Why didn't the Joneses keep up?

The unusual occupational outcomes of the late Baby Boomers and the future of professional work*

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Abstract

Overall, professional work has increased steadily since 1950. This paper, however, identifies considerable cohort variation hiding behind this broad trend. In particular, I show that "Generation Jones" (born 1955-1964) entered professional occupations at a particularly low rate. Furthermore, Generation X (born 1965-1974), returned to higher *rates* of professional work but the cohort was so small that professional workers in Generation X as a *share of the total labor force* fell to even lower levels. I discuss the implications of these results for understanding the causes of cohort variation, the nature of professional occupations, and the future of professional work.

Keywords: cohort effects, professions, unemployment scarring, baby boomers

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Looking at recent trends in the American labor market, one would likely conclude that professional occupations are the wave of the future. Figure 1 documents the steady rise of professional occupations as a share of the labor force over the last five decades. In 1950, approximately seven percent of the labor force was working in professional occupations. Out of the ten major occupation groups measured by the Census,[1] professional occupations ranked seventh in labor market share in 1950. By the 2000 census, professional occupations had more than doubled to almost sixteen percent of the labor force and ranked first in size among the major census occupation groups. This trend is clearly linked to the shift in our economy from manufacturing to service industries.

[Figure 1 about here]

In this paper I argue, however, that this overall trend of rising professional employment masks some intriguing and perhaps troubling patterns in professional employment within different generations of American workers. Figure 2 provides an overview of these patterns. This figure shows the proportion of each cohort in professional occupations at different ages. So, for instance, the solid line for men shows that 13.1% of the Baby Boom cohort was in professional occupations when they were 26-35 years old. By age 46-55 (dotted line), 15.1% of the Baby Boom cohort was in professional occupations. The figure therefore allows us to track professional rates across cohorts, comparing the cohorts at similar ages.

This paper focuses on three questions raised by the results in figure 2. The first and most central question is why both men and women show a sharp dip in rates of professional employment at age 26-35 in the "Generation Jones" cohort. This cohort was born between 1955 and 1964 and represents the second half of the post-WWII Baby Boom. I discuss two possible explanations for this outcome. The first possibility is that the decline in professional occupations is due to cohort size effects, either the large

[1] Using 1990 Census occupation codes assigned by the IPUMS data and separating technical occupations from professional occupations. See more details in the methods section.

size of the Generation Jones cohort or crowding out by the first half of the Baby Boom that preceded it. I review and evaluate a series of theories regarding the impact of cohort size on economic outcomes. The second possibility is that Generation Jones suffered from cohort level "unemployment scarring," a theory that periods of unemployment, especially early in one's career, can have long-term detrimental impacts. Generation Jones entered the labor market during the severe recession of the early 1980s.

The previous research in both of these areas, cohort size effects and unemployment scarring, has focused on income or wages as the primary outcome of interest. I argue for the value of examining occupational outcomes as well. Occupations are likely a key mechanism through which any income effects are produced. In addition, I argue that certain characteristics of professional occupations lead them to be particularly vulnerable to cohort fluctuations.

The analysis on the experience of Generation Jones leads to important implications on three fronts. First, from a theoretical perspective this analysis provides insights into both the mechanisms behind variation in cohort employment and the nature of professional work itself. Second, the findings raise concerns about the well being of the Generation Jones cohort. In previous research, I found lower levels of intergenerational mobility in Generation Jones compared to the earlier Baby Boom cohort (Hollister, 2006). The lower level of professional work in Generation Jones may be a key factor behind this result. The final implication is a practical one. Generation Jones corresponds directly to the cohort interviewed for the National Longitudinal Survey of Youth 1979 (NLSY79), a dataset widely used by social scientists to examine employment outcomes. These findings suggest that researchers using the NLSY79 may need to recognize more carefully whether and how it is an unusual cohort.

[Figure 2 about here]

A second interesting pattern found in figure 2 is that entry into professional occupations at older ages seems to be more common in the recent cohorts for which we have data. This pattern is evidenced by the spacing of the lines in figure 2. For instance, the men in the cohort born in 1935-44 had almost

identical rates of professional occupations as they aged through the youngest three age groups, as shown by the three lines tightly clustered for this cohort. In other words, once the rate of professional work was set for this cohort at age 26-35, it changed very little as this cohort got older. For the Baby Boom and Generation Jones cohorts, though, these lines are more spread out, indicating that the professional rate did not remain fixed but instead increased as these cohorts aged. The same pattern can be seen among the women. As I will discuss, these patterns may reflect the impact of the large sizes of these cohorts. If individuals were crowded out at younger ages and therefore underemployed, they may have continued to try to enter professional occupations at later ages. A second possibility is that this pattern represents a more fundamental change in the way individuals enter professional occupations, reflecting a greater openness to non-traditional paths and older students.

A final question raised by figure 2 is what these patterns predict for the future of professional work. Figure 2 shows that the cohort following Generation Jones, Generation X, has returned to higher participation rates in professional occupations. The size of this cohort, however, is so small that the *share* of young professional workers in the labor force has remained low (as will be shown later in figure 7). This finding is particularly puzzling because, as I have shown in figure 1, the share of professional occupations overall has continued to grow throughout this time period. The decline in professional work in recent cohorts, therefore, may either reflect short-term, cohort-specific effects or it may foretell a more fundamental change in the future of professional work.

The organization of the remainder of the paper is as follows: First, I discuss previous theories and research on cohort-specific effects, with a particular focus on how these theories might apply to the study of professional occupations. I then review the data and methods used for the analysis and provide a brief overview of the different cohorts and their demographic trends. Following this overview, I examine the key questions raised above in detail. In the discussion section I explore the implications of these findings and possibilities for future research on these questions.

Potential sources of cohort variation

All things being equal, one would expect occupational outcomes across birth cohorts to mirror overall trends. If there is a steady increase in professional occupations as a proportion of the labor force, as shown in figure 1, then one would expect that the rate of professional work at any given age would also be increasing with each subsequent cohort. Figure 2 showed, though, that this assumption does not hold. In particular, there appears to be substantial variation in rates of professional work across recent cohorts.

In this section I discuss several factors that might lead to variation in economic outcomes across birth cohorts. Given the large number of potential factors and the small number of observed cohorts, it will not be possible to conclusively test all of these competing explanations. The primary goal of this paper is to provide a careful documentation of these trends, discuss the potential consequences for the future of professional occupations, and, to the extent possible, assess which of these competing explanations best fit the identified patterns. In the discussion section of the paper I will offer possibilities for future research to explore these hypotheses further.

Previous research on cohort variations in labor market outcomes has focused almost exclusively on income, and to some extent educational attainment. The research presented here on cohort variation in occupational outcomes, specifically professional occupations, is valuable for two reasons. First, a focus on income ignores the fact that incomes are primarily earned through access to specific types of jobs. Occupations, therefore, are a primary mechanism through which variations in income may be produced. In addition, professional occupations are closely linked to educational attainment and therefore they may play a particularly important role in translating education into higher incomes. The largest share of college graduates go into professional occupations, and therefore access to these positions may be a key route to economic success.

The second reason to examine cohort variations in occupations is because these relationships may provide insights into the nature of the occupations themselves. The cohort variation identified in this paper seems to be unique to professional occupations (an additional analysis, not shown, found long-term trends in other occupations but little evidence of cohort-to-cohort fluctuations). One therefore might want to examine which characteristics of professional occupations might lead to this sensitivity to cohort variation. There are several possibilities. First, professions tend to be high status positions and therefore will be filled quickly. If there is more interest in these positions than there are slots available, individuals may persist in trying to enter these desirable positions, creating a backlog of people waiting for entry.

A second characteristic of most professions is a requirement for extensive education and training, and a limitation on entry into the profession without proper certification. The close connection between professions and higher education may cause these occupations to be sensitive to variation in college graduation rates. At the same time, professional occupations may not be very responsive to fluctuations in the supply of potential trainees, since professional training institutions are unlikely to expand or contract capacity rapidly. These institutions are unlikely to make such changes due to both bureaucracy and the desire to control the supply of workers into their profession. The certification requirements in many professions, meanwhile, would preclude individuals from bypassing these training institutions and pursuing these careers on their own.

Finally, the long training requirements and the exclusive status of professional occupations may lead to high levels of socialization within these occupations. This may lead to a strong age-based "normative timetable" (Elder, 1975). In other words, individuals may be expected to proceed through the professional training process at specific ages. As one gets older it may become increasingly difficult to enter a profession. This means that factors that impact cohorts early in their labor market experience may have lasting impacts on their ability to enter professional jobs. The costs of professional training

may also play a role in this pattern, as older workers have fewer years to recoup their costs. The discomfort caused by older, non-traditional students, however, suggests that social norms and expectations also play a role.

With these factors in mind, I now turn to previous research on cohort variation in labor market outcomes. I will examine each of these theories and how they might apply specifically to the situation in professional occupations.

Cohort size and crowding

Birth cohorts can vary significantly in size, with the most famous example being the post-World War II Baby Boom. This variation in size may be linked to labor market outcomes through a variety of mechanisms.

Within-cohort crowding. The most well-known theories of cohort size were developed by Easterlin (Easterlin, 1980; Pampel & Peters, 1995). He posited that large cohort sizes would lead to competition for limited opportunities and declining economic outcomes,[2] which would then lead to a variety of secondary economic and social behaviors. The most basic relationship that we might expect to observe, therefore, is that members of large cohorts are crowded out of better job opportunities. Assuming that professional occupations represent better job opportunities, one would expect that when a cohort is growing at a faster pace than the available professional positions then the *rate* of professional work (the proportion of that cohort in professional occupations) will decline. Conversely, when cohort sizes shrink we should see an increase in the rate of professional work within that cohort.

[2] Easterlin posited that a key factor was relative income levels, measured as the relationship between actual income attainment and the income attainment of one's parents. His theories suggested that one's parents' income was influential in setting expectations, and that members of large cohorts, faced with fewer economic opportunities, would undertake a variety of economic and social behaviors to maintain their expected level of attainment.

The number of professional jobs might not change, but as cohort sizes go up and down the professional rates within these cohorts will vary.

