143	0.815	0.665	0.252	0.302	0.043	0.021
33	Chemical	48	-0.002	-0.012	0.780	0.749	0.144	0.142	0.069	0.078
34	Nuclear	49	-0.055	-0.040	0.950	0.988	0.118	0.156	0.020	0.011
35	Civil	53	-0.284	-0.302	0.632	0.529	0.153	0.145	0.237	0.259
36	Agricultural	54	-0.008	-0.003	0.507	0.454	0.193	0.122	0.007	0.002
37	Electrical and electronic	55	0.113	-0.014	0.723	0.693	0.156	0.148	0.550	0.682
38	Industrial	56	-0.261	-0.267	0.586	0.490	0.149	0.139	0.234	0.242
39	Mechanical	57	-0.360	-0.369	0.698	0.608	0.153	0.143	0.298	0.307
40	Marine and naval architects	58	-0.090	-0.061	0.619	0.380	0.249	0.095	0.028	0.006
41	Engineers, n.e.c.	59	-0.196	-0.218	0.686	0.585	0.158	0.184	0.227	0.246
42	Surveyors and mapping scientists	63	0.025	0.022	0.076	0.228	0.163	0.167	0.026	0.015
43	Computer systems analysts and scientists	64	3.384	2.204	0.612	0.616	0.145	0.198	0.358	1.624
44	Operations and systems researchers and anal	65	-0.318	-0.363	0.649	0.471	0.158	0.160	0.176	0.237
45	Actuaries	66	0.021	0.019	0.787	0.789	0.238	0.202	0.014	0.019
46	Statisticians	67	0.020	0.021	0.391	0.528	0.203	0.150	0.032	0.028
47	Mathematical scientists, n.e.c.	68	-0.017	-0.010	0.879	1.065	0.174	0.212	0.009	0.004

	A	B	C	D	E	F	G	H	I	J
1	occ80	occ	dif	dif_adj	m1983	m2000	v1983	v2000	p1983	p2000
48	Physicists and astronomers	69	-0.068	-0.051	0.671	0.792	0.398	0.182	0.034	0.022
49	Chemists, except biochemists	73	0.033	0.030	0.496	0.485	0.239	0.261	0.120	0.131
50	Atmospheric and space scientists	74	0.030	0.030	0.578	0.689	0.210	0.319	0.013	0.012
51	Geologists and geodesists	75	-0.304	-0.290	0.835	0.538	0.246	0.169	0.058	0.042
52	Physical scientists, n.e.c.	76	0.037	0.014	0.518	0.543	0.189	0.161	0.014	0.045
53	Agricultural and food scientists	77	-0.016	-0.018	0.225	0.232	0.288	0.243	0.027	0.039
54	Biological and life scientists	78	-0.058	-0.076	0.293	0.304	0.331	0.247	0.077	0.118
55	Forestry and conservation scientists	79	0.025	0.024	0.361	0.260	0.101	0.157	0.042	0.017
56	Medical scientists	83	0.016	-0.067	0.466	0.309	0.327	0.327	0.032	0.095
57	Physicians	84	3.640	3.422	0.299	0.618	0.595	0.782	0.352	0.585
58	Dentists	85	0.246	0.211	0.699	0.878	0.516	0.725	0.016	0.031
59	Veterinarians	86	-0.004	-0.004	0.285	0.381	0.274	0.192	0.019	0.025
60	Optometrists	87	0.050	0.035	0.840	0.820	0.318	0.262	0.003	0.012
61	Podiatrists	88	0.032	0.027	0.429	0.867	0.153	0.441	0.003	0.004
62	Health diagnosing practitioners, n.e.c.	89	0.016	0.012	0.142	0.504	0.246	0.293	0.003	0.007
63	Registered nurses	95	1.634	1.673	0.291	0.393	0.075	0.127	1.439	1.653
64	Pharmacists	96	0.642	0.642	0.486	0.782	0.123	0.147	0.142	0.159
65	Dietitians	97	0.067	0.070	-0.047	-0.045	0.199	0.280	0.077	0.070
66	Inhalation therapists	98	0.033	0.031	0.101	0.250	0.102	0.082	0.076	0.072
67	Occupational therapists	99	0.031	0.040	0.196	0.399	0.090	0.135	0.024	0.045
68	Physical therapists	103	0.056	0.071	0.236	0.405	0.176	0.168	0.058	0.119
69	Speech therapists	104	0.044	0.054	0.257	0.405	0.100	0.112	0.056	0.087
70	Therapists, n.e.c.	105	-0.034	-0.028	0.075	0.081	0.135	0.170	0.044	0.075
71	Physicians' assistants	106	0.105	0.105	-0.031	0.410	0.193	0.180	0.068	0.070
72	Earth, environmental, and marine science tea	113	0.006	0.006	0.271	0.249	0.106	0.205	0.007	0.008
73	Biological science teachers	114	0.006	0.004	0.373	0.372	0.353	0.352	0.031	0.036
74	Chemistry teachers	115	-0.042	-0.048	0.207	0.337	0.492	0.164	0.015	0.022
75	Physics teachers	116	0.069	0.059	0.408	0.596	0.204	0.345	0.012	0.020
76	Natural science teachers, n.e.c.	117	0.006	0.006	0.583	0.638	0.325	0.193	0.001	0.003
77	Psychology teachers	118	-0.026	-0.027	0.486	0.341	0.198	0.188	0.020	0.021
78	Economics teachers	119	-0.008	-0.002	0.614	0.540	0.174	0.283	0.022	0.017
79	History teachers	123	0.029	0.036	0.388	0.323	0.169	0.409	0.021	0.015
80	Political science teachers	124	-0.006	-0.007	0.335	0.360	0.203	0.141	0.012	0.013
81	Sociology teachers	125	0.016	0.017	0.375	0.488	0.184	0.250	0.011	0.010
82	Social science teachers, n.e.c.	126	0.017	0.017	0.389	0.626	0.094	0.087	0.007	0.007
83	Engineering teachers	127	0.049	0.053	0.415	0.649	0.265	0.208	0.032	0.028
84	Mathematical science teachers	128	0.025	0.037	0.414	0.456	0.261	0.343	0.045	0.031
85	Computer science teachers	129	0.078	0.070	0.387	0.442	0.319	0.551	0.011	0.023
86	Medical science teachers	133	-0.008	-0.004	0.770	0.751	0.311	0.348	0.015	0.014
87	Health specialties teachers	134	0.038	0.045	0.340	0.528	0.242	0.176	0.048	0.040
88	Business, commerce, and marketing teachers	135	0.032	0.038	0.472	0.484	0.218	0.388	0.028	0.021
89	Agriculture and forestry teachers	136	-0.015	-0.016	0.581	0.114	0.118	0.240	0.007	0.008
90	Art, drama, and music teachers	137	0.018	0.022	0.345	0.308	0.246	0.337	0.040	0.031
91	Physical education teachers	138	0.011	0.015	0.395	0.433	0.189	0.330	0.012	0.007
92	Education teachers	139	-0.044	-0.044	0.600	0.343	0.400	0.237	0.011	0.011
93	English teachers	143	0.043	0.043	0.263	0.423	0.256	0.234	0.051	0.049

	A	B	C	D	E	F	G	H	I	J
1	occ80	occ	dif	dif_adj	m1983	m2000	v1983	v2000	p1983	p2000
94	Foreign language teachers	144	-0.037	-0.036	0.307	0.205	0.305	0.198	0.024	0.023
95	Law teachers	145	0.020	0.019	1.042	1.191	0.214	0.155	0.006	0.006
