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The Effect of Early Economic Conditions on Young Adults' Transition Into Adulthood and their Occupational Characteristics

Author

Sanchez, Cesia

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The Effect of Early Economic Conditions on Young Adults' Transition Into Adulthood and their Occupational Characteristics

by

Cesia Sanchez

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Committee in charge:

Professor Jesse Rothstein, Chair
Professor Barry Eichengreen
Assistant Professor Ellora Derenoncourt

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Abstract

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It has been widely known that recessions negatively impact the labor market and social outcomes of individuals who graduate during them, but little attention was devoted to examining how recessions affect individuals who become of age during them. This dissertation aims at exploring how recessions affect the transition into adulthood and the occupational characteristics of individuals who become of age during them.

In chapter 1, I document that high unemployment rates faced at the start of adulthood have effects on a range of transition into adulthood outcomes. I find that young adults who experience high unemployment rates at or around age 18 have significantly higher probabilities of living with their parents throughout their 20s. Other outcomes reflect heterogeneous responses to economic circumstances. High unemployment rates early in adulthood induce some young adults to get married earlier than they otherwise would, in their late teens rather than early/mid 20s, while others are delayed from marrying in their early/mid 20s to the late 20s. High early unemployment rates influence young adults to attend college and complete college earlier than their luckier counterparts. These outcomes are interconnected with labor market factors: High unemployment in early adulthood positively affects the joint outcome of living with parent(s) and having low earnings, effects that persist up to age 26.

In chapter 2, I draw from the empirical strategy employed in chapter 1, but instead primarily focus on analyzing labor market outcomes. I explore how becoming of age during times of high unemployment rates affects the occupation quality of employed young adults. I study effects on various occupation quality measures. First, I study how unemployment rates at the start of adulthood affect working in a low or high paying occupation. Second, I analyze effects on working in a more or less productive occupation measured by the average occupation specific hours of labor. Third, I explore how unemployment rates affect the probabilities of working in a predominantly abstract, routine, or manual oriented occupation. Finally, I explore effects on the occupation specific injury rate that young adults are employed in. I find that higher unemployment rates faced at age 18 influence young adults to be

employed in less productive occupations during early adulthood. Conditions do not affect being employed in a higher or lower paying occupation. In the early ages into adulthood, conditions increase the likelihood of being employed in abstract oriented occupations while decreasing the likelihood of employment in routine or manual oriented occupations. Finally, I find that early conditions have heterogeneous effects on the occupation specific injury rate. At ages 19 through 22 conditions influence young adults to be employed in occupations that are less risky – those that have reductions in reported injury rates. But at later ages conditions influence young adults to be employed in riskier occupations.

In chapter 3, I explore if conditions faced at different ages differentially affect the occupation characteristic outcomes analyzed in chapter 2. I find that early conditions faced at different ages in the early years into adulthood differentially affect estimates on the occupation characteristics. For example, early conditions faced at age 21 induce heavily affected cohorts to be employed in occupations that pay lower hourly wages. On the other, unemployment rates faced at the age of 18 provided no effect on being employed in a higher or lower paying occupation. A possible explanation for differences in estimates may be that experiencing recessions at age 18 may motivate young adults to orient themselves to acquire cognitive skills faster than their luckier counterparts, results of which I provided evidence for in chapter 1 on the likelihood of college attendance. On the other hand, it is possible that experiencing recessions at the time one graduates college may cause more harm than good as these young adults can no longer adjust on the choice of their college major. They will have to face the economic consequences for the major that they chose during their college going years.

To my Papa God. Your strength was indeed made perfect in my weakness.

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Chapter 1

The Effect of Early Economic Conditions on Young Adults' Transition Into Adulthood

1.1 Introduction

Why are so many young adults delaying their transition into adulthood? More precisely, why are young adults today slower to get married, to move out of their parents' homes, and even to successfully begin their occupational trajectories? One candidate explanation is that this is in part a shadow of the Great Recession. It has been well documented that recessions faced in early adulthood have long-run impacts on the labor market outcomes of young adults (e.g., (Altonji, Kahn, and Speer 2016); (Oreopoulos, T. Von Wachter, and Heisz 2012) ; (Rothstein 2021)), but there is less evidence on the long-run impacts of recessions on other life outcomes.

In this paper, I explore the hypothesis that recessions have lasting effects on those who transition into adulthood during them. I combine two bodies of work to explore this hypothesis. I use research on the study of delayed adulthood to inform my choice of outcomes, and combine this literature with the econometric approaches used in the labor market scarring effect literature to test my hypothesis.

Why are "scarring effects" a plausible candidate explanation for delayed transitions to adulthood? First, unsurprisingly, cohabitation is much more common among those not employed,[1] so the reduced employment rates previously documented may lead to delays in independent household formation. Second, Figure 1.1 shows that the share of young adults living with their parents has increased by nearly 40% since 1960. The increase in the share of young adults living with their parents was concentrated in the early 1980s and the years from 2006 to 2012, coinciding with sharp economic downturns. However, while there are many potential explanations for reduced household formation during recessions, it is notable that the share of young adults cohabiting with their parents did not decline during the post-

[1] See appendix figure A.2

recession recoveries. A potential explanation for the persistent higher shares may be that recessions have short and long-term effects on the decisions young adults make, like living with parents, when they are emerging into adulthood.

Figure 1.2 zooms in on the post-2006 period. The share of cohabitating young adults (blue dots series) rose rapidly between 2006 and 2012, approximately mirroring the increase in the unemployment rate (gold series) over this period. However, when the economy began recovering after 2010, the share of young adults living with their parents continued to steadily grow throughout the recovery years.

A growing literature in labor economics (Oreopoulos, T. Von Wachter, and Heisz 2012) ; (Rothstein 2021) shows that recessions have lingering effects, known as "scarring" effects, on the labor market outcomes of those who start their careers during them. It is thus plausible that they might also have lingering effects on household formation. The black diamond series shows early-adulthood unemployment rates, those faced at age 18, averaged over those between 19 and 30 each year. This closely tracks the trajectory of the share of young adults living at home with their parents, consistent with the hypothesis that early conditions have scarring effects and that much or all of the increase in young adult cohabitation in the 2010s is attributable to the long shadow of the Great Recession. The existing literature has shown that early conditions delay entry into employment as well as negatively affect the growth of wages. These delayed effects may affect the decision of choosing to live with parents due to these economic insecurities and how long a young adult may perceive he/she will experience these negative labor market outcomes. It is thus appropriate to believe that early conditions will also affect later cohabitation decisions of young adults and thus delay the time at which young adults achieve their economic and residential independence.

Economic conditions in early adulthood may also affect the education and marriage behaviors of young adults given that the health of the economy affects early investment decisions and the ability to successfully transition into these new stages of life. I therefore further investigate the effect of the unemployment rate faced in early adulthood on outcomes such as marriage and college attendance. I extend the labor market scarring effect literature by confirming results on the likelihood of employment, but contribute to this literature by further exploring effects on the likelihood of being unemployed and the likelihood of being out of the labor force. I further contribute to this literature by analyzing how early conditions affect the distribution of young adults' annual earnings and their evolution across age. Lastly, I further analyze the effect of the unemployment rate faced in early adulthood on joint transition to adulthood and labor market outcomes (e.g. living with parents while being employed).

In summary my unique contributions to the scarring effect and delayed adulthood literatures are exploring how early conditions affect 1) the living arrangements of young adults, 2) their college attendance and completion behaviors, 3) their likelihoods of being unemployed or not in the labor force, 4) their annual earnings, and 5) the joint distribution of their non-economic behaviors (e.g. living arrangements, marriage, and college attendance) and labor market outcomes (e.g. employment status or earnings). My results indicate that unemployment rate conditions faced at the **start** of adulthood influence young adults' life outcomes, both economic (labor market behaviors) and social (e.g. living with parents longer, choosing

to marry, etc.). They further show that these outcomes are closely interconnected, suggesting that labor market success plays an important role in driving social outcomes.

Leveraging data from the American Community Survey (ACS) on 19 to 30 year olds between 2006 and 2021 I estimate, using linear probability regression models, the effect of the early-adulthood unemployment rate on the likelihood that young adults are living with their parents several years later. I assign the treatment of the early-adulthood unemployment rate to the young adults in my sample at the cohort level and follow the cohorts forward through repeated cross sections. This econometric design is known as synthetic cohort analysis and has been used in several previous studies of "scarring" effects of early career conditions on labor market outcomes (e.g., (Oreopoulos, T. Von Wachter, and Heisz 2012) ; (Rothstein 2021)). I use parallel econometric approaches to additionally study effects on employment status, earnings, other living arrangements, marriage, and college attendance. I examine these outcomes both individually and together to understand the co-relationship between social and labor market outcomes.

Much of the scarring literature focuses on college graduates, and assumes that they enter the labor market at or around age 22. I examine both graduates and non-graduates, and accordingly in my primary analyses I use economic conditions at age 18 as my measure of early exposure. Results are robust to using alternative ages (e.g. 19, 20, 21, 22, 23, or the average across these years).[2]

I show that early economic conditions have effects that last for at least a decade, with young people exposed to worse early conditions being notably slower to transition into adulthood.

First, I confirm effects on employment outcomes that are reported in the labor market scarring effect literature. I find that young adults who experience high unemployment rates at or around age 18 have significantly lower probabilities of being employed up to age 23. The effects are quantitatively similar to estimates reported for college graduates by (Rothstein 2021). The negative effect on employment reflects increases in unemployment at ages 20 and 21, and reductions in labor force participation from 19 to 23. Together these results indicate that economic conditions affect the margin between being out of the labor force and being employed during the beginning years that young adults embark on their adulthood trajectories.

Second, higher unemployment rates at the start of adulthood increase the likelihood of having very low earnings throughout the 20s. These results are consistent with prior scarring effect literature on labor outcomes that high early conditions negatively affect growth in wages and thus time it takes to transition from a low earnings bin to the next.

Third, I thoroughly analyse living arrangement behaviors and find compelling results. I find that young adults who experience high unemployment rates at or around age 18 have significantly higher probabilities of living with their parents throughout their 20s even when controlling for contemporaneous economic conditions. The effect on living with parents is significantly positive from ages 19 to 26, then begins to decline. Results are similar for young people who came of age during periods of rising or falling unemployment. Co-habitation with

[2]See appendix figure A.7.

parents largely comes at the expense of living independently (alone, with a spouse, or with non-relatives), which is lower from ages 21 to 27 for those who are exposed to high early unemployment. I find precise zero effects of early conditions on living in correctional facilities (e.g. prisons) throughout the 20s. However, there are effects on non-institutional group quarters (treatment centers, college dorms, etc.): High early unemployment reduces this outcome in the early 20s but increases it in the late 20s. These effects are primarily driven by residence in college dormitories at later ages and not that young adults are entering treatment/mental health centers. These results suggest that young adults with high early adulthood unemployment rates will have a difficult time affording residence in college dormitories during the early 20s, so may perhaps live with their parents. My results suggest that for young adults attending college in the late 20s that residing in college dormitories may be affordable for them in these later ages.

Fourth, high unemployment in early adulthood has heterogeneous effects on marriage. It increases the share of young adults who are married in their teens and early 20s, but also leads to reductions in the share who have been married by age 27, with no effect on the share who marry by 30. That is, some who would have married relatively early are induced to marry even earlier, while marriages are delayed somewhat for those who would have entered that state later. These main effects are mostly driven by young adults who do not live with their parents. When determining effects on the joint outcome of not living with parents and ever married results are almost similar to those found on the outcome of just ever married. This suggests that high early economic conditions affect the margin of choosing to marry or to stay single for young adults who do not live with their parent(s). Results demonstrate that marginal people who get married are all people who would otherwise have not been living with their parents but would have stayed single.

Fifth, weak labor markets motivate young adults to attend college. The opportunity cost of attending college is lower (Smythe 2019) when jobs are scarce, and people evidently respond. I find that adverse early unemployment leads to increases in the share who have attended college by age 21, an effect that persists through age 25. There is no effect, however, on the share who have attended college by 30. As with the marriage results, this suggests that high early unemployment rates accelerate the time at which young adults enroll into college but do not influence young adults to enroll who would not have ever enrolled if economic conditions were better. High early unemployment also increases the share who complete two or more years of college by age 19 or 20, but this again seems to represent acceleration from those who would have completed them anyway. There is no effect on the share who have completed two years by age 23 through age 26. Interestingly, point estimates, though insignificant, become negative at ages 27 and onward, perhaps indicating that some late college-goers are less likely to complete or take longer to complete their college milestones if they carry scars from their labor market entry. Results are similar for completing four years of college or more.

Sixth, I find no evidence of meaningful variation in effects on outcomes by demographic groups, both on race or gender. Effects are similar for men and women, and across racial groups.

Seventh, effects of the unemployment rate faced in early adulthood on joint transition

to adulthood and labor market outcomes demonstrate that these outcomes are strongly interconnected with each other. High unemployment in early adulthood positively affects the joint outcome of living with parent(s) and having low earnings, effects that persist up to age 25. High unemployment rates at age 18 drastically and negatively affects the joint outcome of never having gone to college and being employed. The magnitude of these effects are large. They indicate that early-career recessions alone can explain the lower share of young adults who are employed that never went to college.

Eight, I find that conditions in early adulthood prolong the time that young adults fail on all margins of entering into adulthood; that is, entering into marriage, attending at least one year of college, and successfully achieving their residential independence. I find that high early unemployment substantially increases the share of young adults who meet the definition of currently living with parent(s), not having gone to college, and never having been married. My estimates imply that the Great Recession increased the share of young adults who fail on each of these dimensions of transition to adulthood at age 26 from 9.76% in the cohort that turned 18 in 2007 to 10.21% in the cohort that turned 18 2 years later. The observed increase in the share of 26 year olds failing to transition into adulthood rose from 9.76% in 2015 to 10.27% in 2017. My estimates clearly account for a large part of the increase in the share in these years.

Together, my results provide evidence that early economic conditions can alter the transition into adulthood of young adults. For example, consider the cohorts who were age 18 in 2007, just before the Great Recession, and in 2009, at its peak. The latter was exposed to an age-18 unemployment rate that was 4.7 percentage points higher than that experienced by the former cohort. My scarring estimates predict that members of the later cohort would have been 1.69 percentage points more likely to live with their parents at age 22 than members of the earlier cohort. This closely fits the observed increase of 2 percentage points. This means that 85% percent of the increase in those years was solely attributed to unemployment rates faced in early adulthood. The health of the economy at the start of one's adulthood clearly matters.

The long-term effects of the COVID-19 recession are yet to be seen for older young adults. When including data on the years 2020 and 2021 to my analyses I am able to see how the COVID recession more positively and significantly affected 19 year olds' likelihood of living at home with their parents given that some of these individuals turned 18 in 2020. Scarring effects of the COVID-19 recession are yet to be seen for those aged 20 and up. Given that in the COVID recession the unemployment rate rapidly increased from 3.5% to 14.7%, the highest and fastest increase we have seen since the previous 3 recessions, my results give evidence that the early adult life transition outcomes for the young adults affected by the Covid crisis could be alarming.

The rest of the paper is structured as follows. Section 2 gives an overview of related literature and describes how my study expands upon previous work. Section 3 explores the social decisions that young adults make at the **start** of adulthood and why early conditions may affect these decisions. Section 4 describes the data sources and provides some descriptive statistics of the key outcomes. Section 5 explores the idea of "scarring" and why early conditions experienced at age 18 are important for my empirical approach. Section 6 presents

the empirical framework. Section 7 documents results. In this section I also document effects by race and gender. Section 8 explores robustness checks. Section 9 concludes.

1.2 Literature Review

This paper is related to two literatures. First, my research advances the growing body of literature on the "scarring" effects of recessions. This literature has mainly focused on labor market outcomes. Studies find evidence that recessions have permanent effects on new entrants' employment probabilities (Rothstein 2021). Individuals who lived in areas that suffered larger shocks in the Great Recession had worse labor market outcomes, even after unemployment rates had recovered(Yagan 2019). There has also been evidence that early market conditions lower earnings for 10 to 15 years after beginning one's occupational trajectory(T. Von Wachter 2020);(Schwandt and T. Von Wachter 2019); (Altonji, Kahn, and Speer 2016); (Kahn 2010). I extend this literature by being the first to determine how early conditions affect the earnings distribution of young adults rather than determining effects on log hourly wages. I also am the first to explore effects on the likelihood of being out of the labor force or being unemployed. Additionally, I add to this literature as one of the first to explore the scarring effect on new early adult life transition behaviors, such as living with parents, deciding to attend college, and choosing to transition into marriage.

The second related literature is that exploring the delayed transition to adulthood and family formation behavior of young adults. A few studies show that adverse early economic conditions have effects on a range of social outcomes such as marriage and divorce, criminal activities, obesity, life satisfaction, and risky alcohol and smoking consumption later in life (T. Von Wachter 2020); (Schwandt and T. M. Von Wachter 2020); (Bell, Bindler, and Machin 2018); (Cutler, Huang, and Lleras-Muney 2015); (Maclean 2013). For the marriage outcome, I provide the first detailed analysis of the effect of early conditions on the age at first marriage. I am the first to explore detailed analyses on effects on the age at first marriage because unlike the past literature my marriage outcome additionally includes individuals who are separated, divorced, or widowed. Including all of these marital statuses in my ever married outcome allows me to determine how early conditions affect the time that young adults transition out of singlehood into ever being married. Schwandt and von Wachter, 2020, show that entry conditions are associated with marriage rates among people in their 20s, but do not explore beyond that due to the fact that they explore this outcome on currently being married rather than ever having been married. Schwandt and Von Wachter (2020) further show that cohorts coming of age during the recession in the 1980s are more likely to have higher rates of childlessness, and that recession graduates are more likely to have their own children living in their households throughout their 20's. However, this may simply mean that recessions delay the timing of marriage, thus delaying the time at which young adults have children (Schwandt and T. M. Von Wachter 2020). Currie and Schwandt (2015) confirm this by showing that early economic conditions have a negative effect on the fertility behavior of women and these negative effects grow over time (Currie and Schwandt 2015). However, none of these researchers explore whether recessions induce young adults to move

in (or never move out) with their parents. I add to this literature by exploring how early economic conditions motivate young adults to live with their parents, in contrast to earlier studies exploring whether young adults have any children living in their household.

A growing number of papers are directly relevant to the study of co-residence with parents. Matsudaira considers the effect of how changes in economic conditions cause changes in the likelihood that young adults live with their parents (Matsudaira 2016). His study analyses residential behaviors of young adults from 1960 to 2011 and relies on leveraging the contemporaneous employment-population ratio for 35-44 year olds to explain the co-residence with parents probability. Matsudaira's empirical approach relies on current employment conditions as his treatment variable, which restricts the ability to understand how conditions may affect the long-term co-residence behavior of young adults. Bleemer and coauthors on the other hand consider college tuition costs as a factor influencing the decision to co-reside with parents (Bleemer, Brown, Lee, Van der Klaauw, et al. 2014). They find that in places where young adults are exposed to tuition hikes young adults are more likely to live with parents and less likely to live with roommates at ages 23-25. Giuliano explores the context of culture, in Mediterranean Europe, in influencing the rise in cohabitating with parents. She shows that the sexual revolution of the 1970s had differential impacts on living arrangements in Northern and Southern Europe (Giuliano 2007). Manacorda and Moretti explore the cultural context in Italy. They explore the role of parental preferences by estimating the effect of exogenous changes in parental income on rates of cohabitation of children, showing that a rise in parental income raises the propensity for children to live at home (Manacorda and Moretti 2006). My analysis adds to the literature on co-residence with parents as it has an emphasis on understanding the long-term effects of early adulthood economic conditions that young adults face on co-residing with their parents rather than focusing on the mechanisms of culture, current conditions, or considering tuition hikes to explain the decline in independence of young adults.

Some of the previously mentioned studies explore the effect of young adults graduating during bad economic times or leaving college during recessions on societal outcomes such as marriage. But it is important to note that economic downturns can also motivate young adults to attend college rather than dropping out. Because of this I further add to this body of work by exploring the short and long-term effect of early economic conditions on educational outcomes of young adults. Barr and Turner (2015) show that receipt of unemployment insurance (UI) affects a displaced individual's propensity to enroll in college (Barr and Turner 2015). Their findings suggest that those who would not have enrolled in college are induced into attending college because the receipt of UI benefits facilitates investments in human capital accumulation. My results suggest a different interpretation. While I do find effects of economic conditions on enrollment in the early 20s, this largely seems to come from people who otherwise would have gone to college somewhat later, and there is no effect on the share who ever attend by age 30.

Overall, my research enriches the transition-to-adulthood literature and suggests additional topics and questions for future research. My results show that not only are labor market outcomes of young adults affected by early conditions, but that other social outcomes, not previously studied, are also strongly affected well into the first decade of adulthood.

1.3 Emerging Adulthood Decisions

At the start of adulthood young adults have several important life choices to make. Choosing to attend college is naturally one of the first decisions young adults make. This is due to the fact that in their senior year of high school college attendance is a critical life choice young adults are thinking about and perhaps applying to. The decision to attend college may directly affect the residential behaviors of young adults. Those who choose to attend college out of their current state of residence will naturally move out of their parents' home. Others who choose to attend local colleges may choose between living with parents, college dorms, or off campus. However, choosing to attend college and/or moving away from ones' parent(s) will require a financial stream of income. Consequently, young adults will also have to choose between their participation in the labor market. However, recall that high unemployment rates faced at the start of one's occupational career negatively affects employment probabilities. This indicates that high unemployment rates at the start of one's adulthood trajectory may affect the college attendance and residential decisions that young adults make since these choices may be heavily interconnected to the employment status of young adults.

Given that employment probabilities decline for individuals who faced high unemployment rates at the start of their occupational careers this may induce negative effects on college attendance outcomes and living arrangements. I hypothesize that high early conditions will cause young adults to live longer with their parents. I am not sure how conditions will affect college attendance behavior, but if young adults are heavily dependent on their employment status to successfully attend college then I expect there to be a lower share of young adults who have attended and completed their college education, relative to young adults who faced lower unemployment rates at the start of adulthood. Another plausible hypothesis on college enrollment may be that high early unemployment may lead people to go to college simply because they have difficulties in finding employment. Since recessions reduce the opportunity cost of college, young adults may likely seek enrollment into college when faced with high early economic conditions.

While young adults do not typically marry at age 18 it is worth exploring how unemployment rates at the start of adulthood may affect this decision later in life. It is plausible that impacts of early adulthood economic conditions on employment stability earlier in life may affect marriage outcomes later. For example, not having a (good) job when a young adult is 21 or 22 may mean that he/she will have less money saved at ages 23 or 24, and thus this young adult will be unable to afford to move out of his/her parents' house at that point in time, or to also get married at that point in time. Thus, effects on labor market outcomes early could translate into delayed marriage later.

Knowing that young adults will need a stream of income to help them make their residential, marriage, and college attendance decisions brings about the concern as to whether they will have the adequate financial resources to make these life choices. I thus examine how unemployment rates faced at the start of adulthood affect the earnings distribution of young adults. To explore how early economic conditions affect where in the distribution young adults are earning in I divide the earnings distribution into 6 bins. Where the first

bin reflects those earning zero, indicating the bottom rung of the income ladder. This bottom rung covers 21% of the income distribution. Bin 2 covers the 22-45% of the earnings distribution, bin 3 the 46-64%, bin 4 the 65-82%, and bin 5 covers 83%-93% of the earnings distribution. The earnings distribution for the young adults in my main sample of analysis is right skewed and most of the outliers are in the right tail end. Thus, I include the outliers into the 6th bin, covering the top 94-100% of the earnings distribution. I hypothesize that the likelihood of young adults earning in the lowest two bins will be positive at the start of adulthood with probabilities falling later in life. I hypothesize that having earnings in bins 3-6 will be negative at the start of adulthood but will slowly increase in later life, with positive effects appearing much later for having earnings in the highest salary bins. I draw this hypothesis from the fact that the labor market scarring effect literature has shown that conditions negatively affect the growth in log hourly wages, so conditions may prolong the time that young adults transition from out of one salary bin into the next.

Not being employed at the start of adulthood naturally means that young adults will either be out of the labor force or unemployed. In line with results found in the labor market scarring effect literature on employment probabilities, I hypothesize that high unemployment rates in early adulthood will increase the probability of being unemployed or being out of the labor force well into the first decade into adulthood. I do not know at what magnitudes effect will be larger or smaller for being unemployed or out of the labor force, but I expect likelihoods of being in these states to fall in the later emerging adulthood years.

It is important to note that most life choices might be heavily impacted by the employment prospects of young adults since being employed provides the stream of income that will and can facilitate making the non-economic life decisions. For example, choosing to attend college may mean that young adults will forgo being employed in order to focus on their studies. But starting college during a depressed economy may also mean that there may be limited funding or financial assistance for young adults. These lack of or limited resources may induce young adults, who experience high unemployment rates at the start of their college journey, to seek employment opportunities to successfully complete and fund their college degrees. Because of this, it is worth exploring the joint outcome of attending college and employment behaviors. On the other hand, if young adults choose not to attend college, but rather decide to enter into being employed at the start of adulthood, they may choose to also move out of their parents' home if their earnings provide them the ability to financially afford their residential independence. For this purpose, I examine the joint outcome of employment status and living with parents as well as the joint outcome of living with parents and having earnings in various salary bins. As an exploratory analyses I also analyze effects on a range of other joint outcomes like entering marriage and employment behaviors.

1.4 Data

I use repeated cross sectional data from the American Community Surveys (ACS), provided through IPUMS (Ruggles, Sarah, Ronald, Megan, and Matthew 2022), to construct a

synthetic panel for young adults. The main sample for my analysis consists of individuals born between 1976 to 2002, who are between the ages 19 to 30 when observed in the time period of 2006 to 2021[3]. I drop any young adults who are institutionalized from my main sample, but include them only when analysing the residential outcomes – more specifically to see if there are any effects on living in group quarters that are classified as institutions.[4] To this sample I merge state-level unemployment rate data from the Bureau of Labor Statistics (BLS) spanning the years 1976 to 2021 for the contemporaneous unemployment rate and the unemployment rate at the beginning of adulthood. For my primary analyses, I use the unemployment rate at age 18 as my measure of the early economic condition, though I show that results are robust to selecting other years up to age 23.

I construct variables as follows: I count a young adult as living with parent(s) if he or she is indicated as being a child of the head of the household; if the head of household has a parent listed as living with them I also classify the head of household as cohabitating with parent(s). I classify individuals as living independently if he or she is living alone, is a spouse, or a non-relative to the household head, as living in institutional or non-institutional group quarters if that is indicated, and as living with other relatives if they identify as a relative or in-laws to the head of household. After analyzing residential behaviors I exclude individuals who are in prison, those classified as living in correctional facilities. The residential situations of young adults are a status measure - I measure whether someone is with his or her parents at age 25, for example, but because I lack panel data I cannot tell whether this reflects a "boomerang" or a child who has never moved out. My other outcomes on marriage and college attendance are cumulative. When I examine marriage, I consider whether the individual has ever been married, counting those who are still married as well as those who are separated, divorced, or widowed. Similarly, my analyses of educational attainment focus on whether people have reached specified milestones (e.g., at least two years of college), not on their current college attendance activity. For effects on employment status I create three different binary outcome variables, those being, is employed, is unemployed, or is not in the labor force. I follow the same approach and create binary outcomes for having earnings between certain salary ranges. Note that all outcome variables described are binary variables taking a value of one if these definitions are met and zero otherwise. Tables 1 and 2 provide summary statistics for key outcome variables.

Table 3 shows summary statistics for my main ACS sample. Note that, while many labor market scarring papers focus on college graduates, I do not limit the sample based on years of education.

[3]Excluding the COVID recession little affects my results, so for the main analyses I include data on 2020 and 2021, but present robustness results excluding this recession.

[4]The ACS classifies group quarters into two categories. 1) Institutionalized group quarters include prisons, correctional facilities, patients in psychiatric hospitals, and halfway houses. Those in this living arrangement I classify as living in correctional facilities. When done with this analysis I drop these individuals from the sample to further explore effects on marriage and college attendance. 2) Non-institutionalized group quarters include shelters, treatment centers, religious group quarters, job corps centers, educational residential programs (16-24yr olds), college dorms, and juvenile centers. I classify those living in this category as living in treatment centers or college dorms. After analyses I keep this group in the sample to further examine effects on marriage and college attendance

Data Limitations

There are some limitations to the ACS data for the purposes of my analyses. First, I do not observe the state where the young adults lived when they were age 18. For my regression analysis, I assume that all young adults turned 18 in the state where they currently live in when I observe them. As a robustness check I utilize the state of birth for the early condition rate and show that results little change.[5]

Second, the ACS measures someone's current marriage or educational status as of when they are interviewed, and does not follow up to identify later changes. Some people who I observe without college may later wind up enrolling, after the ACS survey. To minimize the impact of this, some of my outcomes are cumulative, capturing whether the respondent has ever yet been in a particular state (ever been married, for example, or ever attended college).

Third, I can observe where a young adult lives at the time of the survey and where he/she lived one year prior to being surveyed, but not the residential history leading up to that. I do not know if a cohabiting young adult has returned to the family home after leaving or if he or she never left. As robustness checks I match the unemployment rates experienced at age 18 using the state of birth or the state lived in a year ago and show that results do not change. So for the purposes of results presented the unemployment rate used to explain effects on transition into adulthood behaviors will be conditions faced at the current state young adults live in.

1.5 Measuring early exposure

In this section I aim to explain the idea of scarring in the context of non-economic behaviors. But first we must understand what "scarring" means. In labor market analyses it is widely understood that "'scarring' is defined as the negative long-term effect that unemployment early in one's adult life has on future labour market possibilities in itself" (Nilsen and Reiso 2011). Because early conditions have lasting effects on labor market outcomes such as being employed and income growth (T. Von Wachter 2020); (Rothstein 2021) there is cause to believe that early conditions may also persistently affect the non-economic decisions of young adults, given that those decisions such as marrying and choosing where to live are closely tied to the financial well being of the young adult, which is heavily tied to their labor market status. For the purposes of my analyses I adapt the definition from the labor market scarring literature to mean that scarring will be defined as the medium and long-term effect that the unemployment rate a young adult faces in early adulthood has on future adulthood decisions such as marrying, attending college, and living with parents.

Many past studies of scarring have focused on college graduates, and have measured early career conditions by the unemployment rate in the year of college completion or at age 22.

[5]Schwandt and von Wachter develop a "double weighting" method that uses observed transitions to construct an improved measure of the appropriate unemployment rate to which individuals observed in a given state in a given year were exposed. They find that this has little effect on their results relative to the simpler approach I use.

For those who do not go to college, however, earlier conditions may be more relevant. I use the unemployment rate at age 18 as my primary measure of early career conditions for all young adults in my sample. This can be seen as having direct effects on decisions and options around the end of high school, and as a proxy for the conditions that an individual who goes to college will face at the (endogenously chosen) time that he or she graduates from college. Results in the appendix demonstrate that results are robust to other choices, including the use of any single year from 18 to 23.

Figure 1.3 provides an initial look at cohabitation rates by age and year. Each line represents a distinct age group. Not surprisingly, cohabitation rates of 18 year olds are much higher in every year than those of 30 year olds, and indeed the rate declines monotonically with age. Looking over time, the cohabitation rates of 18 year olds have been fairly stable, but around the middle of age 20's and beyond the cohabitation rate has sharply increased over time – for 25 year olds, from 15% in 1962 to 28.5% in 2021.

Of interest for my analysis is the evolution of cohabitation within birth cohorts. Dashed lines in the graph illustrate two example birth cohorts - those born in 1973, who were 18 in 1991, and those born in 1990, who were 18 in 2008, coinciding with recessionary years. I am only describing the evolution of two different birth cohorts coming of age during a recession, but it is important to note that all solid dots represent cohorts who turned 18 during recessions. Again taking the 25-year-old series as an example, we see that 25 year olds in 1980, 1981, 1982, 1987, 1988, 1998, 2008, 2014, 2015, and 2016 – all cohorts exposed to recessions at age 18 – had higher cohabitation rates than did 25 year olds two or three years earlier. There is a similar pattern at other ages in the mid-20s. This is strongly suggestive that recession cohorts have higher rates of cohabitation even when the recession is past - a result that I confirm in the econometric estimates below.

1.6 Empirical Framework

In order to determine how early economic conditions affect young adult's transition to adulthood behaviors I employ the following linear probability regression model:

$$\mathbf{Y}_{i,s,c,a,t} = \sum_{a=19}^{30} \beta_a D_a * UR_{s,(c+18)} + \rho \mathbf{X}_i + \gamma_a + \psi_c + \delta_s + \zeta_t + \pi_{s,t} + \epsilon_{i,s,c,a,t} \tag{1.1}$$

Where $\mathbf{Y}_{i,s,c,a,t}$ represents the outcome (e.g., the cohabitation status) of person i from birth cohort c observed in year t at age $a \equiv t - c$ living in state s.

The key economic variable of interest is $UR_{s,(c+18)}$ which represents the state unemployment rate for individual i for when he/she was an 18 year old. The age-18 unemployment rate may have different effects on outcomes at different ages. To capture this, I interact $UR_{s,(c+18)}$ with a full set of indicators D_a for each age from 19 through 30. The specification also includes main effects for age (γ_a), as well as fixed effects for cohort (ψ_c), state of residence (δ_s), and calendar year (ζ_t). Since economic conditions are measured at the state-by-year level, I further add a fixed effect for the state-year combination ($\pi_{s,t}$). This absorbs

any effect of economic conditions in the year t that outcomes are measured, and ensures that the scarring coefficients β_a do not capture any association between these contemporaneous conditions and those at age 18.

This empirical approach allows me to compare individuals of the same ages, surveyed in different years and residing in different states, that experienced varying levels of entry unemployment rates when they began their young adulthood trajectories. Thus one should interpret the coefficient term β_a to be the change in the $\mathbf{Y}_{i,s,c,a,t}$ probability for individuals of age a experiencing varying levels of entry unemployment rate conditions when they turned 18, holding constant age patterns, contemporaneous conditions at time t in state s, and permanent cohort differences.

The fixed effects absorb many forms of heterogeneity. However, I control in addition for gender and race in $\mathbf{X}_i$. Standard errors are clustered at the state level to account for unmodeled common influences that might affect state labor markets but are not captured by the state fixed effects or the interaction of state and year fixed effects.