Crowding and education. Evidence suggests that this cohort crowding effect has particularly strong impacts on higher-skilled workers (Freeman, 1979; Smith & Welch, 1981). The theory is that higher-skilled jobs require longer training times and therefore newer workers are not easily substituted for more experienced workers. In lower-skilled jobs, in contrast, experience matters less and therefore older and younger workers are more interchangeable. When a cohort is particularly large, this increase in size is more easily absorbed by the large pool of cross-age low-skilled workers. Within higher-skill work, though, the impact of the large cohort size is focused on the more narrow set of positions available to younger workers, and therefore the effects will be more severe. This situation would clearly apply to professional occupations, which tend to have extensive education and training requirements. The crowding in fact may be particularly severe in professional occupations because, as discussed above, professional training institutions may respond slowly to changing demand, may be limited by the availability of instructors, may seek to smooth out fluctuations in trainee numbers, and may wish to control the supply of workers in their professions to maintain their social status.

Crowding and gender. Some researchers have suggested that the cohort crowding effect may be smaller or even reversed among women for two reasons. First, female-dominated jobs may be less experienced-graded because of women's lower levels of labor force attachment, making younger and older workers better substitutes. Second, traditional family structures may lead to different labor market decisions among women. For instance, the declining wages faced by men in large cohorts may lead women to enter the labor market to supplement their family's wages, leading to a positive rather than negative relationship between cohort size and labor market outcomes among women (Pampel & Peters, 1995).

Effects of preceding cohorts. The theories discussed so far focus on the impact of competition within one's own cohort. An additional possibility is that beyond the size of one's own cohort, the sizes of preceding and subsequent cohorts may also have an effect. This raises the question: Is it better to be on the leading or trailing edge of a baby boom? The leading edge of a baby boom may encounter a society and a labor market that is unprepared for them. For instance, the leading edge of the post-WW II baby boom found the public education system scrambling to accommodate the increased enrollment numbers (Macunovich, 2002). As discussed above, professional training institutions are likely to be particularly unresponsive to increased cohort sizes. The trailing edge of the boom, in contrast, may benefit from the extra adjustment time and accommodations created for the leading edge. On the other hand, the trailing edge of a boom may experience a "bottleneck" effect (Macunovich, 2002). The large size of the leading edge may cause a backup of young workers still looking to settle into a career, which would then slow down opportunities for the trailing edge. Again, professional occupations may be particularly prone to these bottlenecks. Not only may training institutions be less responsive to increased cohort size, but the high status of professional occupations may lead members of the leading edge to continue to try to enter these occupations at later ages, creating a backup for the cohorts entering behind it. On the other hand, if professional occupations enforce strict normative timetables, leading edge members may be quickly cleared out of the bottleneck as they become too old to enter.

Effects of subsequent cohorts. The size of subsequent cohorts may also have an effect on occupational outcomes. Feyrer (2008) showed that the entry of the Baby Boom into the labor market required increased recruitment of older workers into managerial occupations to supervise this large cohort of younger workers. This effect would also work in reverse, with a smaller subsequent cohort requiring fewer supervisory positions. As discussed by Feyrer, one would expect that this factor would have the greatest impact upon managerial positions. As we shall see, though, certain supervisory

professional occupations, in particular teachers, may also be sensitive to variations in the sizes of subsequent cohorts.

Macunovich (2002) has proposed an additional effect of subsequent cohorts. She argues that the 15-24 year-old age group constitutes a particularly large share of consumption spending in the United States. She has found a relationship between the size of this age group and business cycles. Her results suggest, therefore, that if the subsequent cohort is small, this will induce an economic downturn in the preceding cohort just as they are entering the labor market.[3]

Gender crowding. A final factor related to demographic crowding, although not specifically to cohort size, is crowding due to the rising levels of labor force participation by women in recent decades. The increase in female workers and the decline in occupational segregation (Tomaskovic-Devey et al., 2006) may have led to increased opportunities for female workers paired with increased crowding for male workers. One might expect, therefore, for cohort effects to vary by gender.

Historical events

In addition to cohort size, cohort variation may also stem from a common experience shared by members of a cohort. Even if a historical event is experienced by everyone, it can have a differential effect on cohorts based upon their current life stage (Elder, 1975). In addition a historical event can have a disproportionate impact on a specific cohort. Wars, for instance, will have a particularly strong impact upon the young men who serve in the war, or face the prospect of being drafted into it.

Recession scarring. A recession is another type of historical event that might cause variation by cohorts. In particular, entering a labor market during a recession may have long-term impacts on employment outcomes. This hypothesis is an extension of the theory of unemployment scarring

[3] Macunovich uses this argument to explain the severe recession in the early 1980s. This argument seems tenuous, though, since the recession was purposely induced by the government to curb inflation. Then again, our current recession is occurring with similar timing in relation to the tail end of the "echo boom."

(Ellwood, 1982; Gangl, 2004), which states that periods of unemployment, particularly early in one's career, can have lasting impacts on an individual's employment outcomes. Most research on unemployment scarring has been at the individual level, examining the impact of a specific spell on unemployment on an individual's future wages and likelihood of being unemployed.

One might expect a similar process to occur at the cohort level when a cohort enters a labor market during a recession. A small handful of studies have recently investigated this question. Oreopoulos, von Wachter and Heisz (2006) studied Canadian college graduates and found a sizable wage penalty for entering a poor labor market, although this effect faded over time. Kahn (2007) used the NLSY79 to examine the labor market outcomes of white males graduating from college in 1979 through 1988. Surprisingly, she found that individuals graduating during the recession in the early 1980s did not show effects on *labor supply* (unemployment and hours worked), most likely because these more advantaged college graduates are at less risk of unemployment. However, Kahn did find negative and persisting *wage effects* for those who graduated during the recession as well as occupation effects, in particular lower levels of occupational prestige.

The relationship between unemployment scarring and professional occupations is difficult to predict. On the one hand, one might expect professional occupations to be relatively immune to business cycles. Professionals tend to hold "core" positions that are buffered from economic fluctuations, and so the overall number of professional workers may not vary strongly with economic conditions. On the other hand, the buffering of core employees may only apply to current workers and not new job openings, resulting in large impacts on labor market entrants.[4] A final consideration is that there is anecdotal evidence that applications to graduate schools increase during recessions, which

[4] Consider, for example, the position of professors during the current economic recession. Many faculty (especially tenured or tenure track) have been buffered from university layoffs. At the same time, though, many universities have instituted hiring freezes, severely limiting the job opportunities for new PhDs.

could lead to *increases* in professional work among cohorts facing recessions. The limited empirical evidence available on this question, however, suggests that this relationship is quite weak (Bedard & Herman, 2008).[5]

Temporary or permanent effects?

A final issue raised in both the literature on cohort size effects and the unemployment scarring literature is the question whether the impacts of these factors are temporary or permanent. Theories of cumulative advantage in the life course (DiPrete & Eirich, 2006) suggest that positive or negative events early in one's career can have a cumulative effect, making it difficult to catch up later in life. In addition, job careers in general tend to have age-based normative timetables. The ability to make up for early losses by switching careers, therefore, may not be easy or cost effective.

Smith and Welch (1981), on the other hand, have suggested that various behavioral adjustments by cohort members, the natural leveling effects of the markets, and the passage of time allowing individuals to find their place in the labor market will lead to a diminishing of any negative effects over time. Similarly, Oreopoulos et al. (2006) found that entering a labor market during a recession had persistent but not permanent effects on the incomes of college graduates. They found that cohorts

[5] A search for the terms "graduate school applications recession" on Google produces a plethora of newspaper articles and other reports confirming the idea that graduate school application rates increase during recessions. The only empirical research on this question was conducted by Bedard and Herman (2008) using data on college graduates with bachelor of science degrees. They found that economic recessions tended to shift male college graduates from masters to PhD programs, but found little or no effect for professional graduate programs. The discrepancy between the news reports and this study may be partly due to the fact that the news articles are reporting on *application* rates while Bedard and Herman studied *enrollment* rates. Given that graduate schools are unlikely to respond rapidly to business cycles by increasing or decreasing enrollment slots, recessions may have a greater impact on the desire to go to graduate school than on actual attendance rates.

affected by recessions had higher levels of employer mobility as individuals sought to improve their positions, eventually reducing their initial disadvantage. Kahn (2007), however, found more permanent wages effects in her results and suggested that recession impacts may be more persistent in the U.S. labor market than in the Canadian system studied by Oreopoulos et al.

There is reason to believe that professional occupations may be particularly susceptible to persistent effects. As discussed above, professions may have particularly strong normative timetables as well as high training costs. It is possible, therefore, that the adjustments described above may improve incomes but perhaps through routes other than professional occupations.

Data and Methods

The primary data used for this study come from the 1950-2000 U.S. Census Integrated Public Use Microdata Series (IPUMS) (Ruggles et al., 2008). The IPUMS data come from the "long form" of the decennial census and represent a one percent sample of the total U.S. population. The advantages of the IPUMS is that it provides a very large sample size and it provides historical data back to 1950. The disadvantage of the IPUMS data is that it only provides a snapshot every ten years. For comparison, therefore, I also conducted an analysis of data from the 1979-2002 Current Population Survey March Annual Demographic File (CPS). The CPS provides an annual snapshot of trends but with a smaller sample size and shorter timeframe. My analysis found that the CPS and IPUMS data resulted in almost identical trends and conclusions. In addition, as shown in Appendix A, the years of the decennial census correspond remarkably well to the key inflection points in the trends found in the CPS data. In this paper, therefore, I will primarily present the results from the IPUMS data. The results using the CPS are available upon request.

The samples for this analysis are restricted to individuals between the ages of 18 and 65 who were part of the civilian labor force at the time of the survey. Members of the labor force are either employed or actively seeking work. A separate analysis using all 18-65 year-old individuals, including

those not in the labor force, produced similar results, as did an analysis looking only at employed individuals.

One challenge with this analysis is that both the IPUMS and CPS data rely on census occupation coding schemes that were modified, sometimes quite significantly, every ten years. The census provides information that allows for the creation of crosswalks between these different coding schemes, but the use of these crosswalks will inevitably involve some amount of error. To address this issue, I have examined the results using a variety of different approaches (see Appendix A). All of these approaches yielded almost identical results. The results presented in this paper, therefore, use the most basic and easily accessible approach; I use a variable provided by IPUMS that codes all responses to a common coding scheme based upon the 1990 census occupation codes. I measure professional occupations using the major occupation groups identified in the 1990 census coding scheme. In addition, some of the analysis uses more detailed professional occupation groups. See Appendix B for a listing of the individual occupation codes and the corresponding professional groups.

For consistency, I chose to measure the cohorts in ten-year spans of birth years, selecting start and end dates that corresponded well to accepted dates of the key cohorts. Much of the analysis also involves examining trends by age groups. I used ten-year age spans that correspond directly with the ten year birth cohorts at each decennial census year. Table 1 shows the census years at which different cohorts were observed at different ages.