96	Social work teachers	146	-0.004	-0.004	0.470	0.540	0.331	0.102	0.002	0.001
97	Theology teachers	147	0.013	0.012	0.400	0.369	0.185	0.288	0.013	0.016
98	Trade and industrial teachers	148	-0.006	-0.004	0.547	0.596	0.193	0.106	0.005	0.002
99	Home economics teachers	149	0.008	0.009	0.245	0.304	0.077	0.000	0.004	0.000
100	Teachers, postsecondary, n.e.c.	153	-0.003	-0.003	0.375	0.371	0.287	0.241	0.005	0.005
101	Postsecondary teachers, subject n.s.	154	0.149	-0.067	0.332	0.263	0.328	0.345	0.145	0.375
102	Teachers, prekindergarten and kindergarten	155	0.212	0.170	-0.189	-0.284	0.217	0.246	0.316	0.532
103	Teachers, elementary school	156	0.106	0.334	0.152	0.157	0.167	0.204	1.585	2.053
104	Teachers, secondary school	157	0.750	0.651	0.204	0.216	0.162	0.197	1.466	1.284
105	Teachers, special education	158	-0.132	-0.028	0.144	0.198	0.137	0.172	0.184	0.368
106	Teachers, n.e.c.	159	0.015	-0.025	0.084	0.017	0.274	0.312	0.257	0.538
107	Counselors, educational and vocational	163	-0.060	-0.053	0.289	0.266	0.209	0.205	0.206	0.245
108	Librarians	164	0.082	0.080	0.141	0.078	0.193	0.232	0.207	0.177
109	Archivists and curators	165	-0.037	-0.040	0.096	0.186	0.361	0.189	0.017	0.028
110	Economists	166	-0.171	-0.174	0.593	0.436	0.276	0.290	0.117	0.119
111	Psychologists	167	0.046	0.045	0.283	0.269	0.213	0.261	0.115	0.173
112	Sociologists	168	0.003	0.003	0.555	0.226	0.047	0.535	0.001	0.001
113	Social scientists, n.e.c.	169	0.040	0.034	0.371	0.241	0.236	0.452	0.011	0.025
114	Urban planners	173	0.004	0.004	0.531	0.525	0.119	0.150	0.018	0.017
115	Social workers	174	-0.519	-0.525	0.098	0.042	0.160	0.156	0.475	0.733
116	Recreation workers	175	-0.003	-0.009	-0.397	-0.385	0.224	0.221	0.070	0.088
117	Clergy	176	-0.313	-0.311	-0.312	-0.165	0.309	0.285	0.338	0.314
118	Religious workers, n.e.c.	177	-0.151	-0.150	-0.211	-0.110	0.266	0.197	0.053	0.129
119	Lawyers	178	2.622	2.544	0.714	0.873	0.289	0.287	0.430	0.645
120	Authors	183	0.000	-0.017	0.390	0.338	0.377	0.275	0.014	0.049
121	Technical writers	184	0.013	0.006	0.490	0.465	0.150	0.183	0.055	0.068
122	Designers	185	-0.235	-0.278	0.161	0.147	0.329	0.279	0.347	0.486
123	Musicians and composers	186	-0.021	-0.022	0.119	0.050	0.368	0.345	0.056	0.040
124	Actors and directors	187	0.006	-0.005	0.288	0.298	0.455	0.403	0.060	0.081
125	Painters, sculptors, craft-artists, and artist pri	188	0.035	0.033	0.110	0.075	0.195	0.227	0.099	0.090
126	Photographers	189	0.063	0.063	0.014	-0.034	0.221	0.292	0.076	0.058
127	Dancers	193	0.025	0.025	-0.097	0.096	0.294	0.556	0.010	0.009
128	Artists, performers, and related workers, n.e.	194	-0.014	-0.025	0.017	-0.033	0.282	0.282	0.035	0.063
129	Editors and reporters	195	0.072	0.075	0.221	0.253	0.262	0.278	0.231	0.220
130	Public relations specialists	197	-0.173	-0.174	0.375	0.284	0.298	0.256	0.169	0.171
131	Announcers	198	-0.006	0.000	-0.190	-0.116	0.278	0.265	0.044	0.027
132	Athletes	199	0.058	0.053	-0.040	0.001	0.389	0.473	0.044	0.060
133	Clinical laboratory technologists and technic	203	0.061	0.058	0.094	0.043	0.130	0.152	0.302	0.294
134	Dental hygienists	204	0.077	0.077	0.267	0.472	0.119	0.117	0.051	0.081
135	Health record technologists and technicians	205	0.083	0.053	-0.124	-0.213	0.126	0.160	0.055	0.018
136	Radiologic technicians	206	0.041	0.037	0.139	0.229	0.084	0.113	0.118	0.137
137	Licensed practical nurses	207	0.451	0.417	-0.093	-0.013	0.063	0.080	0.448	0.286
138	Health technologists and technicians, n.e.c.	208	-0.552	-0.476	-0.088	-0.183	0.153	0.152	0.223	0.627
139	Electrical and electronic technicians	213	-0.017	0.000	0.286	0.203	0.138	0.192	0.322	0.379

	A	B	C	D	E	F	G	H	I	J
1	occ80	occ	dif	dif_adj	m1983	m2000	v1983	v2000	p1983	p2000
140	Industrial engineering technicians	214	0.010	0.009	0.251	0.210	0.068	0.140	0.010	0.007
141	Mechanical engineering technicians	215	0.004	0.004	0.432	0.431	0.116	0.139	0.016	0.017
142	Engineering technicians, n.e.c.	216	0.066	0.047	0.220	0.113	0.181	0.212	0.252	0.184
143	Drafting occupations	217	0.196	0.226	0.198	0.171	0.146	0.153	0.335	0.200
144	Surveying and mapping technicians	218	0.042	0.037	0.075	0.038	0.184	0.233	0.069	0.059
145	Biological technicians	223	-0.025	-0.012	0.040	-0.147	0.156	0.189	0.056	0.099
146	Chemical technicians	224	-0.017	-0.033	0.236	0.173	0.217	0.174	0.097	0.059
147	Science technicians, n.e.c.	225	-0.030	-0.025	0.075	0.028	0.239	0.221	0.074	0.085
148	Airplane pilots and navigators	226	-0.195	-0.193	0.858	0.682	0.437	0.491	0.077	0.073
149	Air traffic controllers	227	0.042	0.041	0.575	0.812	0.222	0.313	0.035	0.019
150	Broadcast equipment operators	228	-0.022	-0.022	0.056	0.109	0.266	0.195	0.029	0.032
151	Computer programmers	229	0.867	0.851	0.430	0.531	0.164	0.215	0.567	0.583
152	Tool programmers, numerical control	233	0.011	0.015	0.300	0.401	0.119	0.215	0.005	0.012
153	Legal assistants	234	-0.235	-0.266	0.075	0.105	0.144	0.169	0.144	0.323
154	Technicians, n.e.c.	235	-0.131	-0.148	0.288	0.078	0.281	0.247	0.230	0.080
155	Supervisors and proprietors, sales occupatio	243	0.389	-0.137	0.070	0.051	0.261	0.293	2.509	3.420
156	Insurance sales occupations	253	0.020	0.036	0.242	0.233	0.302	0.315	0.449	0.379
157	Real estate sales occupations	254	0.326	0.318	0.209	0.324	0.409	0.451	0.276	0.294