Note that equation (1) includes full sets of indicators for cohorts, ages, and times. It is well known that these are not all separately identified, because age equals time minus cohort. An additional linear restriction is required. I normalize the birth cohort effects for young adults born in 1985 and 1996 to be equal. Doing so ensures that the estimated birth year coefficient for these cohorts is zero. Note that these are nuisance parameters and the normalization does not affect the coefficients of interest. Normalizing other birth cohort effects provides similar results.

My main specifications assume that age, time, and cohort effects are additively separable. But because cohorts exposed during the COVID-19 crises are observed only at age 19, the cohort indicator is strongly collinear with the indicators for age 19 and the indicator for year 2020, which will make separating out each effect difficult. To address any sensitivity to this, I re-estimated my regressions dropping all cohorts exposed to the COVID-19 recession. Doing this made little difference to my main results.

1.7 Empirical Results

Impact on Employment, Labor Force Participation, and Earnings

The top panel of Figure 1.4 shows effects on the likelihoods of being employed, unemployed, or not in the labor force. The blue coefficients correspond to the β_a's in regression 1 where being out of the labor force is the outcome of interest. The green coefficients reflects effects where the outcome variable is currently employed. And the gray coefficients reflect effects on being unemployed. Results on being employed are quantitatively similar to estimates reported for college graduates by (Rothstein 2021), though he finds negative effects starting at ages 22 to 27, but likely due to observing college graduates at ages 22 and onward. I show that high unemployment rates experienced at age 18 negatively affect the likelihood that young adults will be employed between the ages of 19 to 23, scarring effects attenuate to zero thereafter. The negative effects I observe on being currently em-

ployed reflect increases in unemployment at ages 20 and 21, and reductions in labor force participation from 19 to 23. Together these results indicate that economic conditions affect the margin between being out of the labor force and being employed during the beginning years that young adults embark on their adulthood trajectories. Surprisingly, it does not appear that early adulthood unemployment rates affect the likelihood of being unemployed for a large part, with the exception of ages 20 to 21, of the time period that young adults are transitioning into adulthood. Given that economic conditions affect the margin between being employed or being out of the labor force it is worth exploring what young adults who are out of the labor force are doing during the first years that they transition into adulthood. Out of the labor force young adults may opt into college attendance or perhaps stay living with their parents longer. To explore this, I analyze joint effects on being out of the labor force and attending college as well as joint effects on being out of the labor force while living with parents. Results of which will soon be discussed.

The bottom panels of Figure 1.4 shows effects on the salary ranges that young adults earn in. Higher unemployment rates at the start of adulthood increase the likelihood of having very low earnings throughout the 20s (black and pink β_a coefficients). These results are consistent with prior scarring effect literature on labor outcomes that high early conditions negatively affect growth in wages and thus time it takes to transition from a low earnings bin to the next. Outcomes on the first three salary bins can indicate that early conditions delay the time that young adults transition out of the first two bins ($0-$9,900) into the third. These outcomes may also portray that young adults may be working part time jobs in the first half of their emerging adulthood years and then towards the tail ends of their 20's may transition into full time jobs or better earnings occupations. Effects on earning in the fourth salary bin shows that young adults face significantly negative probabilities of having earnings in this bin ($20,901-$36,900) throughout the entirety of their emerging adulthood years (ages 20 to 30). This means that higher unemployment rates faced at age 18 will delay the transitioning into this bin past age 30. Showing that early conditions have drastic effects on the upward income mobility of young adults. Surprisingly, effects on earning in the fifth highest salary bin are positive and significant between ages 19 to 23 but thereafter are zero and begin to decline at ages 27 and onward. Also surprising, effects on earning on the highest salary bin ($59,001-$787,000; the top 10% of the earnings distribution) are for the most part positive throughout the first decade of adulthood from ages 20 to 30. This shows that recessions can also widen the gap of income inequality as those already in the highest rungs of the social ladder, perhaps those with higher skilled occupations, can ride out recessionary shocks they experience in early adulthood.

Impact on Residential Outcomes

From the descriptive graph in Figure 1.1 we have seen that the share of young adults living with parents has gradually increased over time. But an important observation from Figure 1.1 shows that the long-run increase in the share of young adults living with parents came during the Great Recession. For these purposes regression equation (1) allows me to

analyze how long high early economic conditions, such as those experienced during the Great Recession affected the residential behaviors of young adults.

Results on living with parents are shown in top left panel of Figure 1.5. This shows the β_a coefficients from equation (1), along with confidence intervals, as a function of a. The β_a coefficients are positive and statistically significant from age 22 through 25, indicating that cohorts who faced a higher unemployment rate at age 18 were more likely to cohabit with their parents throughout their early and mid-20s. It is then insignificant for $a = 26$ to $a = 28$, and significantly negative for $a = 29$ and $a = 30$.

The highest effect on living with parent(s) is observed at age 24 with a 1 percentage point increase in the early unemployment rate corresponding to an increase of .59 percentage points in the likelihood that a young adult is living with his/her parents at age 24. This translates to an increase of 1.69% in the likelihood of living with parents at age 24. In the Great Recession, the national unemployment rate increased by 4.7 percentage points from 2007 to 2009. My results imply that between 2007 and 2016 the share of 24 year olds living with their parents should increase by 2.89%. The share of 24-year-olds observed living with their parents rose from 29% in 2007 to 38% in 2016 – when those who were 18 in 2001 and 2010 were observed at 24 – so my estimates indicate that scarring effects can account for nearly a third of the share of this increase. The effect of early economic conditions is clearly economically significant. My results indicate that the unemployment rate faced at age 18 has medium and long-term effects on young adults' cohabitation status well into their adult years.

Young people who are not living with their parents might be living independently (perhaps alone, with roommates, or a spouse or partner), in group quarters (dormitories, group homes, or correctional facilities), or with other relatives. The bottom left panel of Figure 1.5 presents results for living independently. Effects in the mid-20s (22-25) are close to the mirror image of the effects on living with parents, indicating that economic conditions affect the margin between independence and cohabitation during this period. The top right panel in Figure 1.5 shows us that there is no effect of early conditions on living in treatment centers or college dormitories (red coefficients) at ages 20 to 22, however – here, increases in cohabitation come at the expense of living in treatment centers or college dormitories. This plausibly represents young people who would live in college dormitories in good conditions but are more likely to remain at home when the unemployment rate is higher. However, at later ages we notice a positive and significant effect on living in these types of living arrangements. The increases in living in treatment centers or college dormitories in the late 20s are of similar magnitude to the reductions in cohabitation at those ages, providing a potential explanation for that earlier result. This can represent young adults who would have lived with their parents in good conditions but during their latter years of adulthood are more likely to need rehabilitation and mental health help when their early unemployment rate is higher. An alternative explanation may be that young adults who delayed college attendance to later in life might be living in college dormitories or off campus housing during the tail ends of their emerging adulthood years rather than with their parents.[6]

[6]Figure A.3 provides evidence of this. The joint outcome of living in treatment centers or college

To determine if early conditions affect the criminal behavior of young adults I explore effects on living in correctional facilities. The navy colored coefficients in top right panel in Figure 1.5 demonstrate the corresponding results. Contrary to existing literature on the criminal behavior of young adults heavily affected by recessions in early adulthood, I show that there does not appear to be evidence that early adulthood conditions affect criminal activity. All effects between 19 to 30 are zero and insignificant. It is worth exploring if effects change in later life post-emerging adulthood years.

The effect on living with other relatives (i.e. not parents) is significantly positive, but only between ages 19 to 21. Effects are insignificant thereafter. The bottom right panel in Figure 1.5 documents these results. High unemployment rates experienced at age 18 leads to a higher share of young adults living with their family members between ages 19-21 in comparison to individuals who faced lower unemployment rates. This may indicate that individuals exposed to higher unemployment rates in early adulthood may rely more on familial support for their living arrangements.

Joint Employment and Salary Outcomes

I delve deeper in analyzing the joint outcome of the employment status of young adults and whether they live with their parent(s) or not. The top panels on Figures 1.6 and 1.7 demonstrate the results. I find that the unemployment rate faced at the start of adulthood raises the probability of the joint outcome of living with parents while not being in the labor force, but effects are only positive and significant at ages 19 to 23 and become negative thereafter (blue coefficients on the top panel of Figure 1.6). I find similar effects, but smaller, on the joint outcome of living with parents and being an unemployed at ages 19 to 24. Effects thereafter attenuate to zero. Effects on living with parents and being an employed young adult are significantly negative at ages 19 to 21 and then become positive at ages 23 to 27. These patterns are due to the fact that as young adults are aging early economic conditions shift young adults out of some of these joint statuses into others at earlier or later ages. Effects demonstrate that as young adults age they transition out of living with parents while not being in the labor force and living with parents while unemployed to living with parents while becoming employed. These results show that adverse conditions have longer lasting effects on the cohabitation/living arrangements than on the employment effects. Recall that effects on employment outcomes faded at age 23 and onward but effects on living with parents significantly lasted up to age 26. My results show that living with parents serves as a mechanism that helps young adults facing tough employment outcomes take the necessary time to eventually transition out of unemployment/not in the labor force to successfully being employed during their later emerging adulthood years. Joint effects on not living with parents and being unemployed or not being in the labor force are for the most part precisely

dormitories while currently attending college reflects similar effects as those found on just living in treatment centers or college dorms. The positive and significant coefficients toward the right tail end indicate that high early conditions at the start of adulthood will accelerate the time at which young adults who would have delayed their entry to college at later ages to attend earlier. Effects indicate that those attending college later in life will also jointly choose to live in college dorms or in off campus units.

zero throughout the first decade into adulthood (top panel of Figure 1.7). Results on not living with parents while being employed are predominantly significantly negative between the ages 22 to 27, interestingly when the joint outcome on living with parents while being employed are significantly positive. This means that early adulthood unemployment rates affect the margin between living with parents or choosing not to live with parents when a young adult transitions into the employment state of being employed. Results show that when employed, those facing more adverse early unemployment rates will choose to live with their parents as opposed to not living with them. Choosing to live with parents may be driven by the fact that more adversely affected young adults do not have enough savings to achieve their residential independence during these ages (22 to 27).

Young adults who face higher unemployment rates in early adulthood may see living with parent(s) as a way to save on rent given that their employment and earnings growth will already be negatively affected by scarring effects. I turn to exploring effects on the joint outcome of living with parents while earning in certain salary ranges. The bottom panels on Figures 1.6 and 1.7 demonstrate these results. High unemployment in early adulthood positively and significantly affects the joint outcome of living with parent(s) and earning the lowest salaries among the earnings distribution from ages 19 to 27 (black and pink β_a coefficients in the bottom panels of Figure 1.6). Effects thereafter attenuate to zero and begin to decline at ages 28 and onward. But this is due to the fact that the likelihood that young adults are living with their parent(s) begins to decline at these later ages. Effects on the joint outcome of not living with parent(s) and having earnings in the lowest salary bins are almost all negative from ages 19 to 24 (black and pink β_a coefficients in the bottom panels of Figure 1.7). These results suggest that early adulthood unemployment rates affect the margin between living with parents or choosing not to live with parents when a young adult is earning in the lowest salary bins. Results show that when having low earnings, those facing more adverse early unemployment rates will choose to live with their parents for a longer period of time, up to age 27, before choosing to move out in their later ages. Internally doing cost benefit analyses, young adults may see that living with parents may be more financially advantageous and feasible as this may help them save, or take the time necessary to transition into a higher salary bin before making the decision to move out. We see the case of the latter on positive joint effects, at ages 28 and onward, for not living with parents and earning in the third lowest salary bin (grey triangle β_a coefficients in the bottom panels of Figure 1.7).

Impact on Marriage

The top left panel on Figure 1.8 shows precisely estimated effects of the early economic condition on ever having been married. For the most part my individual level regression results are somewhat consistent with those found by Schwandt and T. M. Von Wachter (2020) at the state-of-birth by year-of-birth by age level. Schwandt and Von Wachter find that high early conditions influence young adults into marriage by 00.219 percentage points between the ages of 19 to 29 I find effects of 00.10 between these ages. Schwandt and von Wacther note that, "in the short-term, recession graduates experience slightly elevated marriage rates.

However, with increasing age this marriage bonus decreases and turns negative in the late 30s when recession graduates are less likely to be married than their more lucky counterparts." I find similar effects but my results show that the marriage bonus turns negative at age 24 up to age 30. According to Schwandt and T. M. Von Wachter (2020), they document that the decrease in the main effects are driven partially by divorces (Schwandt and T. M. Von Wachter 2020). But given that my definition on ever having been married includes young adults who are currently married, divorced, widowed, and/or separated my results show that early conditions affect the timing (age pattern) at which young adults transition from out of singlehood into marriage. The marriage bonus decreases not because of divorce rates but rather because the unemployment rate experienced at age 18 will cause young adults who are not yet married in their mid 20's to further delay their decision to enter into marriage. An anecdotal explanation may be that the positive response into marriage followed by the decreasing effects might be capturing two economic motives. One, for the earlier years more affected cohorts may see marriage as a way to gain financial support from their partner during rough economic times by making the decision to marry. Second, towards the later years into adulthood the more heavily affected young adults, those who faced higher unemployment rates at the start of their adulthood, may be the less attractive life partners later in life given that these individuals may have a hard time finding a job or are just significantly worse off than their luckier counterparts. This observation may also explain the elevated effects on marriage in early adulthood followed by the decreasing effects experienced as young adults age.

A question of concern is why do early conditions raise the likelihood of living with parents in the early ages of entry into adulthood while at the same time raising the likelihood of marriage in the same ages? One would expect that positive effects on living with parents would come at the expense of forgoing entry into marriage. On the top right panel of Figure 1.8 I explore joint effects on the likelihood of ever married and living with parents or ever married and not living with parent(s). When determining effects on the joint outcome of not living with parents and ever married (black hollowed coefficients in the top right panel) results are almost similar to those found on the outcome of just ever married. This suggests that high early economic conditions affect the margin of choosing to marry or to stay single for young adults who do not live with their parent(s). Results demonstrate that marginal people who get married are all people who would otherwise have not been living with their parents but would have stayed single. This is confirmed by the fact that effects on the joint outcome of ever married and living with parent(s) are for the most part zero throughout ages 19 to 30. These results suggest that early conditions do not affect the marriage behavior of young adults who would have otherwise stayed living with their parent(s) in better economic conditions, but rather that early conditions affect the marriage behavior of young adults who otherwise would have stayed single while not living with their parent(s) when faced with lower early economic conditions.

Effects on the joint outcomes of marital status and employment are shown on the bottom two panels of Figure 1.8. They show that for those never married (bottom right panel) early conditions will prolong their likelihood of being single but will affect the margin of which employment state they choose to be in during their singlehood years. In the early ages, 19

to 23, early unemployment conditions will increase the likelihood that those single are either not in the labor force or unemployed. The joint likelihood on being single and employed is significantly negative during these ages. Early unemployment rates will later in life, at ages 25 to 30, increase the likelihood that single young adults enter into employment at the expense of choosing to enter marriage when making this employment transition. This is due to the fact that the share of married and employed adults is lower, at ages 24 to 30, for young adults who experienced higher unemployment rates in early adulthood (green coefficients from bottom left panel), but we can see a higher share of single and employed young adults during these age ranges for individuals who experienced elevated unemployment rates in early adulthood (green coefficients from bottom right panel). Elevated shares of single and employed young adults may shed light on the hypothesis that since early conditions delay the time young adults enter into employment that due to these economic insecurities they may also prolong their transition into independence like choosing to marry at later ages.

For young adults who do marry in early adulthood, high early economic conditions will cause the majority of these young adults to seek employment opportunities. Notice that the majority of the green square coefficients on the bottom left panel, corresponding to the joint outcome of ever married and employed, are all significantly positive from ages 19 to 23. These results suggest that adverse early economic conditions will induce married young adults to work even though they entered adulthood in more depressed labor markets. These positive effects may indicate that though employed, married young adults will most likely be working in lower skilled jobs. If this is true, it is worth exploring if high early adulthood unemployment rates induce both spouses to seek employment in order to achieve their desired standard of living. The top panel in Appendix Figure A.4 shows compelling results. High early adulthood economic conditions will influence both spouses to be employed indicating that it will be more difficult for one spouse in the marriage to be a stay at home spouse. These results imply that more depressed labor markets in early adulthood will demand that for young adults who marry in early adulthood (ages 19 to 23) that both spouses acquire jobs so as to achieve the financial well-being of their marriage.

Impact on College Attendance

Recall that some outcomes I examine like attending college are cumulative outcomes – an individual can transition from not having gone to college to having attended college, but cannot transition the opposite direction. Given that it is hard to determine when exactly a young adult began his/her college trajectory, instead of determining how early economic conditions affect the age at which a young adult first enrolls into college I explore how early conditions affect if young adults ever went to college. Thus the outcome on college attendance groups everyone who completed at least one year of college with anyone who completed a bachelor's and above. The top left panel of Figure 1.9 shows that adverse early unemployment leads to increases in the share who have attended college by age 21, an effect that persists through age 25 (maroon colored coefficients). A 1 percentage point increase in the unemployment rate at age 18 is associated with a .94% increase in the likelihood that a young adult has gone to college by age 21. Effects are clearly economically significant.

Relatively to the mean of 53% of young adults having gone to college by age 21 this means that high unemployment rates at the start of adulthood are large enough to explain a full percentage point increase in the share of those who attend college. But later in life there appear to be no effects on the share who have attended college by 30. This means that high early unemployment rates accelerate the time at which young adults enroll into college but do not influence young adults to enroll who would not have ever enrolled if economic conditions were better.

Not everyone who goes to college emerges with a degree. I more closely investigate the outcome of college attendance and examine how early conditions affect having gone to college for 2 years or more. I take this as proxy for having completed an associates degree or more. I also investigate the impact on completing 4 years of college or more, which serves as a proxy to completing a bachelor's. The light green square and yellow triangle coefficients on the top left panel of Figure 1.9 show the effects for these outcomes. Results show that high early unemployment also increases the share who complete two or more years of college by age 19 or 20, but this seems to represent acceleration of completing two or more years of college from those who would have completed them anyway - there is no effect on the share who have completed two years by age 23. If anything, cohorts that face adverse early conditions seem to be *less* likely to complete two years of college by age 30, though this is not robustly significant. One interpretation of this pattern of results is that it reflects heterogeneous responses: Some people are induced to go to college earlier by the lack of available jobs, while others who struggle in their early careers are not able to save up enough to attend and complete college later. Results are similar for four years of college (yellow triangle coefficients).

The top right panel of Figure 1.9 explores the joint likelihoods of having had attended college and living with parent(s). Results show that for young adults who experienced high unemployment rates at age 18 that they are more likely to have gone to college and are living with their parent(s) at the time they were surveyed. Note that the black point estimates on this outcome are slightly larger between ages 20 to 22 (the typical college going age) than for the joint outcome of having gone to college while not living with parent(s) (purple hollowed coefficients). The black coefficients at age 19 to 27 may indicate that young adults who attended college lived with their parents during their college going years, but after college completion that they may have continued to reside with their parents, at least up to age 27. Effects on the joint outcome then become negative from ages 28 and onward, but this is due to the fact that the likelihood of young adult(s) living with parent(s) also declines during these ages indicating that college educated young adults eventually move out at the age of 27 and onward. This shows that early conditions do indeed delay the time at which young adults achieve their independence regardless if they attended college at earlier ages. Effects on having had attended college and not living with parents are positive from ages 19 to 22, which may mean that these young adults are perhaps living in college dormitories or off campus while pursuing their degrees. But these likelihoods are then negative from ages 23 up to age 26, yet again indicating that early conditions delay the time at which young adults are able to live independently even if they are college educated; as after age 22, the typical age of college completion, more adversely affected young adults are induced to move

back home to live with their parent(s). It is not until age 28 (purple hollowed coefficients) that signs of individuals achieving full residential independence is realized.

The bottom two panels of Figure 1.9 explore the joint likelihoods of college attendance and employment status. Effects on the joint likelihood of having had attended college and not being in the labor force (blue crossed coefficients on bottom left panel) are positive up to age 23, but this is due to the fact that conditions already accelerated the share of young adults who enrolled in college up to that age. Thus conditions for those accelerating their entry into college will affect the margin of their employment state. Those accelerating college enrollment will be induced into being employed at earlier ages or be induced into not being in the labor force. At age 24 we can see that those not in the labor force while having had attended college will transition out of this employment state into having had attended college and being employed at ages 25 and onward. The joint outcome on having had attended college and being unemployed for the most part is precisely zero. Indicating that high unemployment rates do not affect the share of young adults who have attended college and are unemployed during the first decade into their emerging adulthood years, but rather affect the margin of being employed or just simply being out of the labor force. High unemployment rates at age 18 drastically and negatively affect the joint outcome of never having gone to college and being employed from ages 19 up to age 26 (green hollowed square coefficients of the bottom right panel). The magnitude of these effects are large. Indicating that recessions alone can explain the lower share of young adults who are employed that never went to college. Recessions for those that are not college educated will more drastically affect their employment stability well into their first decade into adulthood in comparison to young adults who never went to college but experienced better/lower unemployment rates at the start of their young adulthood years.

Impact on Failure to Launch Into Adulthood

It is clear that high unemployment rates at the start of adulthood influence important life choices that young adults make as they transition into adulthood. I have shown economically meaningful effects on marriage, college attendance, and residing with ones parents. Given that early conditions have stark effects on these life decisions it is useful to explore how high early economic conditions affect these three decisions jointly. I explore how conditions faced at the start of adulthood affected the "failure to transition" individuals. Those being young adults who never got married, never went to college, and are living with ones parent(s). I assign a value of one to individuals who meet this definition and zero otherwise. Results from regression (1) are presented in the top left panel of Figure 1.10.

High unemployment rates faced in early adulthood will increase the share of "failure to transition" individuals at ages 23 to 25. At age 24 a 1 percentage point increase in the unemployment rate experienced at age 18 translates to an increase of 1.54% in the likelihood of being a "failure to transition" young adult. Relative to the mean of 13% of 24 year olds experiencing difficulties transitioning into adulthood this share would rise to roughly 13.2%. By employment status those shares are likely to be larger for the unemployed or those out of the labor force.

Given that coefficients are positive up to age 26, these results show that economic conditions faced at the start of adulthood do indeed delay the time at which young adults take to transition into their full independent roles as adults. High unemployment rates faced at age 18 will prolong the time that young adults are unmarriageable, uneducated, and reliant on their parent(s) for residential and financial support. Policy makers could take into account the economic conditions that young adults face at the start of their emerging adulthood years if their goal is to accelerate the time at which young adults successfully transition adulthood. Although I am not able to account for the wealth of ones family I anticipate that the most affected young adults will be those who lack the financial resources to help them make their marriage, residential, and college attendance decisions.

A question of concern is if being a "failure to transition" young adult is costly for the economy? Perhaps parents are OK with their adult children living with them as long as they are financially contributing to the household? To test this I further restrict the "failure to transition" definition by assigning young adults who never got married, never went to college, are currently employed, and are living with one's parent(s) a value of one and zero otherwise. The top right panel of Figure 1.10 demonstrates corresponding results. I find negative effects at ages 19 to 21, but these are largely due to the fact that young adults who have higher early adulthood unemployment rates are negatively affected on their employment probabilities during these ages. Effects however are positive and significant at ages 23 to 26. At age 24, a 1 percentage point increase in the unemployment rate experienced at age 18 is associated with an increase in the likelihood of being a "failure to transition young adult who is currently employed" by .18 percentage points. This translates to an increase in the share of 24 year olds meeting this definition by 2.15% . Relative to the mean of 8.34% my results imply that this share would rise to roughly 8.52%. These results indicate that young adults who fail to transition on the marriage and college attendance margin may use living with their parent(s) as a means to save or pay cheaper rents when employed rather than living alone, entering marriage, or choosing to attend college.

An economic cost to the economy would come about from foregone GDP if heavily scarred young adults who fail to transition into adulthood also fail on the margin of being employed. The bottom panel of Figure 1.10 demonstrates these results. Young adults who faced high unemployment rates at age 18 are more likely to be jointly unmarried, uneducated, not employed, and living with parent(s) between ages 19 up to age 23. These results are alarming as the increase in the share of young adults meeting this definition means that these young adults will not be able to contribute to the economy's GDP much less to their savings goals and household financial contributions.

Demographic Heterogeneity

Figure 1.11 shows impacts of the early adulthood unemployment rate on living with parent(s) or failing to launch into adulthood by demographic group. I present results for gender and race separately.[7]

[7]Shares by race and gender for each outcome are reported in Figure A.1

Effects on living with parent(s) are similar across race [8] and gender (top two panels of Figure 1.11). But the magnitudes of these effects are larger for women than men. At age 24, a 1 percentage point increase in the unemployment rate faced at age 18 is associated with an increase of 1.42% in the likelihood that men live with their parents, but for women early conditions lead to an increase of 2.15%. A larger magnitude for women may support the anecdotal evidence that women are better care takers of their parent(s) or better at supporting the family unit, thus might live longer with their parent(s). Another potential explanation may be that in general women are employed in lower skilled occupations and thus because their employment effects are negative when faced with higher early adulthood unemployment rates this may cause them to live longer with their parent(s).

Impacts of the unemployment rate faced at the start of adulthood on living with parents are similar across race and the magnitudes of these effects are also similar.

Effects on failing to transition into adulthood are also similar across race and gender (bottom two panels of Figure 1.11). But the magnitudes of these effects are yet again larger for women than men. At age 24, a 1 percentage point increase in the unemployment rate faced at age 18 is associated with an increase of 1.17% in the likelihood that men fail to transition into adulthood, but for women early conditions lead to an increase of 2.1%.

Impacts of the unemployment rate faced at the start of adulthood on failing to transition into adulthood are similar across race, but the magnitudes of these effects are almost twice as large for Asians and Hispanics than for Black and White young adults. At age 24, a 1 percentage point increase in the unemployment rate faced at age 18 is associated with an increase of 1.33% in the likelihood that Whites fail to transition into adulthood, Blacks experience a likelihood of 1.12%, Asians 2.125%, and Hispanics 2.12%.

Overall, scarring effects are similar across race and gender groups, but more positively and significant for women than men.

Impact on Choice of Occupation – Veteran Status

We have seen that early economic conditions affect the non-economic life choices that young adults make. It is important to explore how these conditions affect the types of occupations young adults choose to take part in. This is beyond the scope of this paper, but a research question I am analyzing in a coming paper. As a brief introduction that high unemployment rates in early adulthood influence the type of job that young adults choose to take part in I present effects on being a Veteran. Young adults who faced high unemployment rates at age 18 may seek participation in riskier occupations. Enlisting in the military may be an occupational avenue that more heavily affected young adults may take. It is thought that more depressed labor markets are able to enlist a higher share of men into the military due to the scarcity of jobs available. I turn my attention now to testing this hypothesis.

Results are presented in Figure 1.12 and indicate that some young adults who become of age when unemployment rates are high will enlist in the military as a means to secure

[8] Additionally, controlling for race specific unemployment rates does little to alter main results (panels of Figure A.9 presents these results).

financial stability as they transition into adulthood during a heavily depressed labor market. At age 20, a 1 percentage point increase in the unemployment rate at age 18 increases the likelihood of being a Veteran by .11 percentage points. This translates to an increase of 21.34% in the share of young adults who are veterans by age 20. Relative to the mean of .515314% of young adults being veterans at age 20 my results imply that the share would increase to .6253%. These results are economically significant and motivate the need to determine if early economic conditions have differential effects on other types of occupations that young adults chose to take part in.

1.8 Robustness

I now turn to assessing the robustness of my main results by addressing potential threats to my identification strategy. The main identifying assumption underlying the scarring effects estimation is that young adults in my sample turned 18 at the state they currently reside in. If this assumption does not hold, given that young adults can move flexibly throughout their emerging years, then using the current state residing in as the early condition can either under or over estimate the scarring effects. Moreover, if economic conditions in early adulthood differ by which early adulthood year is used as the unemployment rate match yet again my estimates may be over or under-biased. I thoroughly address these concerns, and more, in this section. I present specifications with alternate controls, alternate samples, and explicitly control for heterogeneous effects in unemployment rates by race that may affect my analysis. I show robustness results for the living with parent(s) outcome only. Unless otherwise noted, all other outcomes reflect similar robustness results as the changes done to the cohabitation robustness regressions.

Alternate Early Economic Conditions

The panels in the Appendix shown in Figure A.7 report the scarring effects from estimating equation (1) using various ages for the early economic condition. Results are robust to my benchmark specification depicted on the top left panel of Figure 1.5. All of the effects, regardless of what age is used for the early condition (e.g. 19-23), overlap the confidence intervals. Effects from these robustness specifications are significant earlier in age than those found using age 18 and effects tend to last roughly until age 26. Using the average early condition from ages 18 through 23 yet again provides results that are robust to those observed in my benchmark specification.

There may be concerns that young adults can move away from home later than when they enter into adulthood. For this reason using the state of birth as the early economic condition match may be more appropriate. The left panel of Figure A.8 presents scarring effects from regression (1) but using the state of birth for the early economic condition, the state of birth fixed effect, the state of birth-by-time fixed effect, and clustering standard errors at the state of birth level. Results are again robust to those in my benchmark specification.

Here effects are lower in magnitude but all effects lie within the confidence intervals of my main specification.

Rather than using state-level unemployment rates to determine scarring effects, it may be more appropriate to use the youth specific state-level rate. Using the unemployment rate for youths between ages 16-19 as the early economic condition may matter more for young adults as they become of age as these rates are on average higher than the state-level rates. I present results in right panel of Figure A.8. Coefficients are a bit smaller than in the main specification, and most are statistically insignificant. This may indicate that it is broader conditions in the state, and not the ease with which a young person can him- or herself find a job, that affects his or her development. However, another hypothesis is that the youth unemployment rate is less well measured than the overall rate.

Alternate Specifications

There may be cause to believe that scarring effects are stronger for young adults becoming of age during recessionary times than those becoming of age when economic conditions are healthy. Interacting the early unemployment rate with indicators for recessions and expansions when young adults become of age produces similar results as my benchmark specification.[9]

In order to explore violations of the additive separability of age and time effects in equation (1) I additionally include a set of age dummy controls interacted with a continuous year variable. The coefficient on these controls is identified from changes in the transition to adulthood outcomes over age that differ across years. These controls will absorb any bias from changing shares within age groups across time. Results yet again are robust and similar to my benchmark specification.[10]

In order to address concerns that the distribution of cohorts is not evenly represented across states through time I further include state by cohort time trends and continue to find robust results. [11]

Alternate Samples

The top panel of Figure A.12 shows robust results for the same sample used in the main analysis, but only dropping pre-covid years. The bottom panel of Figure A.12 explores results using the CPS sample for the same years. Interestingly results are rather different using this sample, but this may be due to the fact that CPS samples are in general smaller than the ACS, thus differences in results may be attributed to difference in sample composition. In sum, excluding Covid effects little changes the primary betas of interest.

In order to determine how early conditions affect young adults in much earlier years, pre-2006, individuals in group quarters needed to be excluded given that in surveys before 2006 individuals who lived in group quarters were not surveyed. The top panel in Figure

[9]Figures A.5 and A.6 provide results and intuition.

[10]The top panel of Figure A.10 demonstrates results.

[11]The bottom panel of Figure A.10 demonstrates results.

A.11 provides regression results using specification (1) for the years 2000 to 2006 in the ACS samples but drops all group quarter individuals. These estimates can then be appropriately compared to the middle panel of Figure A.11, which is a sample of young adults aged 19 through 30 for CPS survey years 2000 up to 2006. Results are robust for these respective samples with the exception of $\alpha = 19$ to $\alpha = 22$. Six years of data may not provide strong enough or compelling results, for this purpose I leverage the additional years available through the CPS and extend analyses to years 1977 to 2006. Results of which are presented in the bottom panel. We can clearly see that results are similar in pattern at ages 22 to 30 to the main results I observed using ACS samples. Interestingly it is worth noting that the share of young adults living with parents was indeed lower in the 1970's, 80's, and 90's thus effects will be greater in magnitude for the CPS survey but also because point estimates are also larger. Overall, results on the Pre-Great recession are robust to my main findings. It is clear that the majority of the scarring effects can be attributed to high unemployment rates in early adulthood and not just that my main effects are solely being driven by the Great Recession cohorts.

Alternative measures of cohabitation and marriage

Depending on the outcome of interest there may be concerns that certain individuals may be wrongly excluded from belonging in certain groups. For example, some young adults may be living with their grandparents rather than their parents. Because of this I include individuals who are the grandchildren of the head of the household or identify as children in law. Including these individuals in the cohabitation definition does not change the main results. On the marriage outcome, some young adults may not necessarily have ever entered into marriage, but may be living with a partner. I add these individuals in the ever married category and find that results yet again do not change. Overall results are robust to including marginal individuals that may fit the standard definitions of my main outcomes.

1.9 Conclusion

In this paper I have documented the effect of early economic conditions on young adults' transition into adulthood behaviors. I have used large cross-sectional data and relied on the econometric approaches from the labor market scarring effect literature to estimate the impact of unemployment rates faced at the start of adulthood on the life choices that young adults make. This is the first paper to study how economic conditions in early adulthood delay the successful transition into adulthood of young adults. It is also the first paper to explore effects on the mobility of young adults across the earnings distribution. Finally, my paper is also the first to explore how conditions faced at the start of adulthood affect the college attendance and completion of young adults.

I observe several compelling findings. I find that young adults who experience high unemployment rates at or around age 18 have significantly higher probabilities of being the lowest earners throughout the entire first decade into their adulthood years. These effects

are largely driven by negative effects on employment. My results suggest that high economic conditions in early adulthood will delay the time that young adults climb from the lowest rungs of the earnings ladder to the next. These findings are consistent with effects found on the negative growth of log wages for college graduates (Rothstein 2021).

I find positive and significant increases in the likelihood that more adversely affected young adults will live with their parents throughout their 20s. This suggests that early conditions will prolong the time young adults successfully achieve their residential independence. Conditions influence young adults to get married earlier than they otherwise would while others are delayed from marrying in their early/mid 20s to even later. These findings, coupled with findings on employment and earnings, suggest that for those induced into marriage earlier in life that the couples' combined income will be much lower than young adults who experienced better economic conditions in early adulthood. Furthermore, a couples combined income is also likely to be among the lowest in the earnings distribution well into the first decade of adulthood. My findings also suggest that for those who are influenced to further delay their marriage decision that this will in turn delay the time at which they embark on family formation via their fertility decisions.