[table 1 about here]

The analysis for this paper consists of basic calculations of the proportions of individuals in various occupation groups. I use the survey weights provided with the data in calculating these proportions. In analyzing the results it is important to note the denominator used to calculate each of the proportions, since the choice of the denominator often has a critical impact on the interpretation of the results. Three types of denominators are used:

Total labor force. The denominator is the total number of people in the labor force in that year, measured as the sum of employed and unemployed individuals. I often refer to these proportions as the *share* of the total labor force.

Cohort size. The denominator is the total number of people in the birth cohort in that year. I often refer to these proportions as the *rate* of participation within a particular cohort. These values can differ from the share of the total labor force because there are large differences in the sizes of the various birth cohorts. So, while a particular cohort may have a very high rate of, for instance, professional occupations, if the size of the cohort is relatively small these professionals may not make up a very large share of all members of the labor force.

Other denominators. In a few cases I use even more specific denominators, for instance the number of college-educated individuals in a given cohort.

Most of the analysis in the paper is presented as figures to better identify the trends over time. The figures indicate the denominators used for each line. In addition, table 2 at the end of the paper lists the measures used in the analysis, the numerators and denominators for these calculations, and the figure numbers where they appear. Finally, table 3 and table 4, also at the end of the paper, provide the values for each cohort of these measures, the numbers underlying the figures.

Four birth cohorts

In this paper I compare trends across four birth cohorts in their levels of participation in professional occupations. In this section I provide background information on each of these cohorts. I focus in particular on two key measures: the size of each cohort and the number of individuals in each cohort with a college education. This second piece of information is important because, as discussed above, higher education and entry into professional occupations are closely linked.

Pre-Boomers (born before 1945)

I analyze the pre-Baby Boomers not so much as a single cohort but rather as a series of cohorts that demonstrate a uniform set of trends and therefore a baseline against which to examine the patterns of the more recent cohorts. These earlier cohorts were born before 1945 and were age 26-35 in the 1950, 1960, and 1970 decennial censuses.

Figure 3 shows the size of each cohort at age 26-35 as a proportion of the entire labor force. The points for the pre-Boomer cohorts show slightly declining cohort shares over time. Figure 4, meanwhile, provides information on educational attainment within the cohorts. The solid line in figure 4 shows the college graduations *rates* by gender and cohort at age 26-35 (the number of college graduates at age 26-35 divided by the total number of 26 to 35-year olds). The dotted line in figure 4 shows the number of 26-35 year-old college graduates as a *share* of the total labor force for each cohort. Since there were only moderate differences in cohort sizes across the pre-Boomer cohorts, the two lines in the figure show very similar patterns through 1970. Both lines indicate that each successive pre-Boomer cohort showed an increase in college educated workers among both men and women.[6] In summary, the pre-Boomer cohorts were moderately-sized cohorts with steadily increasing numbers of college graduates.

[Figure 3 and Figure 4 about here]

Baby Boomers (born 1945-54)

The Baby Boomers are perhaps the most famous birth cohort. After World War II, there was an uptick in births leading to a particularly large cohort, as shown by the sharp increase in 26 to 35 year-olds as shown in figure 3. In the past, the entire twenty-year span of higher birth rates was considered to be a single cohort, the Baby Boom generation. In this paper, though, I use the term Baby Boom to

[6] Note that the separate y-axes scales in the figure, with the college graduation rate on the left and college labor force share on the right. One should refrain, therefore, from direct comparison of the levels of the two lines since they are on different scales. A comparison of the cohort-to-cohort trends is more useful.

refer to the "leading edge" of the boom, the first ten birth years. As we shall see, there is considerable evidence that this first half of the baby boom had markedly different outcomes from the "trailing edge," which I will refer to as Generation Jones.

In addition to being a large birth cohort, the Baby Boom cohort also experienced the historical event of the Vietnam War. Researchers point to two potential impacts of the war on labor market outcomes. First, Macunovich (2002) has suggested that government spending during the Vietnam War acted as a stimulus to the economy. She argues that this wartime expansion created new employment opportunities for this cohort and may have countered some of the predicted ill effects of cohort crowding. In addition, the Baby Boom cohort had a particularly high college graduation rate, as shown by the rise of the solid line in figure 4. This sharp increase in college graduation rates is often attributed to efforts to avoid the Vietnam War draft, although college attendance also increased for women who were not at risk of being drafted (Angrist & Krueger, 1992). Regardless of the cause, the increase in college graduation rates was further amplified by the large cohort size of the Baby Boomers, resulting in a huge increase in young, college educated workers as a share of the entire labor force, as represented by the sharp increase of the dotted line in figure 4 for both genders.

Generation Jones (born 1955-64)

A few years ago social commentator Jonathan Pontell pointed to the existence of an overlooked generation slipped in between the Baby Boom and Generation X. This generation, born between 1954 and 1965 was demographically part of the Baby Boom but, he argued, was too young for most of the cultural events typically associated with this generation such as the Vietnam War and Woodstock. He coined the term Generation Jones because it is a large, anonymous cohort with "unrequited cravings and unfulfilled expectations" (Wikipedia, 2007).[7]

[7] The idea of Generation Jones has gained particular attention in recent months because Barack Obama is considered part of this cohort.

As the analysis in this paper shows, the separation of Generation Jones from the earlier Baby Boomers appears justified for economic reasons as well as cultural ones. One factor contributing to this differentiation is college graduation rates. The solid line in figure 4 shows that Generation Jones is the only generation in the past fifty years that has seen a *decline* in college graduation rates compared to the previous cohort. This decline was experienced primarily by men but was paired with a slowdown of college graduation rate increases for women. These lower college graduation rates may have been due to the fact that the rates were "artificially" increased in the Baby Boom cohort by the threat of the Vietnam War draft. In addition, the large number of Baby Boom college graduates greatly reduced the economic returns to a college education, leading to an alarm in the 1970s about the "overeducated American" (Freeman, 1976).

Generation Jones also experienced the unique historical event of entering the labor market during one of the worst recessions since the Great Depression in the early 1980s. In addition to a large cohort size and lower education rates, therefore, Generation Jones was also potentially affected by recession scarring.

Generation X (born 1965-74)[8]

As figure 3 shows, Generation X is a comparatively small cohort. This cohort represents a dip in birthrates before the resurgence in the 1980s of the "echo boomers," the children of the Baby Boomers. Generation X showed a resurgence of college graduation rates, as shown by the solid line in figure 4. However, Generation X is so much smaller than Generation Jones that this increase in college graduates *rates* had little effect on the number of 26-35 year-old college graduates as a *share* of the entire labor force (dotted line in figure 4). Generation X, therefore, is a cohort with considerably higher levels of

[8] Many people would argue that the Generation X birth years continue through 1980 or later. For the sake of consistency, though, I have restricted this cohort to a ten year time span similar to the other cohorts.

college education, but a cohort of such small size that they did little to increase the proportion of college educated overall.

Examining the pieces of the puzzle

Armed with this background information about each cohort, we can now turn to the three questions raised in the introduction of this paper: 1) Why was there a dip in professional employment within the Generation Jones cohort? 2) Are individuals entering professional work at increasingly older ages? 3) What do these trends suggest for future cohorts?

The curious case of Generation Jones

In this section I examine in more detail the lower rates of professional work within Generation Jones. I focus here specifically on rates of professional work at ages 26-35. In the following section I will consider patterns of entry into professional work at older ages. I also focus here on professional occupation rates among college graduates. As discussed above, there is a close connection between college graduation and professional work. In addition, the patterns of professional work among high school graduates do not play a significant role in the trends explored here.[9]

Figure 5 examines the relationship, separately by gender, between college education and professional work for the labor force as a whole over time. The dashed line in each panel of the figure

[9] Between 1950 and 1960, there was a significant decline in high school graduates in professional occupations and a complimentary sharp increase in college educated professionals. This finding suggests that there was a large increase in credentialing and educational requirements within professional occupations during this period. Since 1960, however, the number of high school graduates with professional jobs as a share of the total labor force has remained quite level. Examining the trends separately by gender, there does appear to be a slow decline in professional opportunities for male high school graduates and slow increase in opportunities for female high school graduates. Both of these trends are small enough, though, that they have little impact on the overall trends examined here.

shows the rapid increase in the share of the labor force with a college degree over the last five decades among both men and women. The solid line shows the number of college-educated professional workers as a share of the total labor force. This share has also increased over time for both genders but at a slower rate than the overall growth of college graduates. The result of these trends is the dotted line in figure 5: college-educated professional workers as a proportion of all college graduates (in effect the solid line divided by the dashed line). In 1960 a bare majority of male college graduates (50%) were working in professional occupations (see the right-hand axis in figure 5) and a large majority of female college graduates (75%) were professionals (primarily teachers and nurses). By 2000, this number was reduced to 35% for men and 49% for women. This trend may reflect both push and pull factors. As the number of college graduates increased more rapidly than professional positions, college graduates may have been crowded out of professional occupations and pushed to find work in other types of jobs. In addition, the increasing number of college graduates working in non-professional occupations may reflect a growing demand for higher education in other occupations, creating more attractive options in these other areas. In the case of women, particularly, this trend may reflect expanding opportunities for skilled women in other occupations.

[Figure 5 about here]

Figure 5 examined trends in the overall labor force. Figure 6 shows similar measures but the results are limited to individuals ages 26 to 35 and therefore allow a comparison across birth cohorts at this age. The figure shows that for the cohorts before the Baby Boom, the share of young college graduates (dashed line) grew at approximately the same pace as the share of young professional workers with a college degree (solid line) for both men and women. Therefore, a relatively constant percent of college graduates were in professional occupations at age 26-35 for these earlier cohorts (dotted line, 50-52% for men and 68-74% for women).

[Figure 6 about here]

The Baby Boom cohort, meanwhile, shows strong increases in both the share of college graduates and the share of professionals among both genders, but the increase in college graduates was considerably larger. The end result was that at age 26-35 only 37% of male college graduates and 55% of female graduates in the Baby Boom cohort were in professional occupations (dotted line). This result is strongly indicative of crowding. The number of professional workers increased with the Baby Boom cohort (solid line), especially for women, but it just could not keep up with the explosion of college graduates in this cohort. The result was a lower professional rate among college graduates in the Baby Boom cohort.

