The Great Resignation, Unemployment, and Underemployment in the US: A Study of Labor Market Segmentation

Lambert, Thomas

University of Louisville

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Thomas E. Lambert, PhD
College of Business, University of Louisville
Louisville, KY 40292
Email: Thomas.Lambert@Louisville.Edu
Phone: 502-403-9795

Abstract

During 2021 and 2022 many news media outlets have been reporting that millions of workers in the US have been quitting their jobs in record numbers. In a global economy rebounding from the economic downturn caused by the Covid-19 outbreak and demanding more workers, a high rate of resignations has exacerbated labor shortages and may be aggravating underemployment rates if many workers are choosing not to be part of the labor force or only to work part time. Many reasons have been offered to explain this "Great Resignation" including high day care costs for working parents which may in turn be causing the trend of lower female labor force participation; the liberating experience of not working at all or to work from home instead of having to work from one's usual work place during the Covid-19 quarantine/lockdown periods; stagnant/low wages and greater job tenure uncertainty which make working less attractive and more stressful; and the feeling by many of not wanting to work further for bad bosses or management who create bad work environments so that resignation becomes a means of escape from such conditions. This paper does data analysis on US labor trends since 2003 and during and after the Great Recession of 2008-2009 and demonstrates that resignations have been trending upward in the US aggregate economy and that quit rates mostly have been trending higher within many US industries. These phenomena can best be explained by the concept of labor market segmentation, high unemployment and underemployment rates that exist even in good economic times among certain industries, minority group composition, wage stagnation, and type of managerial supervision. Some of these same factors help to explain labor under-utilization greater than national/aggregate rates within these industries as well.

Introduction

Over the last two years, the popular press in the US has featured many stories discussing the phenomenon known as the "Great Resignation." This phenomenon has witnessed increasing voluntary quits rates across most if not all industries and occupations even as the economy continues to recover from the economic downturn caused by the Covid-19 pandemic (PBS Newshour 2021, Chen 2022). Unemployment rates have dropped since peaking during the strict quarantine period of March and April of 2020, and the resulting labor shortage has been exacerbated by abnormally high "quits rates" according to the US Bureau of Labor Statistics (BLS), and in March 2022, the number of job resignations set an all time record of 4.5 million (US BLS 2022a).[1]

(Insert Figure 1 around here)

As Figure 1 shows, US economy wide quits rates (the number of voluntary separations as a percent of total employment) have traditionally been between 1.75 and 2.25% going back to 2001. These rates go down during recessionary times but then rebound until the next recession. However, since the Great Recession of 2008-09, quits rates have climbed upward and begun to exceed usual levels until the pandemic crisis beginning in 2020. After this period, however, the quits rates have climbed to their highest levels of this century at greater than 2.5%.

Some of the reasons given for this include a lack of affordable child care for working parents (i.e., it is more economical to stay home and watch children rather than to work); low pay at many jobs which incentivizes not working; encounters with bad supervision or little

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[1] According to the US BLS, "The quits rate is the number of quits during the entire month as a percent of total employment..........Quits are generally voluntary separations initiated by the employee. Therefore, the quits rate can serve as a measure of workers' willingness or ability to leave jobs."
https://www.bls.gov/news.release/jolts.nr0.htm .

supervision/guidance from management or few human managers per worker but intrusive

surveillance techniques of workers which frustrates many employees; better opportunities in a

tight labor market or periods of falling unemployment rates; and a preference not to return to

work under old circumstances after one has found working from home more enjoyable (PBS

News Hour 2021, Schweitzer and Khattar 2021, Chen 2022).

The research for this paper has found that some of the resignation phenomenon is due to

some of these factors, but these also underscore problems that are unique to certain US

industries. Those industries which have suffered higher quits rates than the national average

have had also traditionally high unemployment (and probably underemployment[2]) rates relative

to the national average over the last 20 years or so. These industries include accommodation and

food services; arts, entertainment, and recreation; retailing; and professional and business

services. Of these four, accommodation and food services ranks the highest. Please see Figures

2 to 5 for data on quits rates and Table 1 on industry to national unemployment rates for these

industries.[3] The entire list of industries in Table 1 is used in this paper because data on quits

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[2] There is a high correlation among the different measurements that the BLS uses to measure unemployment and underemployment (or labor underutilization) outside of the main unemployment number published by them on a monthly basis (US BLS 2022e). One alternative measurement to the official US unemployment rate, known as U-3, is U-6. Komlos (2021) argues that this measurement along with another one that he constructs better capture "labor underutilization" by including those working part time who want to work full time, discouraged workers who have dropped out of the labor farce, etc. These alternative measures are also better correlated with inflation. Unfortunately, the industry level unemployment rates published by BLS only use the U-3 definition of being unemployed, and that is that one has to be out of work and looking for work. U-6 for the industries is not used or published. Therefore, the analysis for this paper can only use U-3 definitions of unemployment at both the industry and national levels.   However, the U-3 definition can still serve as a useful indicator of underemployment since there is a high degree of correlation among the different measurements (U-1, U-2, U-3, U-4, U-5, and U-6) at any given time and across time periods (US BLS 2022e). For U-3 and U-6, the author finds a correlation coefficient between them of 0.94 for their rates for the first few months of 2022.

[3] Dalton and Groen (2022) find that as of 2021, most employees in major industries do not have the option to telework or telecommute. They write, "Telework varies substantially by industry. In three sectors, more than 40 percent of jobs involved teleworking at least some of the time. These sectors are information (68 percent), financial activities (45 percent), and professional and business services (46 percent). (See chart 1 and table 4.) The information sector is the only sector in which more than half of jobs involved teleworking full time. In four sectors, less than 10 percent of jobs involved teleworking at least some of the time. These sectors are natural resources

rates for them have been published by the US BLS since 2003 when the Job Opening and Labor

Turnover Survey (JOLTS) by the BLS started asking questions about voluntary resignations, and

estimates are based on a sample of 16,000 US businesses whereas the employment in these

industries represent at least 90% of US employment (US BLS 2020).[4] For the four industries

mentioned previously, the industry unemployment rates have been more than 100% of the

national unemployment rate on average for about the last 20 years or so. Construction is also

high, but it has a lower quits rate, and jobs in this industry typically pay better than those in the

other four.