I document that high early conditions influence young adults to attend college and complete college earlier than young adults who had lower early economic condition rates.

Early conditions jointly affect the employment and life choices that young adults make. Overall, being employed successfully helps young adults to transition into adulthood. Being employed helps young adults to successfully meet their college milestones as joint effects on being employed and having had attended college are positive throughout their emerging adulthood years. Effects on joint employment and living arrangements suggests that young adults might be induced to save during their mid-adulthood years by choosing to live with their parents – perhaps by facing lower housing costs.

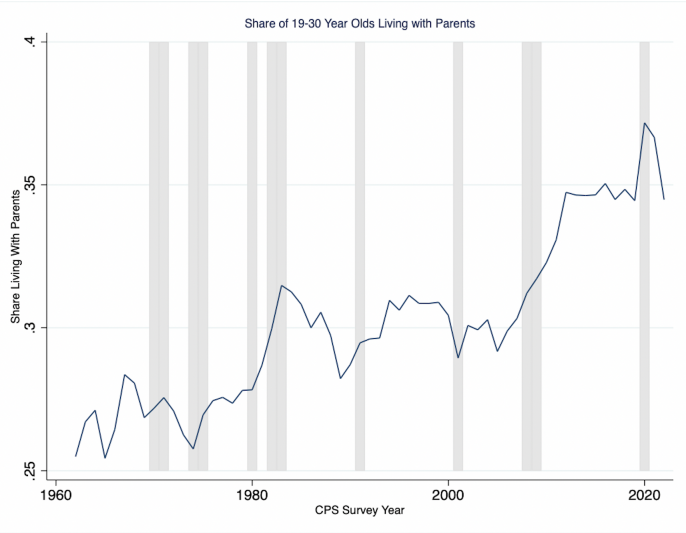
Together, my results have provided evidence that early economic conditions can drastically alter the life decisions of young adults. The health of the economy when one starts his/her adult trajectory clearly matters. There should be great concern for how young adults make their family formation decisions, and more importantly, what the implications to their economic prosperity will be. It is possible that economic conditions, to an extent, reshape the way household and familial structures are created bringing about a new norm to family composition. Conditions may also have an important contributing factor to the composition of the educated population in America. While, I am not able to determine if young adults in my sample come from wealthy families it is important to explore how effects on transitioning into adulthood vary by a family's financial background.

My paper brings about other research questions that can adapt the empirical approaches seen in the scarring effect literature on labor market outcomes. Some of those being: 1) Do more heavily impacted young adults co-reside together with other individuals who also faced high unemployment rates in early adulthood? The aim is to understand the residential decisions of young adults who do not cohabit with their parents during their adulthood years. For young adults who do move away from the family home do high unemployment rates at the start of adulthood make them more reliant on living with roommates/non-relatives as a means to share rental costs? If so, for how long do young adults choose to live with

roommates before obtaining their residential independence? 2) Does giving birth to a child during times of high unemployment rates affect the likelihood that the nuclear family will stay intact as the child ages? Or will the unemployment rate for when the first child is born bring about an increase in divorce rates later in life? 3) Do early economic conditions affect the ability to become a home owner? If so does it take longer for more heavily affected individuals to purchase their homes? Clearly, unemployment rates at different milestones in one's life are worth further exploring.

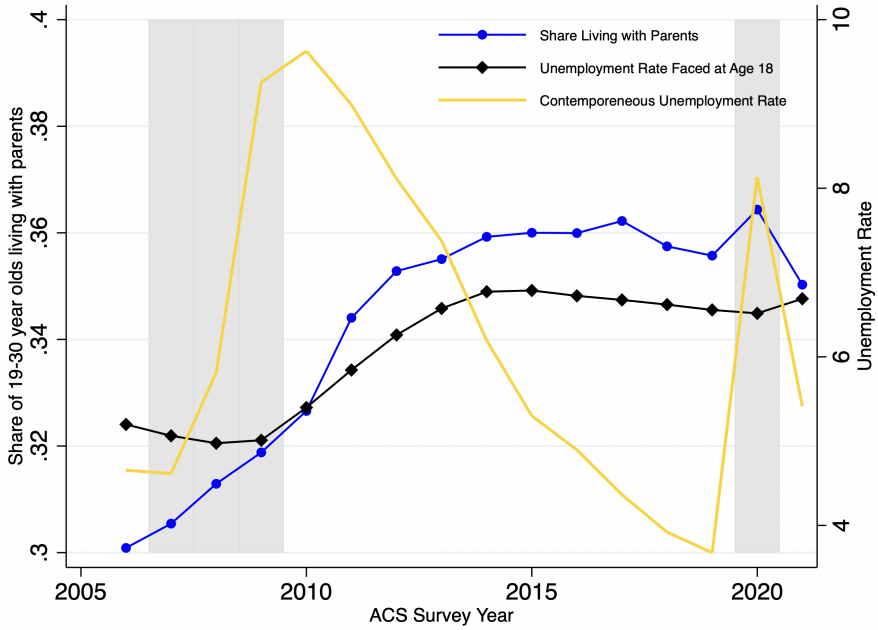
Figures

Figure 1.1 Share of 19-30 Year Olds Living with Parents



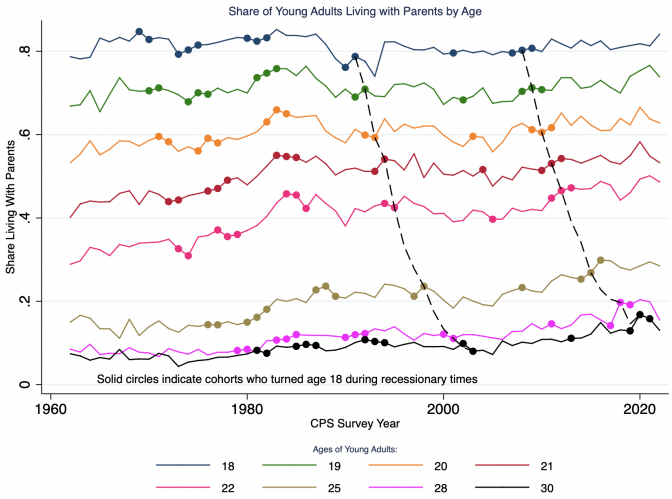
Notes: Current Population Survey (CPS) data are for young adults aged 19 to 30 observed between 1962 and 2022. The figure documents the share of young adults who are living with their parents each year. Recessions are indicated by shaded bars.

Figure 1.2 Correlation of share of young adults living with their parents and early economic conditions



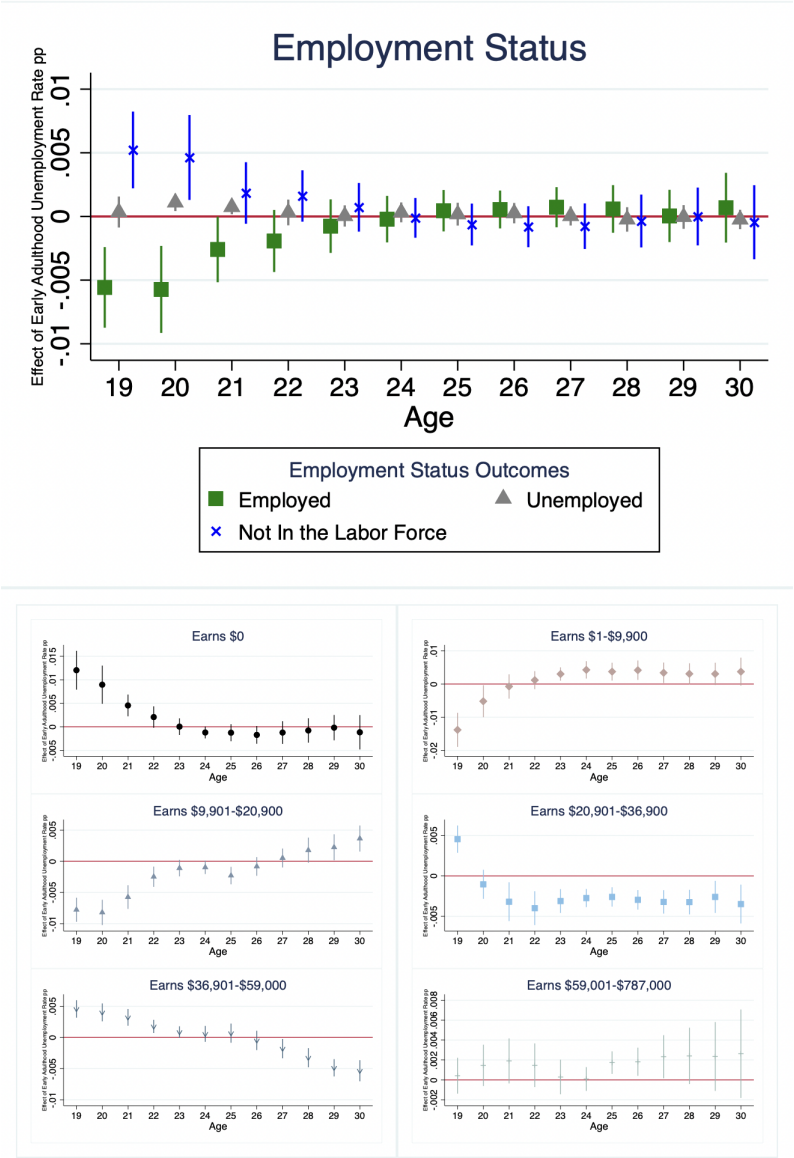
Notes: American Community Surveys (ACS) data for young adults aged 19 to 30 observed between 2006 and 2021. The blue dotted series represents the share of young adults living with their parents. Bureau of Labor Statistics (BLS) data provides the contemporaneous unemployment rate (gold series). The black diamond series shows unemployment rates faced at age 18 averaged over those between 19 and 30 each year. Recessions are indicated by shaded bars.

Figure 1.3 Share of young adults who are living with their parents by age and year



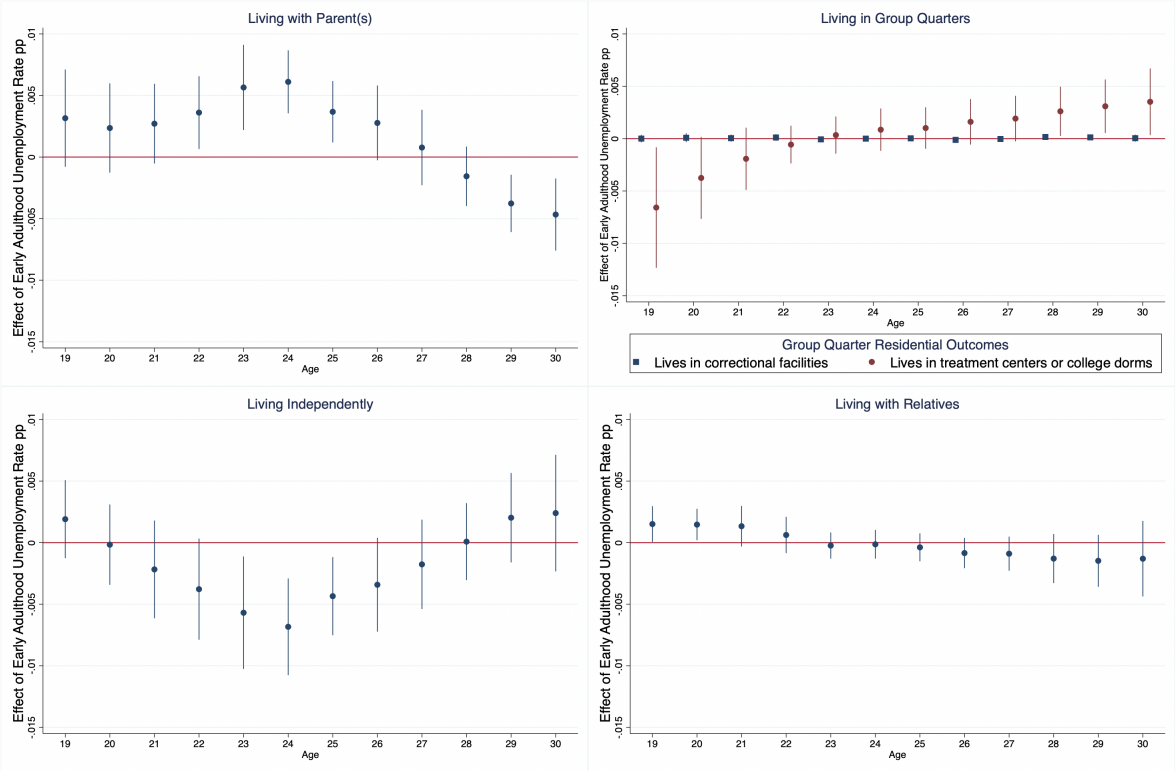
Notes: Current Population Survey (CPS) data are for young adults aged 19 to 30 observed between 1962 and 2022. Shares are weighted using CPS sampling weights. The figure documents the share of young adults who are living with their parents by age and year. Each line represents a distinct age group. Dashed lines in the graph illustrate two example birth cohorts - those born in 1973, who were 18 in 1991, and those born in 1990, who were 18 in 2008, coinciding with recessionary years. The solid circles indicate cohorts who turned 18 during recessionary times.

Figure 1.4 Impact on Employment, Labor Force Participation, and Earnings



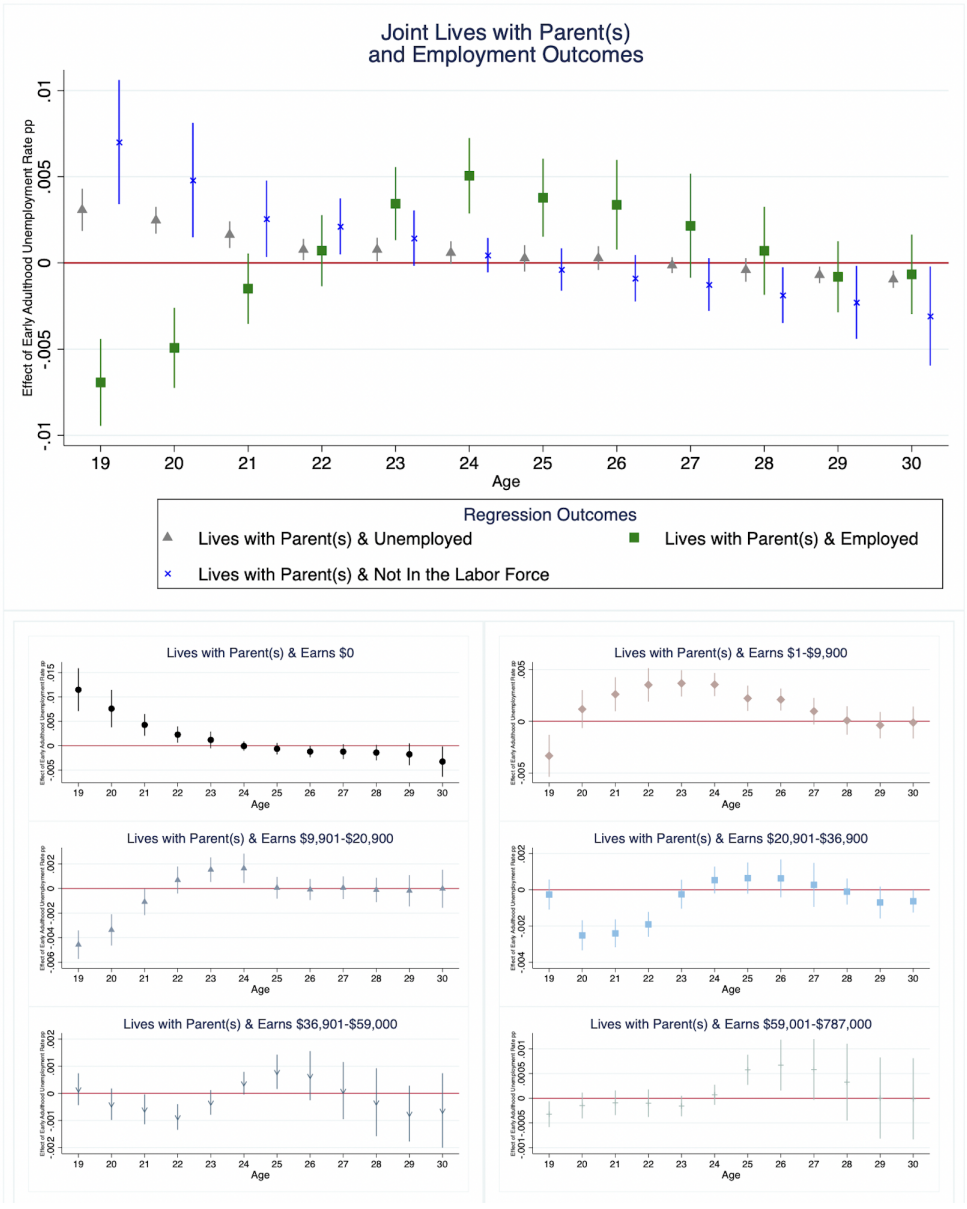
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2006 to 2021. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. The top and bottom panels are based on the main sample of all 19 to 30 year olds observed between 2006 to 2021. The top panel shows coefficient estimates for three different regressions where the employment status of an individual is used as the outcome dummy variable. The bottom panels show coefficient estimates for six different regressions where the salary bin of an individual is used as the outcome dummy variable.

Figure 1.5 Impact on Residential Outcomes



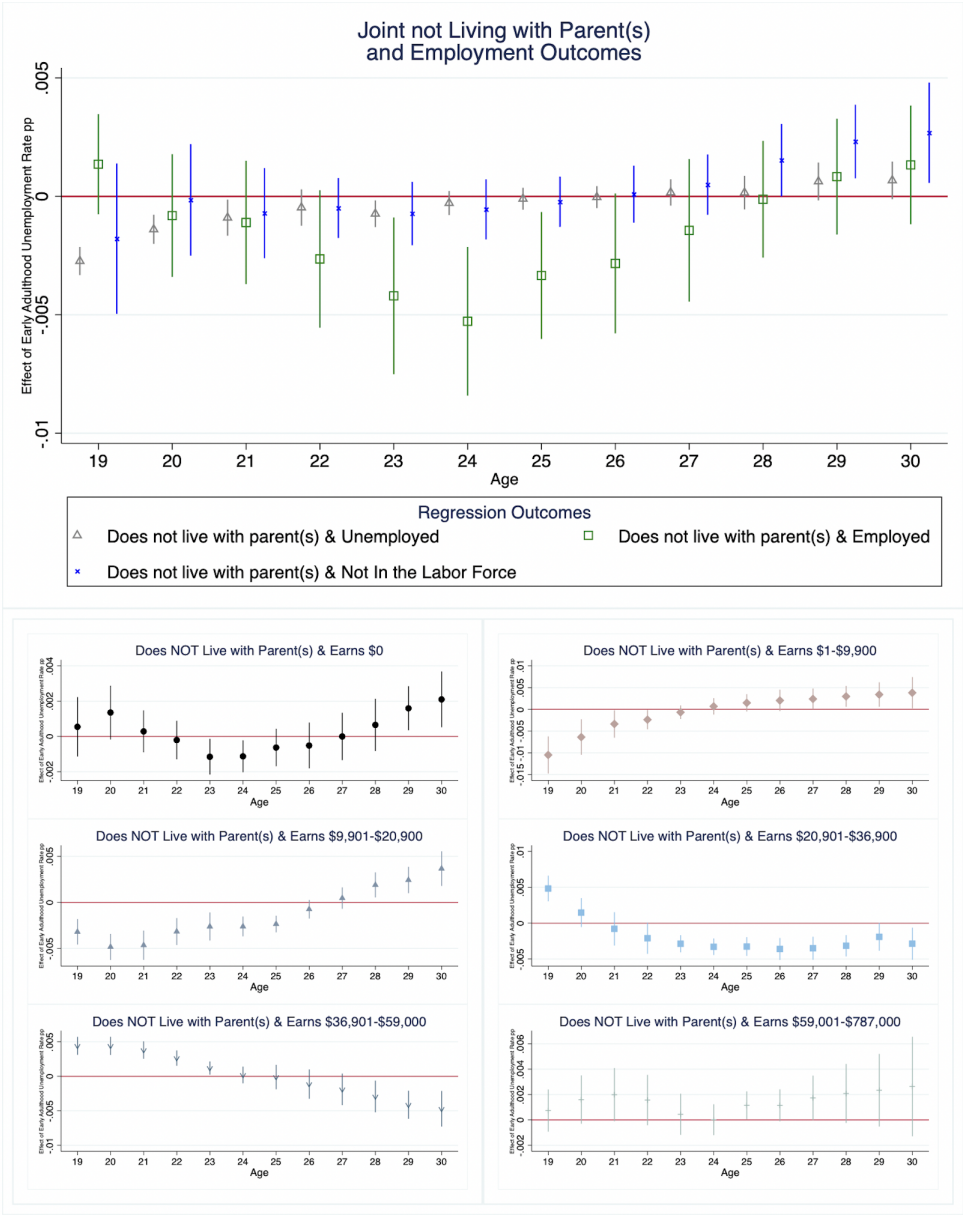
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2006 to 2021. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. All panels are based on the main sample of 19 to 30 year olds observed between 2006 to 2021. The top left panel shows coefficient estimates for living with parent(s) as the outcome dummy variable. The top right panel shows coefficient estimates from two different regressions for living in correctional facilities as the outcome dummy variable and living in treatment centers or college dorms as the second outcome dummy variable. The bottom left panel shows coefficient estimates with living independently as the outcome dummy variable. The bottom right panel shows coefficient estimates with living with other relatives as the outcome dummy variable.

Figure 1.6 Living with Parents: Joint Employment and Salary Outcomes



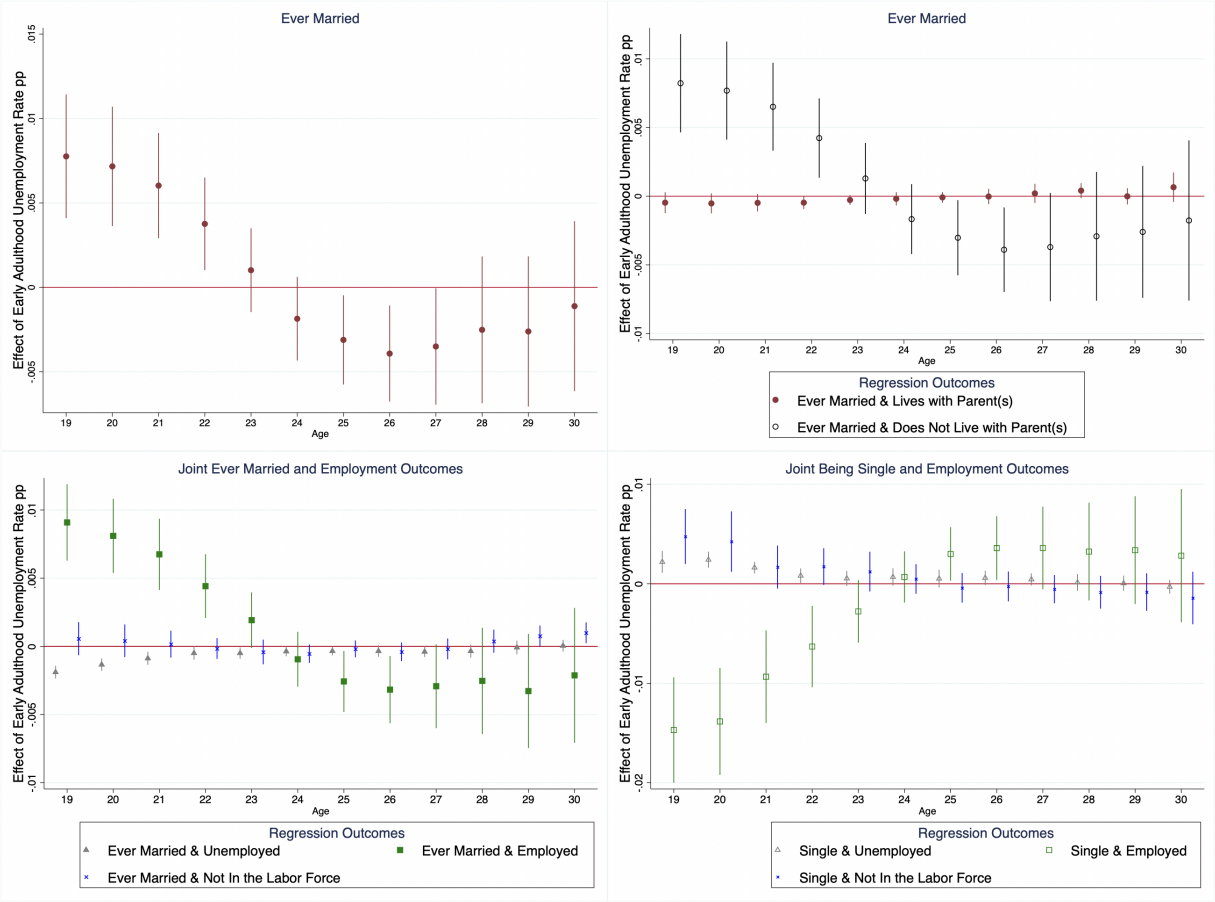
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2006 to 2021. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. All panels are based on the main sample of 19 to 30 year olds observed between 2006 to 2021. The top panel shows coefficient estimates from three different regressions where the outcome dummy variables are 1) Lives with parent(s) and is unemployed, 2) Lives with parent(s) and is employed, and 3) Lives with parent(s) and is not in the labor force. The bottom panels show coefficient estimates from six different regressions where the outcome dummy variables are lives with parent(s) interacted with having earnings in one of the 6 salary bins.

Figure 1.7 Not Living with Parents: Joint Employment and Salary Outcomes



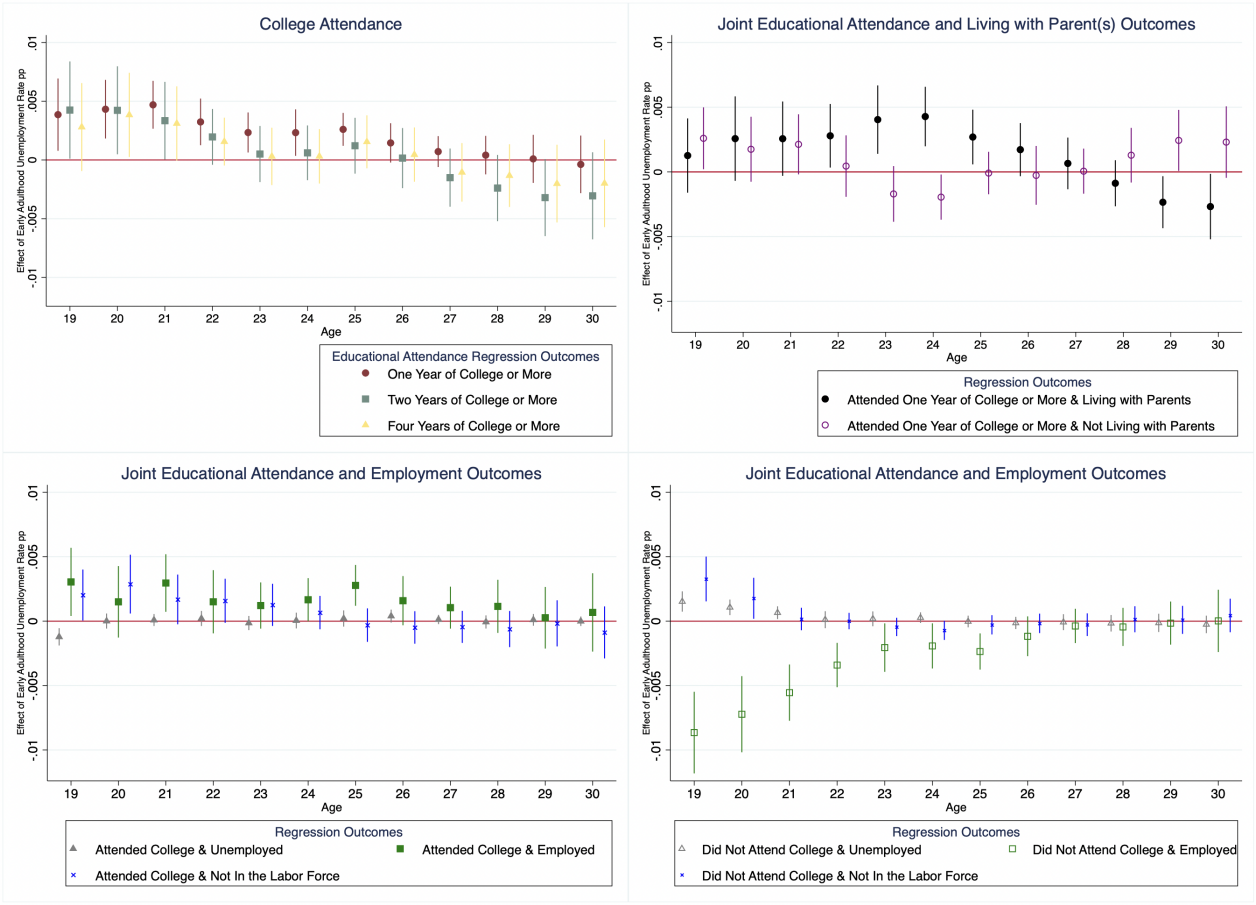
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2006 to 2021. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. All panels are based on the main sample of 19 to 30 year olds observed between 2006 to 2021. The top panel shows coefficient estimates from three different regressions where the outcome dummy variables are 1) Does not live with parent(s) and is unemployed, 2) Does not live with parent(s) and is employed, and 3) Does not live with parent(s) and is not in the labor force. The bottom panels show coefficient estimates from six different regressions where the outcome dummy variables are does not live with parent(s) interacted with having earnings in one of the 6 salary bins

Figure 1.8 Impact on Marriage



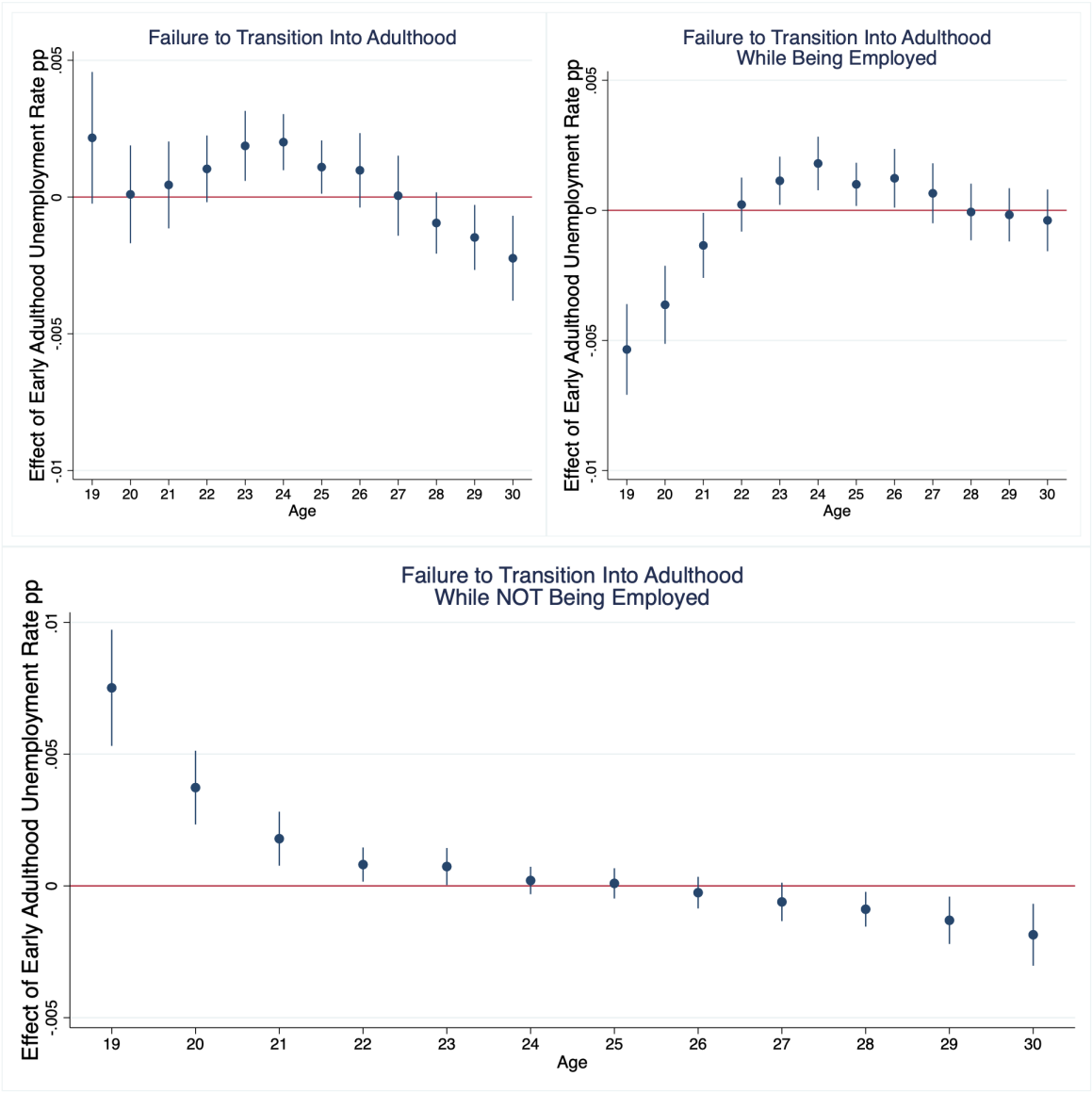
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2006 to 2021. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. All panels are based on the main sample of 19 to 30 year olds observed between 2006 to 2021. The top left panel shows coefficient estimates with ever married as the outcome dummy variable. The top right panel shows coefficient estimates from two different regressions with ever married and currently living with parent(s) as the outcome dummy variable and ever married and not currently living with parent(s) as the outcome variable. The bottom left panel shows coefficient estimates from three different regressions with outcomes being 1) Ever married and is currently unemployed, 2) Ever married and is currently employed, and 3) Ever married and is currently not in the labor force. The bottom right panel shows coefficient estimates from three different regressions with outcomes being 1) Is single and is currently unemployed, 2) Is single and is currently employed, and 3) Is single and is currently not in the labor force.