158	Securities and financial services sales occup	255	1.322	1.209	0.623	0.634	0.365	0.484	0.210	0.400
159	Advertising and related sales occupations	256	0.002	-0.005	0.213	0.257	0.350	0.327	0.140	0.148
160	Sales occupations, other business services	257	0.616	0.519	0.099	0.198	0.323	0.397	0.417	0.600
161	Sales engineers	258	0.044	0.048	0.652	0.789	0.212	0.193	0.036	0.032
162	Sales representatives, mining, manufacturing	259	0.464	0.550	0.293	0.332	0.276	0.292	1.472	1.269
163	Sales workers, motor vehicles and boats	263	-0.043	-0.043	-0.021	-0.011	0.341	0.326	0.262	0.269
164	Sales workers, apparel	264	0.053	0.114	-0.571	-0.578	0.091	0.157	0.350	0.216
165	Sales workers, shoes	265	0.000	0.019	-0.542	-0.583	0.127	0.155	0.097	0.052
166	Sales workers, furniture and home furnishing	266	0.047	0.048	-0.257	-0.199	0.227	0.290	0.128	0.123
167	Sales workers, radio, TV, hi-fi, and applianc	267	0.222	0.196	-0.205	-0.053	0.325	0.467	0.142	0.198
168	Sales workers, hardware and building suppli	268	-0.006	-0.010	-0.311	-0.223	0.153	0.211	0.199	0.233
169	Sales workers, parts	269	0.093	0.087	-0.247	-0.227	0.145	0.192	0.172	0.140
170	Sales workers, other commodities	274	-0.019	0.125	-0.510	-0.442	0.137	0.222	1.135	0.819
171	Sales counter clerks	275	0.067	0.063	-0.511	-0.468	0.130	0.224	0.114	0.121
172	Cashiers	276	2.729	2.715	-0.530	-0.666	0.121	0.099	1.865	1.908
173	Street and door-to-door sales workers	277	-0.102	-0.097	-0.280	-0.166	0.335	0.303	0.124	0.108
174	News vendors	278	-0.044	-0.044	-0.507	-0.394	0.310	0.281	0.037	0.041
175	Demonstrators, promoters and models, sales	283	0.026	0.022	-0.178	-0.542	0.400	0.152	0.012	0.034
176	Auctioneers	284	0.012	0.012	-0.092	0.955	0.071	0.428	0.001	0.001
177	Sales support occupations, n.e.c.	285	0.008	0.008	-0.069	-0.195	0.256	0.266	0.015	0.012
178	Supervisors, general office	303	-0.135	-0.144	0.223	0.092	0.190	0.177	0.455	0.381
179	Supervisors, computer equipment operators	304	-0.031	-0.023	0.502	0.385	0.151	0.191	0.047	0.010
180	Supervisors, financial records processing	305	-0.067	-0.076	0.339	0.223	0.193	0.175	0.107	0.087
181	Chief communications operators	306	-0.004	-0.004	0.258	0.206	0.205	0.114	0.005	0.004
182	Supervisors, distribution, scheduling, and ad	307	-0.052	-0.053	0.251	0.077	0.157	0.184	0.179	0.178
183	Computer operators	308	0.954	0.726	-0.009	0.015	0.164	0.197	0.750	0.238
184	Peripheral equipment operators	309	0.012	0.010	-0.156	-0.376	0.106	0.169	0.006	0.004
185	Secretaries	313	5.417	4.205	-0.141	-0.201	0.117	0.151	4.044	1.746

	A	B	C	D	E	F	G	H	I	J
1	occ80	occ	dif	dif_adj	m1983	m2000	v1983	v2000	p1983	p2000
186	Stenographers	314	-0.081	-0.036	0.174	-0.008	0.188	0.184	0.055	0.096
187	Typists	315	0.862	0.440	-0.232	-0.186	0.107	0.127	0.860	0.363
188	Interviewers	316	0.120	0.097	-0.214	-0.237	0.122	0.145	0.174	0.127
189	Hotel clerks	317	0.046	0.046	-0.521	-0.552	0.096	0.096	0.069	0.104
190	Transportation ticket and reservation agents	318	-0.150	-0.155	0.162	-0.096	0.169	0.166	0.113	0.193
191	Receptionists	319	0.153	0.230	-0.353	-0.395	0.089	0.101	0.619	0.759
192	Information clerks, n.e.c.	323	-0.181	-0.099	-0.312	-0.290	0.157	0.147	0.174	0.308
193	Classified-ad clerks	325	0.005	0.003	-0.347	-0.353	0.104	0.044	0.008	0.002
194	Correspondence clerks	326	0.018	0.013	-0.068	-0.078	0.097	0.069	0.017	0.008
195	Order clerks	327	-0.035	-0.011	0.019	-0.114	0.172	0.177	0.206	0.256
196	Personnel clerks, except payroll and timekee	328	0.056	0.044	-0.016	-0.067	0.124	0.158	0.070	0.054
197	Library clerks	329	0.046	0.037	-0.394	-0.457	0.163	0.161	0.105	0.082
198	File clerks	335	0.229	0.182	-0.332	-0.411	0.130	0.149	0.282	0.212
199	Records clerks	336	0.007	0.012	-0.101	-0.151	0.146	0.146	0.157	0.165
200	Bookkeeping, accounting, and auditing clerk	337	1.236	1.010	-0.163	-0.162	0.131	0.136	1.743	1.076
201	Payroll and timekeeping clerks	338	0.076	0.041	-0.047	-0.065	0.121	0.111	0.198	0.156
202	Billing clerks	339	-0.010	0.008	-0.137	-0.206	0.122	0.113	0.160	0.178
203	Cost and rate clerks	343	0.107	0.099	-0.049	-0.151	0.200	0.268	0.096	0.047
204	Billing, posting, and calculating machine op	344	-0.163	-0.096	-0.215	-0.186	0.132	0.090	0.051	0.115
205	Duplicating machine operators	345	0.009	0.010	-0.164	-0.346	0.155	0.109	0.024	0.026
206	Mail preparing and paper handling machine	346	-0.009	-0.011	-0.231	-0.298	0.249	0.071	0.008	0.007
207	Office machine operators, n.e.c.	347	0.024	0.008	-0.289	-0.273	0.124	0.041	0.040	0.013
208	Telephone operators	348	0.353	0.282	-0.100	-0.336	0.144	0.155	0.236	0.110
209	Telegraphers	349	-0.006	-0.002	-0.087	-0.291	0.273	0.177	0.009	0.014
210	Postal clerks, except mail carriers	354	0.086	0.011	0.346	0.189	0.034	0.089	0.290	0.210
211	Mail carriers, postal service	355	-0.014	-0.044	0.339	0.225	0.038	0.069	0.299	0.260
212	Mail clerks, except postal service	356	0.143	0.104	-0.273	-0.365	0.124	0.121	0.172	0.116
213	Messengers	357	-0.004	-0.010	-0.331	-0.279	0.166	0.186	0.110	0.096
214	Dispatchers	359	-0.026	-0.019	-0.055	-0.096	0.164	0.159	0.204	0.221
215	Production coordinators	363	-0.002	-0.005	0.191	0.113	0.160	0.179	0.219	0.213