<div align="center">(Insert Figures 2 to 5 and Table 1 around here).</div>

The employment in these industries and some professional services (house cleaning, lawn

care services, etc.) are typically low paid, usually require less education than other jobs, are

mostly non-unionized, have a lot of part-time workers, have high concentrations of minority

employment, and employees typically work for firms that are in intensely competitive

environments that have higher failure rates than businesses in other industries (Edwards, Reich

1982, O'Connor 2002 (1973), Lambert 2020). Therefore, the threat of job loss is greater in these

industries than in others, and the unemployment and underemployment (e.g., seasonal work, part

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and mining (6 percent), construction (9 percent), retail trade (7 percent), and accommodation and food services (2 percent)."
Unfortunately, before the pandemic, there is not much data according to industry on what portions of employees teleworked. Since this paper is interested in pinpointing trends over time going back to 2003, consideration of portions of employees teleworking and their impact on industry quits rates has to be skipped in the analysis.
[4] Unfortunately data for major industry categories is available for some industries or sectors but not for others. Many times there are no data at a more detailed level. For example, public administration or government includes state, local and federal governmental employment and quits rates, but data on more specific levels (such as police departments) are not available, and data for variables listed in Table 1 are often only given at major industry categories such as public administration but not for state, local, or federal government subsectors. One example is data on absences and lost work time which may give data on some major sectors and data on their subsectors but not always. Matching variables across non-farm industries for this paper is mostly done at the major industry level because the greatest amount of data is utilized. All annual averages are based on monthly seasonally adjusted numbers.

time work) for occupations in these types of firms are higher than others. These industries also have less opportunities for working from home through tele-commuting and often involve the greatest amount of interaction with customers in either crowded areas (restaurants, stores, theaters, hotels, etc.) or by having to come into close contact with others (barbershops, tour guides, restaurant servers, etc.) versus other types, and so health risks have been amplified in these industries during the Covid-19 pandemic. In fact, these industries have typically had high absences rates or lost work time for their employees when compared to others whether one looks at time periods before or during the pandemic.[5] See Table 1 below which compares the different industries examined in this paper. This could be because some of these jobs offer no vacation days or because workers consider that their pay is so low that the opportunity cost of missing work is fairly low when compared to other jobs. Higher injury rates, especially among lower paying jobs in certain industries, would be one reason for high quits rates within industries such as being a lawn care worker in professional services. Finally, the supervision of employees in these jobs often include wide spans of management due to the low pay of front-line supervisors and managers in certain industries (Lambert 2020).[6] Because of this, employers sometimes rely

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[5] The US BLS defines absence rate as "instances when persons who usually work 35 or more hours per week (full time) worked less than 35 hours during the reference week for one of the following reasons: own illness, injury, or medical problems; childcare problems; other family or personal obligations; civic or military duty; and maternity or paternity leave. Excluded are situations in which work was missed due to vacation or personal days, holiday, labor dispute, and other reasons. For multiple jobholders, absence data refer only to work missed at their main jobs. The absence rate is the ratio of workers with absences to total full-time wage and salary employment."
Lost work time rate is measured as "Hours absent as a percent of hours usually worked." (US BLS 2022c)
[6] Lambert also finds that the organizations with the greatest number of managers with the highest pay rates are those typically in markets with few or no competition, capital intensive, and often are oligopolistic. Smaller firms in more competitive sectors have fewer per managers per worker on average. The oligopolistic type firms do not show consistent results if much at all when it comes to measurements of industry success such as return on investment and return on equity. They do well with profitability, but this is mostly due to high productivity or exploitation of their workers. Managerial pay to employee pay ratios are very high as well. Although perhaps "over-managed" and exploitive (high sales volume per employee), these firms typically pay most of their employees well when compared to firms that operate in much more competitive markets such as some forms of retailing or services.

upon monitoring of employees which involves making sure they are present at their stations, the use of surveillance cameras, timecards and punching clocks, logging in, and other methods which most workers often disdain (Braverman 1974, Gordon 1996, Perelman 2011, Roberts 2022, Krishnasai 2022, Yates 2022). Yates (2022) has noted the acceleration and intensification of employee surveillance of workers at all levels of different organizations but mostly indicates that it is mostly with respect to lower and mid-level employees. If anything, one would surmise that such surveillance techniques widen the span of management for most organizations and save on monitoring costs since fewer managers are needed for monitoring employees directly.

It is true that during a recovery period that quits rates begin to rise as the number of jobs created in a better economy rises. One would expect many to quit jobs in order to accept and go on to better paying or better quality jobs as job choices become better and more abundant. What is surprising during the current recovery is that there now exists such a large gap between the number of jobs currently open and the number of job seekers and so many people indicating that they are leaving a job with no other job awaiting them. Additionally, the rate of employment continues to be low at around 63 to 65% of the labor force compared to previous and higher rates of 67 to 68% from around 20 years ago despite the creation of more jobs (US BLS 2022b). One percent is the equivalent of millions of workers. The growth of female participation rates has come to a halt over the last two years as well and has begun to recede over the last few years, and some of this decline has been attributed to rising day care costs compelling many mothers to stay at home with children. Lower participation rates can be partially explained by younger people staying in school longer and by the retirement of many Baby-boomers (Hipple 2016). These are the traditional explanations. Yet, this may not explain the entire drop in the employment rate. In considering the possible low pay, instability, "negative supervision", and risks of many jobs in

certain sectors of the economy, one could theorize that many workers could be "boycotting" the labor force and deciding to stay home with family or to pursue other interests. These considerations could also explain why so many are also quitting and leaving their jobs.

Theory and Methods

To put quits rates, unemployment, and underemployment within some type of theoretical context, this paper uses the theory of labor market segmentation (Gordon, Edwards, and Reich 1982, O'Connor (1973) 2002) for most of its theoretical background. Labor markets have often been segmented into demographic, educational, and occupational groupings where males dominate occupations in certain industries (e.g., construction and manufacturing) and females dominate occupations in others (e.g., health care and educational services), and the Pct Labor Force Female column in Table 1 shows the percentage of female employment in different industries. Racial discrimination has led to segmentation where certain industries are dominated by whites and others by minority groups where accommodation and food services are dominated not only by females but by members of minority groups. Some industries require certain educational and skill levels such as knowing masonry work (construction) or having a license to sell or manage securities (finance and insurance industry). Most of all, heterodox economists (Gordon, Edwards, and Reich 1982, Reich 1984, O'Connor (1973) 2002) note that some industries are either 1) saturated with low-skilled, low-paid, mostly non-unionized, and sometimes itinerant labor or unstable employment patterns (disproportionate levels of part-time and/or temporary work) or 2) others have highly skilled and educated, sometimes highly unionized, well-paid employees and offer stable employment. Gordon, Edwards, and Reich would label the first group of industries as probably made up of those on the "periphery" or secondary and the second group as those making up the "core" or primary group where