Note that the dotted line in figure 6 represents the rate of professional work *among college graduates* at this age, a number that declined for the Baby Boom cohort. In contrast, the results in figure 2 showed the rate of professional work *within the whole cohort*, a number that increased with the Baby Boomer. The final story, therefore, is the following: the Baby Boom cohort saw an explosion of college educated workers. A large number of these college graduates entered professional occupations, more than in any previous cohort. So, even within one of the largest cohorts in the last century, the rate of professional work increased (figure 2). Therefore, the cohort as a whole was not crowded out of professional work; their increased numbers were accommodated to a remarkable degree. However, this increase in professional work was not enough to absorb the explosion of college graduates in the Baby Boom cohort. Therefore, within this huge new crop of college-educated workers, both men and women worked in professional occupations at a lower rate.

The results in figure 6 for Generation Jones, meanwhile, show quite a different story. As discussed previously, the college graduation rate in Generation Jones declined for men and slowed for women. If the trends in the Baby Boom cohort represented a glut of college graduates crowded out of professional jobs, we might expect that the reduction of college graduation rates in Generation Jones, particularly for men, might ease this crowding and lead to a greater proportion of this smaller cohort of

college graduates to enter professional occupations. We could especially expect this to happen because we know that overall professional occupations continued to grow as a share of the labor force during this time period. What figure 6 shows, though, is that while the share of college graduates declined among men in Generation Jones (dashed line), the share of professional college-educated men (solid line) declined even more. Therefore, contrary to the crowding hypothesis, a lower number of college graduates did not lead to a higher rate of professional work within that smaller pool.

The trend for the women in Generation Jones is only slightly different. As discussed earlier, college graduation rates among Generation Jones women continued to increase but at a slower pace. Note, however, that even for women the patterns for Generation Jones are unexpected. Compare the solid lines in figure 5 and figure 6 for women. In figure 5, which depicts the entire labor force, female college-educated professionals comprised a steadily increasing share of the labor force over the entire time period. Figure 6, however, shows that the share of female college-educated professionals at ages 26-35 plateaued for Generation Jones (and also for Generation X, which will be discussed in a later section). In summary, although measures for the total population show that college-educated professionals (both men and women), were a steadily increasing portion of the labor force, when looking specifically at the entry into professions among 26-35 year-olds, we see with Generation Jones a plateauing among women and a decline among men in labor force share.

A final point to consider is the role of teaching occupations in these trends and differential effects by gender. The dotted line in figure 7 shows the number of 26-35 year old teachers (excluding professors) as a share of the labor force across the cohorts. The dashed line in the figure shows share of non-teaching professions at age 26-35. Finally, the solid line shows the total share of professions (the sum of the other two lines). Both the men and women show a marked decline in teaching occupations with Generation Jones, most likely due to the smaller subsequent cohort, Generation X, requiring fewer teachers. The women also show a large jump in teaching occupations with the Baby Boom, presumably

to teach the large Generation Jones cohort. The dashed line in figure 7 shows that if one removes teachers from the professional occupation group, the Generation Jones effect for women disappears. Among men, though, there was a decline within the share of non-teaching professions as well as the teaching professions.

[Figure 7 about here]

Summary. Looking back to the hypotheses proposed at the beginning of this paper, one might draw a few conclusions. First, there is limited support for the idea of within-cohort crowding. Despite the cohort's large size, the rate of professional work within the Baby Boom cohort as a whole actually *increased*. A separate analysis (not shown) found that this expansion occurred across a broad cross-section of profession types.[10] However, there were such a huge number of college graduates in the Baby Boom cohort that among college graduates some of them were likely crowded out of professional occupations. The within-cohort crowding hypothesis, meanwhile, does not explain the outcomes of the Generation Jones cohort, particularly the men. As the pool of college graduates declined in Generation Jones, the crowding hypothesis predicted an increase in the professional rate among these college graduates. Instead the professional rate continued to fall even within this smaller pool.

The results show some evidence of gender effects. Within Generation Jones, men showed much stronger declines in the college graduation rate, the professional rate, and professionals as a share of the labor force. The larger decline in the college graduation rate among men might be due to the fact that the threat of the Vietnam War draft had passed. The larger decline in the professional rate and professional share among men might be partially due to crowding out by women. However, the overall share (men and women combined) of professionals at age 26-35 declined in Generation Jones. The story

[10] Men saw particularly large increases in health diagnosing, health treating, teachers, lawyers, and other professionals. Women saw increases across all professions, with health treating and teachers contributing a particularly large share.

is therefore not simply one of women getting a bigger piece of the pie. The pie itself got smaller. A better interpretation might be that the expanding opportunities for women during this period were able to counter some of the effects of the shrinking pie and may have exacerbated some of its effects for men.

The trends show some support for the influence of subsequent cohorts on supervisory positions. The share of teaching positions does seem to fluctuate with the size of the subsequent cohort. This factor accounts for all of the Generation Jones effect on women, but there continues to remain a puzzle for men.

The Generation Jones cohort clearly had lower rates of professional work compared to the Baby Boom cohort. The difficulty is in parsing out the causes when there are so many potential factors. The decline in college graduations rates in Generation Jones may have contributed to the lower levels of professional work, but it cannot explain the full results since, as mentioned above, the professional rate declined even within this smaller pool. A scarring effect from the 1980s recession is still a possibility. An additional possibility is the idea of a bottleneck, that the Baby Boom cohort so overwhelmed the system that it took several years to sort out and backed up later cohorts. I will discuss some evidence on this possibility in the following section on later entry into professions. A final possibility is that these trends reflect a more fundamental shift in the nature of professional work. I will discuss this possibility in the section following the next.

Later entry into professional occupations?

In addition to the dip in the rate of professional work in Generation Jones, a second aspect of figure 2 is that it appears that both the Baby Boom and Generation Jones cohorts entered professional occupations at later ages than in previous cohorts. This trend is reflected in the spacing between the lines in figure 2 for these cohorts. The closeness of the lines in the earlier cohorts suggest that once a

professional rate was set at age 26-35 within a cohort, it did not increase substantially at later ages.[11] This pattern likely reflects the normative timetable of professional occupations, making later entry difficult, as well as the fact that later entry does not pay off as well for older workers because of the fewer years to recoup training costs.

The results for the Baby Boom and Generation Jones cohorts, though, show considerably larger spacing between the lines for both men and women, indicating that, unlike in the previous cohorts, the rate of professional work increased as these cohorts aged. This pattern may reflect one of two possibilities. The first possibility is that this pattern is evidence of the "bottleneck" and catch-up effects described earlier. A large number of college graduates in the Baby Boom cohort were initially crowded out of professional occupations. They may have persisted in trying to enter these professions at older ages and eventually some of them likely succeeded. The similar pattern of late entry into professional occupations within Generation Jones may reflect the vestiges of this bottleneck, although this does not make quite as much sense since, as shown earlier, they weren't necessarily crowded out of professional occupations at younger ages.[12] A second possibility is that this pattern of later entry reflects a more fundamental shift in the nature of professional occupations. Perhaps non-traditional paths into professions are becoming more accepted and common, allowing for an increased rate of later entry.

[11] The larger gap for the 56-65 age group for men is a bit of a mystery. Since these numbers are the rate based upon the size of the cohort at that age, it is possible that non-professionals have a higher likelihood of leaving the labor force before age 65, therefore leaving professionals as an increasing share of the remaining labor force.

[12] An additional possibility might be that Generation Jones went back to college at a higher rate at older ages to make up for their initial low education levels. However, an analysis of college attendance rates (not shown) did not show evidence of increases in late college graduation rates within this cohort.

Generation X and beyond

A final question regarding the patterns analyzed in this paper is what these trends predict for the future. The results for Generation X, the cohort with the most recent data for ages 26-35, raise more questions than they answer. As discussed earlier, Generation X returned to a higher rate of college graduation, but the smaller size of Generation X meant college graduates from this cohort constituted an even smaller share of the labor force for men and only a slight increase for women.

This pattern is also evident in the rate and share of professional work. As shown in figure 2, the *rate* of professional work at age 26-35 was higher for Generation X compared to Generation Jones for both genders. However, as shown in the solid line in figure 7, professional work as a *share* of the total labor force declined once again among men in Generation X and was flat for women for this age group. Generation X, therefore, seems to show some elements of reverse crowding (higher rates due to smaller cohorts), but it also reflects a continuing decline in the share of young male professional workers and a plateauing for women. These trends are perplexing given the continued increase in the overall share of professional work shown in figure 1. The results raise the question of whether these patterns reflect the impacts of cohort-specific factors such as bottlenecks and small size or whether they foreshadow a more fundamental change in the nature of professional work.

These questions are particularly intriguing because the cohorts even younger than Generation X are now entering the labor market. “Generation Y” is once again a larger cohort, the “echo” of the Baby Boom. The leading edge of this new baby boom has already entered the labor market. The trailing edge is in college now. If the trends in the share of professional work identified in this paper for Generation Jones and Generation X reflect fundamental changes in the nature of professional work, one would expect to see a continuing flat or declining share of young professionals. The increased size of Generation Y, therefore, may lead to considerable crowding issues. If, on the other hand, the trends identified in Generation Jones and Generation X are due more to cohort-specific factors, then this would

lead to a different set of predictions. In particular, the current cohort of college students seems to share many features with Generation Jones. They do not share a decline in college graduation rates, but they do share the experience of being on the trailing edge of a baby boom and entering the labor market during a severe recession. These factors may not bode well for our current students.

Discussion

The findings in this paper point to implications and areas for future research on three fronts: the experiences of individual cohorts, the factors that influence cohort occupational outcomes, and the changing nature of professional work.

Understanding individual cohorts

The results presented in this paper indicate that one's experience in the labor market can vary considerably by cohort. As cohorts enter and age through the labor market, each one is shaped by its own unique set of circumstances. An examination of these circumstances and how they have influenced a cohort can provide valuable insights into the experience of a large swath of Americans. For instance, my previous research found lower levels of intergenerational mobility in the Generation Jones cohort compared to the Baby Boom cohort (Hollister, 2006). My initial findings also tied this lower rate of mobility to lower levels of professional careers. A more in-depth examination of this connection may point to broader social equality impacts of these trends.

Understanding and recognizing the unique circumstances of cohorts also poses a challenge to researchers seeking to document long-term trends in the labor market, since it can be difficult to separate cohort-specific effects from longer-term trends. As discussed in the introduction, the problem of cohort-specific effects is particularly relevant for researchers using the NLSY79, since Generation Jones (the cohort interviewed in NLSY79) seems to have experienced a particularly unique combination of circumstances. At the same time, the NLSY79 dataset offers an unusually rich data source to examine in more detail the impacts of these circumstances.