Figure 1.9 Impact on College Attendance



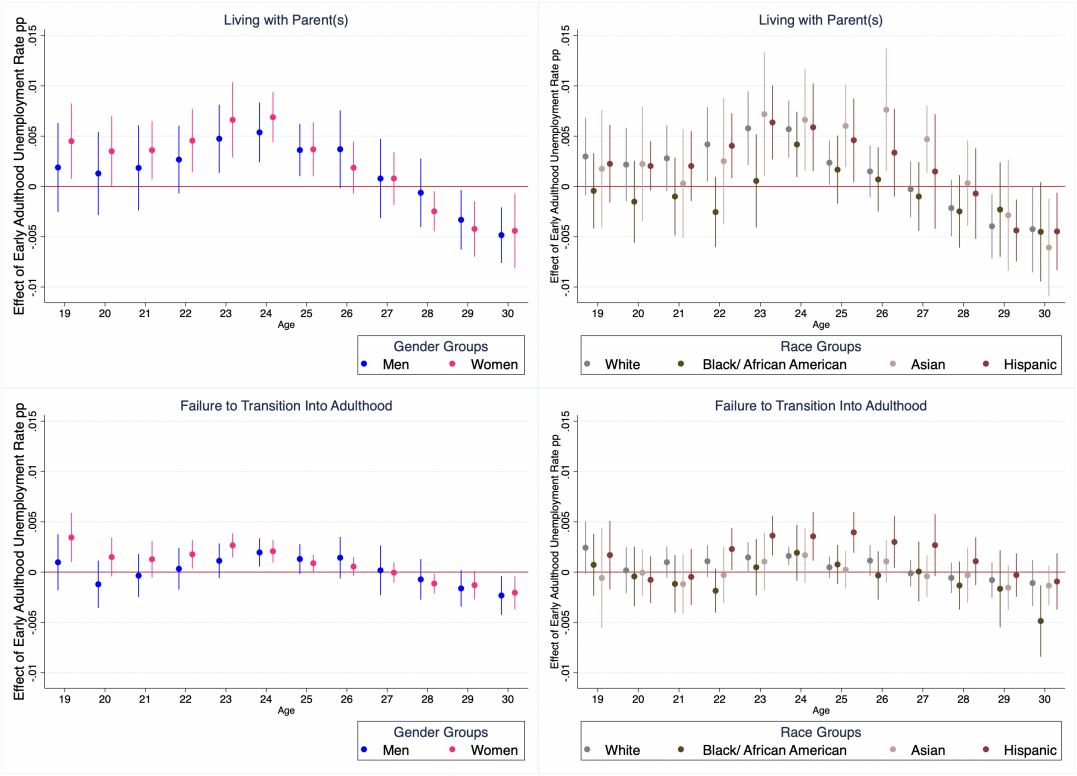
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2006 to 2021. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. All panels are based on the main sample of 19 to 30 year olds observed between 2006 to 2021. The top left panel shows coefficient estimates from three different regressions with outcome dummy variables as follows: 1) Has completed at least one year of college, 2) Has completed at least two years of college, and 3) Has completed four years of college. The top right panel shows coefficient estimates from two different regressions with having gone to college and currently living with parent(s) as the outcome dummy variable and having gone to college and not currently living with parent(s) as the outcome variable. The bottom left panel shows coefficient estimates from three different regressions with outcomes being 1) Went to college and is currently unemployed, 2) Went to college and is currently employed, and 3) Went to college and is currently not in the labor force. The bottom right panel shows coefficient estimates from three different regressions with outcomes being 1) Never went to college and is currently unemployed, 2) Never went to college and is currently employed, and 3) Never went to college and is currently not in the labor force.

Figure 1.10 Impact on Failure to Launch Into Adulthood



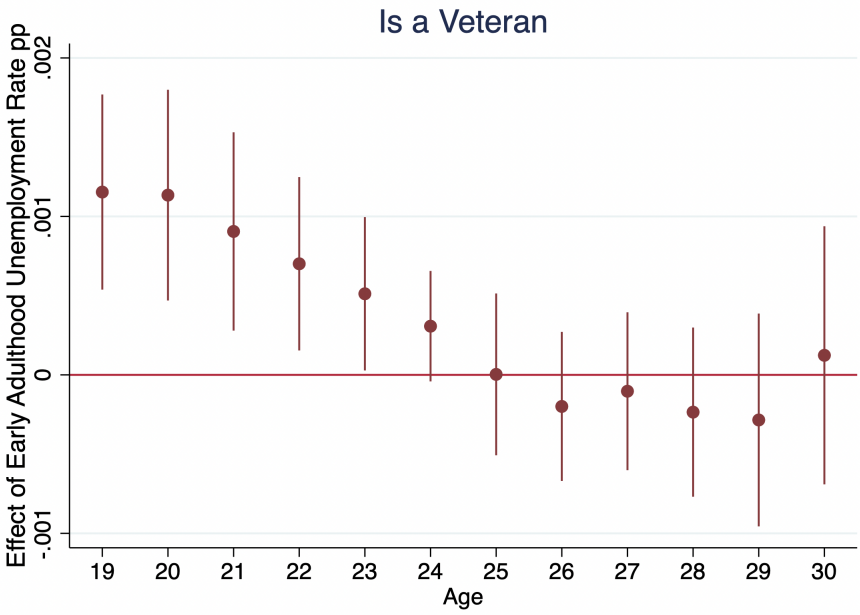
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2006 to 2021. Results are also based on the main sample of 19 to 30 year olds observed between 2006 to 2021. The figures show coefficients and confidence intervals clustered at the state level. The top left panel shows coefficients from regressing the "failure to transition into adulthood" (young adults who never got married, never went to college, and live with their parent(s)) variable on unemployment rates at the start of adulthood interacted with age dummies. The top right panel shows coefficients from regressing the "failure to transition into adulthood while being employed" (young adults who never got married, never went to college, are currently employed, and live with their parent(s)) variable on unemployment rates at the start of adulthood interacted with age dummies. The bottom panel shows coefficients from regressing the "failure to transition into adulthood while NOT being employed" (young adults who never got married, never went to college, are currently not working, and live with their parent(s)) variable on unemployment rates at the start of adulthood interacted with age dummies.

Figure 1.11 Demographic Heterogeneity



Notes: Results are based on the specification presented in equation 1, using data on 19 to 30 year olds from the ACS from 2006 to 2021. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. The top left panel shows coefficient estimates from two different regressions with living with parent(s) as the outcome dummy variable, separately for men and women. The top right panel shows coefficient estimates from four different regressions with living with parent(s) as the outcome dummy variable separately for White, Blacks, Asians, and Hispanics. The bottom left panel shows coefficient estimates from two different regressions with "failing to launch into adulthood" as the outcome dummy variable, separately for men and women. The bottom right panel shows coefficient estimates from four different regressions with "failing to launch into adulthood" as the outcome dummy variable separately for White, Blacks, Asians, and Hispanics.

Figure 1.12 Impact on Choice of Occupation – Veteran Status



Notes: Results are based on the specification presented in equation 1, using data on 19 to 30 year olds from the ACS from 2006 to 2021. The figure shows coefficients and confidence intervals clustered at the state level. The figure shows coefficients from regressing the **Is a Veteran** dummy variable on unemployment rates at the start of adulthood interacted with age dummies.

Tables

Table 1.1 Summary Statistics for Employment Status Outcomes

Summary Statistics for Employment Status Outcomes

	Mean	SD	N
Employed	.679	.467	7045027
Unemployed	.074	.262	7045027
Not in the labor force	.247	.431	7045027

Notes: Summary statistics relate to the main analysis sample, consisting of individuals aged 19-30. Statistics are weighted using ACS sampling weights.

Table 1.2 Summary Statistics of Transition to Adulthood Outcomes

Summary Statistics of Outcomes:

	Mean	SD	N
Lives with parent(s)	.328	.469	7045027
Lives independently	.392	.488	7045027
Lives in correctional facilities	.028	.166	7045027
Live in treatment centers or college dorms	.078	.268	7045027
Lives with other relatives or in-laws	.175	.38	7045027
Attended at least 1 year of college	.564	.496	6847840
Attended at least 2 years of college	.317	.465	6847840
Attended at least 4 years of college	.242	.428	6847840
Has ever been married	.276	.447	6847840

Notes: Summary statistics relate to the main analysis sample, consisting of individuals aged 19-30. Statistics are weighted using ACS sampling weights. Rows 6 to 9 excludes incarcerated individuals

Table 1.3 Summary Statistics of Data Set

Summary Statistics of Data Set

	Mean	SD	p10	p90
Birth Year	1989.20	5.74	1981	1997
Entry Year (Age 18)	2007.20	5.74	1999	2015
Age	24.38	3.52	20	29
Unemployment Rate (State, %)	6.25	2.29	3.74	9.79
Unemployment Rate at Age 18 (State, %)	6.11	2.13	3.85	9.35

Notes: Summary statistics relate to the main analysis sample, consisting of individuals aged 19-30. Statistics are weighted using ACS sampling weights.

Chapter 2

Early Economic Distress and its Effect on Workers' Occupational Characteristics

2.1 Introduction

In Chapter 1 we learned that facing high unemployment rates at the start of adulthood affected the transition into adulthood behaviors of young adults. In this chapter I explore if high unemployment rates at the start of adulthood affects workers' occupational characteristics. Leveraging data from the American Community Survey (ACS) on 19 to 30 year olds between 2000 and 2022 I estimate the effect of the early-adulthood unemployment rate on employed young adults' occupation quality measures. First, I study how unemployment rates at the start of adulthood affect working in a low or high paying occupation. Second, I explore how conditions affect the average occupation specific hours of work. Third, I explore how conditions affect the type of skill/task that young adults are required to predominantly carry out in the occupation that they are employed in. Finally, I explore effects on the injury rates for the occupations that young adults are employed in. I find informative and heterogeneous effects on these occupation quality outcomes.

I find that between the ages of 19 through 24 higher unemployment rates faced at age 18 will influence young adults to be employed in occupations that offer workers a lower number of hours of labor per week. Additionally, higher early conditions do not affect, throughout the first decade into adulthood, being employed in a higher or lower paying occupation.

Consistent with prior literature, I show that high unemployment rates faced at age 18 lead to negative effects on individual earnings. Although not statistically significant, the coefficients on young adults log individual hourly wages indicate that young adults experience earnings losses throughout the first decade into adulthood–even after controlling for the occupation specific hourly wages.

I find counter intuitive results on how early economic conditions affect the types of tasks that young adults predominantly perform in their occupations. At ages 19 through 22, a 1

percentage point increase in the unemployment rate experienced at age 18 increases the likelihood that young adults are in abstract oriented occupations while decreasing the likelihood that they are in routine or manual oriented occupations. The positive effects on working in abstract oriented occupations can indicate that the unemployment rate experienced at age 18 motivates young adults to acquire human capital skills quicker than their luckier counterparts. An avenue for this may be obtaining trade certificates, something that luckier counterparts may not be acquiring. These certificates can accelerate the time at which young adults end up being employed in more abstract leaning occupations.

Finally, I find that the unemployment rate faced at age 18 has heterogeneous effects on the occupation specific injury rate. At ages 19 through 22 higher early conditions will influence young adults to be employed in occupations that are less risky – those that have lower reported injury rates. But at ages 23 through 26 early conditions influence young adults to be employed in riskier occupations – those exhibiting higher injury rates.

2.2 Literature Review

The analysis in this chapter is related to two literatures. First, my research advances the robust body of work on the "scarring" effects of recessions. This literature has mainly focused on how unemployment rates faced at the time of college graduation affect the labor market outcomes of individuals later in life. (Ellwood 1982); (Oyer 2008); (Kahn 2010); (Genda, Kondo, and Ohta 2010); (Oreopoulos, T. Von Wachter, and Heisz 2012); (Yagan 2019); (Schwandt and T. Von Wachter 2019); (T. Von Wachter 2020); (Kawaguchi and Kondo 2020); (Rothstein 2021); etc. The main outcome variables of interest in these prior works have been employment status, individual log wages, log hours of work, weeks worked per year, firm size, occupation prestige scores, as well as other socioeconomic factors. However, there has been less work on how unemployment rates in early adulthood affect the occupation quality of heavily affected young adults. Kahn (2010) uses an occupation prestige score that quantifies the quality of an occupation. She finds a negative correlation between the unemployment rate and occupation specific prestige score. This means that for young adults who experienced higher unemployment rates early in life that they will likely end up working in occupations with a lower occupation specific prestige score. On the other hand, von Wachter (2020) utilizes the average payroll of firms, the average firm size, and the average median wage to characterize firm quality. von Wachter points out that the effects on earnings losses, labor supply, and wages are accompanied by the changes in the occupation, job mobility, and the employer/firm characteristics. In another study, von Wachter analyzes employer quality and employer earnings by studying the firms that young adults are employed in post college (Oreopoulos, T. Von Wachter, and Heisz 2012). The authors however are limited to a low number of firms. Leveraging data from the ACS in this analysis will provide more precise results to prior literature that has been limited to smaller data on firms. Since the ACS provides a large quantity and diverse set of occupations, studying occupation specific measures, rather than firms, can better proxy how firms respond in hiring heavily affected cohorts. I extend Kahn, von Wachter, and others' work by measuring occupation quality

differently. Instead of utilizing firm information a parallel is to use occupation specific information which I use to characterise occupation quality by measuring occupation specific hourly wages and occupation specific hours of labor. Additionally, instead of relying on the occupation prestige score it would be more advantageous to explore the components of this score at a more granular level. It is possible that conditions may differentially affect each component that makes up the prestige score that Kahn utilized as one of her outcome variables. I instead explore effects on occupation specific injury rates as well as the likelihood that young adults perform a particular task in their occupation – which best characterises the occupation skill level.

The second related literature is that exploring how technological innovations change the demand for skilled labor in the economy (Acemoglu and D. Autor 2011); (D. H. Autor and Dorn 2013); (Altonji, Kahn, and Speer 2014). Acemoglu and Autor (2011) document that the evolution of technology has lead to the job "polarization" phenomenon which is characterised by increases in employment in high skill and low skill occupations relative to middle skilled occupations. Although their emphasis is exploring how technological innovations affect the changes in employment in these three skill categories I instead explore how unemployment rates faced at the start of adulthood affect whether or not young adults are employed in either of these three skill groups.

Furthermore, Altonji, Kahn, and Speer (2014) document that the changes in earnings differentials across field of study are accounted for by changes in the labor market return to skills associated with a major. In their study the authors explore the relative importance of abstract, routine, and manual tasks of the skills associated with college majors. These skill groups are related with those studied by Acemoglu and Autor (2011). For the purposes of this paper abstract oriented occupations are to be considered high-skilled occupations, routine oriented occupations middle skilled, and manual oriented occupations low-skilled. Rather than analysing how college majors relate to abstract, routine, and manual tasks/skills I simply explore how the occupations that young adults are employed in relate to these tasks. I analyze how early conditions affect the shares of those employed in abstract, routine, and manual leaning occupations during the first decade into adulthood.

2.3 Data

I use repeated cross sectional data from the American Community Surveys (ACS), provided through IPUMS (Ruggles, Sarah, Ronald, Megan, and Matthew 2022), to construct a synthetic panel. The main sample for my analysis consists of individuals born between 1970 to 2003, who are between the ages 19 to 30 when observed in the time period of 2000 to 2022. I restrict my sample to only include individuals who are currently employed at the time of being surveyed. I only analyze employed individuals because I am interested in exploring effects on occupation quality, so for individuals who are out of the labor force or unemployed their occupational characteristics will not be relevant for my setting given that their occupational characteristic measures will be classified/measured as missing. To this sample I merge state level unemployment rates data from the Bureau of Labor Statistic

(BLS) spanning the years 1976 to 2022. This merging allows me to assign each individual in the sample his/her early economic condition as well as their respective contemporaneous unemployment rate.

My emphasis in this paper is on the effect of early conditions on characteristics of the occupation that an individual is employed in at each later age. To construct occupation specific characteristic variables I utilize three datasets. First, I measure the average hourly wage in each occupation across all observations in my sample, pooling all years and cohorts, and treat this as a measure of the occupation wage level. Note that each individual in my sample who is working in the same occupation will have the exact same occupation specific hourly wage regardless of the year that they are surveyed in. Their individual hourly wage will be different, but the occupation specific hourly wage will be the same for all individuals who work in the same OCC code. I follow this same approach to measure the average weekly hours for workers in each occupation. Thus every individual who works in the same occupation will have an identical average hours of work that were provided to that occupation regardless if the hours that they themselves provided is above or below this occupation specific number. Second, to identify which jobs perform tasks that are predominantly abstract, routine, or manual I utilize (D. H. Autor and Dorn 2013)'s task intensity measures and merge these measures to the main sample. I call an occupation "abstract" if the Autor and Dorn abstract measure is greater than the routine and manual measures. I follow the same approach to identify "routine" and "manual" occupations. Thus, I treat each occupation as belonging to exactly one of the three categories. Finally, I leverage the BLS' Survey of Occupational Injuries and Illnesses Data to identify the injury rate for each occupation in 2021-2022. I merge these rates, using the OCCSOC code, to the main analysis sample.[1] While the BLS provides various injury and illness measures I utilize the annualized incidence rate for nonfatal occupational injuries and illnesses involving days away from work. This rate accounts for occupation size.

The outcome variables of interest are 1) the log of the average occupation specific usual hours of work that workers in that occupation provide, 2) the log of the average occupation specific hourly wage that workers in that occupation earn, 3) three different dummy variables indicating the probability of being in a job that is abstract, routine, or manual, and 4) the log of the occupation specific injury rate. These outcomes will be used to determine if individuals who faced higher unemployment rates at age 18 were later employed in occupations that were riskier, lower paying, and more demanding/rigorous/productive in hours of work that they requested from their workers not just from worker i.

Table 1 shows summary statistics for my main ACS sample. Table 2 provides summary statistics for the main occupation quality measures which will be the outcomes of my regressions. Note that, while many labor market scarring papers focus on college graduates, I

[1] "The incidence rates represent the number of injuries and illnesses per 10,000 full-time workers and were calculated as (N/EH) x 20,000,000, where N = number of injuries and illnesses during the reference period, EH = total hours worked by all employees during the reference period, and 20,000,000 = base for 10,000 equivalent full-time workers (working 40 hours per week, 50 weeks per year)"–Source: Bureau of Labor Statistics, U.S. Department of Labor, Survey of Occupational Injuries and Illnesses, in cooperation with participating state agencies.

do not limit the sample based on years of education. However, in the appendix I do present results for a college and a non-college sample.

Data Limitations

There are some limitations to the ACS data for the purposes of my analysis. First, the BLS injury rate data comes from a new survey that is administered biannually. The initial estimates are for the years 2021 to 2022. I assign all individuals in my sample the 2021-2022 occupation specific injury rate even if they were surveyed before 2021. Certain occupations may have exhibited more or less injuries in the years prior to 2021. Using the 2021-2022 injury rate measure for all of the individuals in my sample may provide a downward bias on the true effect of how early economic conditions affects the occupation specific injury rate if occupations prior to 2021 may have exhibited a higher injury rate than what was reported for the years available. Additionally, although the BLS adjusts for occupation employment size in the injury rate measure they do not publish the rate for occupations whose employee head count is too small. Note that I was only able to match roughly 80% of my sample with occupation specific injury rates. It is possible that 20% of my sample may be individuals in occupations whose injury rate is high but I just do not have the data for them due to them being in smaller occupations. This would create further bias to my estimates if smaller occupations exhibit really high injury rates and they are just not being accounted for.

Second, the Autor and Dorn task intensity measure dataset does not provide a measure for every occupation. I am able to match up to 95.75% of my sample to their respective task intensity measures, so for these purposes I am not concerned that the excluded occupations may drastically change my results. But the exclusion of these measures for some occupations is worth mentioning.

2.4 Measuring early exposure

In this section I give a brief overview of the idea of scarring in the context of affecting one's choice of occupation/occupation quality. But first I explain what "scarring" means. In labor market analyses it is widely understood that "'scarring' is defined as the negative long-term effect that unemployment early in one's adult life has on future labour market possibilities in itself" (Nilsen and Reiso 2011). Because early conditions have lasting effects on labor market outcomes such as being employed and income growth (T. Von Wachter 2020); (Rothstein 2021); (Altonji, Kahn, and Speer 2016) there is cause to believe that early conditions will also persistently affect the occupation quality that young adults are employed in later in life. When I state "early economic condition effects" this should be understood as the "scarring" effects. For the purposes of my analysis scarring will be defined as the medium and long-term effect that the unemployment rate a young adult faces in early adulthood has on the quality/choice of his/her occupation later in life. Choice of occupation or quality of occupation will be used interchangeably and should be understood as being employed in a risky occupation(measured by occupation specific injury rate), higher paid occupation

(measured by the occupation specific hourly wage), more productive occupation (as measured by the occupation specific hours of work that workers provide), and being employed in a low, middle, or high-skilled occupation (as measured by the predominant task performed in one's occupation).

Many past studies of scarring have focused on college graduates, and have measured early career conditions by the unemployment rate in the year of college completion or at age 22. For those who do not go to college, however, earlier conditions may be more relevant. I use the unemployment rate at age 18 as my primary measure of early career conditions for all young adults in my sample. I later show that using the unemployment rate at age 21 for the early economic condition does change the results of my main effects. I devote a section in this paper explaining why we might be seeing different effects when utilizing the unemployment rate experienced at age 21 versus conditions at the start of adulthood, at age 18. In the future I will explore results utilizing unemployment rates faced at various ages from 18 to 23. In this paper I show results using unemployment rates at ages 18 and 21. Results utilizing the unemployment at age 22 are similar to effects utilizing the 21-year old early economic condition. But it is still worth exploring conditions at ages 19, 20, and 23 to determine at what point in the emerging adulthood years do unemployment rates begin to have different effects on occupation quality outcomes for young adults.

2.5 Workers' Occupational Characteristics

It is profitable to study how the unemployment rate faced at the age of 18 affects workers' occupational characteristics for various reasons. First, it is believed that workers who graduate in recessionary times are matched to lower quality occupations (Altonji, Kahn, and Speer 2016); (Oreopoulos, T. Von Wachter, and Heisz 2012). Researchers explore how individuals affected by recessions were able to acquire employment in the top 5 occupations for their college major. Furthermore, previous research (Oreopoulos, T. Von Wachter, and Heisz 2012) has also used firm specific measures to determine the job quality of individuals exposed to recessions. Their measures for firm quality are average log firm size, log total payroll, and log median wage over the course of the panel that they observe. I draw upon this body of work on firm quality measures and instead rely on occupation specific information to construct the occupation quality measures that may be affected for those who experienced recessions at the start of adulthood. For the purposes of my paper if I use the language "firm" this should be interpreted as referring to the occupation of employment.

The economic occupation quality measures that I analyze are log occupation specific hours of work and log occupation specific hourly wages. The occupation specific hours of work reflect the average hours of labor that workers in a specific occupation are employed for. The occupation specific hourly wage reflects the average hourly wage that workers in a specific occupation are compensated. Implicitly it should be understood that the quality of a job is reflective of the education level required for employment in that job. Thus when exploring effects on the occupation quality measures the reader should keep in mind the education levels associated with what it means to be employed in a high quality occupation versus a

low quality occupation. For example, figures 2.1 and 2.2 demonstrate that higher educated young adults work in occupations that are more productive, as measured by the occupation specific hours of work, and are higher paying. It is possible that more productive occupations have higher average hours of work perhaps because these occupations may provide their workers with more time to refine or learn skills on the job. It is possible that more time spent at work learning and refining occupation specific skills will eventually lead to increased output because the worker has simply spent longer hours doing the critical thinking aspect of the job that will then lead to the creation of a valuable occupation specific output. Less productive occupations have lower hours of work possibly because these occupations do not need of their workers to engage in lengthy critical thinking to aid them in their occupational output requirements. It it possible that workers who have a bachelors degree or higher are in occupations that require of them to engage in critical thinking skills and development. This may explain why more educated young adults are in occupations that have high occupation specific hours of work as seen in figure 2.1.

The second reason that studying how the unemployment rate at the age of 18 affects workers' occupational characteristics/quality is that high early conditions can influence young adults to be employed in higher skilled occupations quicker than their luckier counterparts. This is because as we saw in chapter 1 increased unemployment rates at age 18 induced young adults to enroll into college quicker than their luckier counterparts. This may have aided them to build skills faster and when seeking employment their current college attendance status may have allowed them to be employed in higher skilled occupations sooner. Another avenue for obtaining skills faster may have been seeking trade degrees.

Following prior literature, I explore effects on occupation skill level as measured by performing abstract, routine, or manual tasks in one's occupation (Brendan Price and Price 2013). A task is "routine" if it can be accomplished by machines following explicit programmed rules. Thus routine oriented occupations are to be understood as occupations where human tasks are easily substituted by machines. A task is considered abstract if it has strong complementarities with machines and manual if there are limited opportunities for substitution or complementarities. Wage and employment distributions are predominantly correlated with occupational tasks. Occupations that predominantly perform abstract tasks are those at the top of the wage distribution, routine in the middle, and manual at the bottom of the wage distribution (Altonji, Kahn, and Speer 2014). Thus working in an occupation that has high quality attributes would be understood as working in an abstract oriented occupation. A low quality occupation would be considered working in a manual oriented occupation. Figures 2.3 through 2.5 document the share of young adults employed in the three occupation skill quality measures that I study. The figures document the share of young adults employed in abstract, routine, and manual leaning occupations by age and education level.

The last occupation quality measure that I study is occupation specific injury rates. It is well known that lower educated individuals are overrepresented in occupations and industries with higher injury and fatality rates (Orrenius and Zavodny 2013). Figure 2.6 graphically demonstrates this statistic. However, recessions may impede employment in riskier occupations. Charles, Hurst, and Notowidigdo (2018) show that individuals were

cyclically sensitive to working in the construction sector during the burst of the housing bubble, a sector that predominantly reports high cases of workers experiencing injuries on the job (Charles, Hurst, and Notowidigdo 2018). If recessions influence riskier occupations to shut down all together 1) it is possible that these occupations may never recover 2) or that when they re-open, when economic conditions are better, and these occupations begin hiring they may hire individuals who have had less time being unemployed. These two possibilities may mean that heavily scarred individuals may simply have a different choice set of the types of occupations they can and can not receive employment in.

2.6 Empirical Framework

In order to determine how early economic conditions affect worker's occupational characteristics/quality I employ the following regression model:

$$\mathbf{Y}_{i,s,c,a,t} = \sum_{a=19}^{30} \beta_a D_a * UR_{s,(c+18)} + \rho \mathbf{X}_i + \gamma_a + \psi_c + \delta_s + \zeta_t + \pi_{s,t} + \epsilon_{i,s,c,a,t} \tag{2.1}$$

Where $\mathbf{Y}_{i,s,c,a,t}$ represents the outcome (e.g., the log of the occupation specific hourly wage) of person i from birth cohort c observed in year t at age $a \equiv t - c$ living in state s.

The key economic variable of interest is $UR_{s,(c+18)}$ which represents the state unemployment rate for individual i for when he/she was an 18 year old. The age-18 unemployment rate may have different effects on outcomes at different ages. To capture this, I interact $UR_{s,(c+18)}$ with a full set of indicators D_a for each age from 19 through 30. The specification also includes main effects for age (γ_a), as well as fixed effects for cohort (ψ_c), state of residence (δ_s), and calendar year (ζ_t). Since early economic conditions are measured at the state-by-year level, I further add a fixed effect for the state-year combination ($\pi_{s,t}$). This absorbs any effect of economic conditions in the year t that outcomes are measured, and ensures that the long-term effect coefficients β_a do not capture any association between these contemporaneous conditions and those at age 18.

This empirical approach allows me to compare individuals of the same ages, surveyed in different years and residing in different states, that experienced varying levels of entry unemployment rates when they began their young adulthood trajectories. Thus one should interpret the coefficient term β_a to be the change in the $\mathbf{Y}_{i,s,c,a,t}$ probability/log points for individuals of age a experiencing varying levels of entry unemployment rate conditions when they turned 18, holding constant age patterns, contemporaneous conditions at time t in state s, and permanent cohort differences.

The fixed effects absorb many forms of heterogeneity. However, I control in addition for gender and race in $\mathbf{X}_i$. Standard errors are clustered at the state level to account for unmodeled common influences that might affect state labor markets but are not captured by the state fixed effects or the interaction of state and year fixed effects.

Note that equation (1) includes full sets of indicators for cohorts, ages, and times. It is well known that these are not all separately identified, because age equals time minus

cohort. An additional linear restriction is required. The year effects for 2000 and 2022 are normalized to zero. Doing this normalization ensures that the estimated year coefficient for these years is zero. Note that these are nuisance parameters and the normalization does not affect the coefficients of interest. Normalizing other year effects provides identical coefficient results as those from the regression estimates were the 2000 and 2022 year effects had been normalized.

My main specifications assume that age, time, and cohort effects are additively separable. But because cohorts exposed during the COVID-19 crises are observed only at age 19 and 20, the cohort indicators are strongly collinear with the indicators for ages 19 and 20 and the indicators for years 2021, and 2022, which will make separating out each effect difficult. To address any sensitivity to this, I re-estimated my regression dropping all cohorts exposed to the COVID-19 recession. Doing this made little difference to my main results.

2.7 Empirical Results

Impact on individual specific log hourly wages

Before exploring how the unemployment rate faced at age 18 affects the occupation quality of young adults I first explore how early conditions affect individuals' log hourly wages. Figure 2.7 demonstrates the results. I do not find a statistically significant negative effect on individual log hourly wages. I do find negative effects. However, the effects are not persistent throughout the first decade into adulthood as (Kahn 2010);(Altonji, Kahn, and Speer 2016); (Schwandt and T. Von Wachter 2019);(Rothstein 2021), and others find. My estimates are lower in magnitude as well. At age 23, a 1 percentage point increase in the unemployment rate faced at age 18 reduces a young adult's individual hourly wage by .0025 percent at that age. In the context of a large recession, an increase of 5 percentage points in the early unemployment rate, translates to a decrease in hourly wages by .0125 percent. Though effects are small it is important to note that early conditions at age 18 still bring about negative earnings losses to individuals who experienced high unemployment rates as they entered into adulthood in comparison to their luckier counterparts. Point estimates attenuate to zero roughly around age 25 and after.

A large part as to why I find smaller and less significant effects on log hourly wages, than prior literature, is mainly because I analyze a more diverse sample and because I use the unemployment rate faced at age 18 as the early economic condition rather than that faced at age 22– what is predominantly used in prior literature. In this paper, I do not restrict my sample to a specific race, to only full-time workers, nor to only individuals who have a college degree. Figure B.13, in the appendix, demonstrates persistent negative and significant effects, at ages 19 to 24, when examining results on a sample of full-time workers (bottom panel). But even then I obtain smaller coefficients as prior literature who further restrict their sample to college graduates. Overall, my results in the appendix demonstrate that early economic conditions negatively impact full-time workers more significantly than non-full time workers. The pattern of those results are consistent with prior literature.

Through the remainder of the paper I will demonstrate results on the more diverse sample that I utilize and refer the reader to the appendix to explore results by race, level of education completed, gender, and by full-time and non-full time worker status. Chapter 3 will explore how different early economic condition unemployment rates yield different results.

The key takeaway from Figure 2.7 is that experiencing a higher unemployment rate at age 18, when one comes of age, will little affect individual log wages. Though effects are insignificant, the coefficients demonstrate a clear negative effect on the earnings that young adults will earn as they embark into their emerging adulthood years. In comparison to their luckier counterparts, what may explain part of the insignificant earnings losses may be that more heavily affected cohorts got employed in lower paying occupations, reflecting the individual earnings losses. In the next subsection, I now turn my attention to exploring effects on occupation quality measures, like being employed in an occupation that pays a low occupation specific hourly wage.

Impact On Occupation Specific Hourly Wage & Hours Worked

The top panel of Figure 2.8 shows effects on log average occupation specific hours worked. The blue coefficients correspond to the $\beta_a's$ in regression 1. The negative, and significant, effects at ages 19 to 22 indicate that, conditional on being employed, young adults who faced higher unemployment rates at age 18 worked in occupations that on average offered workers lower hours of work compared to their luckier counterparts.

The largest effect is experienced one year after entering into adulthood. A 1 percentage point increase in the unemployment rate at age 18 is associated with a reduction of .0017 log points in the occupation specific hours of work that young adult i is working in. In the context of a large recession, this translates to a decrease of .0085 percent in the occupation specific hours of work per week that workers provide to the occupation that young adult i is working in at age 19. This means a reduction of roughly 20 minutes a week. This is not economically significant for the individual, but when we think about this effect on aggregate productivity my estimates indicate a reduction of roughly 17 hours of labor a year that occupations will withhold from **each** of their workers, who would have worked 52 weeks in a given year and who faced the highest levels of unemployment rates when they became of age. Multiplying these forgone hours by the number of 19 year olds who faced the highest unemployment rates at the start of their adulthood trajectories will certainly yield an economically significant aggregate result. Thus, heavily affected cohorts who were employed in occupations that offered their workers lower hours of work may contribute to large productivity losses in large part because these cohorts were constrained in the hours of work that they were able to provide, but were just not able to fully maximize their potential labor as the occupations that they received employment in were less productive occupations as measured by the occupation specific hours of work.

In the top panel of Figure 2.8 we see that at ages 23 and onward there is no difference in the hours that occupations provide to heavily affected cohorts in comparison to their luckier counterparts. A possible explanation may be that more heavily affected cohorts may have

just transferred at later ages to working for different occupations that provided them more hours of work. Thus these workers will have transferred in to "higher quality" occupations.

The negative effects of being employed in occupations that offer workers a lower number of hours of work can in part account for the loss in log annual hours of work that more heavily scarred individuals themselves provide, as documented by (Altonji, Kahn, and Speer 2016). In the future, I will test this hypothesis. I will regress individual log hours of work on the specification in equation 1 while also controlling for the average occupation specific hours of work that young adult i is working in.