businesses in the core are composed of producers which make items with high valued added whereas the periphery is made up of industries that provide ancillary services to core businesses and the general public. Reich (1984) notes that core employment should have lower quits rates than those of the periphery. O'Connor labels the first group of industries as "competitive" where firms typically have low profit margins and high failure rates compared to those in the "monopoly" sector which have little competition, high profit rates, and low failure rates. The caliber of management is different in each sector with those in the competitive sector probably not having the same level of skills or education as those in the monopoly sector. Since the competitive sector is very labor intensive, management could have a wide span of control with few managers per employees (Lambert 2020). Finally, O'Connor also writes that "state" or government or public sector employment along with private suppliers to government provides a third major source of employment, and the pure government portion of this sector has a greater variety of workers with respect to gender and race and is often highly unionized with medium paying jobs and very stable employment.

A comparison among O'Connor's three groupings could be among a locally owned restaurant or retailer, a Fortune 500 company such as McDonald's or Walmart, and a local government sanitation department. He notes that the first group usually has higher structural unemployment rates and a greater share of women and minority groups than the second one, although the state sector does well regarding diversity and has more stable employment. Competitive sector workers supposedly have fewer "attachments" to a capitalistic system or are alienated in a capitalistic system because they earn so little money. Demand for workers in the competitive sector is more "elastic" than that for the monopoly sector or government sector according to O'Connor, and so the pay in these types of firms is usually lower than that of the

other two. Dividing an economy and its employment into 3 categories this way may be an overgeneralization, but the framework may be useful in understanding high quits rates, high unemployment and high underemployment in some industries versus others as the Great Resignation has unfolded. Other ways of looking at labor market segmentation are useful, but since O'Connor uses three categories rather than just looking at core versus periphery sectors, his typology is generally used in this paper.

With these thoughts in mind, the industries listed in Table 1 can be somewhat divided into competitive, monopoly, and state sectors with those exhibiting ratios of quits rates (2003-2021a) and of high industry unemployment rates (and probably underemployment rates) to national unemployment rates (US BLS 2003-2021b and 2003-2021c); low levels of inflation adjusted pay (US BLS 2003-2021d)[7]; high female employment rates (usually above 50%) (US BLS 2003-2021e); high absence and high work time lost rates (US BLS 2003-2021f); low industry unionization rates (US BLS 2003-2021g); high rates of minority (African-American, Asian-American, and Hispanic-Latino) employment (US BLS 2003-2022e); high levels of job openings as a percent of employment and openings because of high employee turnover and the need to replace workers (US BLS 2003-2021a)[8]; and low levels of managers as a percentage of

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[7] From the Bureau of Labor Statistics Annual Occupational Employment and Wage Statistics (OEWS), the average hourly pay for employees within an industry is adjusted for inflation using a Consumer Price Index where 1982-1984 years is the base (US BLS 2003-2021h).

[8] The BLS defines a job opening as "A job is open only if it meets all three of these conditions:
* A specific position exists and there is work available for that position. The position can be full-time or part-time, and it can be permanent, short-term, or seasonal.
* The job could start within 30 days, whether or not the employer can find a suitable candidate during that time.
* The employer is actively recruiting workers from outside the establishment to fill the position. Active recruiting means that the establishment is taking steps to fill a position. It may include advertising in newspapers, on television, or on the radio; posting Internet notices, posting "help wanted" signs, networking or making "word-of-mouth" announcements; accepting applications; interviewing candidates; contacting employment agencies; or soliciting employees at job fairs, state or local employment offices, or similar sources." https://www.bls.gov/news.release/jolts.tn.htm . US BLS 2022a.

the industry labor force (US BLS 2003-2021d)[9] as signs of industries that could be classified as part of the competitive sector. These factors can be used in a model using panel data to predict average annual quits rates for each industry listed in Table 1 over the period 2003-2021. Doing so can help pinpoint which variables correlate with quits rates and identify industries which suffer from chronically high unemployment rates, which in turn influences national unemployment rates. Some of these variables along with quits rates can in turn be used to predict industry to national unemployment rates percentage ratios in order to see which of these factors contribute to higher or lower industry unemployment rates compared to national unemployment rates. Since the focus of this paper is on persistent, year-in and year-out unemployment and underemployment, unemployment due to involuntary discharges were left out of the analysis because these are often related to business cycle fluctuations.[10]

To examine whether high day care costs are causing some workers, especially females, to quit their jobs, the variable Pct Female is multiplied by a cost-of-living index (base year = 1982-84) which accounts for tuition, school fees, and childcare expenses and inflation from 2003-2021 (US BLS 2003-2021h) in order to see if the interaction of these two factors influence quits rates.[11] As of 2021, only about 12% of US employers offer childcare assistance to full time workers, and far fewer offer it to part-time workers (US BLS 2021a). Admittedly it would be better to know the portion of females with children in each industry, but this data is not available, and so the interaction of these two variables is used as a proxy variable. Also, since the absences and lost work time variables are highly correlated, these two variables are combined into an

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[9] This is calculated by taking the total number of employees classified as managers and dividing this by total employment in the industry and then multiplying by 100.

[10] The BLS gives some data on people who work 1 to 34 hours per week or part time, but the range of industries is not as wide as the ones examined in this paper. Therefore, this data is not used.

[11] The BLS provides national/aggregate level numbers on families with children who work, but nothing is available at the industry level.

index using principal components analysis. Table 2 shows that Component 1 is the best index, and this is used as the variable Index of Absences and Lost Work in the model. It is hypothesized that the variables Interaction Female-Childcare Costs and the index are positively correlated with quits rates since higher day care costs give an incentive to employees (mostly female employees according to different accounts) to not work and stay home with children and since higher absence rates and lost work time are hypothesized to be associated with "marginal" types of employment and/or unhealthy or dangerous types of unemployment such as those faced by workers dealing with the general public during the height of the pandemic. Furthermore, another theory is that the lesser the percentage of managers as a portion of the industry's workforce, the greater the quits rate due to either too great of a span of management (employees not being guided enough) or the use of employee surveillance through technological means. A greater unionization within an industry is hypothesized to be correlated with lower quits rates since unionization offers greater job stability for most workers, and the greater the inflation adjusted hourly pay of an industry should also be associated with lower quits rates. The greater the real pay, the greater the loss for quitting it. Greater minority employment is also theorized to be associated with higher quits rates because past and current racial discrimination has led to members of certain groups to be forced into low paying work. Also, the greater the job openings percent within an industry, one would expect this to be positively associated with higher industry unemployment rates to national rates due to high employee turnover. Table 1 shows that those industries which could be considered part of the competitive sector have high job openings rates. Finally, the ratio of the industry unemployment rate to the national unemployment rate is assumed to be positively correlated with the quits rate since higher than national unemployment rates may be an indicator of an industry full of itinerant and unstable work, work that is similar

to that of the competitive sector. Employees in such industries may feel the risk or loss of

quitting a job very low because of the instability of the work versus more stable work. At the

same time, there is some endogeneity in that higher quits rates for an industry lead to higher

industry to national unemployment rate ratios if many who resign their jobs do so without

immediately finding another job. Therefore, the industry to national unemployment rate variable

is put on a one year lagged basis in predicting annual average quits rates per industry.