Testing the causes of cohort effects

In addition to documenting the situation of individual cohorts, the results point to the need to better parse out the impact of different factors on cohort outcomes. Particular attention might be paid to the most commonly occurring factors: cohort size and business cycles. The Baby Boom led to a burst of research in the 1970s and early 1980s on the effects of cohort size as this cohort came of age and entered the labor market. Much of the research cited in this paper comes from this period. When some of the predictions from this literature, particularly predicted improvements in economic outcomes for Generation X, did not hold true much of this work was abandoned. The entry into the labor market of more recent cohorts, though, particularly the "echo boom," provides a new set of cohorts with sizable size variations to examine.

Research on cohort level recession scarring has gained some recent attention, as discussed earlier. More research on this topic would be valuable. A particularly interesting question is whether the scarring effect has declined over time as the labor market has moved away from the ideal of the lifetime job. As suggested by the late entry patterns into professions in recent cohorts, more unconventional career paths may be more acceptable today and allow for faster catch up.

A major challenge in studying these cohort-level effects is that we have data on only a limited number of cohorts and yet a multitude of potential factors affecting each cohort. The addition of data on more recent cohorts will help ameliorate some of this problem. Cross-national comparisons also offer an opportunity to increase the number of cohorts studied. One must be careful, however, about the impact of national labor market institutions on the measured outcomes.

Finally, the results point to the value of examining occupational outcomes as well as income and wages. One's income is clearly an important measure, but focusing solely on this outcome ignores the fact that these incomes must be earned by navigating through the social system of the labor market. Economic models of job searching may miss some of the barriers to moving across occupational

boundaries. Professional occupations in particular have highly structured social systems. Examining occupational patterns, therefore, adds additional insights into how economic outcomes are produced.

Implications for professional occupations

In addition to cohort-specific questions, the trends identified in this paper have several implications for the study of professional work. First, professional occupations were the only major occupation group to show the distinct patterns identified with Generation Jones and its neighboring cohorts. This finding suggests that professional occupations are particularly sensitive to the factors that caused these variations. Unfortunately, it's not completely clear which factors are to blame (thus the need for more studies as described above).

A second finding is that both the Baby Boom and Generation Jones cohorts showed higher rates of entry into professional occupations at older ages. Two factors may be behind this trend. One possibility is that these later entry rates were caused by a bottleneck of underemployed workers trying to improve their labor market positions. A second possibility is that these results reflect a loosening of normative timetables within professional occupations. The experience of Generation X at older ages will provide a key test of this idea. As a smaller cohort, Generation X already had a higher *rate* of professional occupations at age 26-35 (a larger proportion of the cohort was already in professions by age 26-35). There should therefore be fewer underemployed individuals and no bottleneck in this cohort. If Generation X also shows higher rates of late entry into professional work, this finding would point to a more fundamental change in the entry process into professional occupations.

Finally, the trends identified here raise a question about the future of professional occupations as whole. The share of professional occupations declined in both Generation Jones and Generation X. This decline may be due to cohort specific factors of bottlenecks, small cohorts, and unique historical circumstances. The share of professional occupations may therefore rebound strongly for Generation Y, especially as the Baby Boom cohort, which holds an unusually large share of professional occupations,

reaches retirement. On the other hand, the experiences of recent generations may represent a more permanent change, foreshadowing a future trend of flat or even lower shares of professional work. There are at least two factors that might have led to a more permanent shift in this direction. First, recent developments in technology and in the labor market may have led to a shift away from professional occupations. If one considers health occupations, for instance, increasing technology as well as the substitution towards lower-skill nurses may have reduced the share of professional-level doctors and nurses. However, a separate analysis (not shown) found that the patterns for these cohorts occurred across many different types of professional occupations, especially in the case of men. To the extent that the recent cohorts represent permanent changes, therefore, they are not due to factors specific to one type of profession.

A second possible cause of a permanent shift might be increasing opportunities outside of the professions. In the past a large majority of college graduates went into professions. Today professions still draw a large share of college graduates, but no longer the majority. A quick look at current college graduates reveals the appeal of careers in consulting, management, and finance, occupations that are not considered part of the professional category. The professional occupations, therefore, may be losing some of their elite status. The lower share of professional workers in recent cohorts, therefore, may not reflect crowding but rather the allure of new opportunities.

The results of this study, therefore, point to several aspects of professional occupations to explore further. As more data from recent and future years becomes available, it will be easier to determine which trends identified here are cohort-specific and which are more permanent changes. Meanwhile, these trends, regardless of whether they are temporary or permanent, point to significant changes occurring within professional occupations, particularly in terms of the age composition and paths of entry into these positions. More detailed studies of the impact of these changes on the experience of professional work would be valuable.

[Table 2, Table 3, and Table 4 about here]

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Table 1. Census years at which birth cohorts were measured at different ages.

Birth cohort		Age Group			
Years	Name	26-35	36-45	46-55	56-65
1965-74	Gen X	2000			
1955-64	Gen Jones	1990	2000		
1945-54	Baby Boom	1980	1990	2000	
1935-44	WWII	1970	1980	1990	2000

Table 2. Measures used in the analysis and their corresponding figure numbers.

Measure	Numerator	Denominator	Figure #s
Professional rate			
26-35yr	prof 26-35yr	all 26-35yr	2
36-45yr	prof 36-45yr	all 36-45yr	2
46-55yr	prof 46-55yr	all 46-55yr	2
56-65yr	prof 56-65yr	all 56-65yr	2
	Measures at age 26-35		
Share of LF	all 26-36yr	total LF	3
Professional rate	prof 26-35yr	all 26-35yr	2
Professional share	prof 26-35yr	total LF	7
College rate	college 26-35yr	all 26-35yr	4
College share	college 26-35yr	total LF	4,6
Prof college rate	prof coll 26-35yr	all 26-35yr	6
Prof college share	prof coll 26-35yr	total LF	
Prof rate among college	prof coll 26-35yr	college 26-35yr	6
Teaching share	teachers 26-35yr	total LF	7
Non-teaching prof share	non-teach prof 26-35yr	total LF	7

Table 3. Cohort values used for the analysis, men.

Cohort Name	Pre-baby boom			Baby Boom	Gen Jones	Gen X
Birth Years	1915-24	1925-34	1935-44	1945-54	1955-64	1965-74
Professional rate						
26-35yr	0.067	0.106	0.128	0.131	0.112	0.135
36-45yr	0.081	0.111	0.127	0.139	0.130	
46-55yr	0.082	0.109	0.131	0.151		
56-65yr	0.093	0.124	0.144			
	Measures at age 26-35					
Year when age 26-35	1950	1960	1970	1980	1990	2000
Share of LF	0.191	0.165	0.145	0.165	0.166	0.131
Professional rate	0.067	0.106	0.128	0.131	0.112	0.135
Professional share	0.013	0.018	0.019	0.022	0.019	0.018
College rate	0.032	0.154	0.191	0.279	0.245	0.285
College share	0.006	0.025	0.028	0.046	0.041	0.037
Prof college rate	0.016	0.080	0.097	0.104	0.086	0.103
Prof college share	0.003	0.013	0.014	0.017	0.014	0.014
Prof rate among college	0.503	0.519	0.511	0.372	0.351	0.361
Teaching share	0.002	0.003	0.004	0.004	0.002	0.002
Non-teaching prof share	0.011	0.014	0.015	0.017	0.016	0.015

Table 4. Cohort values used for the analysis, women.

Cohort Name	Pre-baby boom			Baby Boom	Gen Jones	Gen X
Birth Years	1915-24	1925-34	1935-44	1945-54	1955-64	1965-74
Professional rate						
26-35yr	0.106	0.128	0.161	0.183	0.165	0.203
36-45yr	0.105	0.124	0.156	0.202	0.207	
46-55yr	0.109	0.127	0.171	0.230		
56-65yr	0.105	0.139	0.186			
			Measures at age 26-35			
Year when age 26-35	1950	1960	1970	1980	1990	2000
Share of LF	0.069	0.066	0.075	0.119	0.138	0.112
Professional rate	0.106	0.128	0.161	0.183	0.165	0.203
Professional share	0.007	0.008	0.012	0.022	0.023	0.023
College rate	0.039	0.096	0.145	0.240	0.260	0.327
College share	0.003	0.006	0.011	0.029	0.036	0.037
Prof college rate	0.027	0.071	0.105	0.132	0.115	0.149
Prof college share	0.002	0.005	0.008	0.016	0.016	0.017
Prof rate among college	0.680	0.744	0.721	0.549	0.442	0.455
Teaching share	0.003	0.004	0.006	0.010	0.007	0.008
Non-teaching prof share	0.004	0.005	0.006	0.012	0.016	0.015

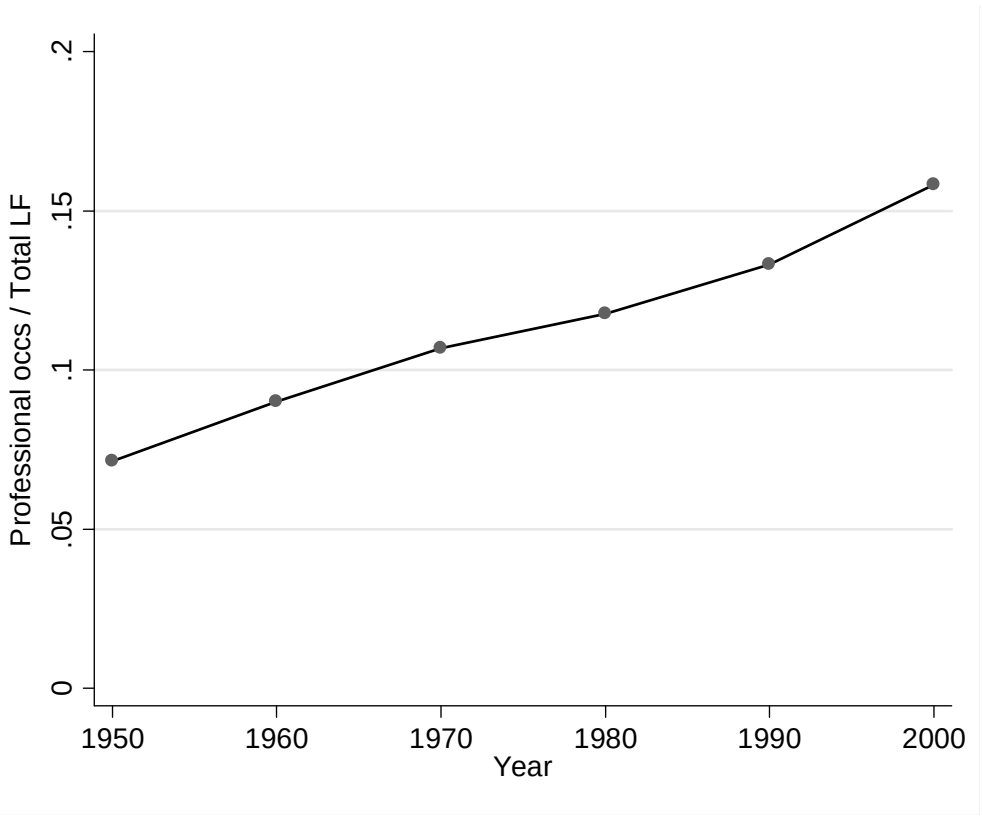

Figure 1. Professional occupations as a share of the total labor force, 1950-2000 Census iPUMS data.