216	Traffic, shipping, and receiving clerks	364	0.097	0.135	-0.112	-0.250	0.141	0.129	0.532	0.603
217	Stock and inventory clerks	365	0.398	0.287	-0.100	-0.180	0.164	0.150	0.607	0.378
218	Meter readers	366	0.021	0.014	-0.022	-0.017	0.143	0.155	0.051	0.043
219	Samplers	369	0.090	0.068	-0.145	-0.263	0.165	0.188	0.085	0.047
220	Expediters	373	-0.005	0.032	-0.036	-0.324	0.177	0.143	0.130	0.241
221	Material recording, scheduling, and distribut	374	0.011	0.003	-0.299	-0.303	0.187	0.158	0.034	0.010
222	Insurance adjusters, examiners, and investig	375	-0.267	-0.193	0.091	0.064	0.146	0.168	0.235	0.424
223	Investigators and adjusters, except insurance	376	-1.065	-0.920	0.037	-0.141	0.184	0.148	0.361	0.960
224	Eligibility clerks, social welfare	377	0.006	0.006	-0.085	-0.120	0.111	0.110	0.079	0.079
225	Bill and account collectors	378	-0.123	-0.100	-0.104	-0.185	0.135	0.102	0.096	0.153
226	General office clerks	379	0.345	0.297	-0.194	-0.269	0.145	0.155	0.609	0.540
227	Bank tellers	383	0.429	0.372	-0.351	-0.436	0.079	0.069	0.505	0.316
228	Proofreaders	384	0.024	0.014	-0.148	-0.141	0.176	0.193	0.028	0.012
229	Data-entry keyers	385	-0.064	0.069	-0.162	-0.248	0.097	0.116	0.374	0.545
230	Statistical clerks	386	0.093	0.082	0.038	-0.160	0.141	0.187	0.099	0.081
231	Teachers' aides	387	0.378	0.371	-0.439	-0.495	0.095	0.132	0.314	0.542

	A	B	C	D	E	F	G	H	I	J
1	occ80	occ	dif	dif_adj	m1983	m2000	v1983	v2000	p1983	p2000
232	Administrative support occupations, n.e.c.	389	-0.202	-0.107	-0.046	-0.051	0.166	0.185	0.612	0.829
233	Launderers and Ironers	403	0.000	0.001	-0.415	-0.296	0.106	0.000	0.001	0.000
234	Cooks, private household	404	-0.107	-0.079	-0.875	0.030	0.269	0.309	0.015	0.002
235	Housekeepers and butlers	405	-0.101	-0.037	-0.753	-0.633	0.149	0.192	0.031	0.006
236	Child care workers, private household	406	-0.952	-0.940	-1.158	-0.719	0.146	0.205	0.119	0.108
237	Private household cleaners and servants	407	-0.396	-0.301	-0.715	-0.689	0.128	0.204	0.306	0.156
238	Supervisors, firefighting and fire prevention	413	-0.010	-0.018	0.352	0.308	0.168	0.152	0.047	0.035
239	Supervisors, police and detectives	414	0.040	0.056	0.513	0.443	0.119	0.218	0.082	0.100
240	Supervisors, guards	415	0.006	0.008	0.105	-0.082	0.226	0.273	0.039	0.057
241	Fire inspection and fire prevention occupatic	416	-0.010	-0.014	0.285	0.041	0.220	0.218	0.025	0.016
242	Firefighting occupations	417	0.224	0.208	0.045	0.083	0.156	0.226	0.265	0.239
243	Police and detectives, public service	418	0.200	0.186	0.308	0.331	0.126	0.145	0.504	0.464
244	Sheriffs, bailiffs, and other law enforcement	423	0.008	0.021	0.045	0.124	0.186	0.207	0.101	0.124
245	Correctional institution officers	424	-0.142	-0.091	0.050	0.032	0.101	0.138	0.173	0.277
246	Crossing guards	425	0.034	0.034	-0.418	-0.551	0.094	0.163	0.021	0.016
247	Guards and police, except public service	426	0.203	0.197	-0.277	-0.324	0.181	0.183	0.637	0.615
248	Protective service occupations, n.e.c.	427	0.022	0.018	-0.558	-0.540	0.109	0.152	0.055	0.063
249	Supervisors, food preparation and service oc	433	0.235	0.202	-0.338	-0.470	0.172	0.146	0.272	0.321
250	Bartenders	434	-0.012	0.012	-0.533	-0.416	0.107	0.236	0.288	0.203
251	Short-order cooks	437	1.112	1.018	-0.546	-0.591	0.099	0.112	1.474	1.595
252	Food counter, fountain, and related occupati	438	0.085	0.134	-0.745	-0.797	0.034	0.058	0.253	0.202
253	Kitchen workers, food preparation	439	0.177	0.102	-0.605	-0.636	0.076	0.084	0.130	0.205
254	Waiters'/waitresses' assistants	443	0.194	0.083	-0.683	-0.592	0.066	0.170	0.270	0.393
255	Miscellaneous food preparation occupations	444	0.471	0.547	-0.618	-0.705	0.072	0.093	0.537	0.434
256	Dental assistants	445	-0.023	-0.024	-0.274	-0.181	0.079	0.102	0.161	0.157
257	Health aides, except nursing	446	0.518	0.515	-0.295	-0.419	0.090	0.148	0.347	0.262
258	Nursing aides, orderlies, and attendants	447	0.447	0.456	-0.435	-0.451	0.115	0.135	1.296	1.540
259	Supervisors, cleaning and building service w	448	0.077	0.077	-0.050	-0.174	0.174	0.187	0.157	0.146
260	Maids and housemen	449	0.503	0.535	-0.515	-0.601	0.080	0.089	0.547	0.484
261	Janitors and cleaners	453	1.605	1.561	-0.332	-0.451	0.155	0.151	1.858	1.538
262	Elevator operators	454	0.021	0.015	-0.212	-0.171	0.103	0.132	0.017	0.007
263	Pest control occupations	455	-0.020	-0.020	-0.246	-0.216	0.125	0.139	0.036	0.050
264	Supervisors, personal service occupations	456	-0.027	-0.041	-0.213	-0.027	0.246	0.261	0.039	0.059
265	Barbers	457	0.018	0.019	-0.316	-0.446	0.232	0.207	0.028	0.024
266	Hairdressers and cosmetologists	458	-0.056	-0.058	-0.466	-0.398	0.201	0.259	0.370	0.306
267	Attendants, amusement and recreation facilit	459	0.071	0.049	-0.524	-0.424	0.167	0.269	0.109	0.164
268	Guides	463	0.000	0.003	-0.399	-0.453	0.187	0.151	0.027	0.016
269	Ushers	464	0.016	0.017	-0.688	-0.760	0.046	0.099	0.013	0.012
270	Public transportation attendants	465	-0.180	-0.181	0.602	0.181	0.336	0.352	0.058	0.060
271	Baggage porters and bellhops	466	0.081	0.058	-0.562	-0.544	0.190	0.294	0.021	0.046
272	Welfare service aides	467	0.808	0.643	-0.553	-0.660	0.120	0.125	0.069	0.383
273	Child care workers, except private household	468	-0.252	-0.177	-0.665	-0.630	0.120	0.181	0.246	0.127