The panel data model with quits rates as the dependent variable appears as follows:

Quits Rate = Pct. Managers + Inf. Adj. Hrly. Wage + Union Pct + Industry/Natl Unemp Rate +
        Index of Absences-Lost Work + Interaction of Pct Female-Childcare Costs +
        Minority Pct + Job Openings Avg. Annual Rate
        (Model 1)

To examine which factors influence industry to national unemployment rate ratios, it is

hypothesized that higher annual average quits rates for industries (lagged one year) are

associated with higher industry to national unemployment rates; higher job openings rates (agedd

one year because of possible endogeneity) are associated with lower industry to national

unemployment rates; a greater share of managers as a portion of the workforce is associated with

less industry to national unemployment since firms with large numbers of managers are usually

in relatively stable markets and since more professional occupations are usually shielded from

periods of unemployment[12]; industries with high female employment have higher industry to

national unemployment rates because increasing high child care rates pressure some to leave

employment; the higher the index of job and work time lost the higher the unemployment ratios

should be because higher absence and quits rates indicate a certain degree of job instability in an

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[12] Lambert (2020) finds that during recessions that the percentage of managers of an industry's workforce goes up as many frontline workers are let go, and that their share declines as the economy recovers and industries hire workers. The span of management expands of contracts according to the business cycle apparently because managers lose their jobs at much lower rates than most other employees within an industry.

industry; the greater the percentage of employees who are labor unions member is expected to be associated with lower unemployment ratios because of the job stability secured by unions; the greater the share of minorities within an industry, the greater the industry to national unemployment ratio; and the greater the inflation adjusted pay, the more stable an industry is, and so its ratios should be lower on average.

The panel data model where industry to national unemployment rates as the dependent variable appears as follows:

Industry/Natl Unemp Rate = Pct. Managers + Inf. Adj. Hrly. Wage + Union Pct + Annual Average Quits Rates Lagged 1 Yr. + Index of Absences-Lost Work + Interaction of Pct Female-Childcare Costs + Minority Pct + Job Openings Avg. Annual Rate Lagged 1 Yr.

(Model 2)

Results and Discussion

A Hausman specification test indicates that random effects is preferred to fixed effects regression regarding Model 1. Table 3 shows the results of fixed effects regression in grouping the industries according to year and using robust standard errors (RSE). Looking at a correlation matrix of the independent variables, there are no signs of multicollinearity among them with no correlation coefficient (r) value greater than an absolute value of 0.64.[13] The results show a pattern from 2004 to 2021 regarding quits rates. All of the variables are statistically significant at $\alpha = 0.05$ except for the interaction term of percentage female and childcare costs. For each 1 unit increase in the percentage of managers, inflation adjusted average hourly wage, percentage of union membership, and index of absences-lost work for an industry, the average annual quits

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[13] If the panel data are used in an ordinary least squares model similar to random effects regression, no variance inflation factor (VIF) greater than 3.0 is found among the independent variables, and the average VIF for them is 2.15. An r of 0.64 would have a VIF score of 1/(1-0.64) = 2.78. The usual cutoff for VIFs for multicollinearity is usually 5, and sometimes a VIF of 10.0 is permissible (Bersnson, Levine, Szabat 2014).

rate goes down 0.023, 0.117, 0.018, and 0.060 respectively, on average, and holding all else

constant. The result for absences-lost work is counter to the hypothesis that expected a positive

sign for its coefficient. At the same time, for each one unit increase in the ratio of industry to

national unemployment, minority employment percentage, and jobs openings per employee in

thousands, quits rates rise 0.00, 0.049, and 0.367 respectively, on average, and holding all else

constant. The model's within-r-square is 0.87, between r-square is 0.61, and its overall r-square

is 0.80. Some of this paper's notions about quits rates gain some statistical support with the

exception of how high day care costs coupled with female employment and absences-work lost

in an industry affect quits rate.

The results for the second model are displayed in Table 4. A Hausman specification test

indicates that fixed effects regression is preferred for this model too, robust standard errors are

used, and grouping is according to years. Yearly groupings are again done over time to show a

pattern. The inflation adjusted hourly wage and jobs openings variables are not statistically

significant at alpha = 0.05, yet all of the others are. Similar to the model in Table, 3, there are no

indications of multicollinearity among the independent variables with no r values among them

greater than an absolute value 0.67. As hypothesized, the average annual quit rate lagged one

year is positively correlated with higher ratios of industry to national unemployment. For every

1 unit increase in industry average annual quits rates, the ratio goes up 32.9%. For every 1 unit

increase in the percentage of managers, the ratios of the rates decline about 4.01%. Counter to

expectations, greater unionization rates are associated with higher ratios so that a 1 unit increase

in unionization is correlated with a 0.830 increase in the ratio value. Also counter to

expectations, the greater the absences and lost work and the greater the index of female-child

care costs, the lower the ratio of the rates. A 1 unit increase in the index of absences and lost

work is associated with a 6.14 decrease in the ratio percentage, and a 1 unit increase in in the

index of female-child care costs lowers the ratio percentage by 0.001 percent on average and

hold all else constant. Also contrary to expectations, the greater the minority employment, the

lower the industry's unemployment rate to the national all else constant. The within r-square is

moderate at 65%; the between r-square is only around 14%,; and the overall r-square is moderate

at 48%.

Conclusion

One limitation to this analysis is that there is no data about switching jobs from one

industry to another . Another limitation is that the use of labor market segmentation analysis,

whether of the Gordon, Edwards Reich type or that of O'Connor could be an oversimplification.