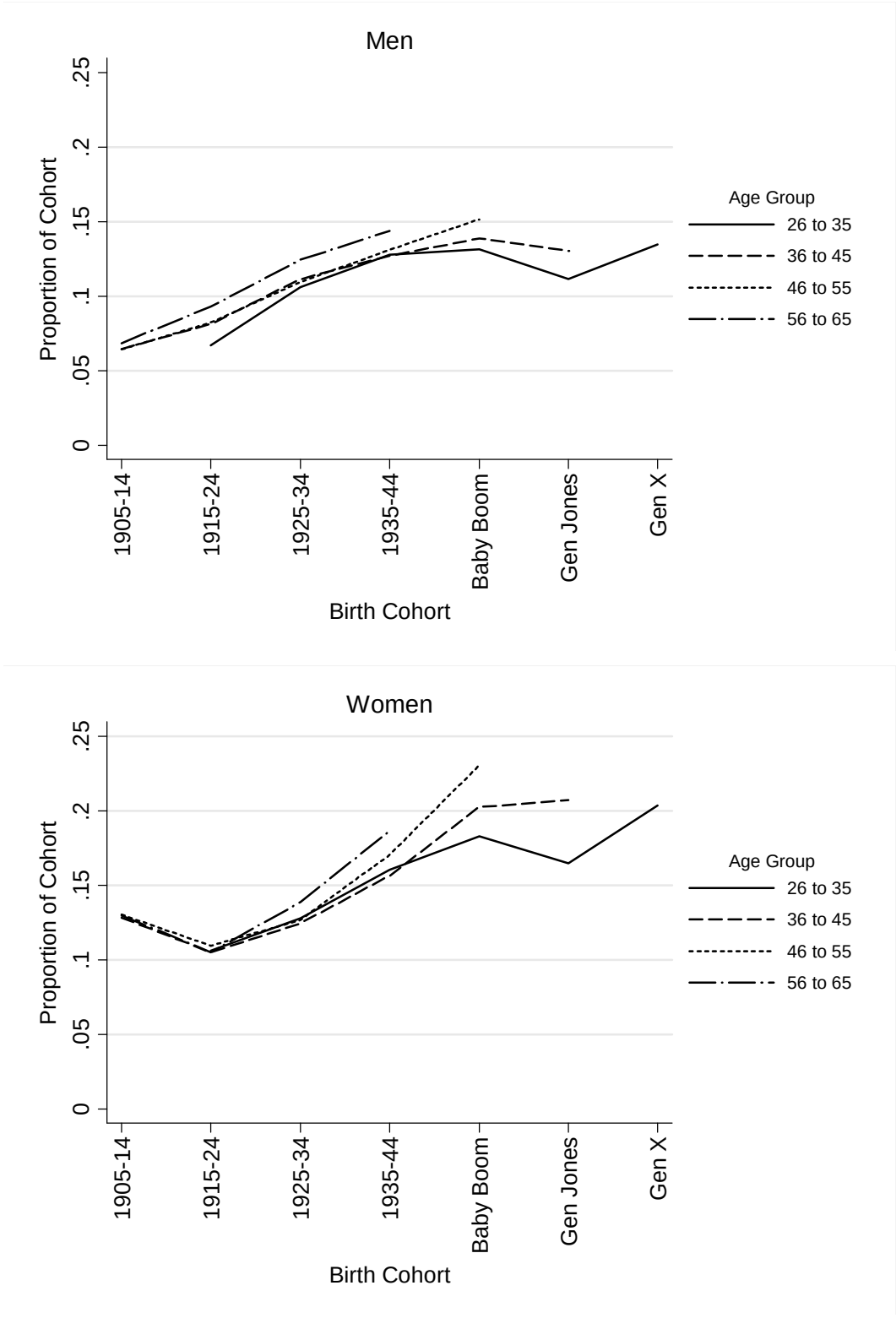

Figure 2. Professional occupation rate by age and cohort.

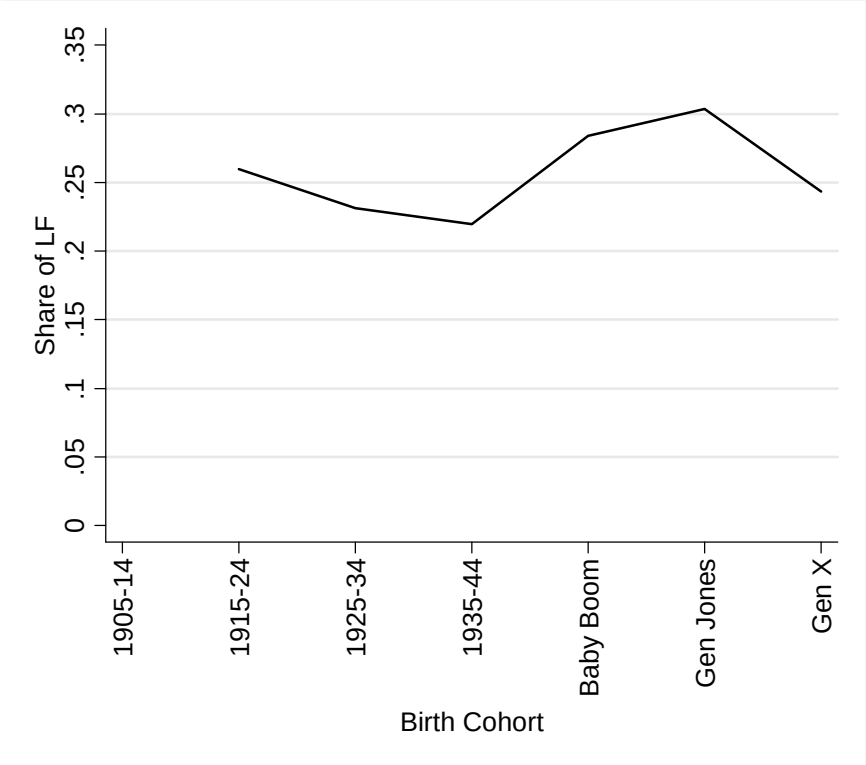

Figure 3. Cohort share of the total labor force at age 26-35 (age 26-35/LF).

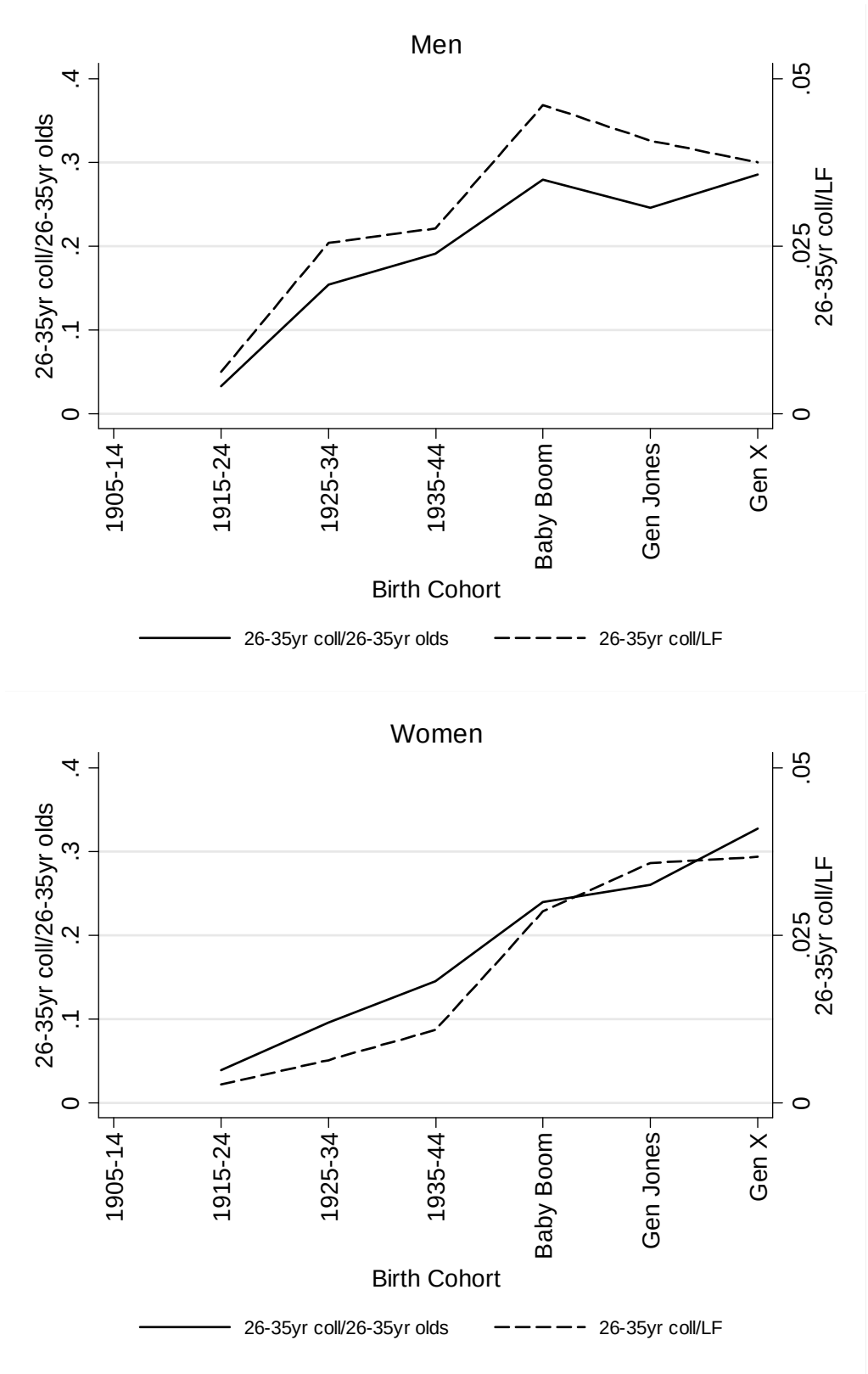

Figure 4. College graduation rates (26-35yr coll/26-35yr olds) and share of labor force (26-35yr coll/LF) by cohort.