The bottom panel of Figure 2.8 shows effects on log average occupation specific hourly wage. Interestingly, effects are zero or nearly zero throughout the first decade into adulthood. This means that on the occupation specific hourly wage margin, it appears that young adults who faced high unemployment rates when they became of age do not get matched to lower quality/lower paying occupations.

Overall, my results indicate that in the early ages into adulthood, young adults get matched to lower quality occupations, but only based off of working in occupations that offer workers a lower number of hours of work. It is possible that for young adults who become of age during recessionary times, and who are able to acquire employment in their emerging adulthood years, that they would rather be employed in occupations that offer them the opportunity to work, even if it's working in a job that limits the number of hours of labor that they themselves can provide. I am not able to distinguish between preferences from options, but this possibility may be what is driving heavily affected cohorts to be employed in less productive occupations in their early years into adulthood.

Impact on individual specific log hourly wages controlling for occupation specific hourly wage

Does controlling for occupation quality change the effects of early economic conditions on log individual hourly wages as those seen in figure 2.7? We have seen that during the first years into emerging adulthood, that becoming of age during times of high unemployment rates will induce young adults to be employed in occupations that offer workers lower hours of work and will induce them to be employed in occupations that pay roughly the same hourly wages to their luckier counterparts. How do the effects on these occupation quality outcomes affect, if any, the individual labor market outcomes of more heavily affected cohorts? Might being employed in less productive occupations or controlling for the occupation specific hourly wage explain the insignificant effects of reductions in the individual log wages that more heavily affected cohorts experienced? I explore this question in this section.

Figure 2.9 demonstrates these effects. The coefficients are brought about by regressing log individual hourly wage on the specification in regression 1 with an added control of the occupation specific hourly wage. It appears that controlling for the occupation specific hourly wage accounts for a small part of the individual earnings losses. At age 20, 06% of the earnings loss can be attributed to controlling for the occupation specific hourly wage. Furthermore, controlling for the occupation specific hourly wage at times even yields a

larger reduction in individual's hourly wage. Take for example age 24. The regression not controlling for the occupation specific hourly wage yields an estimate of -.00197 for the β_{24} coefficient. Whereas the regression controlling for the occupation specific hourly wage yields a coefficient of -.002325 for the β_{24} coefficient. Looking at only the coefficient on the occupation specific hourly wage variable, not pictured in any of these graphs, yields a statistically significant estimate of .0374282 with a t-statistic of 69.64. This means that a 1 dollar increase in the occupation specific hourly wage will lead to a .037 log point increase in the individual hourly wage of young adults. This shows that the paramater on the occupation specific hourly wage variable directly affects the individual log hourly wages of young adults more than the scarring of the early economic conditions faced at age 18. My results are also consistent with those found by (Kahn 2010) who controls for occupation prestige score. She finds that roughly a sixth of the wage effect is eliminated when controlling for prestige score, but even then she points out that a substantial portion of negative effects on earnings remain and are still statistically significant.

Given that controlling for the occupation specific hourly wage slightly changed the effects on log individual hourly wage it is possible that controlling for the occupation specific hourly wage is indirectly also capturing other occupation specific characteristics, like the occupation specific hours of work or the skill level (abstract, routine, or manual) of the occupation that the young adult is working in. In the future I will control for the occupation specific hours of work and skill-level that the young adult i is working in to determine if these occupation quality variables more directly affect the earnings losses. A more efficient way to capture occupation quality effects on log individual hourly wage is to include an occupation specific fixed effect that captures the average hours of work, the skill-level, and the average hourly wage across all years in the sample to the regression model in equation 1).

Impact On Being Employed in Occupations that Require Tasks to be Predominantly Abstract, Routine, or Manual

Given that at the start of adulthood the average young adult lacks the sufficient human capital to be employed in very skilled occupations, one would expect a negative or zero effect in working in abstract occupations at the initial ages of entering into adulthood. Contrary to this logic, Figure 2.10 demonstrates counter intuitive results. The β_a coefficients in the top panel reflect effects on the probability of working in an abstract leaning occupation. The β_a coefficients in the middle panel reflect effects on the probability of working in a routine leaning occupation, meaning that most of the tasks performed in individual i's occupation are routine in nature. Finally, the β_a coefficients in the bottom panel reflect effects on the probability of working in a manual oriented occupation.

The top panel of Figure 2.10 demonstrates counter intuitive results as in the early ages into adulthood young adults, experiencing high unemployment rates at the start of adulthood, appear to be employed in more abstract oriented occupations while facing negative effects on being employed in less skilled occupations, routine and manual. A potential explanation may be that the unemployment rate at age 18 can quickly influence young adults

into acquiring higher human capital skills, either by going to trade school, obtaining a trade certificate, or even enrolling in college sooner than they otherwise would–results of which I documented in chapter 1. For example, consider a young adult who becomes of age when the unemployment rate is high and this young adult is on the job search at age 18. While on the job search he/she may notice that occupations demand higher skills for the types of jobs he/she may desire. Additionally, he/she may notice that these desired jobs also pay well. Thus, it is possible that the labor market conditions that the young adult experiences at age 18–like the unemployment rate may influence how he/she adjusts on their human capital accumulation behaviors in the earlier years into adulthood.

Adjusting on how to acquire more human capital skills early in the emerging adulthood years can then lead the young adult to be employed in a more abstract oriented occupation. To confirm the validity of this statement in the future I will re-run the regressions from Figure 2.10 exploring new outcome variables. Those being, 1) a dummy variable indicating a one for individuals who have a high school degree or less of education completed & who are in a abstract leaning occupation, 2) a dummy variable indicating a one for individuals who only obtained trade program certificates & who are in abstract leaning occupations, and 3) a dummy variable indicating a one for individuals who have at least completed a bachelors degree or more & are in abstract leaning occupations. In the appendix, though not depicting the effects on the dummy variables I have just described, I show results for those who have at least completed a bachelors degree and compare those coefficients with results on a sample of young adults who had less than a bachelors degree of education. In the early ages into adulthood, the top panel of figure B.2 shows larger positive effects of being employed in more abstract oriented occupations for young adults who have at least a bachelors degree or more. This gives credibility to my hypothesis that the unemployment rate faced at age 18 indeed influences young adults with high early economic condition unemployment rates to acquire human capital skills faster than their luckier counterparts, which I verified in chapter 1, to then be employed in more abstract oriented occupations in the early ages into adulthood. As mentioned, the proper way to test this hypothesis is to conduct joint outcome analyses on occupational tasks interacted with education level completed. Regressions which I will run in the future.

Determining effects of being employed in abstract oriented occupations in the earlier ages into adulthood, ages 19-22, for young adults who have obtained a trade certificate is important for various reasons. 1) Trade programs on average take less than 3 years, some only take 6-months, to acquire and they do not reward young adults who acquire these certificates a bachelors degree, so splitting my sample into just bachelors vs non-bachelors will not reveal precisely what level of education, in the early years into adulthood, influences young adults into being employed in abstract oriented occupations at ages 19-22. Further narrowing the education groups in figure B.2 might reveal strong positive effects on being employed in abstract occupations at the ages of 19-22 for young adults with trade certificates. 2) Trade programs pay higher salaries than some careers that require a bachelors degree. For example, a dental hygienist, electrician, and web developers on average pay higher wages than young adults who graduate with bachelors degrees in history, theology and religion, or liberal arts oriented careers. Young adults entering into their adulthood years – especially

those whose parents are not financially supporting them in their transition into adulthood, might find trade programs more appealing because of the higher pay and likely because one can get these specializations faster than a bachelors degree.

In the early ages into adulthood, being employed in abstract oriented occupations is offset by negative effects on being employed in routine and manual oriented occupations (the middle and bottom panel of Figure 2.10). The negative effects on being employed in routine and manual occupations may reflect the scarring of the cyclicality of the types of jobs available for more heavily affected cohorts at the time that they become of age. For example Hurst and authors show that individuals are cyclically sensitive to working in the construction sector (routine oriented) during the boom and bust of the housing bubble (Charles, Hurst, and Notowidigdo 2018). The cyclicality of working in the construction sector, and the like, are captured by the time fixed effects. But the "scarring" of this cyclicality are captured in the β_a's. Consider a young adult who became of age in a recession and who found it difficult to obtain employment as a waiter(manual oriented) when he/she was 18. This young adult might have instead found success in obtaining a job as a salesperson (more abstract oriented) during the early ages into his/her emerging adulthood years. Since obtaining the more abstract oriented job when the young adult was 18 was more likely than acquiring a manual job the young adult might likely just stay in his/her abstract oriented job during his/her emerging adulthood years (19-22) rather than switching into the waiter(manual oriented) occupation that he/she initially desired. This may best explain the negative effects on being employed in routine or manual occupations at ages 19-22.

In the second half of the first decade into adulthood effects of the early economic condition for the most part have attenuated to zero. There are only noticeable significant effects on working in abstract oriented occupations at ages 25 and 26. At age 25 a 1 percentage point increase in the unemployment rate experienced at age 18 raises the probability of working in an abstract job by roughly .002. This is offset by lowering the probability of working in a routine or manual job by .001 each at that age. In the later ages there are no significant differences in how more heavily impacted young adults differ in the types of occupational tasks that they perform in their occupations in comparison with their luckier counterparts.

A cause for concern that may be primarily driving my results is that the share of those employed are not consistent over time with respect to birth cohorts. If say, the share of young adults who are employed was roughly 70% since the ages of 19 through 30, regardless of what cohort the young adult belongs to this would not bring my estimates to scrutiny as in my sample the share of those employed would be consistent across cohorts through time. In chapter 1 I showed evidence that early conditions do affect the probability of being employed for heavily affected cohorts. In the sample used for analysis in this chapter the share of young adults who are employed varies by birth cohort. Figures 2.11, 2.12, and 2.13 show descriptive statistics of the share of young adults in the ACS data who are employed, unemployed, and not in the labor force between the years 2000-2022. It is important to note that these descriptive graphs are produced from a larger ACS sample than the main sample of only employed young adults that I utilize for my regression analysis. In Figure 2.11 we see that in the early ages into the emerging adulthood years, ages 19 to 23, the share of employed young adults who became of age during the Great Recession years is

lower by about 20 percentage points than the share of young adults who became of age when unemployment rates were lower (birth cohorts 1981-1983). These differences in the shares of employed young adults may be a driving factor in the estimates on being in more abstract oriented occupations. Figure 2.11 points out that the likelihood at age 19 of being in an abstract oriented occupation will be larger for the 1990 birth cohort than for the 1981 cohort as the denominator characterizing those employed will be lower for the 1990 cohort even though the share, at age 19, in abstract oriented occupations (numerator) is roughly the same, 14%, for both of these cohorts.

To address the inconsistency of the share employed by birth cohort in the appendix I have presented results where I add a control $\omega_{c,s,a}$ to regression 1) that accounts for the share of young adults who are employed at the cohort-state-age level. Adding this control to the regression provided similar results. Results are depicted in the appendix in figures B.18 through B.20. Accounting for the share employed at the cohort-state-age level may yield different results if instead this variable is treated as a fixed effect. Figures B.21 through B.23 demonstrate that treating the share employed as a fixed effect does indeed alter the results from my benchmark specifications. Why the fixed effects results are different than those brought about by controlling for the share employed will be studied in detail in the future.

Impact on Occupation Specific Incidence Rate

Figure 2.14 shows effects on log annualized occupation specific injury rates. Having a high unemployment rate at age 18 induces young adults to be employed in occupations that experience a lower number of nonfatal occupational injuries compared to their luckier counterparts between the ages of 19 to 22. At age 21 a 1 percentage point increase in the unemployment rate faced at age 18 will lower the occupation specific injury rate where a young adults works at by .0049 percent. Effects however become positive and significant, at ages 23 to 25, on working in an occupation that experiences an increase in its' occupation specific injury rate. Effects at ages 26 and after attenuate to zero.

A potential explanation for the heterogeneous effects on injury rates may yet again reflect the "scarring" of the cyclicality of jobs available at the time one becomes of age. It is possible that during recessionary times that the occupations that have higher injury rates may be the occupations that are the most cyclical, and thus these occupations may be the ones that exhibit the largest contractions in the number of workers that they employ. Thus obtaining employment in more risky occupations may just as well be impeded/prevented, in the early ages into adulthood, for young adults who become of age when the economy was experiencing high unemployment rates. If it takes riskier occupations a couple of years to recover/go back to their pre-recession hiring behaviors than this can explain the negative effects of the early economic conditions on the log occupation specific injury rate at ages 19 to 22.

Additionally, as mentioned in the previous subsection, Hurst and authors show that individuals are cyclically sensitive to working in the construction sector during the boom and bust of the housing bubble (Charles, Hurst, and Notowidigdo 2018), effects of which are captured in the time fixed effects. This may indicate that the number of construction or manufacturing jobs available, which are occupations that are more physically demanding/more prone to

experiencing occupational injuries, may have been limited to those becoming of age during recessionary times. When the economy begins recovering there has to be an adjustment period for these types of occupations to regain their pre-recession employment numbers and this adjustment period may still make it difficult for young adults to enter these professions in their earlier years into adulthood, ages 19 to 21. For example, consider the young adult who found it difficult to obtain employment in the construction sector at age 18, when he became of age. The decreased demand for risky jobs (e.g. construction/manufacturing) may have lead the young adult into other occupational roles, jobs that may have been less prone to experiencing injuries. This young adult is instead able to obtain employment in a less risky occupation at the age of 18. It is possible that the young adult will continue to stay employed in this less risky occupation during the first years into adulthood until the construction sector has recovered. If years later the construction sector (more risky occupations), or others of the like, have readjusted on their pre-recession hiring behaviors then at that point for more heavily affected young adults who see these types of jobs as more appealing may transition into these occupations later in their emerging adulthood years, at ages 23 to 25. This can be an intuition that can explain the heterogeneous results in Figure 2.14.

Towards the tail ends of reaching the first decade into adulthood, ages 27 to 30, effects have attenuated to zero. These latter effects indicate that working conditions are not significantly different between young adults who experienced high unemployment rates at the start of adulthood and their luckier counterparts. My results indicate differences in working conditions only in the first half of the decade into adulthood, ages 19 to 25.

Demographic Results

Impacts of the unemployment rate faced at the start of adulthood on occupational quality measures by demographic groups are presented in the appendix, figures B.1 through B.9. I present results by level of education, where I separate individuals into two education groups 1) did they complete a bachelors degree or more or 2) do they have less than a bachelors degree. I also present results by gender. Lastly, I present results by race presenting point estimates for a sample of white individuals and point estimates for non-white individuals. Overall, across all of these demographic categories I demonstrate that these effects are similar to the patterns observed in my main specifications. Additionally, there is no meaningful variation in point estimates across gender, education completed, and race groups. Although some groups have estimates higher than their respective comparison group, all of their confidence intervals overlap one another, so I can not conclude that early conditions differentially affect some groups more than others.

Results by Full-time & Non Full-time workers

A different dimension where one might expect to find heterogeneous results on outcomes can be on the type of employed workers one analyzes. In the appendix, figures B.10 through B.14, I present results on outcomes by full-time and non full-time workers. Full-time workers

are defined as individuals who worked 30 hours or more each week in the previous year and who worked 48 weeks or more in the previous year. Individuals who do not meet this definition are classified as non full-time workers. I find no meaningful variation in point estimates across these types of workers. Although at different ages point estimates are opposite from their respective comparison group, all of the confidence intervals of either type of worker overlap one another. Because of this I can not conclude that early conditions differentially affect the occupation quality measures of full-time workers more than non-full time workers.

In previous studies the samples of analysis have been restricted to white college educated individuals. Other times the restrictions are full-time employed white male college educated individuals. In the future, I will further narrow my sample to best match the samples in prior literature, but I will only change the sample in one dimension for appropriate comparison. For example, it would be worthwhile to compare how early conditions differentially affect, if any, full-time employed white male college educated individuals compared to full-time employed black male college educated individuals. There is certainly room for further micro level analysis!

Robustness: Balanced Panels

A concern when conducting research on synthetic cohort panels is that one may not be able to consistently observe the same cohorts through time. So it may be unclear if changes in point estimates are driven by changes in cohorts observed at various ages and not necessarily that one is comparing consistent cohorts across the ages that I observe individuals. For example, those becoming of age during the COVID-19 Pandemic are only observed at ages 19 and 20. If these young adults have the highest unemployment rates from all the cohorts observed at ages 19 and 20 my results will be biased upward only reflecting the COVID 19 cohorts. But because I am not able to observe these cohorts at age 21 and onward, it will be unclear to me if the effects in age 20 are worth comparing to effects at age 21 partly because different cohorts will be driving the different results. To get around this I re-run my main specifications on balanced panels. I present results in the appendix.

Figures B.15, B.16, and B.17 present results on the occupation quality measures for a sample that has been balanced at the age and birth-year groups. The main sample of analysis consists of individuals aged 19 to 30 who were born between 1981 to 1992. Results for the most part have similar patterns as those in my main analysis. There are a few interesting results to point out though.

In the top panel of figure B.15 notice that all coefficients on log occupation specific hours of work are now negative. Whereas in the main sample effects had attenuated to zero by age 26 and onward, figure 2.8. Additionally, all, but two, of the coefficients on the log occupation specific hourly wage outcome are also negative, bottom panel of figure B.15. Whereas in the main sample only one coefficient was negative, bottom panel of figure 2.8. Regarding effects on log occupation injury rates, notice that effects are positive from ages 23 through 30, figure B.17. This means that a 1 unit increase in the unemployment rate faced at age 18 will lead young adults to be employed in occupations that have a higher occupation specific

injury rate than their luckier counterparts. In the main sample only three coefficients were positive and statistically significant for this outcome.

It is important to note that the cohorts in this new balanced sample, at the age and birth-year group, turned 18 between 1999 and 2010. 1999 through 2010 was a time period where the economy experienced huge variation in unemployment rates. Given that some of the cohorts in this sample experienced high early conditions – predominantly those brought about by the Great Recession, we can better understand why some of the coefficients on certain outcomes changed to being all negative (occupation specific hours worked/ hourly wages). Since I can observe these cohorts all throughout the ages of 19 to 30 it is likely that the cohorts exposed to the Great Recession are the folks that are driving the changes in the coefficients from those observed with the unbalanced synthetic panel that I used in my main analysis. Although some of the coefficients have changed all confidence intervals between the two samples overlap thus the overall pattern of results remain consistent with the results from the main analysis sample.

2.8 Conclusion

In this chapter I have explored how becoming of age during times of high unemployment rates affects the occupation quality of employed young adults. I study individuals between the ages of 19 to 30 who are observed between the years 2000 to 2022. I study effects on various occupation quality measures. First, I study how early economic conditions affect working in a low or high paying occupation. I am able to explore this by analyzing effects on the log of the average hourly wage that workers in young adult i's occupation earn. Second, I follow the same approach for analyzing effects on working in a more or less productive occupation measured by the number of hours of labor that workers provide to that occupation. Third, I explore how conditions affect the type of skill/task that young adults are required to predominantly carry out in the occupation that they are employed in. I do so by determining effects on the probabilities of working in a predominantly abstract, routine, or manual oriented occupation. Finally, I explore effects on the injury rates for the occupations that young adults are employed in. Exploring effects on this outcome allowed me to determine if young adults who experienced high unemployment rates at age 18 were induced to be employed in more risky occupations compared to their luckier counterparts. I find informative and heterogeneous effects on these occupation quality outcomes.

I find that higher unemployment rates faced at age 18 will influence young adults to be employed in less productive occupations between the ages of 19 through 24, effects of which attenuated to zero thereafter. Additionally, higher early conditions do not affect, throughout the first decade into adulthood, being employed in a higher or lower paying occupation.

Furthermore, consistent with prior literature, I show that high unemployment rates faced at age 18 lead to negative effects on individual earnings. Although not statistically significant, the coefficients on young adults log individual hourly wages indicate that young adults experience earnings losses throughout the first decade into adulthood–even after controlling for the occupation specific hourly wages.

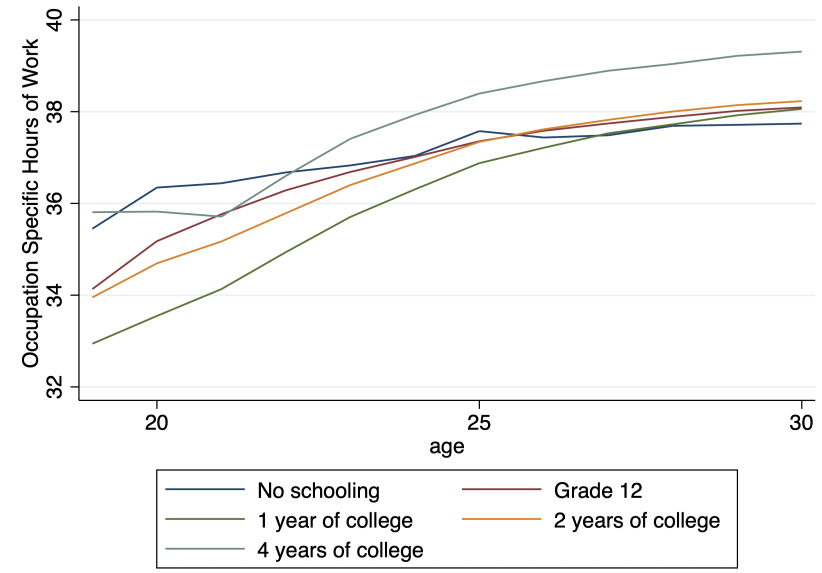
I find counter intuitive results on how early economic conditions affect the types of skills that young adults predominantly perform in their occupations. At ages 19 through 22, a 1 percentage point increase in the unemployment rate experienced at age 18 increases the likelihood that young adults are in abstract oriented occupations while decreasing the likelihood that they are in routine or manual oriented occupations. The positive effects on working in abstract oriented occupations can indicate that the unemployment rate experienced at age 18 motivates young adults to acquire human capital skills quicker than their luckier counterparts. An avenue for this may be obtaining trade certificates, something that luckier counterparts may not be acquiring. These certificates can accelerate the time at which young adults end up being employed in more abstract leaning occupations. Though this is only speculative, I will in the future explore effects on attaining a trade certificate to better understand why conditions at age 18 influence young adults to be employed in more cognitive occupations earlier in life, ages 19-22, as opposed to obtaining employment in routine or manual occupations during these ages.

Finally, I find that the unemployment rate faced at age 18 has heterogeneous effects on the occupation specific injury rate. At ages 19 through 22 higher early conditions will influence young adults to be employed in occupations that are less risky – those that have lower reported injury rates. But at ages 23 through 26 early conditions influence young adults to be employed in riskier occupations – those exhibiting higher injury rates. Effects thereafter attenuated to zero.

In conclusion, this chapter brings about further areas and questions worth researching. First, it will be fruitful to explore if becoming of age during recessionary times if any affects how young adults adjust on their choices of majors during their college going years. Second, there is none, to my knowledge, or little research exploring how early conditions affect if individuals are placed in occupations offering only the state minimum wage to their workers or if these individuals themselves only earn the state minimum wage. This has perhaps been overlooked because college graduates have been the primary focus group on previous studies. Looking at these populations will help give further clarity on how economic conditions, if any, contribute to inequality. Lastly, prior research has studied how conditions affect the firm size that heavily affected cohorts work in. A parallel to this would be to investigate how early conditions affect the occupation size (i.e. the number of workers by occupation OCC ACS codes) that heavily affected cohorts end up working in. Clearly, there are further areas and more narrow population groups to study in the already robust scarring effect literature.

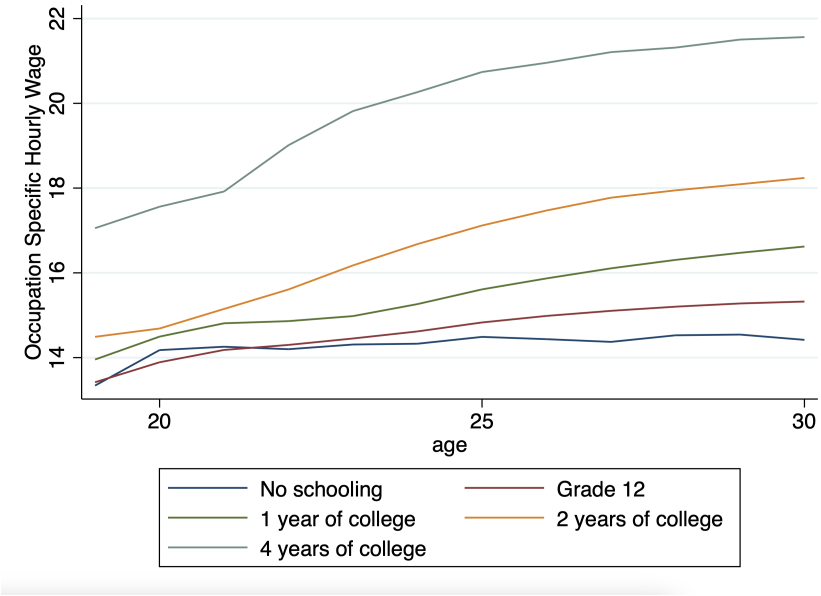
Figures

Figure 2.1 Average occupation specific hours of work by age and education level



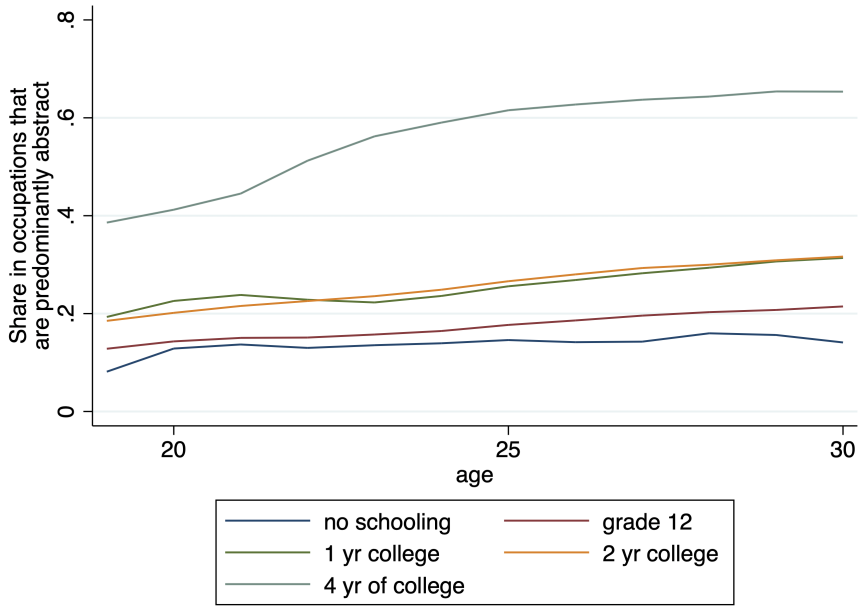
Notes: American Community Surveys (ACS), data are for individuals that are 19 to 30 years old who are observed between 2000 and 2022. The figure documents the average occupation specific hours of work by age and education level of the young adults in the main analysis sample.

Figure 2.2 Average occupation specific hourly wage by age and education level



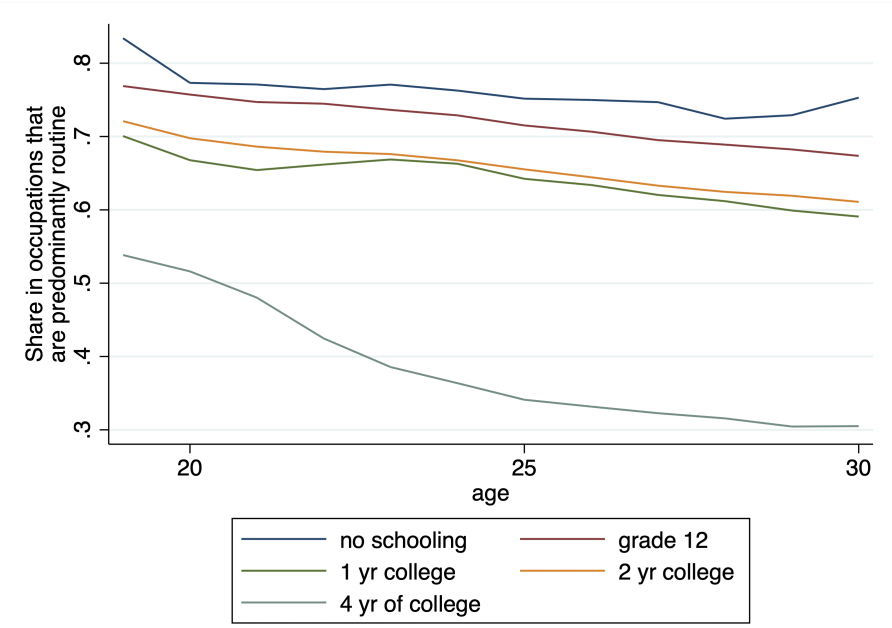
Notes: American Community Surveys (ACS), data are for individuals that are 19 to 30 years old who are observed between 2000 and 2022. The figure documents the average occupation specific hourly wage by age and education level of the young adults in the main analysis sample.

Figure 2.3 Share of young adults employed in abstract leaning occupations by age and education level



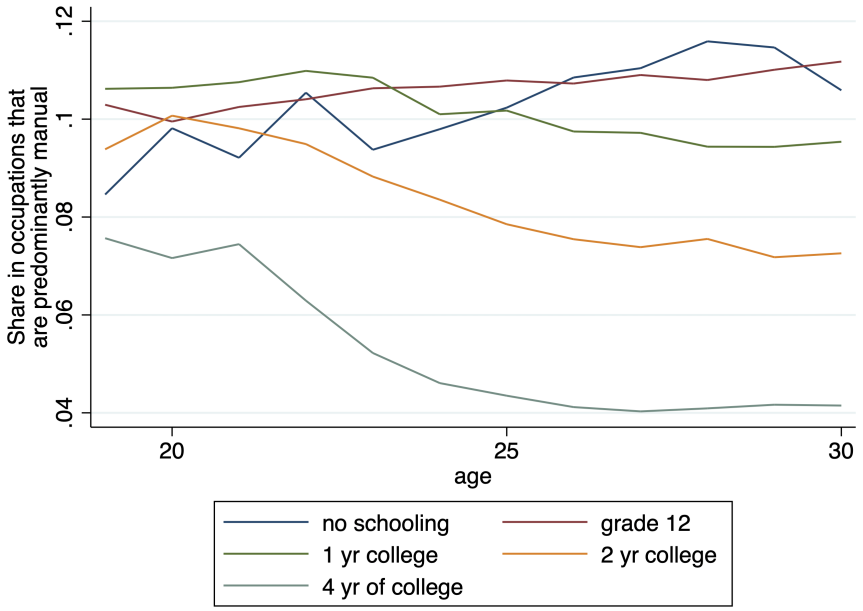
Notes: American Community Surveys (ACS), data are for individuals that are 19 to 30 years old who are observed between 2000 and 2022. The figure documents the share of young adults employed in abstract leaning occupations by age and education level. I use David Autor and David Dorn's (2013) task intensity measures to identify the predominant occupational task for the individuals in my sample.

Figure 2.4 Share of young adults employed in routine leaning occupations by age and education level



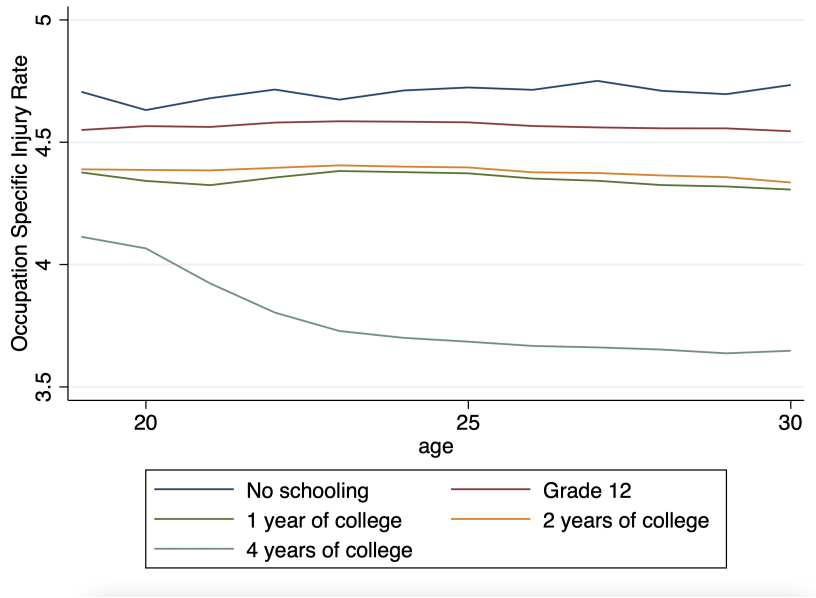
Notes: American Community Surveys (ACS), data are for individuals that are 19 to 30 years old who are observed between 2000 and 2022. The figure documents the share of young adults employed in routine leaning occupations by age and education level. I use David Autor and David Dorn's (2013) task intensity measures to identify the predominant occupational task for the individuals in my sample.

Figure 2.5 Share of young adults employed in manual leaning occupations by age and education level



Notes: American Community Surveys (ACS), data are for individuals that are 19 to 30 years old who are observed between 2000 and 2022. The figure documents the share of young adults employed in manual leaning occupations by age and education level. I use David Autor and David Dorn's (2013) task intensity measures to identify the predominant occupational task for the individuals in my sample.

Figure 2.6 Average occupation specific injury rate by age and education level

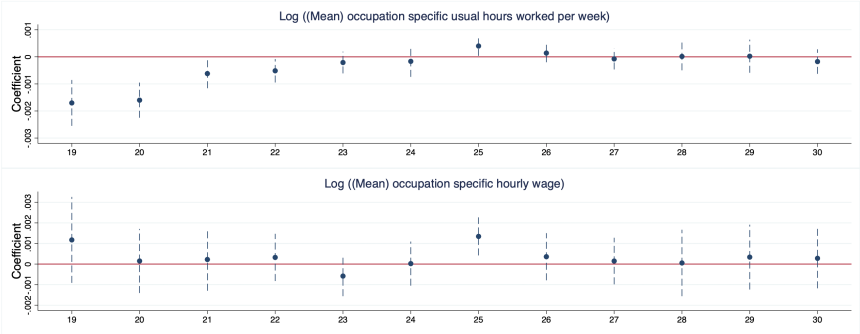


Notes: American Community Surveys (ACS), data are for individuals that are 19 to 30 years old who are observed between 2000 and 2022. The figure documents the average occupation specific injury rate by age and education level of the young adults in the main analysis sample.