Also, to get a better picture of unemployment rates at either the industry or national levels, the

use of layoff or involuntary discharge rates at either level could have been used as an

independent variable in the models, although as explained above, a need to isolate and discuss

persistent industry unemployment and underemployment is a goal of the analysis. Finally, with

fixed effects regression there is always the problem of omitted variables. This is discussed

further in the next few paragraphs.

Additionally, results have been found which are contrary to expectations. The

hypothesized effect of some industries having high concentrations of female employees along

with rising childcare and tuition costs leading to high resignation rates on average instead show

no effect. This is despite news media accounts and survey results indicating the opposite. When

used individually, the variables percent female and index of childcare, tuition and school

expenses are not statistically significant when regressed either with quits rates or the ratio of the

two unemployment rates. Again, it would be more useful to know the percentage of females or

couples per industry with children, but this is only disclosed at the aggregate economy level by the BLS. This is also a situation of an omitted variable. That unionization rates are associated with lower quits rates is supported, but their positive association with the ratio of the two unemployment rates counter to expectations, but is not a total surprise since many industries that have highly unionized labor forces have pro-cyclical employment trends such as manufacturing, transportation, and construction. Government employment, according to the data, has the highest unionization rate with an average of 35.62% from 2003-2021 and very low levels of unemployment, yet it is apparently an outlier among the industries. The finding that industries with high concentrations of minorities supports the notion that many within these groups perhaps feel marginalized by their work circumstances and feel less attachment to the labor market. The degree of past racial discrimination causing this is probably an omitted variable and a difficult one to measure. Finally, the one-year, lagged variable of industry unemployment to national unemployment rates ratio predicts the next year's average annual quits rates as hypothesized which supports the notion that industries which have high labor under-utilization have high turnover and perhaps little loyalty from the typical worker in those industries. Most probably do not feel perhaps that their positions are the career type of jobs.

Instead of having its hypothesized effect on quits rates and the unemployment ratios, the index of absences and lost work time has a negative effect on these two variables. Yet, these have a plausible explanation. Instead of high absences and lost work time due to injury, illnesses, or other reasons being an indicator of overall "bad" jobs in an industry due to the jobs being unsafe or itinerant, perhaps instead that the high rates of absences and illnesses being associated with lower, not higher, quits rates is due to a prevalence of employees in most industries having health care and disability coverage at their jobs so that using sick days or

taking time off for illnesses is a benefit that incentivizes them to stay at their jobs. Lower

absences and lost work time rates being associated with higher quits could be a symptom of

industries where a disproportionate number of jobs have little or no healthcare, disability, or lost

work benefits. Therefore, employee resignation and turnover rates are high as workers seek such

benefits with other employers. This in turn causes the industry's unemployment rate to be higher

than that in other industries. In any event, this paper's notion that high absences and lost work

time is a manifestation of employees' dissatisfaction with their type of work or industry and so

calling in sick is frequent is not supported by the statistical results in Tables 3 and 4. To have

had the portion of employees covered withing each industry by health care or disability benefits

would have been useful, but such data does not cover as many industries as covered in this paper

and only go back to 2011. Therefore, the lack of such a variable to use also would be an omitted

variable.   However, as Table 5 indicates, according to the BLS (2021b), some industries have

lower rates of benefits afforded to employees than others, and it is the leisure and hospitality

industry, which includes accommodation and food services as well as arts, entertainment, and

recreation industries, that shows the lowest rate of benefits to employees versus other industries.

These industries also have high quits rates, so the idea of less covered sick days and absences

leading to more resignations appears to be correct.

<center>(Insert Table 5 around here)</center>

The findings that lower inflation adjusted pay rates and lower rates of managerial

presence are associated with higher quits rates and higher industry to national unemployment

rates support two important hypotheses of this paper. Industry wide, low average pay levels are

an obvious reason for high quits rates as people seek better opportunities. This is partially

explained by the jobs opening rate being positively correlated with average annual quits rates,

although its relationship with the unemployment variable is not statistically significant. Yet the low pay probably serves as a big motive for leaving a job and explains why some industries suffer higher than national unemployment rates even during good economic times. The greater span of management in some industries (greater number of workers per bosses) either means that many workers could be facing too little supervision and guidance in doing their jobs or that employees are being monitored and supervised by managers with the help of other means such as cameras, listening devices, and customer surveys/complaints. Trying to supervise too many workers at one time can lead to chaotic management in which new employees are given very little orientation and training whereas too much surveillance can lead to employee resentment and hence higher quits rates and higher unemployment rate ratios.

The outcomes that show lagged average annual quits rates, low levels of managerial supervision, unionization, and low pay levels associated with high levels of industry unemployment support the ideas that the characteristics of some industries keep their unemployment levels abnormally high regardless of economic conditions, and this in turn exacerbates national unemployment rates and problems. Counter to this paper's theories, higher absences and work time lost rates as well as the interaction of female employment and childcare costs are associated with lower unemployment ratios. This is probably due again to the fact that most employers provide full-time employees health care coverage, and so employee turnover is lower than what it would be otherwise, even if the job is a low paying one. Health care coverage is a crucial fringe benefit. Finally, the finding that greater minority shares are associated with lower, not higher, unemployment ratios is against expectations. Although on average industries with higher minority populations may have higher quits rates, this may not be systemic enough to link minorities with industries with abnormally high unemployment rates.

There are some possible policy lessons that can be considered in reflecting on the results of the analysis. Unemployment at the national level would perhaps be lower and/or alleviated if some sectors of the US economy paid better or "living wages" that could help to lower quits rates in certain industries. Although during the labor shortage of 2021 most US workers have received substantial boosts in pay, the high inflation of 2022 has mostly negated these gains (Iacurci 2022).   One inference of the findings of this paper is that better health care benefits would probably help to lower turnover and unemployment rates in different industries as well. More pay probably would not only lower turnover rates but possibly could improve productivity and morale levels at many employers. This could negate management problems and the need for employee surveillance. Although not a focus of this paper, the benefits of lower turnover rates, job churning, and lower unemployment and underemployment rates for different industries could outweigh the costs of higher pay and more benefits. Hiring and recruiting costs could go down along with the need for many of the unemployed and underemployed to seek public and/or private assistance. Minority workers and female workers would benefit since they suffer from lower pay and benefit coverage. O'Connor's notion of an unstable competitive sector could become more stable.