274	Personal service occupations, n.e.c.	469	0.002	-0.007	-0.438	-0.378	0.175	0.219	0.097	0.121
275	Farmers, except horticultural	473	0.014	0.016	-0.584	-0.111	0.182	1.142	0.012	0.005
276	Horticultural specialty farmers	474	0.001	0.001	-0.320		0.000		0.000	
277	Managers, farms, except horticultural	475	-0.033	-0.029	-0.249	-0.215	0.219	0.180	0.062	0.061

	A	B	C	D	E	F	G	H	I	J
1	occ80	occ	dif	dif_adj	m1983	m2000	v1983	v2000	p1983	p2000
278	Managers, horticultural specialty farms	476	0.006	0.007	-0.236	-0.265	0.178	0.200	0.009	0.005
279	Supervisors, farm workers	477	0.066	0.081	-0.224	-0.375	0.153	0.161	0.061	0.042
280	Farm workers	479	-1.138	-1.243	-0.682	-0.711	0.137	0.113	1.050	0.582
281	Marine life cultivation workers	483	0.000	0.000	-0.304	-0.371	0.110	0.049	0.001	0.001
282	Nursery workers	484	0.018	0.022	-0.589	-0.654	0.074	0.099	0.028	0.022
283	Supervisors, related agricultural occupations	485	0.014	0.017	-0.081	-0.028	0.161	0.158	0.093	0.080
284	Groundskeepers and gardeners, except farm	486	0.160	0.177	-0.400	-0.455	0.151	0.135	0.487	0.612
285	Animal caretakers, except farm	487	0.042	0.034	-0.448	-0.529	0.145	0.112	0.063	0.086
286	Graders and sorters, agricultural products	488	0.142	0.117	-0.585	-0.748	0.081	0.066	0.015	0.053
287	Inspectors, agricultural products	489	-0.005	-0.006	-0.557	-0.245	0.074	0.182	0.001	0.005
288	Supervisors, forestry and logging workers	494	-0.006	-0.005	0.278	0.101	0.112	0.173	0.006	0.010
289	Forestry workers, except logging	495	0.008	0.008	-0.205	-0.056	0.126	0.186	0.016	0.013
290	Timber cutting and logging occupations	496	0.009	-0.018	-0.145	-0.159	0.260	0.210	0.063	0.025
291	Captains and other officers, fishing vessels	497	-0.007	-0.003	-0.042	-0.074	0.407	0.050	0.004	0.001
292	Fishers	498	0.021	0.015	-0.282	-0.584	0.280	0.223	0.024	0.012
293	Hunters and trappers	499	0.001	0.001	-0.185	0.243	0.090	0.127	0.001	0.001
294	Supervisors, mechanics and repairers	503	-0.262	-0.296	0.407	0.247	0.174	0.169	0.318	0.236
295	Automobile mechanics, except apprentices	505	0.496	0.371	-0.117	-0.152	0.189	0.215	0.806	0.591
296	Automobile mechanic apprentices	506	-0.004	-0.004	-0.577	-0.233	0.171	0.357	0.004	0.004
297	Bus, truck, and stationary engine mechanics	507	0.187	0.097	0.117	0.044	0.135	0.151	0.380	0.287
298	Aircraft engine mechanics	508	-0.044	-0.041	0.413	0.302	0.106	0.148	0.105	0.109
299	Small engine repairers	509	0.034	0.007	-0.127	-0.145	0.179	0.153	0.068	0.038
300	Automobile body and related repairers	514	0.059	0.044	-0.090	-0.057	0.195	0.216	0.171	0.145
301	Aircraft mechanics, except engine	515	0.006	0.013	0.333	0.419	0.125	0.124	0.014	0.022
302	Heavy equipment mechanics	516	0.015	-0.052	0.243	0.096	0.135	0.138	0.190	0.135
303	Farm equipment mechanics	517	0.049	0.037	-0.214	-0.212	0.106	0.139	0.051	0.029
304	Industrial machinery repairers	518	0.433	0.215	0.167	0.101	0.120	0.139	0.636	0.407
305	Machinery maintenance occupations	519	0.039	0.018	0.088	-0.063	0.167	0.171	0.041	0.017
306	Electronic repairers, communications and in	523	-0.005	-0.012	0.109	0.094	0.208	0.199	0.157	0.146
307	Data processing equipment repairers	525	-0.207	-0.233	0.391	0.181	0.144	0.203	0.124	0.255
308	Household appliance and power tool repaire	526	-0.004	-0.015	0.054	-0.104	0.226	0.173	0.041	0.031
309	Telephone line installers and repairers	527	0.045	0.023	0.428	0.419	0.070	0.124	0.076	0.050
310	Telephone installers and repairers	529	-0.097	-0.117	0.440	0.287	0.082	0.140	0.286	0.237
311	Miscellaneous electrical and electronic equi	533	0.057	0.039	0.253	0.270	0.165	0.215	0.080	0.060
312	Heating, air conditioning, and refrigeration r	534	-0.131	-0.098	0.120	0.088	0.183	0.163	0.220	0.263
313	Camera, watch, and musical instrument repa	535	0.017	0.012	0.122	0.027	0.208	0.255	0.026	0.015
314	Locksmiths and safe repairers	536	-0.010	-0.009	-0.125	-0.031	0.174	0.135	0.016	0.016
315	Office machine repairers	538	0.036	0.019	0.164	0.049	0.126	0.121	0.071	0.044
316	Mechanical controls and valve repairers	539	0.039	0.019	0.137	0.153	0.135	0.179	0.031	0.014
317	Elevator installers and repairers	543	-0.002	-0.004	0.544	0.403	0.118	0.251	0.027	0.024
318	Millwrights	544	0.086	0.023	0.331	0.304	0.108	0.170	0.110	0.060
319	Mechanics and repairers, n.e.c.	547	0.188	0.128	0.049	-0.064	0.182	0.202	0.420	0.346
320	Mechanics and repairers, n.s.	549	-0.134	-0.086	0.091	-0.041	0.181	0.165	0.174	0.231
321	Supervisors, brickmasons, stonemasons, and	553	-0.002	-0.001	0.516	0.232	0.078	0.264	0.006	0.006
322	Supervisors, carpenters and related workers	554	-0.025	-0.035	0.481	0.350	0.126	0.104	0.027	0.017
323	Supervisors, electricians and power transmis	555	-0.053	-0.064	0.597	0.526	0.136	0.129	0.047	0.029

	A	B	C	D	E	F	G	H	I	J
1	occ80	occ	dif	dif_adj	m1983	m2000	v1983	v2000	p1983	p2000
324	Supervisors, painters, paperhangers, and pla	556	-0.013	-0.011	0.362	0.176	0.086	0.104	0.009	0.012
325	Supervisors, plumbers, pipefitters, and steam	557	-0.023	-0.027	0.545	0.491	0.180	0.113	0.017	0.012
326	Supervisors, n.e.c.	558	-0.350	-0.345	0.367	0.227	0.160	0.166	0.406	0.437
327	Brickmasons and stonemasons, except appre	563	-0.126	-0.103	0.180	-0.006	0.199	0.175	0.129	0.163