Figure 2.7 Impact on individual log hourly wages

Notes: The figure shows coefficients from regressing log individual hourly wage on the unemployment rate at the start of adulthood interacted with age dummies. Results are based on the specification presented in equation 1. The regression uses data from the ACS from 2000 to 2022 for individuals aged 19 to 30. The figure shows coefficients and confidence intervals clustered at the state level.

Figure 2.8 Impact On Occupation Specific Hourly Wage & Hours Worked

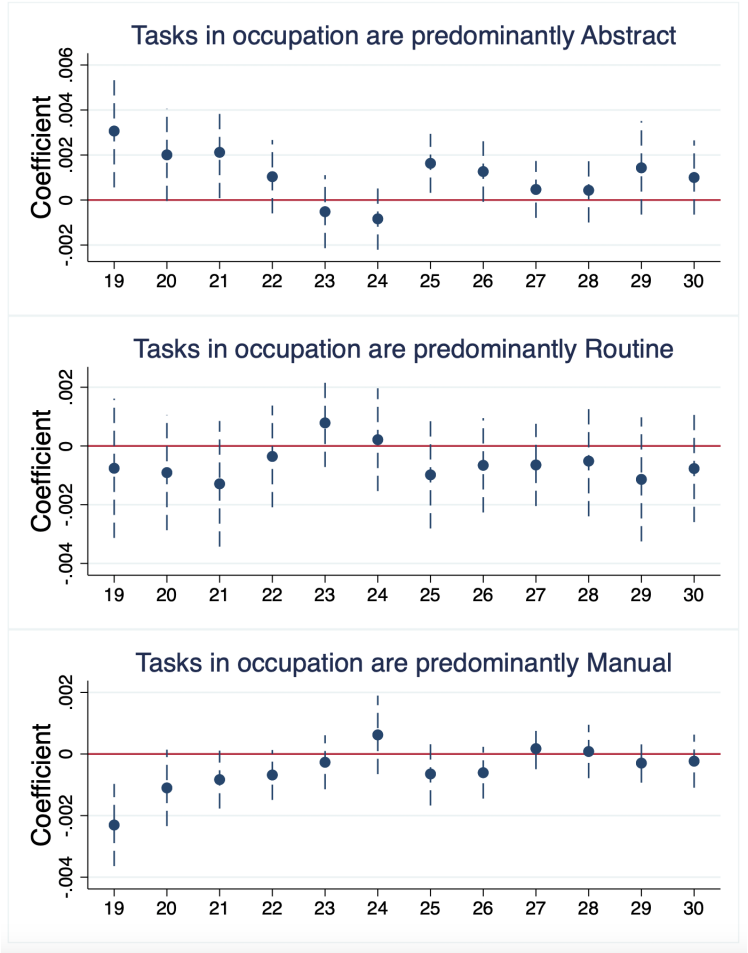


Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. The top and bottom panels are based on the main sample of all 19 to 30 year olds observed between 2000 to 2022. The top panel shows coefficient estimates ($\beta'_a s$) from regression 1 where the outcome variable is the log of the average occupation specific hours of work that individuals in that occupation supply. The bottom panel shows coefficient estimates where the outcome variable is the log of the average occupation specific hourly wage.

Figure 2.9 Impact on individual log hourly wages controlling for occupation specific hourly wage

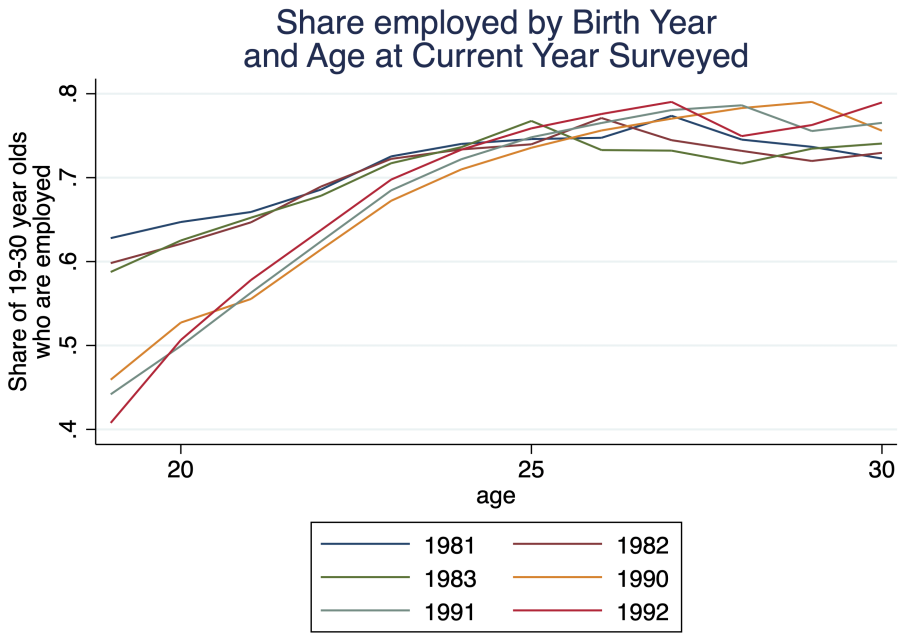
Notes: The figure shows coefficients from regressing log individual hourly wage on the unemployment rate at the start of adulthood interacted with age dummies. Results are based on the specification presented in equation 1 with an added control for occupation specific hourly wage. The regression uses data from the ACS from 2000 to 2022 for individuals aged 19 to 30. The figure shows coefficients and confidence intervals clustered at the state level.

Figure 2.10 Impact On Being Employed in Occupations that Require Tasks to be Predominantly Abstract, Routine, or Manual



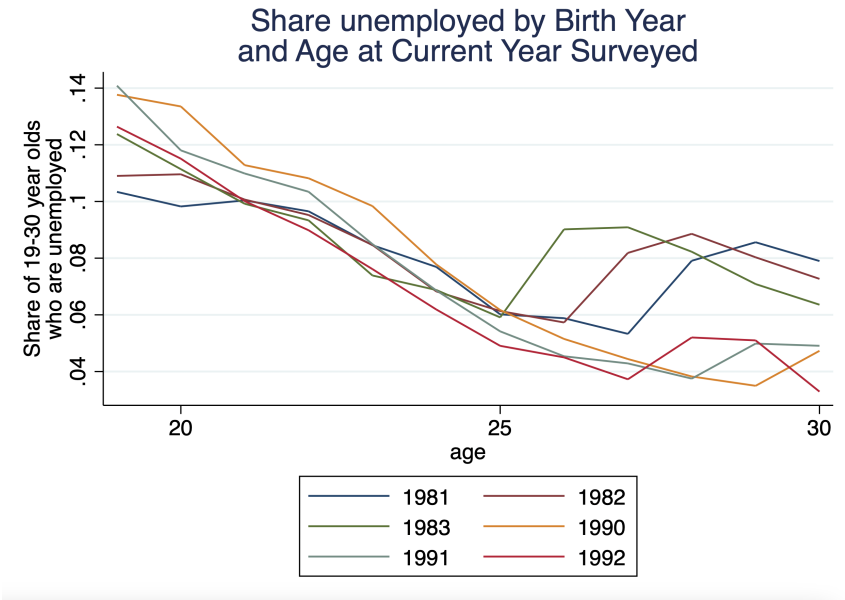
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. Results are based on the main sample of all 19 to 30 year olds observed between 2000 to 2022. The figures show coefficient estimates for three different regressions where the outcomes are 1) binary variable equal to one if the predominant tasks in one's occupation are abstract (top panel), 2) binary variable equal to one if the predominant tasks in one's occupation are routine (middle panel), and 3) binary variable equal to one if the predominant tasks in one's occupation are manual (bottom panel).

Figure 2.11 Share of 19 to 30 year olds who are employed



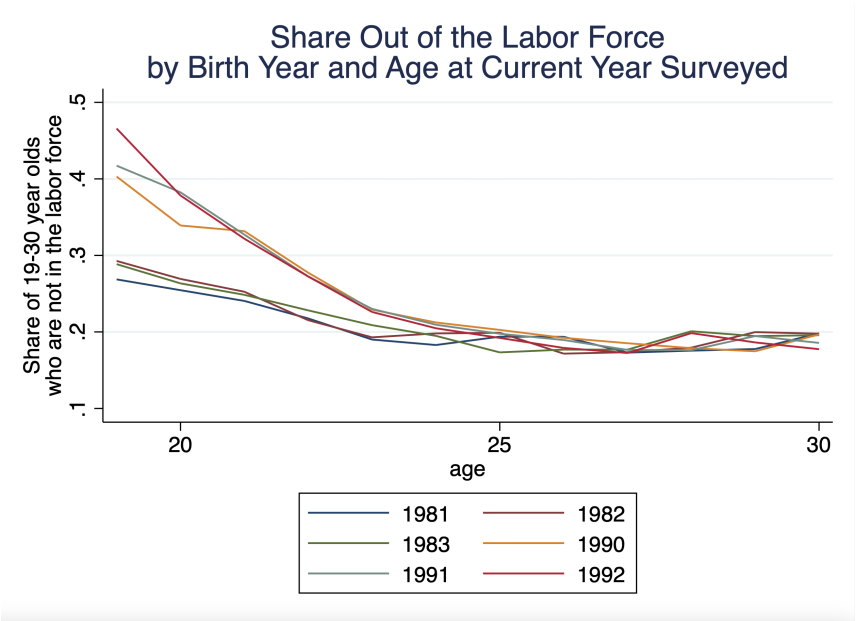
Notes: American Community Surveys (ACS), data are for individuals born in 1981, 1982, 1983, 1990, 1991, and 1992 observed between 2000 and 2022. The figure documents the share of 19 to 30 year olds who are employed at the time they were surveyed. Note that these shares are not from the main analysis sample that I utilize for my regression estimates.

Figure 2.12 Share of 19 to 30 year olds who are unemployed



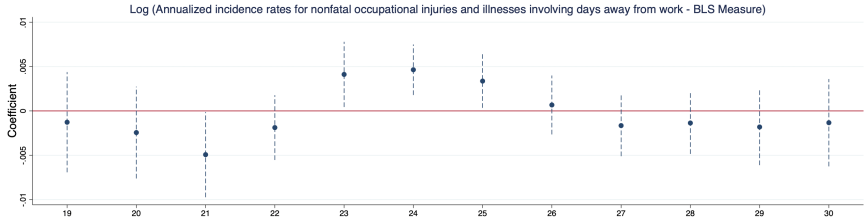
Notes: American Community Surveys (ACS), data are for individuals born in 1981, 1982, 1983, 1990, 1991, and 1992 observed between 2000 and 2022. The figure documents the share of 19 to 30 year olds who are unemployed at the time they were surveyed. Note that these shares are not from the main analysis sample that I utilize for my regression estimates.

Figure 2.13 Share of 19 to 30 year olds who are not in the labor force



Notes: American Community Surveys (ACS), data are for individuals born in 1981, 1982, 1983, 1990, 1991, and 1992 observed between 2000 and 2022. The figure documents the share of 19 to 30 year olds who are not in the labor force at the time they were surveyed. Note that these shares are not from the main analysis sample that I utilize for my regression estimates.

Figure 2.14 Impact on Occupation Specific Incidence Rate



Notes: Results are based on the specification presented in equation 1. The regression uses data from the ACS from 2000 to 2022 for individuals aged 19 to 30. The figure shows coefficients and confidence intervals clustered at the state level. The figure shows coefficients from regressing log occupation specific injury rates on the unemployment rate at the start of adulthood interacted with age dummies.

Tables

Table 2.1 Summary Statistics for Main Analysis Sample

Summary Statistics for Main Analysis Sample

Variable	N	Mean	SD	Min	Max
Female	5616931	.49	.5	0	1
White	5616931	.65	.48	0	1
Has a bachelor's or more	5616931	.29	.46	0	1
Is Employed	5616931	1	0	1	1
Is a Full-time Worker	5616931	.65	.48	0	1
Usual hours worked per week	5616931	37	12	1	99
Weeks worked last year	5616931	45	13	1	52
Hourly wage	5616931	17	57	0	37500
Year	5616931	2013	5.9	2000	2022
Birth Year	5616931	1988	6.8	1970	2003
Year at age 18	5616931	2006	6.8	1988	2021
Age	5616931	25	3.4	19	30
Unemployment Rate (State, %)	5616931	5.9	2.2	2	14
Unemployment Rate at Age 18 (State, %)	5616931	6	2.1	2.1	14

Notes: Summary statistics relate to the main analysis sample, consisting of individuals aged 19-30. Statistics are weighted using ACS sampling weights.

Table 2.2 Summary Statistics for Main Analysis Sample – Outcome Variables

Summary Statistics for Main Analysis Sample – Outcome Variables

Variable	N	Mean	SD	Min	Max
Log (Annualized incidence rates for nonfatal occupational injuries and illnesses involving days away from work) – OCCSOC Specific Rate	4461826	4.3	1.2	-1.6	7.4
Tasks in occupation currently working in are predominantly abstract	5318159	.34	.47	0	1
Tasks in occupation currently working in are predominantly routine	5318159	.58	.49	0	1
Tasks in occupation currently working in are predominantly manual	5318159	.083	.28	0	1
(Mean) Occupation specific usual hours worked per week	5616931	37	5.1	17	73
Log ((Mean) Occupation specific usual hours worked per week)	5616931	3.6	.14	2.9	4.3
Occupation specific hourly wage	5616931	17	6.4	.84	79
Log (Occupation specific hourly wage)	5616931	2.8	.33	-.17	4.4

Notes: Summary statistics relate to the main analysis sample, consisting of individuals aged 19-30. Statistics are weighted using ACS sampling weights.

Chapter 3

Effects of Early Economic Conditions at Age 21 on Workers' Occupational Characteristics

3.1 Introduction

In chapter 2, I have primarily utilized the unemployment rate that young adults faced at age 18 as the early economic condition for two reasons. First, prior literature has primarily focused on the age of college graduation to determine scarring effects, but most of the US population did not have a college degree in the time periods those studies were done. It is great that some of those papers restricted their analysis to college graduates, so it makes sense why they would use the college graduation year for the early economic condition. But this limits the external validity of their findings– especially if one would be interested in the effects of early conditions on labor market outcomes or occupational characteristics for non college educated young adults. The data show that for the majority of employed 19-30 year olds that they do not see college going as a primary activity to undertake in during the initial ages into their emerging adulthood years. This is likely the case given that the young adults in my sample by definition have opted into being an employed young adult at the ages of 19-30. It is possible that these young adults are prioritizing more their employment hours over the hours spent acquiring a college degree. I refer the reader to the appendix for results on the outcomes by college completion status. In my sample, less than half , 29%, of young adults had a bachelors degree or more completed at the time at which they were surveyed. For this reason I utilized the age 18 unemployment rate as the early economic condition.

Second, starting adulthood, at age 18, during a depressed labor market may motivate young adults to acquire more cognitive skills, by attending college or entering into occupations that will provide them with transferable skills later in life. If this is the case I should expect to see different effects on the outcomes in the early years into adulthood followed by changes in effects as the individuals age. If I used the time of college graduation I would fail to see, if any, how entry conditions at age 18 may influence how young adults adjust on

their human capital attainment/choice of major and thus how the increases in human capital accumulation during say ages, 19-21, might be affecting the occupational quality at these specific ages. Additionally, those graduating at age 21 may have not been exposed to the job search process when they turned age 18, as they may have just directly gone straight from high school into college, so they may not have been aware of whether or not they needed to switch their majors accordingly or acquire different skills during their college going years. I do not explore, in this paper, how the unemployment rates faced at age 18 influence the types of college majors that young adults choose to specialize in, but this is worth mentioning as a consideration of why one might expect different results on my outcome variables of interest when utilizing different ages for the early economic condition treatment variable.

Utilizing the unemployment rate at age 21 will only indicate how recessions reward/penalize the types of majors that young adults had already chosen to specialize in, but will not allow me to determine if these conditions if any influenced young adults to switch to more cognitive majors as a form of adjustment to be better employable later in life. Lisa Kahn does find that graduating in a recession (Kahn 2010) will influence young adults to acquire a graduate degree, but this is only true for a very small percentage of the individuals in her sample. Given that she finds effects on acquiring a graduate degree for those who graduated during recessions gives credibility to my hypothesis that economic conditions at age 18 can also influence how young adults choose to acquire their human capital skills or college majors. Thus utilizing the unemployment rate at age 18 may be a better measure of how early conditions affect occupational characteristics later in life.

In this section, I now utilize age 21 as the early economic condition treatment on the outcome variables to determine if there may be suggestive evidence that recessions faced at age 18 versus age 21 differentially affect the occupational characteristics of the individuals in my sample. If the coefficients are different than the ones I have previously presented this can suggest that young adults do adjust on either switching their choice of majors earlier in their adulthood years, decide to pursue trade certificates, or if they choose to attend college sooner– evidence of which I showed in chapter 1. Of course comparing coefficients from using age 18 versus age 21 in my specifications will not clearly reveal that changing majors or choosing to attend college is what young adults are doing, but it will provide evidence in support of my hypothesis. To best match the appropriate early condition that is likely to affect the occupation characteristics of the young adults in my sample I will, in the future, assign young adults who do not have a college degree the unemployment rate at age 18 and for those who have a college degree match them with the unemployment rate at the age of college graduation – typically age 21 or 22.

3.2 Data

I use repeated cross sectional data from the American Community Surveys (ACS), provided through IPUMS (Ruggles, Sarah, Ronald, Megan, and Matthew 2022), to construct a synthetic panel. The main sample for my analysis consists of individuals who are between the ages of 22 to 30 when observed in the time period of 2000 to 2022. I restrict my sample

to only include individuals who are currently employed at the time of being surveyed. I only analyze employed individuals because I am interested in exploring effects on occupation quality, so for individuals who are out of the labor force or unemployed their occupational characteristics will not be relevant for my setting given that their occupational characteristic measures will be classified/measured as missing. To this sample I merge state level unemployment rates data from the Bureau of Labor Statistic (BLS) spanning the years 1976 to 2022. This merging allows me to assign each individual in the sample his/her early economic condition as well as their respective contemporaneous unemployment rate. Given that this chapter focuses on examining effects of the unemployment rate experienced at age 21 on the outcomes presented in chapter 2 I refer the reader to the data section in chapter 2 for information on outcome construction and data limitations. The key difference from the sample used in this chapter as opposed to the sample used in chapter 2 is that I observe individuals between the ages of 22 to 30 and now utilize the unemployment rate experienced at the age of 21 as the treatment variable for their early economic conditions.

3.3 Empirical Framework

In order to determine how unemployment rates experienced at age 21 affect worker's occupational characteristics/quality I employ a similar regression model as that from chapter two. That being:

$$\mathbf{Y}_{i,s,c,a,t} = \sum_{a=22}^{30} \beta_a D_a * UR_{s,(c+21)} + \rho \mathbf{X}_i + \gamma_a + \psi_c + \delta_s + \zeta_t + \pi_{s,t} + \epsilon_{i,s,c,a,t} \tag{3.1}$$

Where $\mathbf{Y}_{i,s,c,a,t}$ represents the outcome (e.g., the log of the occupation specific hourly wage) of person i from birth cohort c observed in year t at age $a \equiv t - c$ living in state s.

The key economic variable of interest is $UR_{s,(c+21)}$ which represents the state unemployment rate for individual i for when he/she was a 21 year old. The age-21 unemployment rate may have different effects on outcomes at different ages. To capture this, I interact $UR_{s,(c+21)}$ with a full set of indicators D_a for each age from 22 through 30. The specification also includes main effects for age (γ_a), as well as fixed effects for cohort (ψ_c), state of residence (δ_s), and calendar year (ζ_t). Since early economic conditions are measured at the state-by-year level, I further add a fixed effect for the state-year combination ($\pi_{s,t}$). This absorbs any effect of economic conditions in the year t that outcomes are measured, and ensures that the long-term effect coefficients β_a do not capture any association between these contemporaneous conditions and those at age 21.

This empirical approach allows me to compare individuals of the same ages, surveyed in different years and residing in different states, that experienced varying levels of entry unemployment rates when they began their young adulthood trajectories. Thus one should interpret the coefficient term β_a to be the change in the $\mathbf{Y}_{i,s,c,a,t}$ probability/log points for individuals of age a experiencing varying levels of entry unemployment rate conditions when

they turned 21, holding constant age patterns, contemporaneous conditions at time t in state s, and permanent cohort differences.

The fixed effects absorb many forms of heterogeneity. However, I control in addition for gender and race in $\mathbf{X}_i$. Standard errors are clustered at the state level to account for unmodeled common influences that might affect state labor markets but are not captured by the state fixed effects or the interaction of state and year fixed effects.

Note that equation (1) includes full sets of indicators for cohorts, ages, and times. It is well known that these are not all separately identified, because age equals time minus cohort. An additional linear restriction is required. The year effects for 2000 and 2022 are normalized to zero. Doing this normalization ensures that the estimated year coefficient for these years is zero. Note that these are nuisance parameters and the normalization does not affect the coefficients of interest. Normalizing other year effects provides identical coefficient results as those from the regression estimates were the 2000 and 2022 year effects had been normalized.

3.4 Empirical Results

Figures 3.1 through 3.5 shows effects on outcomes using the unemployment rate at age 21. Results do suggest that there are differences in outcomes when utilizing the unemployment rate faced at age 21 as the treatment variable as opposed to utilizing the unemployment rate faced at age 18. For example, take the occupation specific hourly wage, bottom panel of figure 3.1; results using early conditions faced at age 21 show that more heavily affected young adults are employed in occupations that pay their workers a lower hourly wage than their luckier counterparts, at least at the ages of 22 through 24. At age 22, the drop in the occupation specific hourly wage is roughly .002 log points whereas using the unemployment rate at age 18 as the early condition results in a gain of the occupation specific hourly wages by .00032 log points at that age. This can provide evidence that young adults coming of age in recessions are indeed able to adjust on their human capital accumulation early into their adulthood, whereas for those exposed to recessions at age 21 it may be too late for them to adjust their human capital accumulation as they launch into the labor market.

Young adults at age 18 who are looking for employment during a recession vs 18 year olds looking for a job when economic conditions are healthy do not have any college major to which they can use to match to an occupation. It may be that at the age of 18 young adults are more flexible in the types of jobs that they will consider for employment. Since there is nothing of their skill level at age 18 to match to a specific occupation this may explain the nearly zero effects found at the bottom panel of figure 2.8. To determine if these particular young adults are acquiring/adjusting on their human capital accumulation in their early ages not only do I need to compare the coefficients from figure 2.8 and 3.1 but a more precise way to determine adjustments on human capital accumulation would be to examine the results in 2.8 by non-college and college goers then compare those results to estimates on non-college and college goers using the unemployment rate at age 21 as the treatment variable. In the appendix, figure B.1, I show results only for regressions that use age 18 as the early economic

condition broken by non-college and college goers, but I have yet to produce the comparable figure using age 21 as the early condition. Nonetheless, effects at ages 19 to 20 in figure B.1 do indicate a large effect on being employed in higher paying occupations for young adults who did obtain a college degree/adjusted on their human capital accumulation.

The occupation specific hourly wage reductions are negative and significant, at ages 22-24, for those exposed to recessions at age 21 than for those exposed to recessions at age 18. What about effects on their occupation specific hours of work? Those entering into adulthood when they were 18, (top panel of figure 2.8), experienced minimal effects on the reduction in the occupation specific hours of work at ages 22-24 than those exposed to recessions at age 21 (top panel of figure 3.1) . At age 23, the occupation specific hours of work are reduced by .0002093 log points when the treatment variable is the early condition faced at age 18, but the reduction is .0010131 when the treatment variable is measured at age 21. Furthermore the age 21 economic condition effects are negative and significant for a longer time. These conditions cause a significant reduction in occupation specific hours of labor until age 24 while effects using age 18 as the treatment variable are significant and smaller until the age of 22 and attenuate to zero thereafter. There are clear differences in the log occupation specific hours of work and hourly wage estimates when using the age 21 unemployment rates as opposed to those faced at age 18. I now explore if conditions faced at age 21 also differentially affect individual outcomes, like young adult's log hourly wages, and not just the occupation quality outcomes. Results of which are presented in figure 3.2.

Figure 3.2 in comparison to Figure 2.7 shows that the unemployment rate at age 21 brings about individual earnings losses for a longer period of time for more heavily affected cohorts. These young adults have significant earnings losses until the age of 24 relative to their luckier counterparts. However, in figure 2.7 we saw that there is no clear evidence that the unemployment rate at age 18 brought about significant losses in log hourly earnings. I can not rule out that effects may just as well be zero throughout the first decade into adulthood.

Furthermore in figure 3.3, when controlling for occupation specific hourly wages the unemployment rate faced at age 21 continues to bring about negative and significant individual earnings losses until age 23. At age 24, a 1 percentage point increase in the unemployment rate faced at age 21 brings about a reduction in **individual** hourly wages by .00225 percent when I control for the occupation specific hourly wage. But when I do not control for occupation specific hourly wages the reduction in **individual** hourly earnings is .0032 percent. This means that controlling for the occupation specific hourly wage accounts for 29% of the individual earnings losses at age 24 when the treatment variable is the age 21 early economic condition. Whereas controlling for the occupation specific hourly wage accounts for 21% of the individual earnings losses at age 24 when the treatment variable is the age 18 early economic condition. Even though those coefficients at age 24 where not significant when the early condition was age 18 it it still useful to note that controlling for the occupation hourly wage can account for roughly 21% of the individual earnings losses.

The comparison of coefficients when early condition ages are different clearly point out that the unemployment rates faced at age 21 cause more harm to young adults' labor market outcomes. This gives credibility to my hypothesis that at age 18 young adults are more

flexible in the occupations that they consider for employment. Whereas at age 21 young adults might be more selective in the types of occupations they chose to be employed in – especially if their objective function includes matching their potential employment occupations to their college majors – a matching process that is more difficult when graduating and being on the job search during a recession. These hypotheses can better help us understand why we notice more negative impacts on the outcomes when utilizing unemployment rates at age 21 as opposed to those faced at age 18.

Figure 3.4 shows different effects on the type of tasks predominantly performed in young adults' occupations than those found in figure 2.10. Effects are actually positive, and sometimes significant, for working in routine occupations during ages 22 to 25 when the early condition at age 21 is used. On the other hand, effects are pretty much zero, at those ages, when the early condition at age 18 is used as the treatment variable. In the top panel of figure 3.4, we see that effects on working in cognitive/abstract occupations are negative at ages 22 to 25 and attenuate to zero thereafter. On the contrary, with the exception of two coefficients all other coefficients exhibit a positive effect on working in an abstract leaning occupation when the early condition at age 18 is utilized. Not only are the coefficients mostly positive, but the early condition at age 18 has a greater magnitude on the effects of working in an occupation requiring cognitive/abstract skills. At age 29, a 1 percentage point increase in the unemployment rate at age 18 increases the likelihood of working in an abstract job by roughly .002. Whereas, at age 29 a 1 percentage point increase the unemployment rate at age 21 increases the likelihood of working in an abstract job a little less than .001, which is less than half of the magnitude of the effect of the early condition at age 18. It appears that the early condition faced at age 18 exhibits a larger magnitude than the unemployment rates faced at age 21 on the occupation task intensity probability outcomes. It is worthwhile to investigate what are the objective functions young adults are maximizing at the age of 18 vs the age of 21 to better help us understand the heterogeneous effects when utilizing different early economic conditions as our treatment variable. Although there are heterogeneous effects for likelihoods of working in abstract and routine oriented occupations it is worth mentioning that the pattern of effects on the likelihoods of working in a manual oriented occupation are similar when employing either the age 18 or the age 21 early economic condition.

Finally, I turn to exploring how the early condition at age 21 differentially affects, if any, the occupation specific injury rate. I present results in figure 3.5. I find a similar pattern in effects on log occupation specific injury rates as those observed in Figure 2.14 between the ages of 23 to 26. It is worth noting though that the point estimates from figure 3.5, where the unemployment rate at age 21 is used as the early condition, are all larger in magnitude than the estimates in figure 2.14 when the unemployment rate at age 18 is used. This may give indication that the unemployment rate faced at age 18 may better prepare young adults in acquiring higher skills earlier on, that by the time they are in their early 20's they are able to be employed in higher skilled occupations and by being employed in these higher skilled occupations this may allow them to forgo being employed in more risky occupations. On the other hand, for those experiencing recessions at age 21, if they did not have the adequate time to adjust on acquiring more human capital skills, their current skills may not

be sufficient to forgo being employed in riskier occupations. Thus this intuition can explain why the point estimates in Figure 3.5 are larger than those from Figure 2.14.

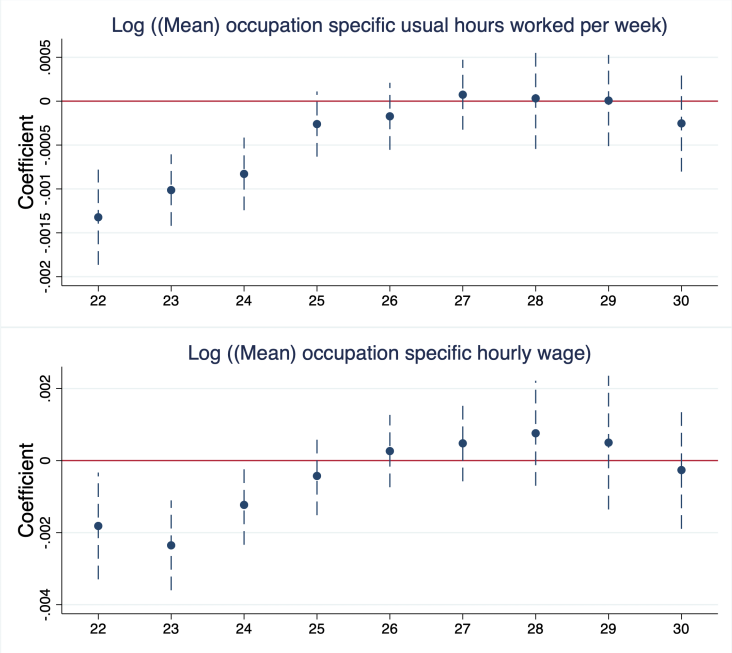
3.5 Conclusion

The estimates in this chapter have shown that early conditions matter and differentially affect the quality of the occupations of young adults. Being exposed to recessions at the start of adulthood, those analyzed in chapter 2, rather than at the college graduation age may better influence how young adults acquire the necessary skills in their early adulthood years to then be a more attractive candidate to be employed in jobs with higher occupational quality measures.

Experiencing recessions at age 18 can motivate young adults to orient themselves to acquire cognitive skills faster than their luckier counterparts. On the other hand, experiencing recessions at the time one graduates college may cause more harm than good as these young adults can no longer adjust on the choice of their college major. They will have to face the economic consequences for the major that they chose during their college going years. These hypotheses bring about the possibility that young adults facing recessions at age 18 versus those facing recessions at age 21 are likely optimizing different utility functions all together. A topic that requires further investigation.

Figures

Figure 3.1 Impact On Occupation Specific Hourly Wage & Hours Worked



Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on the unemployment rate faced at age 21 interacted with age dummies. The top and bottom panels are based on a sample of 22 to 30 year olds observed between 2000 to 2022. The top panel shows coefficient estimates ($\beta'_a s$) from regression 1 where the outcome variable is the log of the average occupation specific hours of work that individuals in that occupation supply. The bottom panel shows coefficient estimates where the outcome variable is the log of the average occupation specific hourly wage.

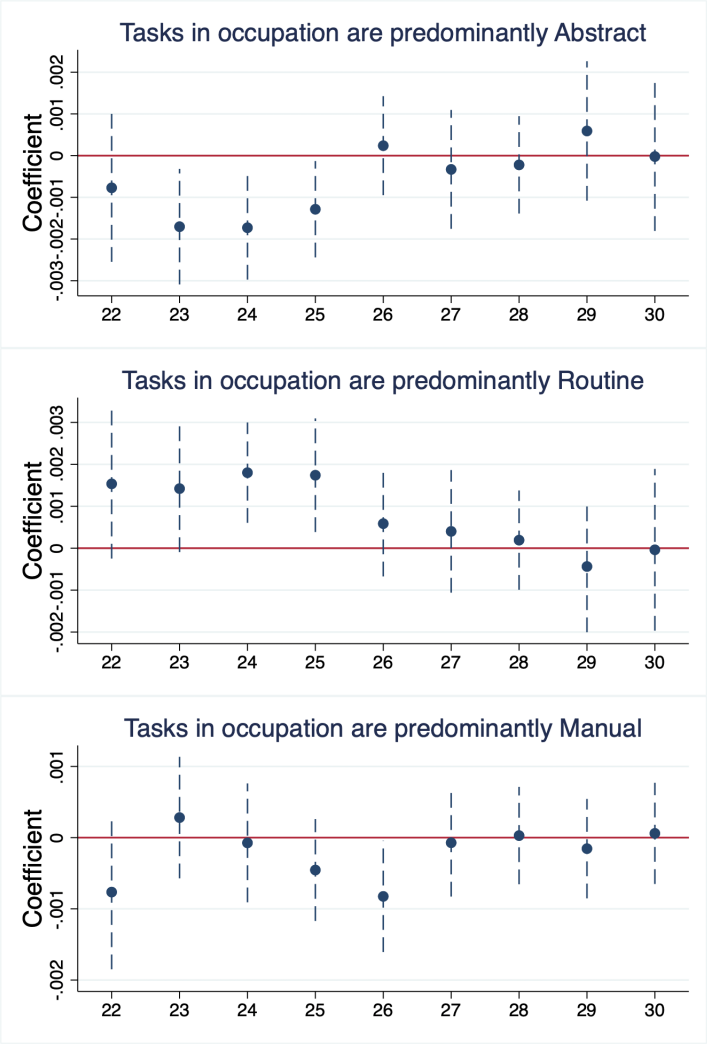
Figure 3.2 Impact on individual specific log hourly wages

Notes: The figure shows coefficients from regressing log individual hourly wage on the unemployment rate faced at age 21 interacted with age dummies. Results are based on the specification presented in equation 1. The regression uses data from the ACS from 2000 to 2022 for individuals aged 22 to 30. The figure shows coefficients and confidence intervals clustered at the state level.