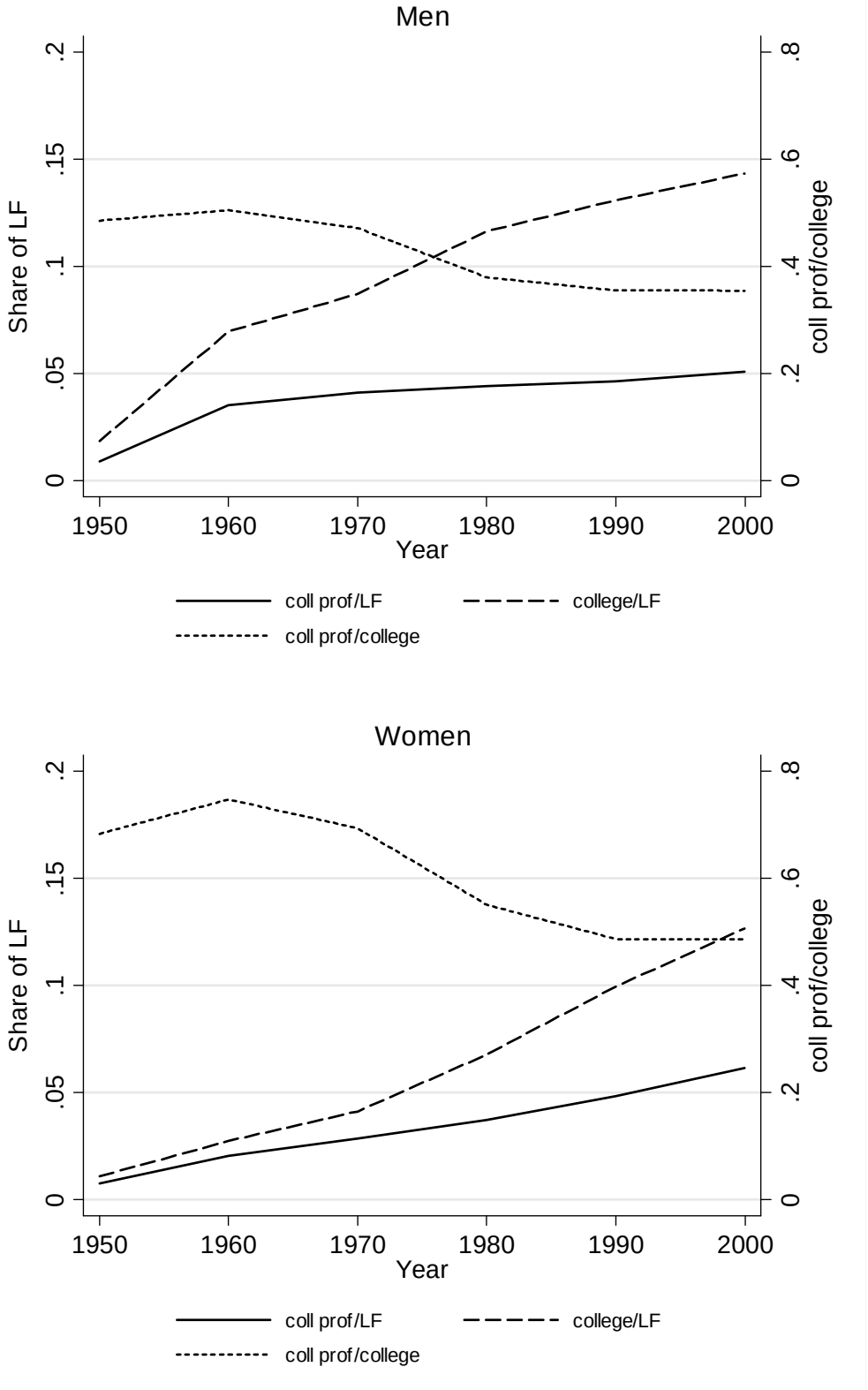

Figure 5. The share of the labor force that is college educated and that is professional and college educated, and the rate of professional work among the college educated, 1950-2000.

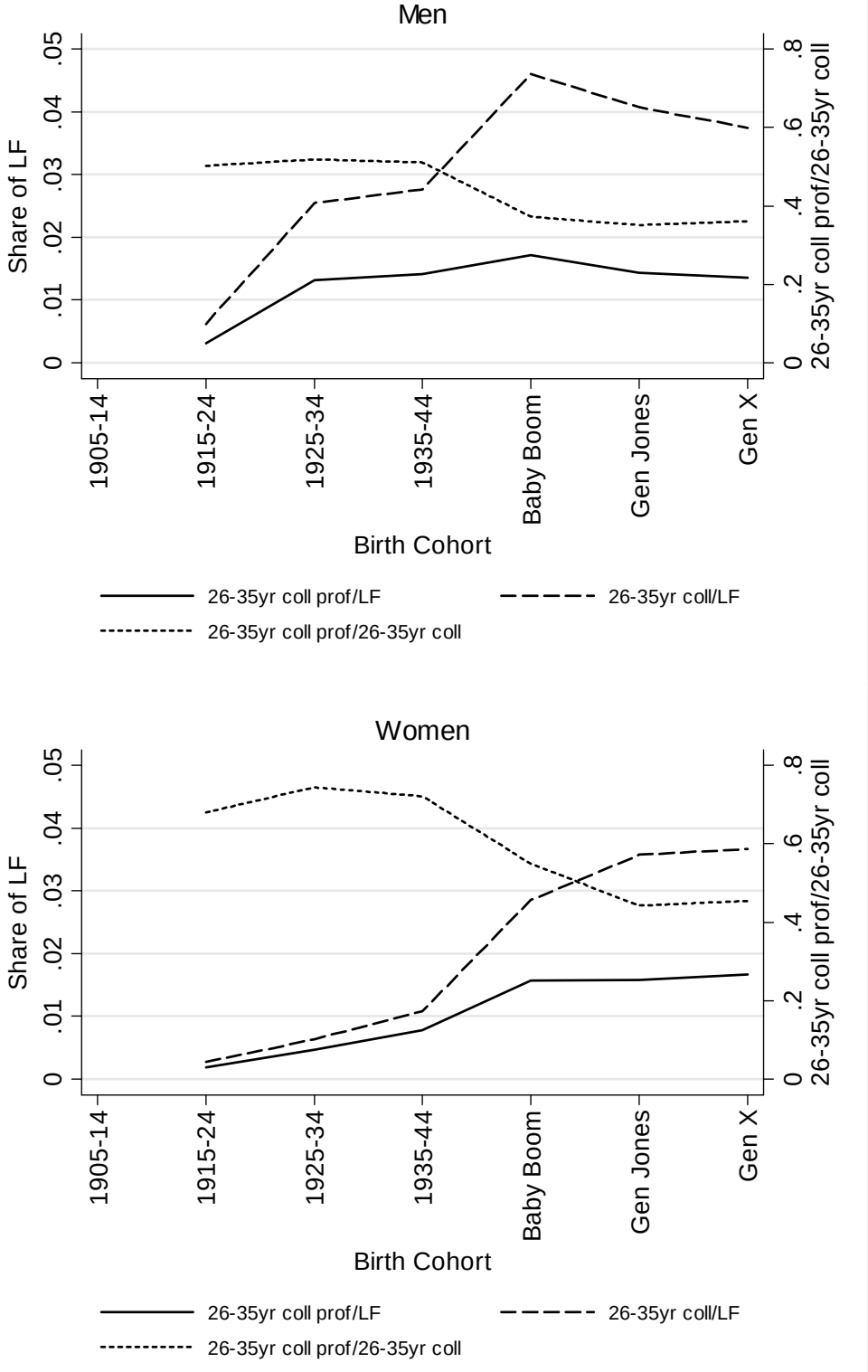

Figure 6. The share of the labor force by cohort that is 26-35 years old & college educated, the share that is 26-35 years old & college education & in a professional occupation, and the rate of professional work among 26-35 year-old college graduates.