Of course, one objection would be that greater pay and benefits would give firms greater incentives to further automate in an attempt to minimize the increased costs. Yet, the improved morale and any increased productivity and lower recruiting costs could offset higher labor costs. Additionally, some forms are work are still difficult to replace with automation. The corporate cultures of many organizations would have to change from one of either loose supervision or "negative" supervision to one where employee training and increasing productivity are linked to better pay and retention. It is granted that some of the industries that are in the competitive or

periphery sectors have disproportional amounts of younger workers who are in entry level or first time jobs. Yet, many of these workers contribute to a family's overall income in that parents do not have to support teen children as much as would be the case otherwise, some are trying to pay for college and avoid student loan costs, and some have children. For those completing high school or college, they may go on to better jobs in different industries. Admittedly, this will keep quits rates somewhat higher for some industries versus others. Yet some workers within these industries will not leave.

As a society we must grapple with the opportunity costs of unemployment and underemployment. Lost output are concomitant with these two phenomena. Certain industries apparently exacerbate overall US labor under-utilization through their characteristics. One set of steps would be to change how these industries employ and utilize their workers. It is strongly possible that the benefits of doing so would outweigh the costs.

Fig. 1: Pct Quits Rate: Total Nonfarm, Annual, Seasonally Adjusted
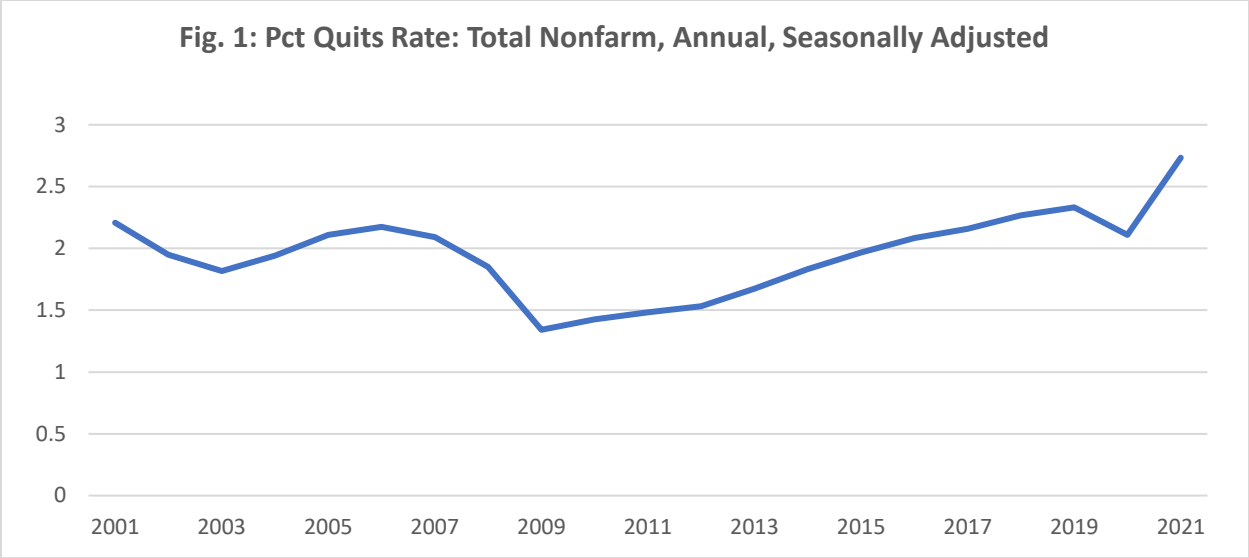
Source: U.S. Bureau of Labor Statistics, Quits: Total Nonfarm [JTSQUR], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/JTSQUR , May 26, 2022.

Fig. 2: Pct Quits Rate: Accomodation and Food Services

Source: US Bureau of Labor Statistics. 2003-2021. *Job Openings and Labor Turnover Survey*.

Fig. 3: Pct Quits Rate: Arts, Entertainment, and Recreation

Source: US Bureau of Labor Statistics. 2003-2021. *Job Openings and Labor Turnover Survey*.

Fig. 4: Pct Quits Rates: Retailing

Source: US Bureau of Labor Statistics. 2003-2021. *Job Openings and Labor Turnover Survey*.