328	Brickmason and stonemason apprentices	564	0.001	-0.001	-0.092	-0.320	0.191	0.058	0.004	0.002
329	Tile setters, hard and soft	565	-0.028	-0.015	0.118	-0.101	0.285	0.253	0.034	0.056
330	Carpet installers	566	-0.054	-0.052	-0.016	-0.194	0.292	0.165	0.057	0.059
331	Carpenters, except apprentices	567	0.096	0.073	0.058	-0.077	0.190	0.191	0.980	0.941
332	Carpenter apprentices	569	0.006	0.005	-0.103	-0.240	0.157	0.154	0.011	0.010
333	Drywall installers	573	-0.113	-0.098	0.163	-0.127	0.227	0.162	0.105	0.127
334	Electricians, except apprentices	575	-0.199	-0.206	0.338	0.231	0.159	0.186	0.631	0.619
335	Electrician apprentices	576	-0.028	-0.021	-0.130	-0.174	0.165	0.115	0.030	0.039
336	Electrical power installers and repairers	577	0.034	0.023	0.373	0.258	0.112	0.204	0.125	0.109
337	Painters, construction and maintenance	579	0.098	0.101	-0.085	-0.264	0.198	0.167	0.336	0.342
338	Paperhangers	583	0.009	0.006	-0.050	-0.260	0.169	0.151	0.009	0.005
339	Plasterers	584	-0.008	-0.003	0.133	-0.136	0.217	0.214	0.034	0.040
340	Plumbers, pipefitters, and steamfitters, excep	585	-0.204	-0.236	0.283	0.121	0.203	0.210	0.433	0.388
341	Plumber, pipefitter, and steamfitter apprentic	587	0.008	0.006	-0.133	-0.234	0.150	0.141	0.016	0.013
342	Concrete and terr o finishers	588	-0.038	-0.027	0.109	-0.100	0.177	0.157	0.081	0.093
343	Glaziers	589	-0.009	-0.014	0.120	-0.004	0.205	0.174	0.040	0.035
344	Insulation workers	593	-0.042	-0.056	0.149	0.006	0.258	0.163	0.062	0.044
345	Paving, surfacing, and tamping equipment o	594	-0.010	-0.006	0.225	-0.001	0.243	0.222	0.008	0.012
346	Roofers	595	0.022	0.017	-0.051	-0.208	0.203	0.172	0.134	0.127
347	Sheetmetal duct installers	596	-0.033	-0.035	0.180	0.074	0.268	0.198	0.036	0.035
348	Structural metal workers	597	-0.100	-0.104	0.410	0.228	0.202	0.165	0.068	0.065
349	Drillers, earth	598	-0.007	-0.005	0.075	0.004	0.234	0.211	0.015	0.017
350	Construction trades, n.e.c.	599	-0.030	-0.010	-0.054	-0.147	0.201	0.184	0.171	0.196
351	Supervisors, extractive occupations	613	-0.129	-0.138	0.485	0.195	0.212	0.188	0.082	0.035
352	Drillers, oil well	614	0.099	0.043	0.133	0.019	0.133	0.145	0.083	0.029
353	Explosives workers	615	0.007	0.004	0.288	-0.242	0.089	0.145	0.009	0.005
354	Mining machine operators	616	-0.004	-0.026	0.352	0.199	0.115	0.112	0.045	0.026
355	Mining occupations, n.e.c.	617	0.052	0.011	0.219	-0.004	0.131	0.171	0.056	0.022
356	Supervisors production occupations	633	-0.395	-0.502	0.289	0.135	0.193	0.184	1.557	0.992
357	Tool and die makers, except apprentices	634	0.095	0.014	0.323	0.301	0.098	0.119	0.160	0.093
358	Tool and die maker apprentices	635	0.013	0.007	-0.004	-0.170	0.090	0.044	0.007	0.002
359	Precision assemblers, metal	636	-0.015	-0.002	0.178	0.024	0.069	0.170	0.010	0.024
360	Machinists, except apprentices	637	0.259	0.064	0.186	0.042	0.117	0.136	0.576	0.405
361	Machinist apprentices	639	0.006	0.000	-0.258	-0.375	0.115	0.033	0.006	0.002
362	Boilermakers	643	-0.011	-0.035	0.374	0.250	0.125	0.077	0.042	0.021
363	Precision grinders, fitters, and tool sharpene	644	0.017	0.003	0.182	0.092	0.127	0.112	0.021	0.009
364	Patternmakers and model makers, metal	645	0.000	-0.001	0.238	0.378	0.197	0.088	0.007	0.005
365	Lay-out workers	646	0.024	0.012	0.166	-0.013	0.094	0.094	0.018	0.006
366	Precious stones and metals workers	647	0.021	0.019	-0.150	-0.290	0.192	0.192	0.027	0.020
367	Engravers, metal	649	0.004	-0.002	-0.170	-0.061	0.189	0.122	0.016	0.007
368	Sheet metal workers, except apprentices	653	0.019	-0.027	0.265	0.134	0.158	0.184	0.142	0.099
369	Sheet metal worker apprentices	654	0.008	0.004	-0.098	-0.270	0.071	0.067	0.004	0.001

	A	B	C	D	E	F	G	H	I	J
1	occ80	occ	dif	dif_adj	m1983	m2000	v1983	v2000	p1983	p2000
370	Miscellaneous precision metal workers	655	0.006	0.006	0.034		0.104		0.002	
371	Patternmakers and model makers, wood	656	-0.003	-0.008	0.473	-0.052	0.116	0.207	0.008	0.002
372	Cabinet makers and bench carpenters	657	-0.032	-0.021	-0.070	-0.195	0.177	0.125	0.037	0.052
373	Furniture and wood finishers	658	0.020	0.013	-0.299	-0.436	0.159	0.119	0.028	0.019
374	Miscellaneous precision woodworkers	659	0.001	0.002	-0.020	-0.511	0.014	0.006	0.000	0.001
375	Dressmakers	666	0.048	0.068	-0.425	-0.536	0.106	0.111	0.058	0.031
376	Tailors	667	0.045	0.048	-0.258	-0.418	0.123	0.100	0.038	0.017
377	Upholsterers	668	0.020	0.019	-0.217	-0.208	0.124	0.142	0.051	0.042
378	Shoe repairers	669	0.019	0.017	-0.403	-0.564	0.058	0.120	0.012	0.005
379	Apparel and fabric patternmakers	673	0.004	0.007	-0.192	-0.242	0.017	0.304	0.001	0.007
380	Misc. precision apparel and fabric workers	674	0.004	0.004	-0.245		0.153		0.003	
381	Hand molders and shapers, except jewelers	675	-0.003	-0.003	-0.012	-0.045	0.175	0.158	0.014	0.014
382	Patternmakers, lay-out workers, and cutters	676	0.014	0.004	0.266	-0.099	0.173	0.235	0.024	0.009
383	Optical goods workers	677	-0.007	-0.007	-0.167	-0.138	0.136	0.140	0.056	0.059
384	Dental laboratory and medical appliance tecl	678	0.027	0.026	0.007	-0.079	0.138	0.187	0.041	0.038
385	Bookbinders	679	0.020	0.008	-0.157	-0.311	0.170	0.101	0.037	0.023
386	Electrical and electronic equipment assembl	683	0.273	0.194	-0.231	-0.295	0.119	0.126	0.368	0.268