Figure 3.3 Impact on individual specific log hourly wages controlling for occupation specific hourly wage

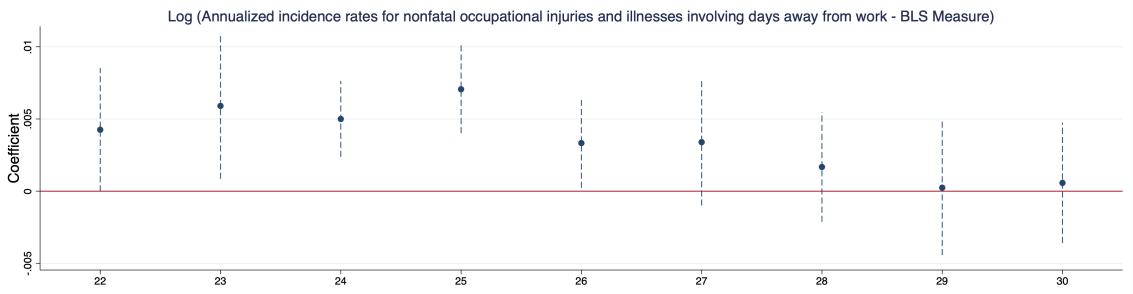
Notes: The figure shows coefficients from regressing log individual hourly wage on the unemployment rate faced at age 21 interacted with age dummies. Results are based on the specification presented in equation 1 with an added control for occupation specific hourly wage. The regression uses data from the ACS from 2000 to 2022 for individuals aged 22 to 30. The figure shows coefficients and confidence intervals clustered at the state level.

Figure 3.4 Impact On Being Employed in Occupations that Require Tasks to be Predominantly Abstract, Routine, or Manual



Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on the unemployment rate faced at age 21 interacted with age dummies. Results are based on the main sample of all 22 to 30 year olds observed between 2000 to 2022. The figures show coefficient estimates for three different regressions where the outcomes are 1) binary variable equal to one if the predominant tasks in one's occupation are abstract (top panel), 2) binary variable equal to one if the predominant tasks in one's occupation are routine (middle panel), and 3) binary variable equal to one if the predominant tasks in one's occupation are manual (bottom panel).

Figure 3.5 Impact on Occupation Specific Incidence Rate



Notes: Results are based on the specification presented in equation 1. The regression uses data from the ACS from 2000 to 2022 for individuals aged 22 to 30. The figure shows coefficients and confidence intervals clustered at the state level. The figure shows coefficients from regressing log occupation specific injury rates on the unemployment rate at age 21 interacted with age dummies.

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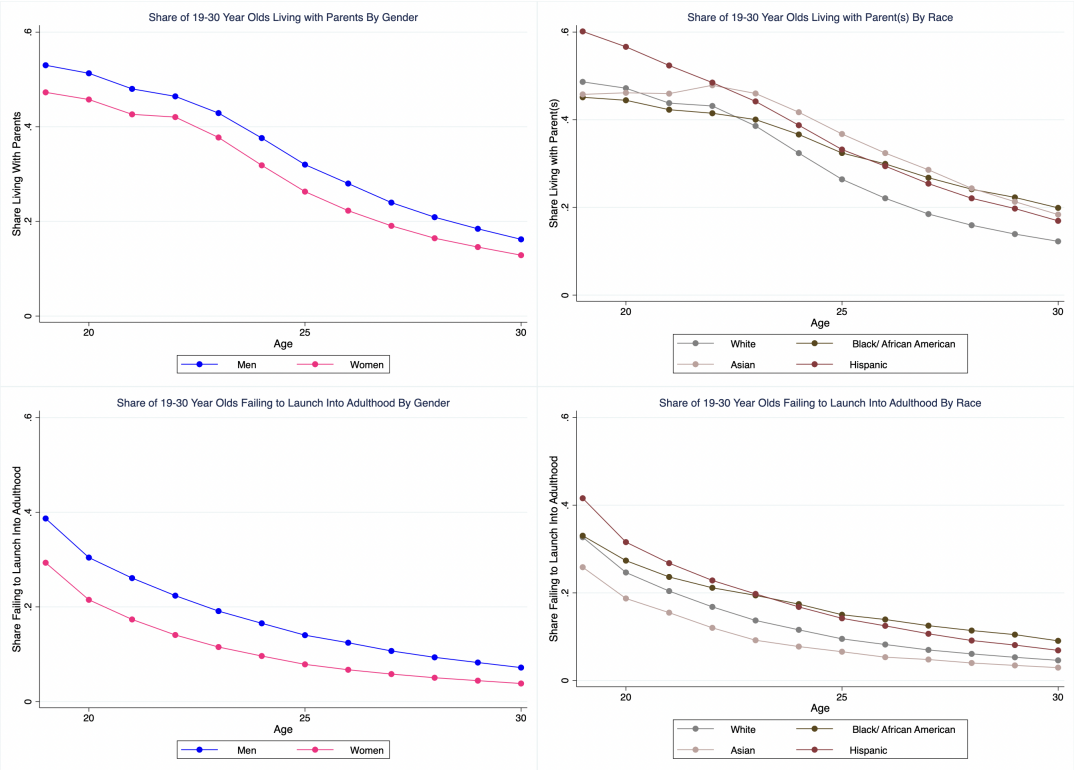
Appendix A

Appendix To Chapter 1

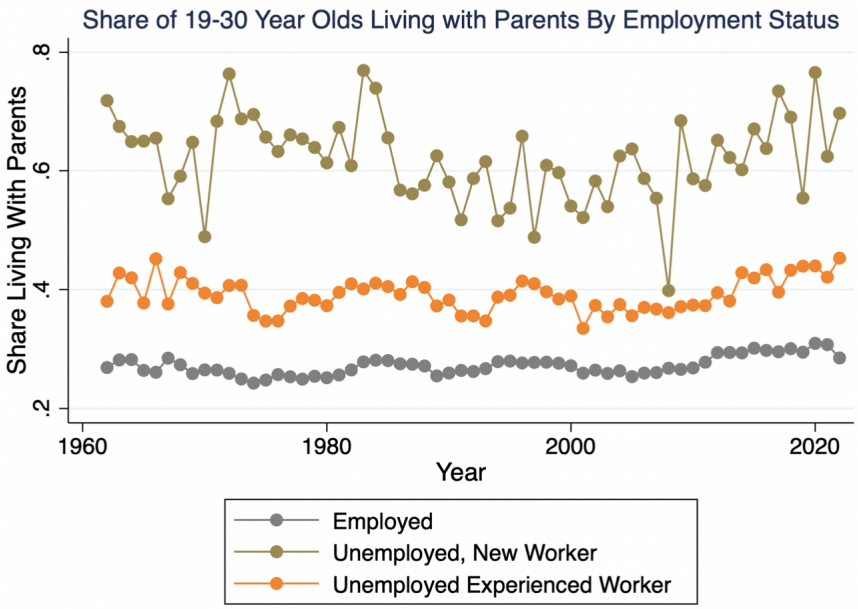
A.1 Descriptive Graphs

Figure A.1 Shares Living with Parents & Failing to Launch into Adulthood by Gender and Race



Source and Notes: American Community Surveys (ACS) data for young adults aged 19 to 30 observed between 2006 and 2021. The top left panel shows the shares of young adults who are living with their parent(s) by age for men and women. The top right panel shows the shares of young adults who are living with their parent(s) by age for Whites, Blacks, Asians, and Hispanics. The bottom left panel shows the shares of young adults who failed to transition into adulthood by age for men and women. The bottom right panel shows the shares of young adults who failed to transition into adulthood by age for Whites, Blacks, Asians, and Hispanics

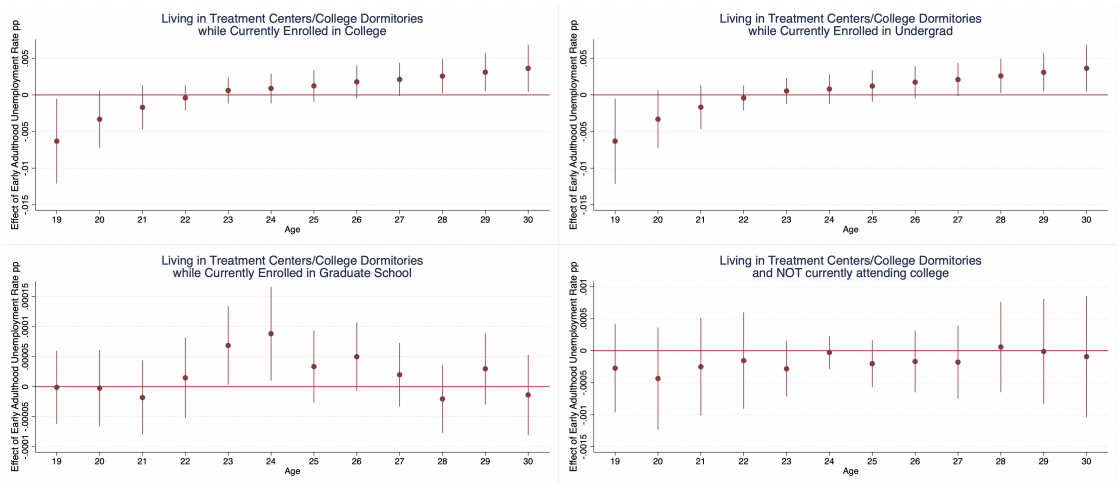
Figure A.2 Shares of young adults living with their parent(s) by employment status



Source and Notes: Current Population Survey (CPS) data for young adults aged 19 to 30 observed between 1962 and 2022. The figure shows the shares of young adults who are living with their parent(s) by employment status.

A.2 Effects on Joint Outcomes of College Attendance and Living in Treatment Centers or College Dormitories

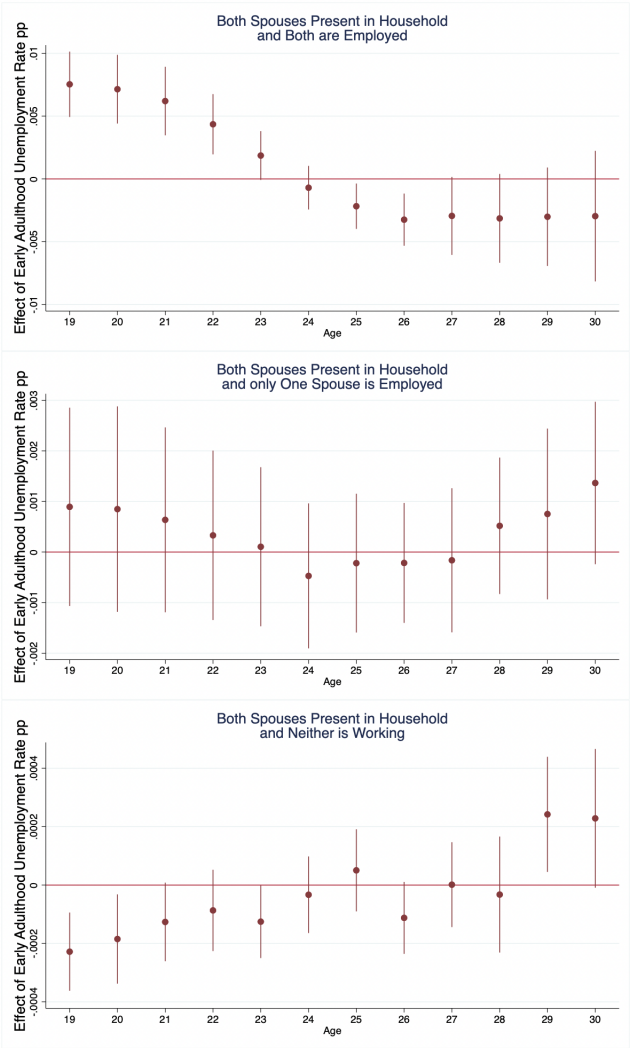
Figure A.3 Effects on Joint Outcomes of College Attendance and Living in Treatment Centers or College Dormitories



Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2006 to 2021. Results are also based on the main sample of 19 to 30 year olds observed between 2006 to 2021.The figures show coefficients and confidence intervals clustered at the state level. The top left panel shows coefficients from regressing the joint outcome variable of living in treatment centers or college dormitories while being currently enrolled in college on unemployment rates at the start of adulthood interacted with age dummies. The top right panel shows coefficients from regressing the joint outcome variable of living in treatment centers or college dormitories while being currently enrolled in undergrad on unemployment rates at the start of adulthood interacted with age dummies. The bottom left panel shows coefficients from regressing the joint outcome variable of living in treatment centers or college dormitories while being currently enrolled in graduate school on unemployment rates at the start of adulthood interacted with age dummies. The bottom right panel shows coefficients from regressing the joint outcome variable of living in treatment centers or college dormitories while not currently attending school on unemployment rates at the start of adulthood interacted with age dummies.

A.3 Effects on joint outcome of both spouses present in the household and their employment status

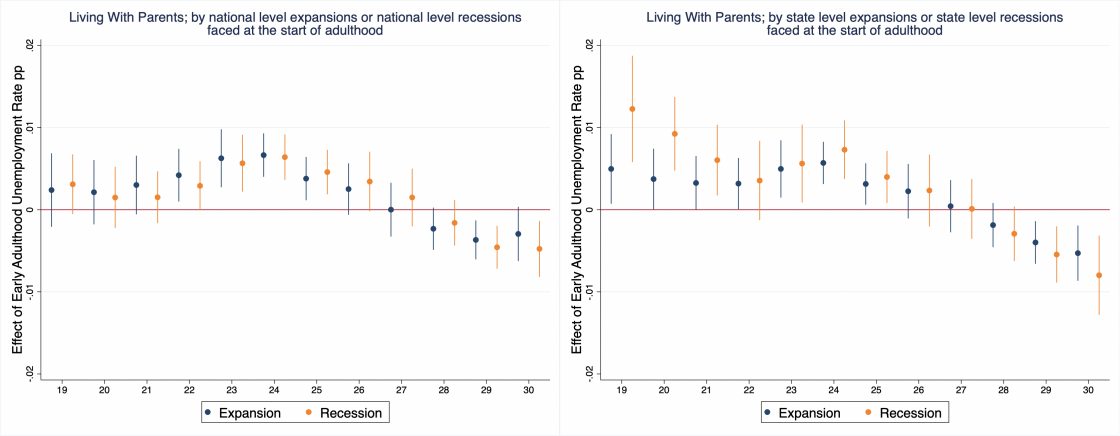
Figure A.4 Impact on both spouses present in the household and their employment status



Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2006 to 2021. Results are also based on the main sample of 19 to 30 year olds observed between 2006 to 2021. The figure shows coefficients and confidence intervals clustered at the state level. The top panel shows coefficients from regressing the joint outcome variable of **both spouses present at home and both are employed** on unemployment rates at the start of adulthood interacted with age dummies. The middle panel shows coefficients from regressing the joint outcome variable of **both spouses present at home and only one spouse is employed** on unemployment rates at the start of adulthood interacted with age dummies. The bottom panel shows coefficients from regressing the joint outcome variable of **both spouses present at home and neither is working** on unemployment rates at the start of adulthood interacted with age dummies.

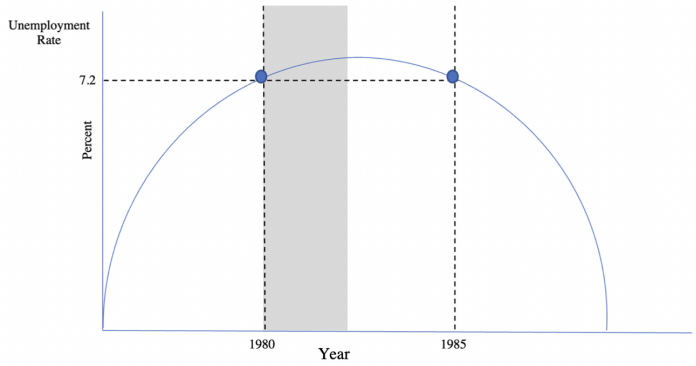
A.4 Robustness Graphs

Figure A.5 Effects on Living with Parents by Becoming of Age During Expansions or Recessions



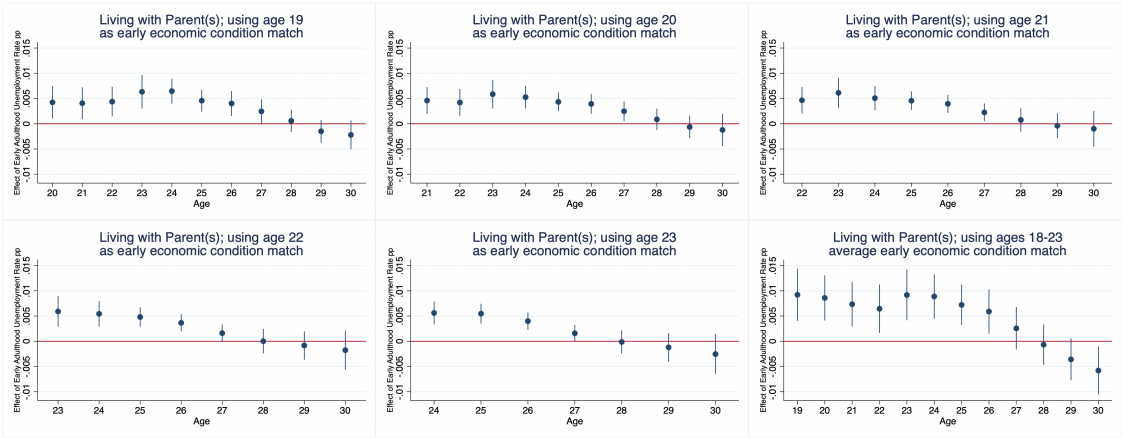
Notes: Results are based on data on 19 to 30 year olds from the ACS from 2006 to 2021. I adapt specification (1) where the only difference is that I have added two triple interactions to estimate scarring effects for young adults who become of age during expansionary times and those who become of age during recessionary times. The corresponding regression of interest is as follows:
$\mathbf{Y}_{i,s,c,a,t} = \sum_{a=19}^{30} \beta_a D_a * UR_{s,(c+18)} * Expan_{(c+18)} + \sum_{a=19}^{30} \iota_a D_a * UR_{s,(c+18)} * Rece_{(c+18)} + \rho \mathbf{X}_i + \gamma_a + \psi_c + \delta_s + \zeta_t + \pi_{s,t} + \epsilon_{i,s,c,a,t}$
The left panel plots the effects for young adults who turned 18 during seasons of national economic expansions (blue coefficients) and national recessionary periods (orange coefficients). Effects are symmetric and robust to my main results. The right panel plots the effects for young adults who turned 18 during seasons of state-level economic expansions (blue coefficients) and state-level recessionary periods (orange coefficients).

Figure A.6 Intuitive Graph on Aging Through Recessions and Expansions



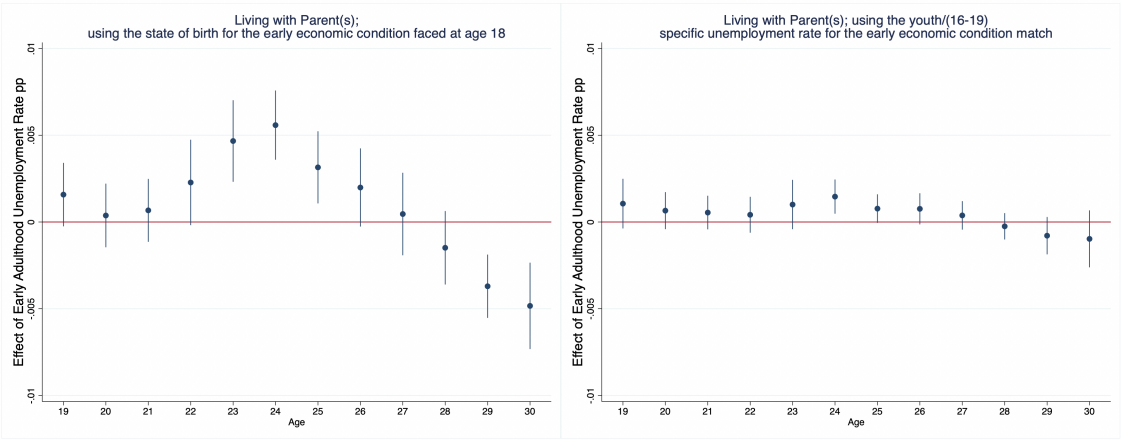
Notes: This figure demonstrates the intuition of the orange and blue coefficients from Figure **??**. A young adult becoming of age in 1980 entered into adulthood during a recessionary season and faced an early condition of 7.2 as the unemployment rate. Another young adult entered into adulthood during an expansionary season in 1985 and faced the same early economic condition rate. Although the young adult who became of age in 1985 faced lower unemployment rates as he/she aged, the early economic condition of 7.2% had the same effect on his/her likelihood of cohabiting with parents that the young adult who became of age in 1980 faced– who faced higher unemployment rates as he/she aged through the years. Economic conditions at the start of adulthood clearly matter and symmetrically affect the cohabiting decision of young adults.

Figure A.7 Effects on living with parent(s) using different ages for early economic conditions



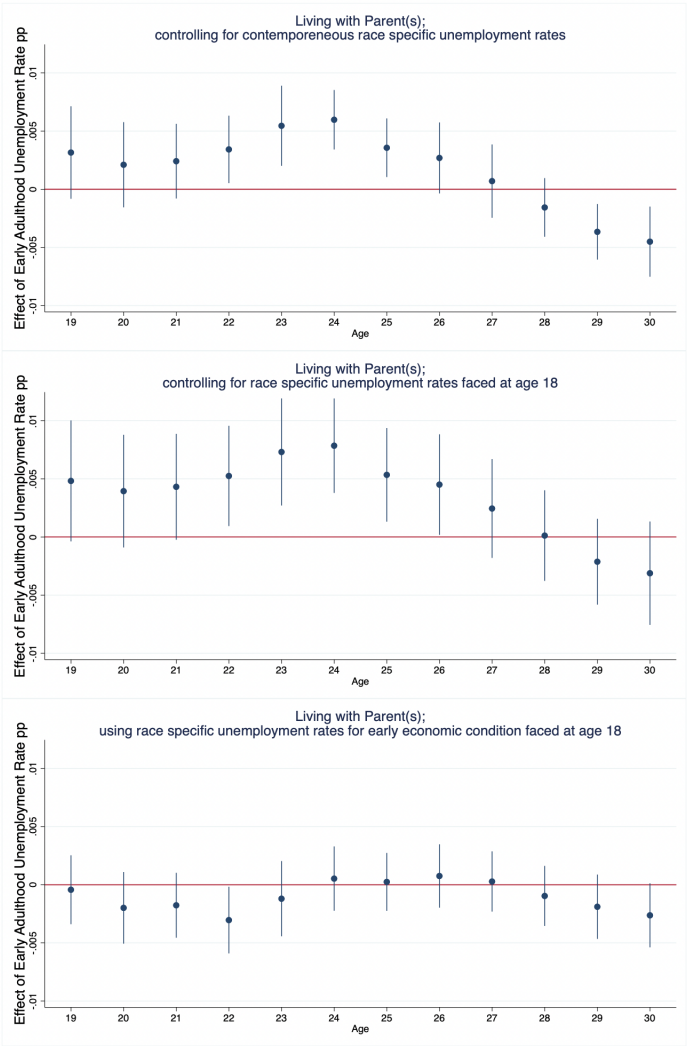
Notes: Panels of Figure show effects on living with parent(s) from equation (1) but changes the unemployment rate faced at the start of adulthood from age 18 to different ages. The top far left panel uses age 19, the top middle panel uses age 20, the top far right panel uses age 21, the bottom far left panel uses age 22, the bottom middle panel uses age 23, and the bottom far right panel uses the average unemployment rate at age 18 to 23 for the early adulthood unemployment rate.

Figure A.8 Robustness: State of Birth as Early Economic Condition or Youth Unemployment Rate as Early Economic Condition



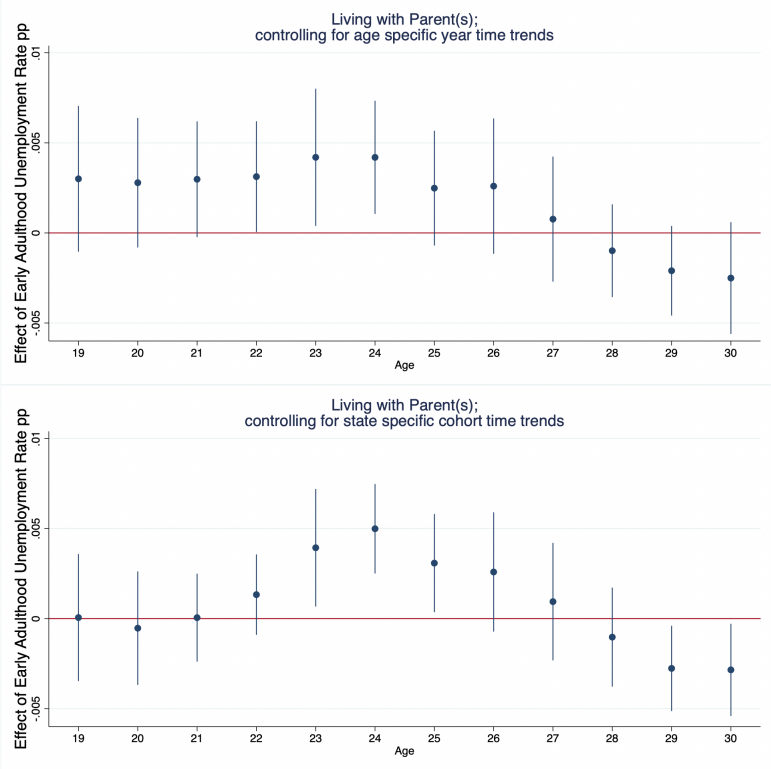
Notes: Panels of Figure show effects on living with parent(s) from equation (1) but changes the unemployment rate faced at the start of adulthood to alternative measures. The left panel presents scarring effects from regression (1) but using the state of birth for the early economic condition, the state of birth fixed effect, the state of birth-by-time fixed effect, and clustering standard errors at the state of birth level. Results are robust to those in my benchmark specification. The right panel presents scarring effects from regression (1) using the youth specific unemployment rate for youths between ages 16-19 as the early economic condition.

Figure A.9 Robustness: Controlling for race specific unemployment rates or using race specific unemployment rates as early condition



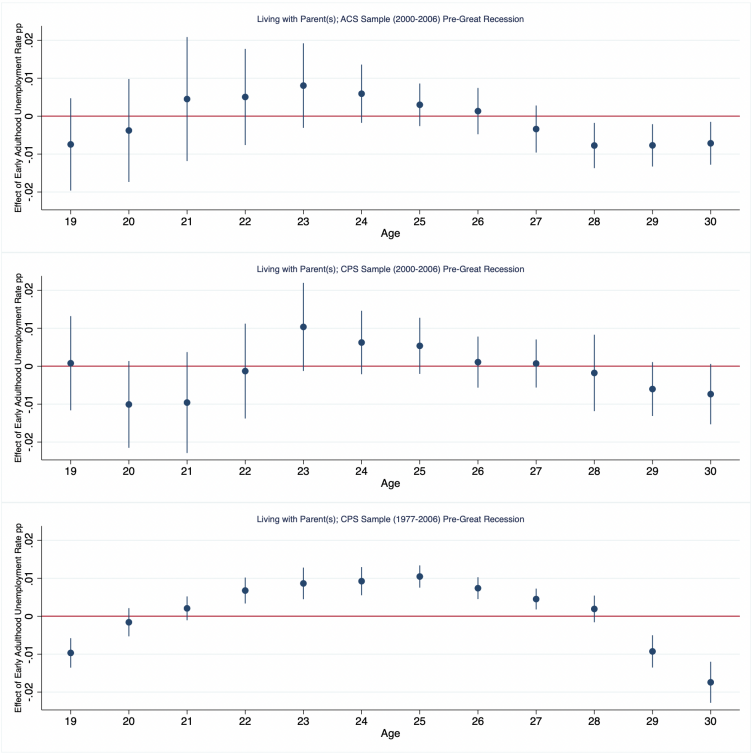
Notes: Panels of Figure show effects on living with parent(s) from equation (1) but additionally controls for race specific contemporaneous unemployment rates, race specific unemployment rates faced at the age of 18, or uses race specific unemployment rates at age 18 for the unemployment rate faced at age 18. The bottom panel demonstrates effects using the race specific unemployment rate at age 18 for the early adulthood unemployment rate. For Hispanic young adults I assign them the cell-level Hispanic unemployment rate for the respective year they turned age 18. I follow the same approach for Blacks, Asians, and Whites. For the *other* race category I assign them the average unemployment rate for Asians, White, Blacks, and Hispanics. The middle panel shows effects on living with parent(s) from equation (1) controlling for the race specific unemployment rate faced in early adulthood. The top panel shows effects on living with parent(s) from equation (1) controlling for the race specific contemporaneous unemployment rate.

Figure A.10 Robustness: Controlling for Age-Year Time Trends or Controlling for State Specific Time Trends



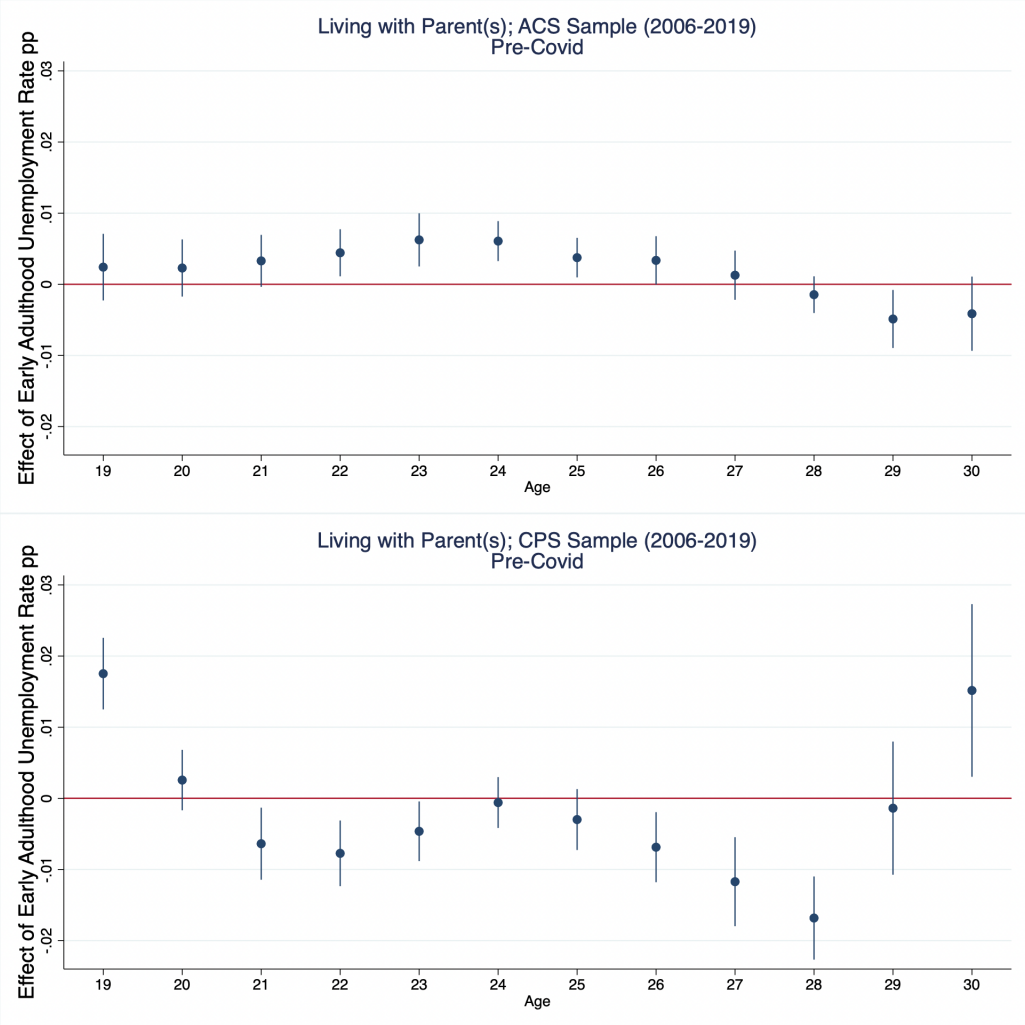
Notes: The top panel of Figure shows effects on living with parent(s) from equation (1) but I additionally include a set of age dummy controls interacted with a continuous year variable. The bottom panel of Figure shows effects on living with parent(s) from equation (1) but additionally controls for state by cohort time trends.

Figure A.11 Robustness: Pre-Great Recession ACS or CPS Samples



Notes: The top panel of Figure shows effects on living with parent(s) from equation (1) but on an ACS sample of 19 to 30 year olds between the years 2000 to 2006. Individuals in group quarters were excluded from this sample given that they were not surveyed pre-2006. The top panel can then appropriately be compared with the middle panel exploring results on young adults of age 19 to 30 on CPS samples surveyed between 2000 to 2006. To explore a longer length of time I leverage the CPS survey samples. I am unable to determine effects pre-2000 for ACS samples given that there are no data on years before 2000 for this dataset. The bottom panel shows effects on living with parent(s) from equation (1) on young adults of ages 19 to 30 surveyed between 1977 to 2006. Effects are robust and show that my main results are not solely driven by Great Recession cohorts, but rather that it is high unemployment rates at the start of adulthood that affect the life choices of young adults.

Figure A.12 Robustness: Pre-Covid Recession ACS or CPS Samples



Notes: The top panel of Figure shows effects on living with parent(s) from equation (1) but on an ACS sample of 19 to 30 year olds between the years 2006 to 2019 to exclude pre-Covid 19 effects. The top panel can then appropriately be compared with the bottom panel exploring results on young adults of age 19 to 30 on CPS samples surveyed between 2006 to 2019.