Fig. 5: Pct Quits Rate: Professional and Business Services
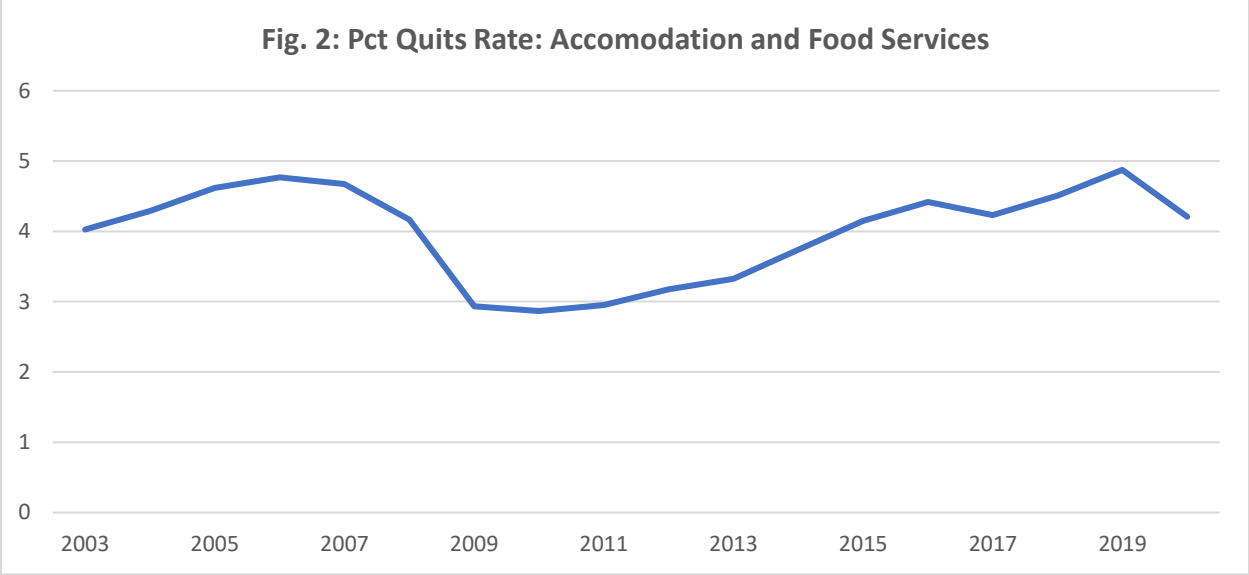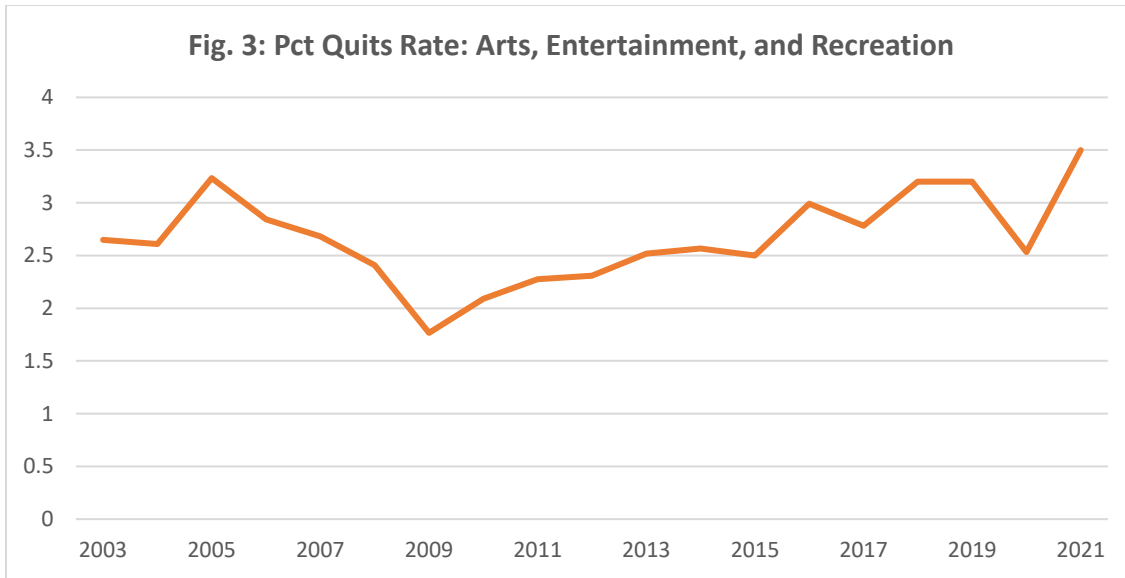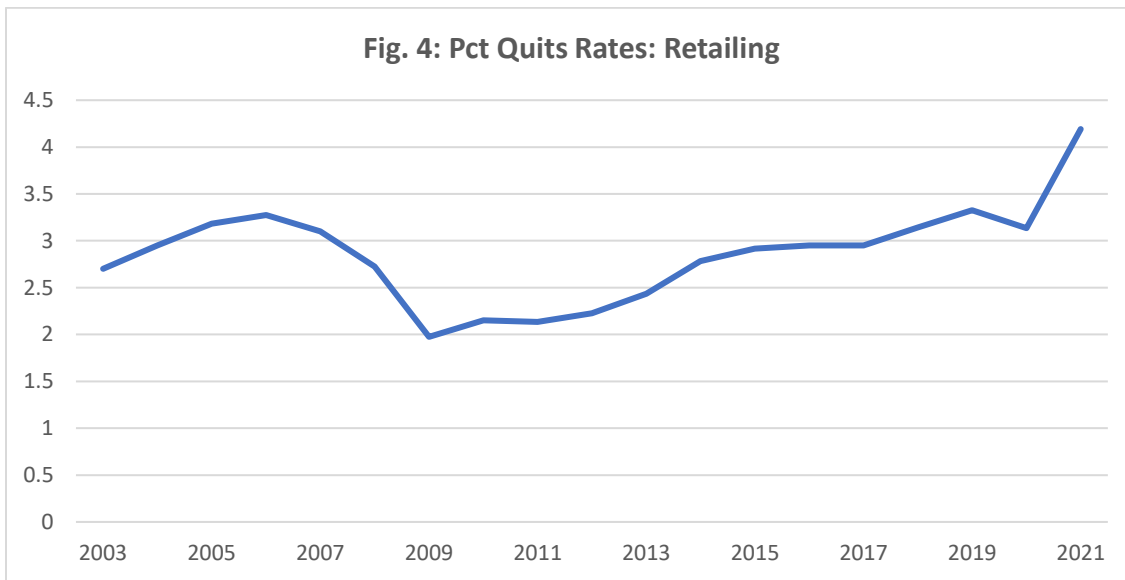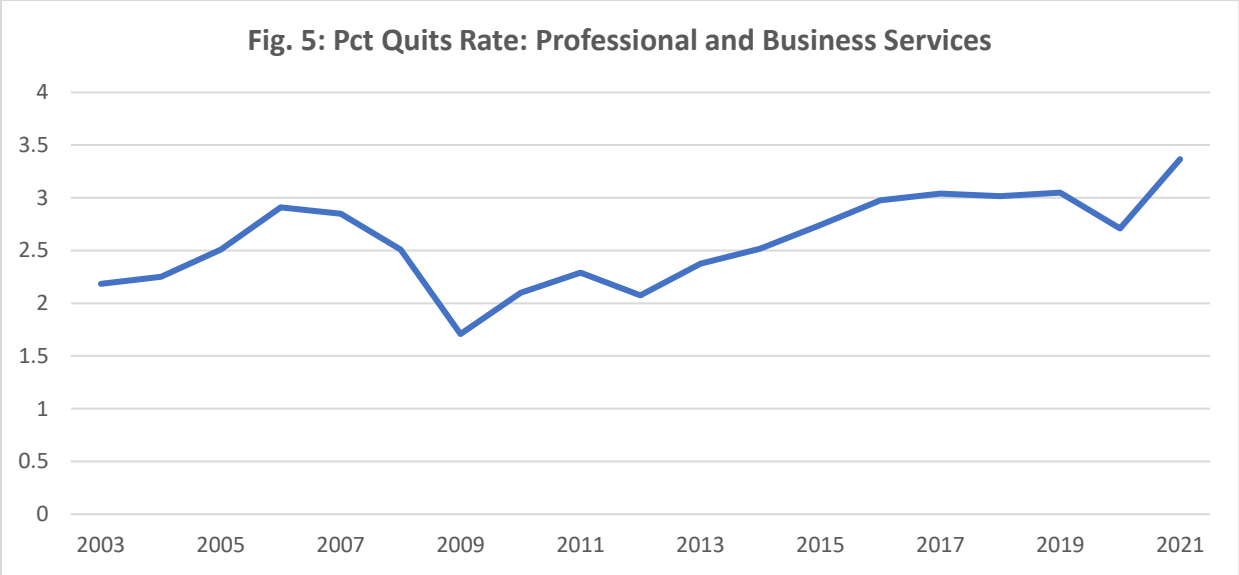
Source: US Bureau of Labor Statistics. 2003-2021. *Job Openings and Labor Turnover Survey*.