387	Miscellaneous precision workers, n.e.c.	684	0.021	0.007	-0.109	-0.176	0.143	0.130	0.034	0.023
388	Butchers and meat cutters	686	0.219	0.208	-0.098	-0.316	0.175	0.123	0.313	0.226
389	Bakers	687	0.083	0.080	-0.252	-0.422	0.161	0.129	0.103	0.113
390	Food batchmakers	688	0.028	0.028	-0.266	-0.450	0.148	0.110	0.033	0.047
391	Inspectors, testers, and graders	689	0.031	0.032	0.205	0.056	0.160	0.220	0.148	0.149
392	Adjusters and calibrators	693	0.019	0.016	0.191	0.168	0.164	0.346	0.012	0.008
393	Water and sewage treatment plant operators	694	-0.015	-0.004	0.143	0.122	0.120	0.153	0.051	0.069
394	Power plant operators	695	0.033	0.012	0.456	0.453	0.097	0.176	0.058	0.034
395	Stationary engineers	696	-0.039	-0.050	0.315	0.187	0.145	0.152	0.124	0.102
396	Miscellaneous plant and system operators	699	-0.002	-0.009	0.413	0.200	0.098	0.210	0.044	0.037
397	Lathe and turning machine set-up operators	703	0.053	0.022	0.135	-0.078	0.090	0.129	0.036	0.015
398	Lathe and turning machine operators	704	0.176	0.071	0.003	-0.163	0.121	0.160	0.098	0.022
399	Milling and planing machine operators	705	0.020	0.004	0.113	-0.123	0.151	0.139	0.019	0.007
400	Punching and stamping press machine opera	706	0.160	0.095	-0.014	-0.192	0.134	0.137	0.148	0.086
401	Rolling machine operators	707	0.002	-0.006	0.191	-0.082	0.139	0.096	0.019	0.012
402	Drilling and boring machine operators	708	0.065	0.031	0.025	-0.196	0.141	0.197	0.040	0.013
403	Grinding, abrading, buffing, and polishing m	709	0.182	0.091	-0.017	-0.172	0.133	0.118	0.177	0.094
404	Forging machine operators	713	0.015	0.002	0.154	-0.021	0.116	0.065	0.022	0.011
405	Numerical control machine operators	714	-0.057	-0.024	0.145	0.034	0.112	0.110	0.004	0.029
406	Miscellaneous metal, plastic, stone, and glas	715	0.034	0.013	0.044	0.072	0.134	0.140	0.043	0.027
407	Fabricating machine operators, n.e.c.	717	0.029	0.014	-0.166	-0.090	0.144	0.195	0.031	0.017
408	Molding and casting machine operators	719	0.123	0.075	-0.103	-0.188	0.137	0.155	0.119	0.070
409	Metal plating machine operators	723	0.058	0.031	-0.034	-0.177	0.120	0.114	0.047	0.023
410	Heat treating equipment operators	724	0.025	0.013	0.121	0.001	0.101	0.132	0.019	0.008
411	Miscellaneous metal and plastic processing m	725	0.009	0.016	-0.067	-0.381	0.118	0.094	0.015	0.022
412	Wood lathe, routing, and planing machine op	726	0.009	0.002	-0.265	-0.234	0.085	0.085	0.014	0.008
413	Sawing machine operators	727	0.081	0.038	-0.274	-0.336	0.122	0.106	0.104	0.055
414	Shaping and joining machine operators	728	0.009	0.009	-0.185	-0.459	0.082	0.118	0.004	0.005
415	Nailing and tacking machine operators	729	0.000	-0.004	-0.484	-0.402	0.072	0.017	0.007	0.001

	A	B	C	D	E	F	G	H	I	J
1	occ80	occ	dif	dif_adj	m1983	m2000	v1983	v2000	p1983	p2000
416	Misc. woodworking machine operators	733	0.006	0.002	-0.237	-0.256	0.131	0.119	0.030	0.025
417	Printing machine operators	734	0.149	0.098	0.035	-0.022	0.178	0.182	0.321	0.231
418	Photoengravers and lithographers	735	0.008	-0.012	0.220	-0.053	0.219	0.238	0.045	0.024
419	Typesetters and compositors	736	0.097	0.058	-0.082	-0.064	0.165	0.188	0.073	0.015
420	Miscellaneous printing machine operators	737	0.039	0.026	-0.125	-0.248	0.142	0.142	0.040	0.025
421	Winding and twisting machine operators	738	0.167	0.132	-0.325	-0.319	0.043	0.084	0.119	0.037
422	Knitting, looping, taping, and weaving mach	739	0.060	0.054	-0.304	-0.292	0.057	0.113	0.055	0.031
423	Textile cutting machine operators	743	0.001	-0.002	-0.452	-0.409	0.085	0.086	0.007	0.003
424	Textile sewing machine operators	744	0.231	-0.023	-0.539	-0.637	0.079	0.099	0.937	0.320
425	Shoe machine operators	745	-0.005	-0.018	-0.517	-0.439	0.071	0.109	0.074	0.008
426	Pressing machine operators	747	0.155	0.151	-0.458	-0.682	0.109	0.073	0.159	0.063
427	Laundering and dry cleaning machine operat	748	0.153	0.158	-0.519	-0.601	0.086	0.096	0.164	0.151
428	Miscellaneous textile machine operators	749	0.128	0.103	-0.324	-0.422	0.085	0.141	0.092	0.033
429	Cementing and gluing machine operators	753	0.025	0.007	-0.220	-0.276	0.165	0.134	0.047	0.026
430	Packaging and filling machine operators	754	0.616	0.534	-0.235	-0.434	0.143	0.142	0.460	0.282
431	Extruding and forming machine operators	755	0.033	0.017	-0.033	-0.014	0.114	0.126	0.039	0.025
432	Mixing and blending machine operators	756	0.105	0.078	-0.010	-0.134	0.141	0.160	0.139	0.105
433	Separating, filtering, and clarifying machine	757	0.064	0.043	0.245	0.194	0.114	0.190	0.077	0.056
434	Compressing and compacting machine opera	758	0.025	0.014	-0.169	-0.196	0.127	0.154	0.027	0.016
435	Painting and paint spraying machine operato	759	0.215	0.150	-0.079	-0.180	0.158	0.184	0.228	0.146
436	Roasting and baking machine operators, food	763	0.007	0.006	-0.049	-0.365	0.128	0.071	0.006	0.004
437	Washing, cleaning, and pickling machine op	764	0.020	0.015	-0.183	-0.264	0.101	0.104	0.016	0.007
438	Folding machine operators	765	0.020	0.010	-0.332	-0.471	0.156	0.102	0.032	0.014
439	Furnace, kiln, and oven operators, except foo	766	0.167	0.080	0.155	-0.017	0.124	0.152	0.134	0.046
440	Crushing and grinding machine operators	768	0.062	0.041	-0.142	-0.334	0.170	0.155	0.060	0.036