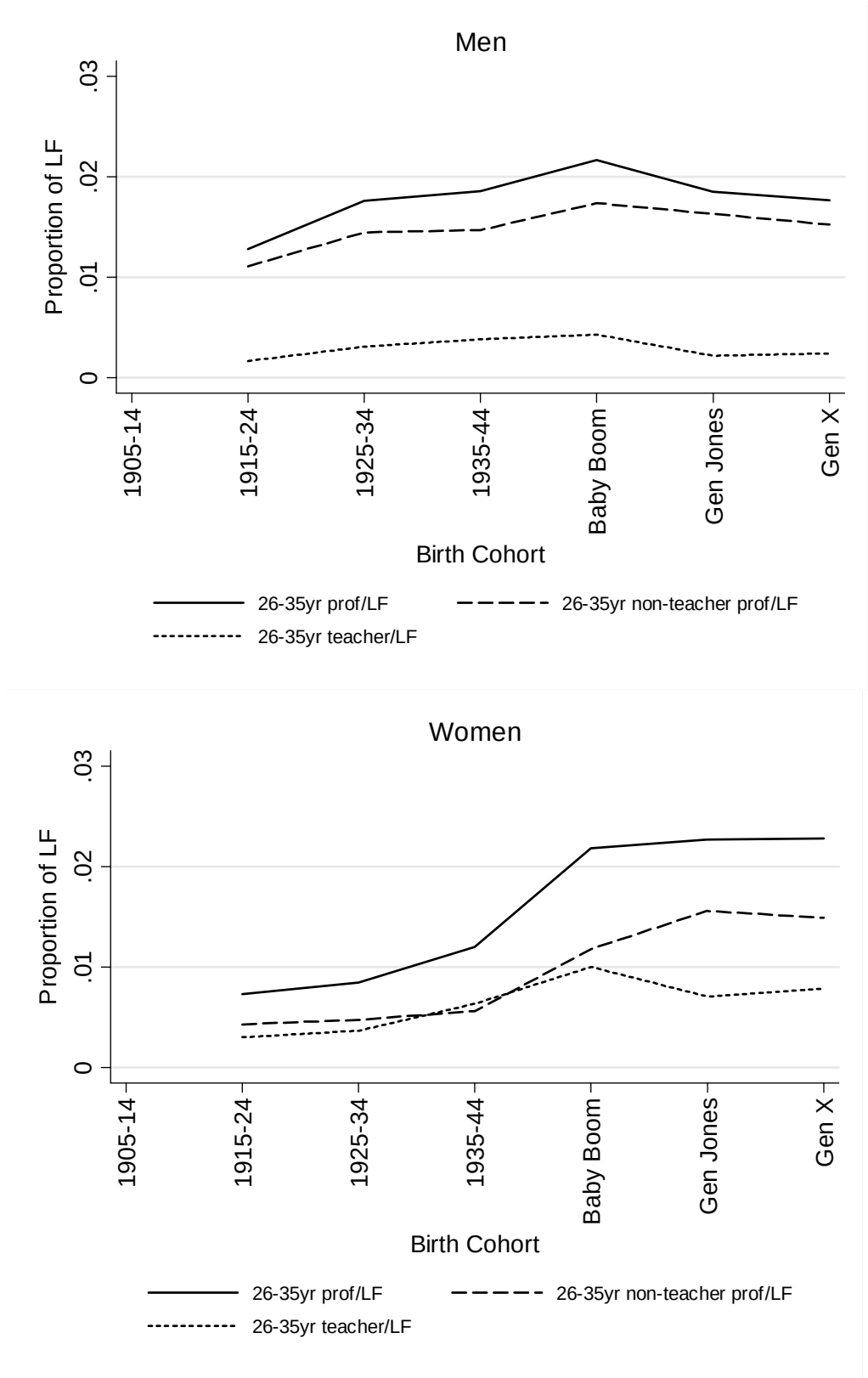

Figure 7. Professional occupation rates by gender and cohort, including and excluding teaching occupations.

Appendix A: Changing census occupation coding schemes

As discussed in the paper, the census updates its occupation coding schemes for each decennial census. The CPS also relies on the census occupation coding schemes, usually adopting the updated version a year or two after the decennial census. The largest changes in the occupation coding schemes occurred between 1970 and 1980 versions and between the 1990 and 2000 versions. With each modification the census published a cross classification of a sample of individuals under both schemes. These cross classifications can be used to create crosswalks between the different coding schemes. However, without the detailed descriptions of each respondent's occupation, any use of a crosswalk will inevitably introduce a certain amount of error. To address this issue, I analyzed the results using a variety of approaches.

IPUMS common coding. One of the simplest approaches is to use a variable provided by IPUMS which codes all responses into a common coding scheme. IPUMS provides two different variables, one with all occupations coded to the 1990 coding scheme and another with all occupations coded to the 1950 scheme. The IPUMS variables map each code in each year onto a single 1990 (or 1950) code (Meyer & Osborne, 2005). This approach is straightforward, and often necessary, but introduces a certain amount of error. In the cross classifications produced by the census, it is rare to find cases where *all* individuals in an occupation code under one scheme would be classified under a single code in another. For instance, among the individuals with the code "accountants" in the 1970 scheme, 85.67% were classified as "accountants and auditors" under the 1980 scheme, but the remaining 14.33% were classified under a variety of other codes (1.31% were financial managers,4.21% bookkeepers, etc) in the 1980 codes (Meyer & Osborne, 2005). Assigning all of the 1970 accountants to the 1980 accountants and auditors code, therefore, introduces some error.

Weighted cross classification. Weeden (2005) has developed an approach that tries to reduce these errors by using a weighted average approach. She uses the same cross classifications discussed

above but rather than creating a one-to-one mapping of occupation codes over time, she uses the full information provided by these reports. For instance, using the example given above an individual who was coded as an accountant in 1970 would be split into several different records each with an assigned weight. One record would be coded to the 1980 accountants and auditors category and would be given a weight of 0.8567 of a person. An additional record would be given 1980 bookkeepers code and a weight of 0.421, etc. I used Weeden's coding scheme to translate the CPS data across the different survey years.

Consistent 1980 and 1990 codes. The 1980 and 1990 census occupation coding schemes are very similar. In fact, the 1990 codes involved only a small handful of very straightforward and well-documented modifications. The CPS used the 1980 census codes from 1983 to 1991 and the 1990 codes from 1992 to 2002. One can therefore estimate extremely reliable trends in occupations during this 1983-2002 period using the CPS. This period also happens to be the key period for the trends analyzed in this paper. I therefore conducted a separate analysis over this time period using the consistent 1980/1990 codes.

All of the approaches above provided almost identical results. In addition, as shown in figure 8, the inflections points indicated in the yearly CPS data correspond well to the decennial census years measured in the IPUMS data. In the paper, therefore, I present results using the IPUMS common 1990 occupation codes because these data provide the longest historical time span and results that are the easiest to replicate by other researchers.

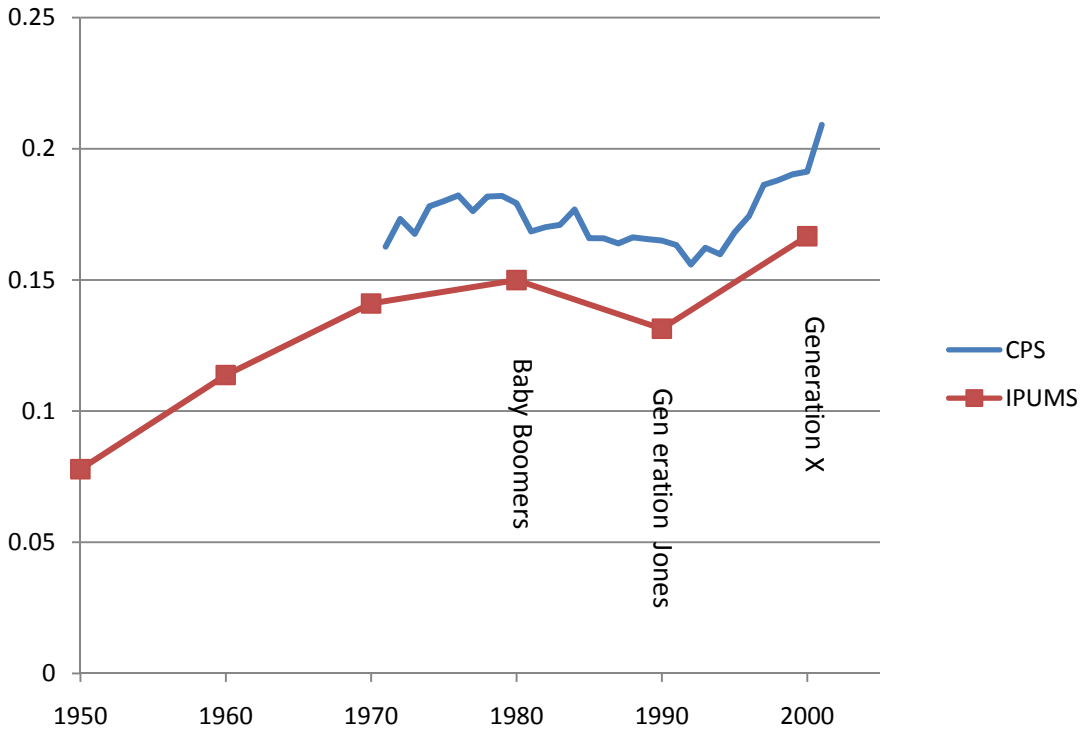

Figure 8. Professional rate at age 26-35. Comparison of CPS and IPUMS results.

Appendix B: Professional occupations

The following table lists the occupations included in the professional category, as well as the more detailed professional groups used in some of the analysis. The numbers are the 1990 census occupation codes.

Scientists

44	Aerospace Engineers
45	Metallurgical and materials Engineers
46	Mining Engineers
47	Petroleum Engineers
48	Chemical Engineers
49	Nuclear Engineers
53	Civil Engineers
54	Agricultural Engineers
55	Electrical and electronic Engineers
56	Industrial Engineers
57	Mechanical Engineers
58	Marine and naval architects
59	Engineers, n.e.c.
66	Actuaries
67	Statisticians
68	Mathematical scientists, n.e.c.
69	Physicists and astronomers
73	Chemists, except biochemists
74	Atmospheric and space scientists
75	Geologists and geodesists
76	Physical scientists, n.e.c.
77	Agricultural and food scientists
78	Biological and life scientists
79	Forestry and conservation scientists
83	Medical scientists

Computers

64	Computer systems analysts and scientists
65	Operations and systems researchers and analysts

Health diagnosing

84	Physicians
85	Dentists
86	Veterinarians
87	Optometrists
88	Podiatrists
89	Health diagnosing practitioners, n.e.c.

Health treating

95	Registered nurses
96	Pharmacists
97	Dietitians
98	Respiratory therapists

99 Occupational therapists
103 Physical therapists
104 Speech therapists
105 Therapists, n.e.c.
106 Physicians' assistants

Professors

113 Earth, environmental, and marine science teachers
114 Biological science teachers
115 Chemistry teachers
116 Physics teachers
117 Natural science teachers, n.e.c.
118 Psychology teachers
119 Economics teachers
123 History teachers
124 Political science teachers
125 Sociology teachers
126 Social science teachers, n.e.c.
127 Engineering teachers
128 Mathematical science teachers
129 Computer science teachers
133 Medical science teachers
134 Health specialties teachers
135 Business, commerce, and marketing teachers
136 Agriculture and forestry teachers
137 Art, drama, and music teachers
138 Physical education teachers
139 Education teachers
143 English teachers
144 Foreign language teachers
145 Law teachers
146 Social work teachers
147 Theology teachers
148 Trade and industrial teachers
149 Home economics teachers
153 Teachers, postsecondary, n.e.c.
154 Postsecondary teachers, subject not specified

Teachers

155 Teachers, prekindergarten and kindergarten
156 Teachers, elementary school
157 Teachers,, secondary school
158 Teachers, special education
159 Teachers, n.e.c.

Lawyers & judges

178 Lawyers
179 Judges

Other professions

43 Architects
63 Surveyors and mapping scientists
163 Counselors, educational and vocational
164 Librarians

165 Archivists and curators
166 Economists
167 Psychologists
168 Sociologists
169 Social scientists, n.e.c.
173 Urban planners
174 Social workers
175 Recreation workers
176 Clergy
177 Religious workers, n.e.c.
183 Authors
184 Technical writers
185 Designers
186 Musicians and composers
187 Actors and directors
188 Painters,sculptors,craft-artists, & artist print-makers
189 Photographers
193 Dancers
194 Artists, performers, and related workers, n.e.c.
195 Editors and reporters
197 Public relations specialists
198 Announcers
199 Athletes