Table 1—Averages from 2003 to 2021

Industry	Annual Quits Rates	Pct Mgrs	Inf Adj Avg Hrly Wage	Union Pct	Pct Labor Force Female	Pct Industry to Natl UR Rate*	Absences Rate	Lost Work Rate	Minority Pct	Jobs Opening Rates
Accommodation and Food Services	4.10	2.66	4.95	2.31	53.23	149.95	2.93	1.38	26.72	4.37
Arts, Ent., & Recreation	2.67	3.93	7.16	5.88	45.81	147.85	2.91	1.40	26.71	3.74
Construction	1.98	5.87	10.40	13.73	9.57	152.42	2.46	1.26	27.29	2.34
Educational Services	1.21	4.70	10.65	12.80	69.23	71.96	2.83	1.46	27.63	2.46
Fin. & Ins.	1.20	8.23	13.16	1.48	56.45	60.42	2.67	1.41	28.88	3.51
Govt, All Levels	0.69	5.65	11.26	35.62	45.39	51.45	3.75	1.98	28.79	2.14
Health Care & Social Assistance	1.78	3.55	10.16	7.35	78.63	63.26	3.82	2.11	28.57	4.30
Information	1.46	7.44	13.76	10.62	40.77	92.38	2.71	1.48	29.78	3.54
Manufacturing	1.27	5.48	9.98	10.34	29.34	93.39	2.85	1.63	31.12	2.49
Mining and logging	1.74	5.76	11.55	6.76	13.36	99.95	2.17	1.33	31.83	2.48
Other Services	1.97	5.23	7.90	2.92	52.12	93.28	2.84	1.32	33.54	3.23
Professional & Bus. Services	2.59	7.70	13.99	2.36	41.96	110.01	2.61	1.27	33.16	4.64
Real Estate, Rental, and Leasing	1.80	10.94	9.01	3.39	47.33	67.89	2.73	1.29	34.12	3.05
Retail Trade	2.85	2.51	6.45	4.85	48.47	106.44	3.14	1.64	34.90	3.51
Transportation, Warehousing, Utilities	1.64	3.26	10.95	20.62	23.69	91.80	5.13	1.77	34.62	3.10
Wholesaling	1.33	6.70	11.02	4.61	29.20	89.30	2.36	1.28	35.78	2.63

*Uses the traditional/official definition of unemployment for both industry and national rates, or U-3.

Source: Author's calculations based on BLS data used for this paper.

Table 2—Principal Components Analysis

Principal components/correlation   **Number of obs   =   304**

Number of comp. =   4

Trace   =   4

Rotation: (unrotated = principal)   Rho =   1.0000

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	2.44	1.52	0.61	0.61
Comp2	0.91	0.36	0.23	0.84
Comp3	0.55	0.44	0.14	0.97
Comp4	0.11	.	0.03	1

Principal components (eigenvectors)

Variable	Comp1	Comp2	Comp3	Comp4	Unexplained
Lost Work Time: Illness, Injury	0.55	-0.33	0.51	0.58	0
Lost Work Time: Other reasons	0.27	0.93	0.25	0.05	0
Absences: Injury, Illness	0.61	-0.17	0.11	-0.77	0
Absences: Other	0.51	0.06	-0.82	0.27	0

Table 3—Fixed Effects Regression

Dependent Variable: Average Annual Quits Rates

Group Variable: Year

Independent Variables	b (RSE)
Pct Managers	-0.023** (0.007)
Inf. Adj. Hrly. Wage	-0.117** (0.007)
Union Pct	-0.018** (0.003)
Industry/Natl UR 1 Yr lag	0.005** (0.001)
Index of Absences-Lost Work	-0.060** (0.018)
Int. Pct Female-Childcare Costs	-0.0000002 0.0000015
Minority Pct	0.049** (0.003)
Jobs Openings Annual Avg. Rate	0.367** (0.022)
Constant	0.114

**p<0.05

n = 288
number of groups = 18
observations per group = 16
r-square within: 0.87
r-square between: 0.61
r-square overall: 0.80

Table 4—Fixed Effects Regression

Dependent Variable: Industry to National Unemployment Rates Ratio

Group Variable: Year

Independent Variables	b (RSE)
Avg. Annual Quits Rate, 1 Yr. Lag	32.919** (5.033)
Pct Managers	-4.018** (0.353)
Inf. Adj. Hrly. Wage	-0.221 (0.831)
Union Pct	0.830** (0.239)
Index of Absences-Lost Work	-6.140** (1.043)
Int. Pct Female-Childcare Costs	-0.001** 0.0001
Minority Pct	-1.710** (0.416)
Jobs Openings Annual Avg. Rate	0.345 (3.416)
Constant	134.328

**p<0.05

n = 288
number of groups = 18
observations per group = 16
r-square within: 0.65
r-square between: 0.14
r-square overall: 0.48

Table 5—Health Care Benefits Rates

Take-up rate for private industry workers with access to and participating in health care benefits, for select industries, 2011 to 2021

Year	All workers	Construction	Manufacturing	Wholesale trade	Retail trade	Trans., warehousing	Utilities	Information
2011	79%	79%	87%	83%	71%	82%	94%	80%
2012	79	77	86	82	70	82	93	82
2013	79	78	85	83	74	83	93	80
2014	79	79	85	83	72	83	93	82
2015	79	80	84	81	70	80	91	86
2016	80	81	86	82	70	83	95	89
2017	80	82	87	83	69	80	91	86
2018	79	84	87	82	64	82	88	88
2019	79	82	85	83	65	83	93	88
2020	78	78	84	82	66	81	91	87
2021	77	77	85	80	65	80	90	87

Year	Financial activities	Pro-bus. services	Educ. services	Health, social assist	Leisure, hosp.	Other services
2011	84%	83%	79%	77%	63%	75%
2012	84	82	81	76	62	76
2013	83	81	80	77	58	79
2014	84	81	83	75	60	78
2015	85	82	83	77	61	75
2016	85	81	84	79	59	80
2017	84	80	84	78	66	78
2018	84	78	85	80	67	80
2019	85	80	82	79	64	80
2020	84	79	78	77	58	78
2021	84	82	77	71	45	80

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