441	Slicing and cutting machine operators	769	0.202	0.122	-0.178	-0.308	0.158	0.139	0.233	0.134
442	Motion picture projectionists	773	-0.002	-0.001	-0.139	-0.513	0.456	0.206	0.009	0.008
443	Photographic process machine operators	774	0.126	0.116	-0.217	-0.321	0.159	0.236	0.096	0.066
444	Miscellaneous machine operators	777	0.647	0.479	-0.062	-0.189	0.150	0.152	1.100	0.915
445	Machine operators, n.s.	779	0.195	0.145	-0.041	-0.228	0.175	0.154	0.384	0.323
446	Welders and cutters	783	0.275	0.097	0.125	-0.055	0.141	0.140	0.666	0.475
447	Solderers and blazers	784	0.056	0.029	-0.291	-0.436	0.106	0.074	0.048	0.018
448	Assemblers	785	0.977	0.836	-0.092	-0.263	0.167	0.176	1.169	0.992
449	Hand cutting and trimming occupations	786	-0.005	-0.011	-0.369	-0.433	0.190	0.053	0.019	0.007
450	Hand molding, casting, and forming occupat	787	0.032	0.028	-0.155	-0.064	0.156	0.343	0.020	0.015
451	Hand painting, coating, and decorating occu	789	0.040	0.026	-0.206	-0.338	0.160	0.177	0.034	0.014
452	Hand engraving and printing occupations	793	0.019	0.014	-0.296	-0.390	0.105	0.094	0.018	0.008
453	Hand grinding and polishing occupations	794	0.001	-0.006	-0.312	-0.363	0.218	0.178	0.052	0.034
454	Production inspectors, checkers, and examin	796	0.667	0.449	-0.016	-0.131	0.174	0.177	0.809	0.448
455	Production testers	797	0.027	0.019	0.130	0.108	0.159	0.172	0.074	0.060
456	Production samplers and weighers	798	0.019	0.014	-0.082	-0.189	0.127	0.201	0.012	0.005
457	Graders and sorters, except agricultural	799	0.206	0.207	-0.335	-0.559	0.164	0.133	0.120	0.123
458	Supervisors, motor vehicle operators	803	-0.014	-0.004	0.095	0.092	0.147	0.185	0.050	0.072
459	Truck drivers, heavy	804	0.134	0.053	-0.056	-0.131	0.201	0.182	2.594	2.400
460	Driver-sales workers	806	0.258	0.201	0.006	-0.135	0.156	0.164	0.265	0.141
461	Bus drivers	808	0.080	0.079	-0.067	-0.226	0.178	0.166	0.356	0.391

	A	B	C	D	E	F	G	H	I	J
1	occ80	occ	dif	dif_adj	m1983	m2000	v1983	v2000	p1983	p2000
462	Taxicab drivers and chauffeurs	809	0.096	0.123	-0.423	-0.480	0.235	0.215	0.119	0.173
463	Parking lot attendants	813	0.042	0.043	-0.491	-0.598	0.122	0.121	0.040	0.037
464	Motor transportation occupations, n.e.c.	814	-0.008	-0.003	0.104	-0.178	0.037	0.121	0.002	0.008
465	Railroad conductors and yardmasters	823	-0.100	-0.107	0.573	0.361	0.139	0.113	0.048	0.041
466	Locomotive operating occupations	824	-0.064	-0.086	0.521	0.269	0.107	0.205	0.079	0.051
467	Railroad brake, signal, and switch operators	825	-0.041	-0.081	0.518	0.147	0.110	0.117	0.065	0.007
468	Rail vehicle operators, n.e.c.	826	-0.005	-0.010	0.527	0.322	0.062	0.022	0.010	0.002
469	Ship captains and mates, except fishing boat	828	-0.007	-0.005	0.245	0.088	0.328	0.393	0.046	0.028
470	Sailors and deckhands	829	0.019	0.016	-0.111	-0.221	0.269	0.328	0.027	0.012
471	Marine engineers	833	0.017	0.020	0.204	0.635	0.160	0.306	0.001	0.004
472	Bridge, lock, and lighthouse tenders	834	0.014	0.009	0.228	0.029	0.142	0.303	0.010	0.002
473	Supervisors, material moving equipment ope	843	-0.007	-0.008	0.382	0.049	0.156	0.213	0.013	0.010
474	Operating engineers	844	-0.076	-0.047	0.186	0.092	0.170	0.175	0.176	0.203
475	Longshore equipment operators	845	-0.012	-0.013	0.798	0.335	0.044	0.048	0.002	0.004
476	Hoist and winch operators	848	0.059	0.024	0.102	-0.063	0.135	0.144	0.045	0.014
477	Crane and tower operators	849	0.063	0.009	0.291	0.138	0.105	0.162	0.111	0.064
478	Excavating and loading machine operators	853	0.043	0.013	0.117	0.020	0.146	0.151	0.106	0.078
479	Grader, dozer, and scraper operators	855	0.154	0.059	0.029	-0.030	0.165	0.198	0.125	0.042
480	Industrial truck and tractor equipment operat	856	0.049	0.087	-0.029	-0.219	0.134	0.112	0.481	0.525
481	Misc. material moving equipment operators	859	0.245	0.155	0.043	-0.152	0.147	0.178	0.177	0.063
482	Supervisors, handlers, equipment cleaners, a	863	-0.004	-0.003	0.024	-0.163	0.187	0.159	0.010	0.012
483	Helpers, mechanics and repairers	864	0.023	0.018	-0.309	-0.478	0.202	0.145	0.033	0.026
484	Helpers, construction trades	865	0.138	0.082	-0.301	-0.415	0.137	0.116	0.172	0.099
485	Helpers, surveyor	866	0.020	0.014	-0.212	-0.475	0.163	0.138	0.015	0.004
486	Helpers, extractive occupations	867	0.007	0.001	0.084	-0.010	0.139	0.028	0.005	0.001
487	Construction laborers	869	0.109	0.118	-0.124	-0.217	0.194	0.181	0.666	0.678
488	Production helpers	873	0.076	0.052	-0.185	-0.356	0.181	0.146	0.091	0.054
489	Garbage collectors	875	0.011	-0.003	-0.266	-0.222	0.184	0.197	0.061	0.043
490	Stevedores	876	-0.008	-0.018	0.583	0.551	0.097	0.181	0.018	0.007
491	Stock handlers and baggers	877	0.598	0.592	-0.458	-0.581	0.162	0.109	0.731	0.770
492	Machine feeders and offbearers	878	0.125	0.090	-0.199	-0.367	0.147	0.144	0.106	0.058
493	Freight, stock, and material handlers, n.e.c.	883	-0.023	-0.027	-0.129	-0.260	0.211	0.154	0.590	0.583
494	Garage and service station related occupatio	885	-0.127	-0.139	-0.566	-0.576	0.109	0.103	0.280	0.140
495	Vehicle washers and equipment cleaners	887	0.247	0.254	-0.377	-0.529	0.179	0.145	0.212	0.239
496	Hand packers and packagers	888	0.369	0.374	-0.323	-0.503	0.136	0.103	0.314	0.328
497	Laborers, except construction	889	0.770	0.686	-0.175	-0.361	0.190	0.151	1.132	0.986