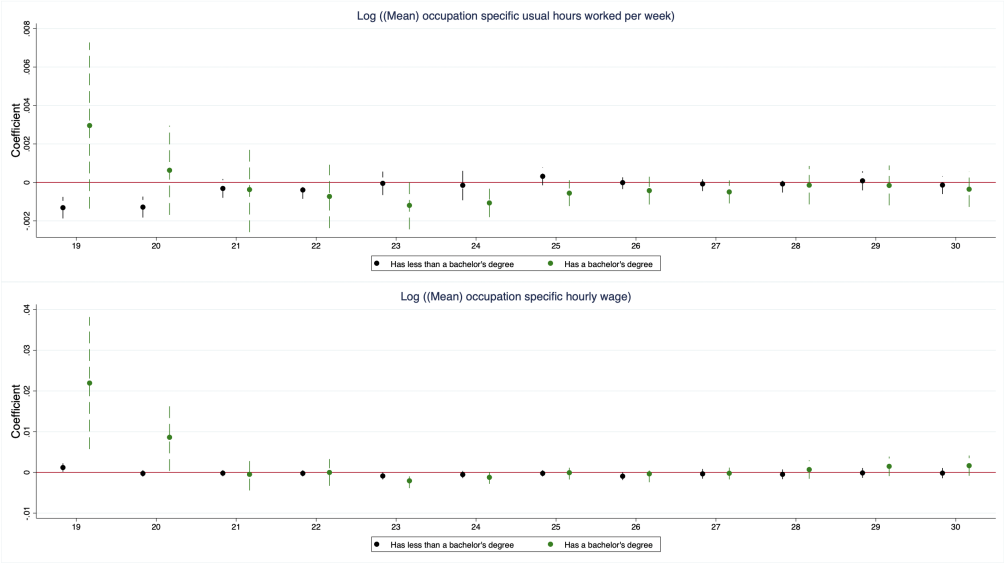
Appendix B

Appendix To Chapter 2

B.1 Demographic Graphs

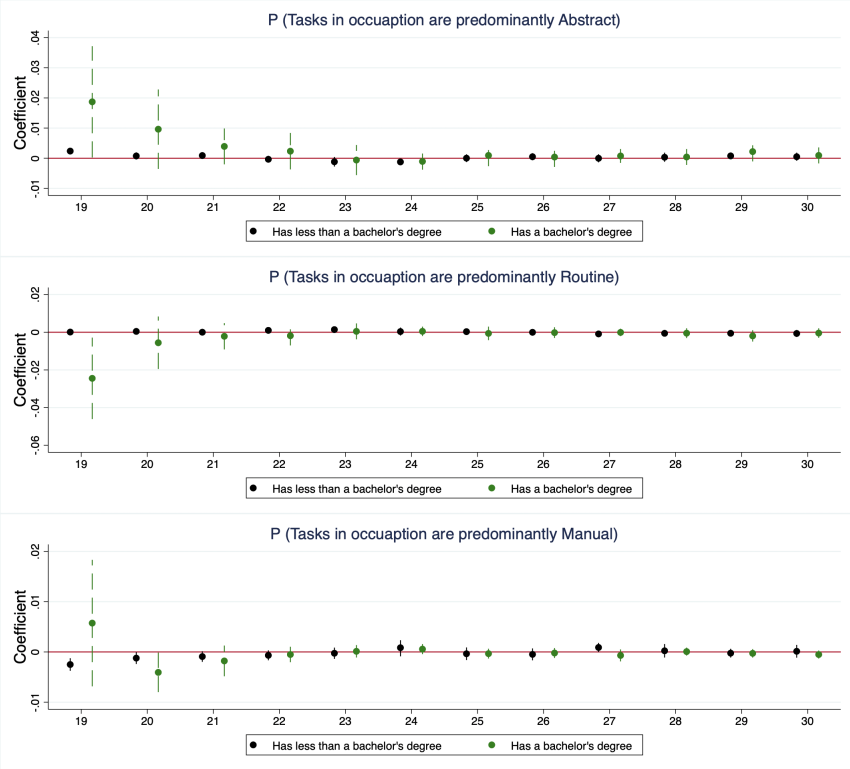
Results by Level of Education

Figure B.1 Results by Level of Education – Occupation Hours of Work & Hourly Wage



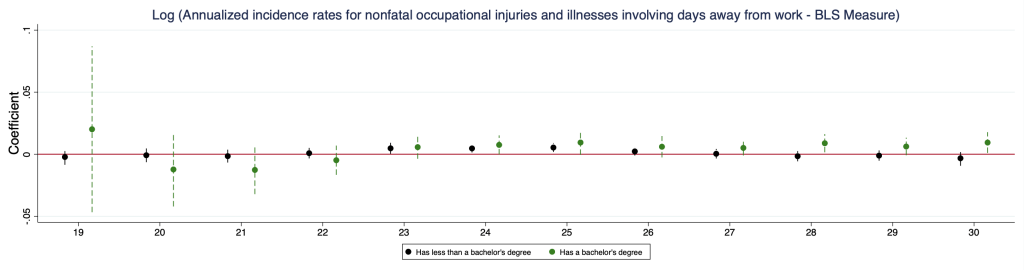
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. The top and bottom panels are based on the main sample of all 19 to 30 year olds observed between 2000 to 2022. The top panel shows coefficient estimates ($\beta'_a s$) from regression 1 where the outcome variable is the log of the average occupation specific hours of work that individuals in that occupation supply. The bottom panel shows coefficient estimates where the outcome variable is the log of the average occupation specific hourly wage. These results are separated by college completion. Where black coefficients represent individuals with less than a bachelors degree while the green coefficients represents individuals with a bachelor's degree or more.

Figure B.2 Results by Level of Education – Occupational Task



Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. Results are based on the main sample of all 19 to 30 year olds observed between 2000 to 2022. The figure shows coefficient estimates for six different regressions where the outcomes are 1) binary variable equal to one if the predominant tasks in one's occupation are abstract (top panel), 2) binary variable equal to one if the predominant tasks in one's occupation are routine (middle panel), and 3) binary variable equal to one if the predominant tasks in one's occupation are manual (bottom panel). These results are separated by college completion. Where black coefficients represent individuals with less than a bachelors degree while the green coefficients represents individuals with a bachelor's degree or more.

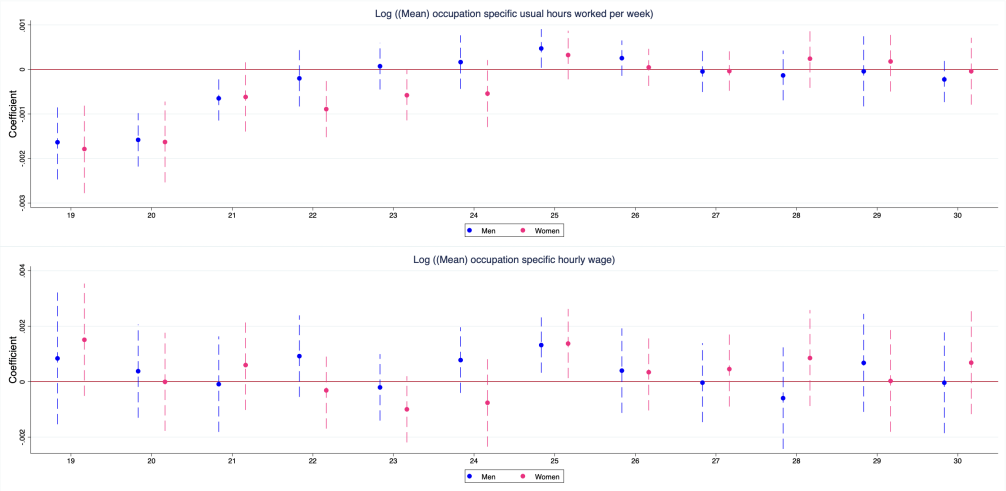
Figure B.3 Results by Level of Education – Occupation Injury Rate



Notes: Results are based on the specification presented in equation 1. The regression uses data from the ACS from 2000 to 2022 for individuals aged 19 to 30. The figure shows coefficients and confidence intervals clustered at the state level. The figure shows coefficients from regressing log occupation specific injury rates on the unemployment rate at the start of adulthood interacted with age dummies. These results are separated by college completion. Where black coefficients represent individuals with less than a bachelors degree while the green coefficients represents individuals with a bachelor's degree or more.

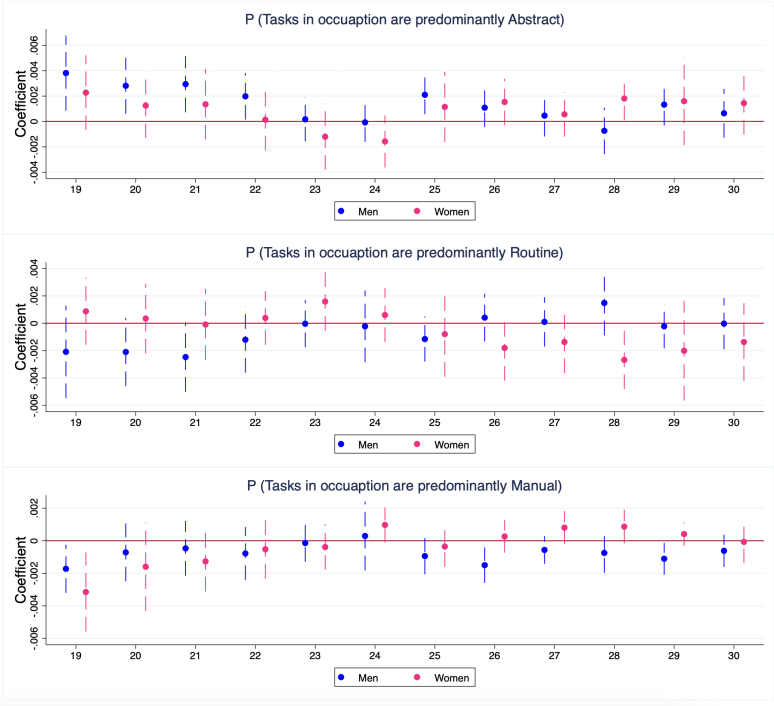
Results by Gender

Figure B.4 Results by Gender – Occupation Hours of Work & Hourly Wage



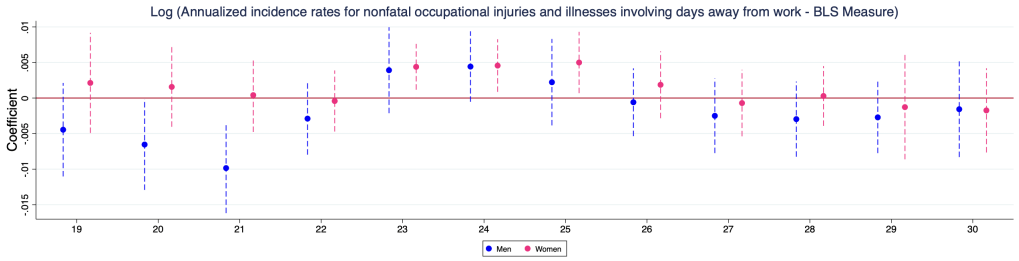
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. The top and bottom panels are based on the main sample of all 19 to 30 year olds observed between 2000 to 2022. The top panel shows coefficient estimates ($\beta'_a s$) from regression 1 where the outcome variable is the log of the average occupation specific hours of work that individuals in that occupation supply. The bottom panel shows coefficient estimates where the outcome variable is the log of the average occupation specific hourly wage. These results are separated by gender. Where blue coefficients represent estimates for men while the pink coefficients represent estimates for women.

Figure B.5 Results by Gender – Occupational Task



Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. Results are based on the main sample of all 19 to 30 year olds observed between 2000 to 2022. The figures show coefficient estimates for six different regressions where the outcomes are 1) binary variable equal to one if the predominant tasks in one's occupation are abstract (top panel), 2) binary variable equal to one if the predominant tasks in one's occupation are routine (middle panel), and 3) binary variable equal to one if the predominant tasks in one's occupation are manual (bottom panel). These results are separated by gender. Where blue coefficients represent estimates for men while the pink coefficients represent estimates for women.

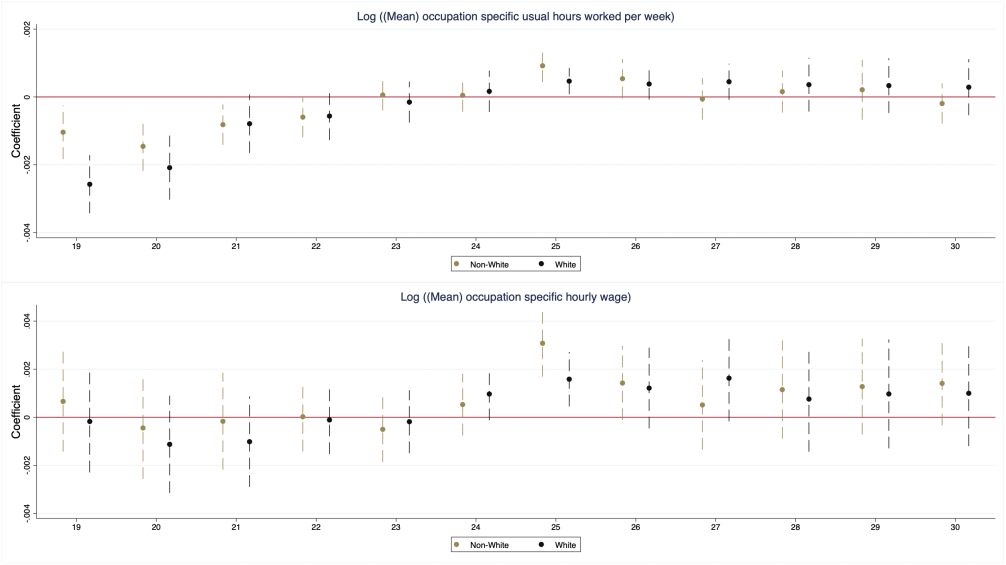
Figure B.6 Results by Level of Gender – Occupation Injury Rate



Notes: Results are based on the specification presented in equation 1. The regression uses data from the ACS from 2000 to 2022 for individuals aged 19 to 30. The figure shows coefficients and confidence intervals clustered at the state level. The figure shows coefficients from regressing log occupation specific injury rates on the unemployment rate at the start of adulthood interacted with age dummies. These results are separated by gender. Where blue coefficients represent estimates for men while the pink coefficients represent estimates for women.

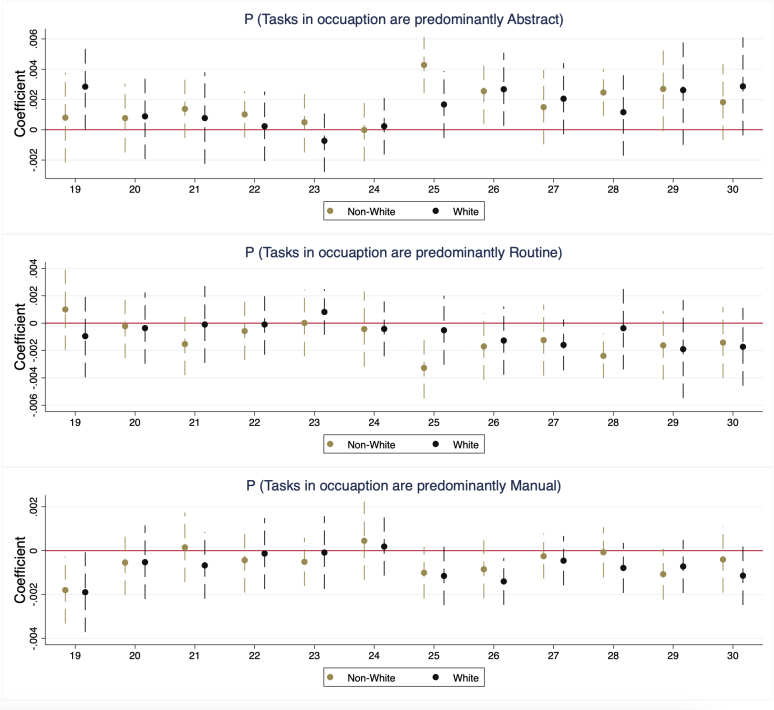
Results by Race

Figure B.7 Results by Race – Occupation Hours of Work & Hourly Wage



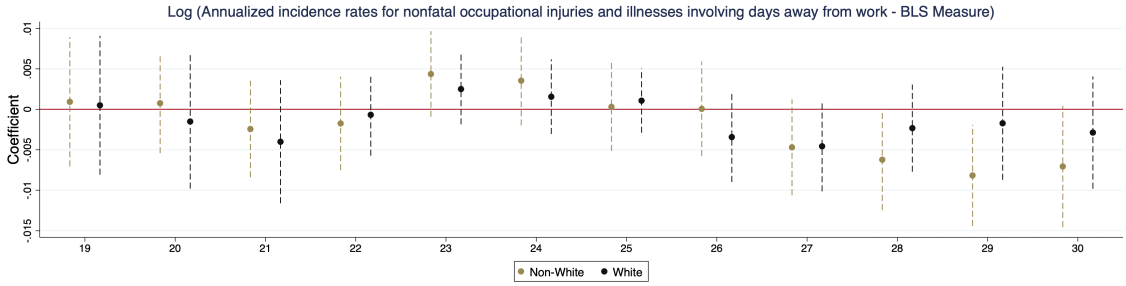
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. The top and bottom panels are based on the main sample of all 19 to 30 year olds observed between 2000 to 2022. The top panel shows coefficient estimates ($\beta'_a s$) from regression 1 where the outcome variable is the log of the average occupation specific hours of work that individuals in that occupation supply. The bottom panel shows coefficient estimates where the outcome variable is the log of the average occupation specific hourly wage. These results are separated by race. Where the black coefficients represent results for white individuals while the brown coefficients represent all others.

Figure B.8 Results by Race – Occupational Task



Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. Results are based on the main sample of all 19 to 30 year olds observed between 2000 to 2022. The figures show coefficient estimates for six different regressions where the outcomes are 1) binary variable equal to one if the predominant tasks in one's occupation are abstract (top panel), 2) binary variable equal to one if the predominant tasks in one's occupation are routine (middle panel), and 3) binary variable equal to one if the predominant tasks in one's occupation are manual (bottom panel). These results are separated by race. Where the black coefficients represent results for white individuals while the brown coefficients represent all others.

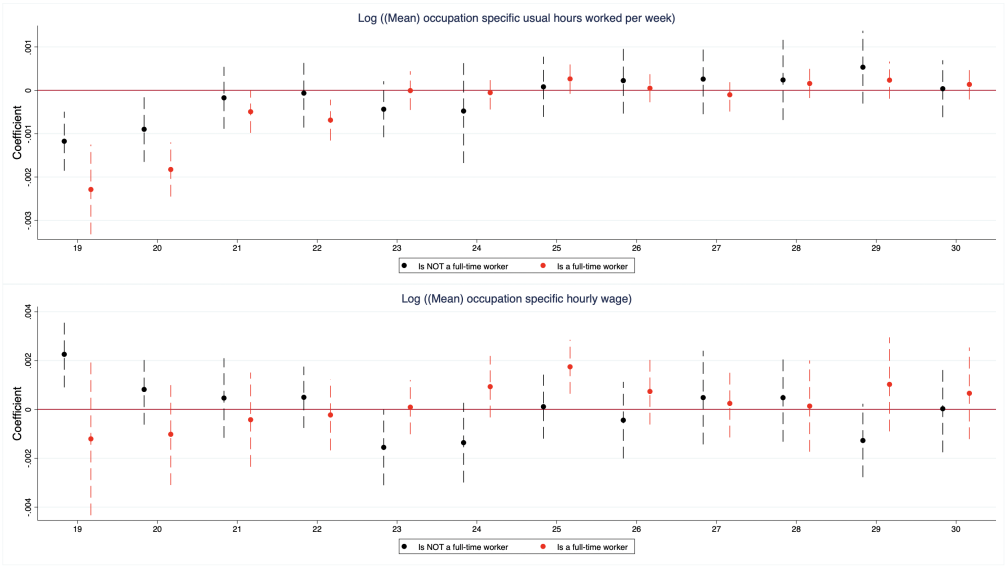
Figure B.9 Results by Race – Occupation Injury Rate



Notes: Results are based on the specification presented in equation 1. The regression uses data from the ACS from 2000 to 2022 for individuals aged 19 to 30. The figure shows coefficients and confidence intervals clustered at the state level. The figure shows coefficients from regressing log occupation specific injury rates on the unemployment rate at the start of adulthood interacted with age dummies. These results are separated by race. Where the black coefficients represent results for white individuals while the brown coefficients represent all others.

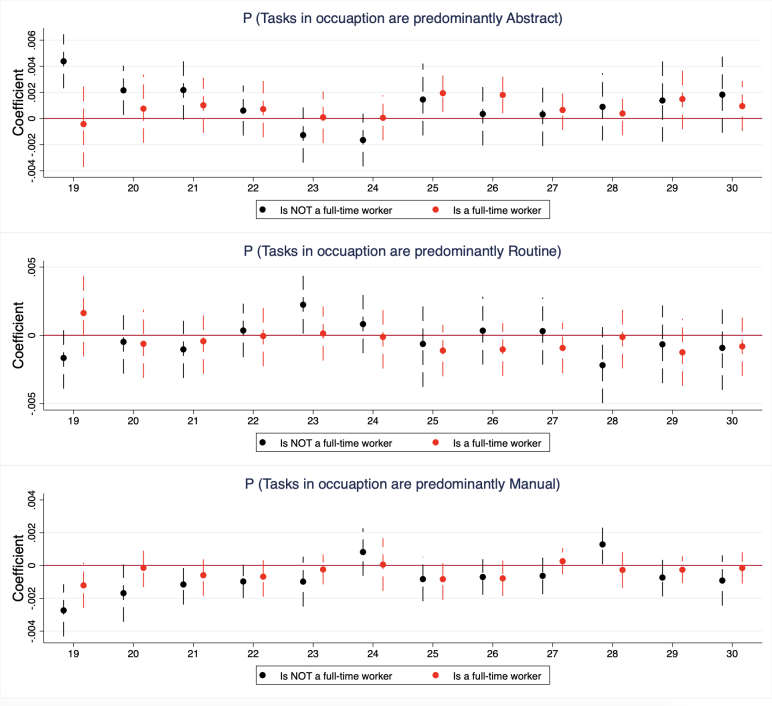
Results by Full-Time & Non Full-Time Workers

Figure B.10 Results by Full-Time & Non Full-Time Workers – Occupation Hours of Work & Hourly Wage



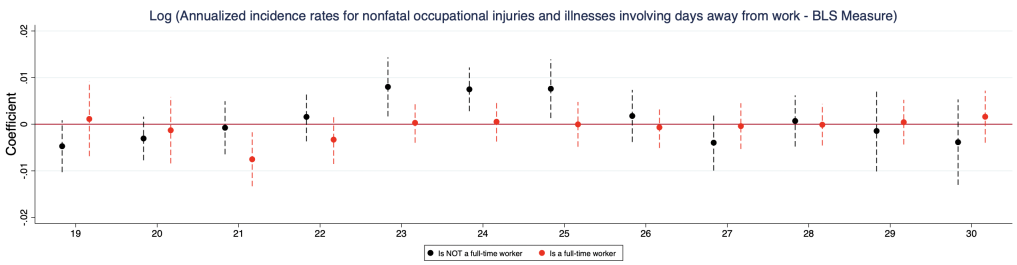
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. The top and bottom panels are based on the main sample of all 19 to 30 year olds observed between 2000 to 2022. The top panel shows coefficient estimates ($\beta'_a s$) from regression 1 where the outcome variable is the log of the average occupation specific hours of work that individuals in that occupation supply. The bottom panel shows coefficient estimates where the outcome variable is the log of the average occupation specific hourly wage. These results are separated by full-time and non full-time workers. Where the black coefficients represent results for non full-time workers while the red coefficients represent estimates for full-time workers. Full-time workers are individuals who worked at least 30 hours or more per week and who worked at least 48 weeks or more in the previous calendar year.

Figure B.11 Results by Full-Time & Non Full-Time Workers – Occupational Task



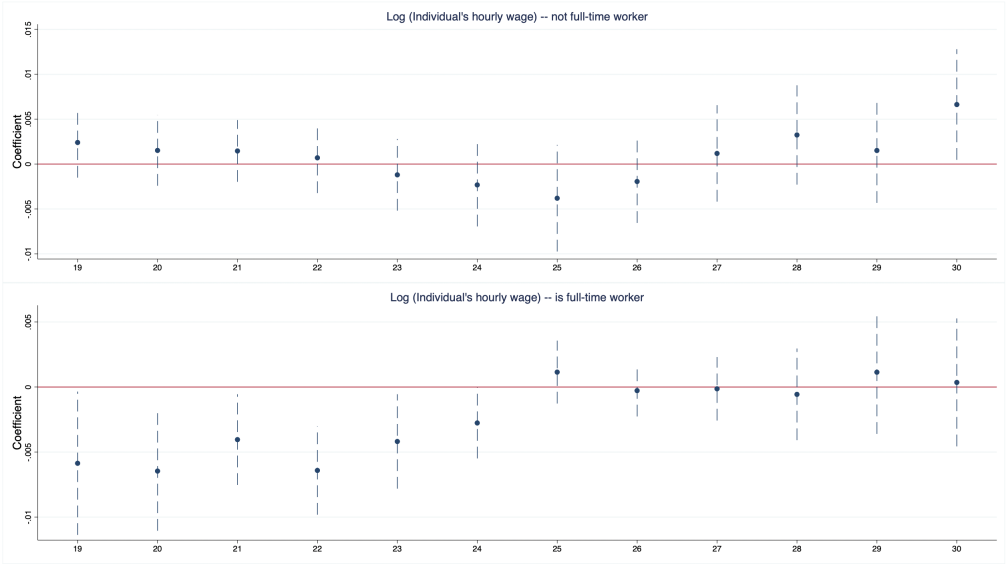
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. Results are based on the main sample of all 19 to 30 year olds observed between 2000 to 2022. The figures show coefficient estimates for three different regressions where the outcomes are 1) binary variable equal to one if the predominant tasks in one's occupation are abstract (top panel), 2) binary variable equal to one if the predominant tasks in one's occupation are routine (middle panel), and 3) binary variable equal to one if the predominant tasks in one's occupation are manual (bottom panel). These results are separated by full-time and non full-time workers. Where the black coefficients represent results for non full-time workers while the red coefficients represent estimates for full-time workers. Full-time workers are individuals who worked at least 30 hours or more per week and who worked at least 48 weeks or more in the previous calendar year.

Figure B.12 Results by Full-Time & Non Full-Time Workers – Occupation Specific Injury Rate



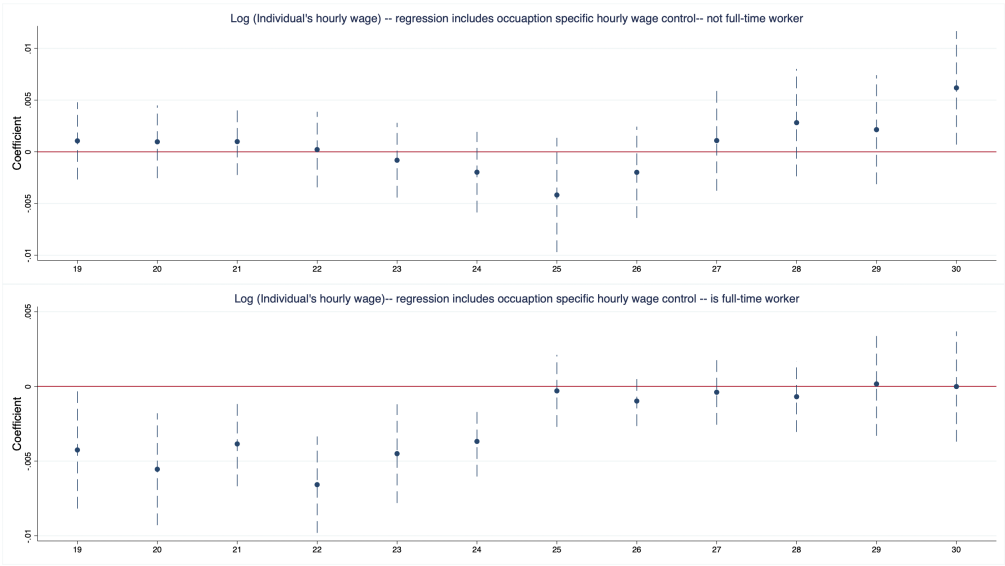
Notes: Results are based on the specification presented in equation 1. The regression uses data from the ACS from 2000 to 2022 for individuals aged 19 to 30. The figure shows coefficients and confidence intervals clustered at the state level. The figure shows coefficients from regressing log occupation specific injury rates on the unemployment rate at the start of adulthood interacted with age dummies. These results are separated by full-time and non full-time workers. Where the black coefficients represent results for non full-time workers while the red coefficients represent estimates for full-time workers. Full-time workers are individuals who worked at least 30 hours or more per week and who worked at least 48 weeks or more in the previous calendar year.

Figure B.13 Results by Full-Time & Non Full-Time Workers – Log Individual Hourly Wage



Notes: The figures show coefficients from regressing log individual hourly wage on the unemployment rate at the start of adulthood interacted with age dummies. Results are based on the specification presented in equation 1. The regression uses data from the ACS from 2000 to 2022 for individuals aged 19 to 30. The figures show coefficients and confidence intervals clustered at the state level. These results are separated by full-time (bottom panel) and non full-time workers (top panel). Where the black coefficients represent results for non full-time workers while the red coefficients represent estimates for full-time workers. Full-time workers are individuals who worked at least 30 hours or more per week and who worked at least 48 weeks or more in the previous calendar year.

Figure B.14 Results by Full-Time & Non Full-Time Workers – Log Individual Hourly Wage with Occupation Specific Hourly Wage Control

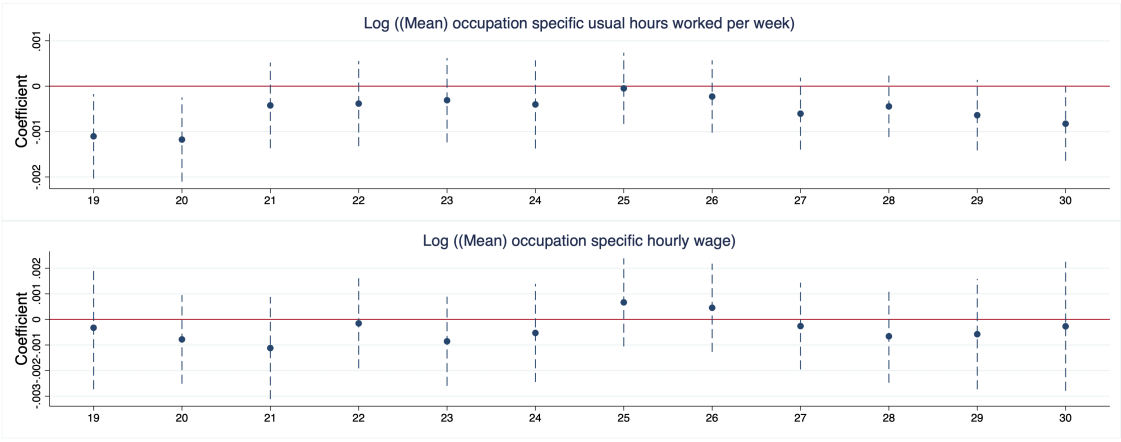


Notes: The figures show coefficients from regressing log individual hourly wage on the unemployment rate at the start of adulthood interacted with age dummies. Results are based on the specification presented in equation 1 with an added control for occupation specific hourly wage. The regression uses data from the ACS from 2000 to 2022 for individuals aged 19 to 30. The figures show coefficients and confidence intervals clustered at the state level. These results are separated by full-time (bottom panel) and non full-time workers (top panel). Where the black coefficients represent results for non full-time workers while the red coefficients represent estimates for full-time workers. Full-time workers are individuals who worked at least 30 hours or more per week and who worked at least 48 weeks or more in the previous calendar year.

B.2 Robustness Graphs

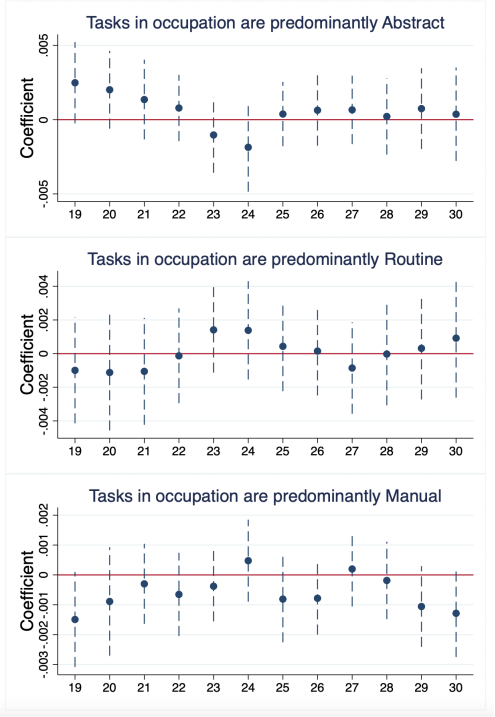
Age and Birth-Year Balanced Panels

Figure B.15 Age and Birth-Year Balanced Panels – Occupation Hours of Work & Hourly Wage



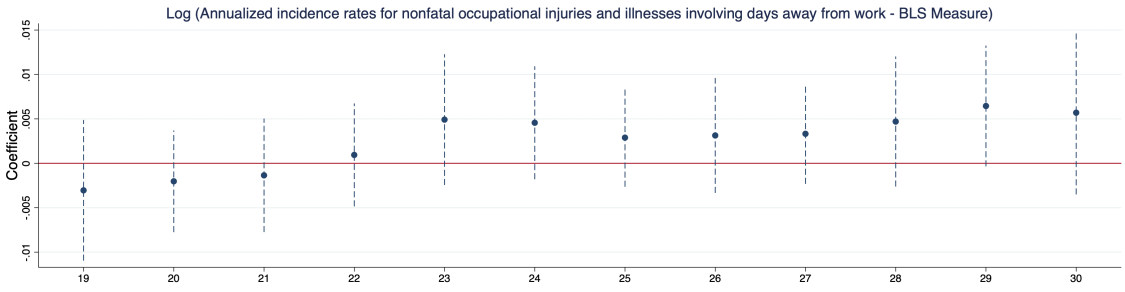
Notes: Results are based on the specification presented in equation 1. I restrict the sample to a balanced panel of age and birth year cohorts. The resulting sample are individuals aged 19 to 30 who were born between 1981 to 1992. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. The top panel shows coefficient estimates ($\beta'_a s$) from regression 1 where the outcome variable is the log of the average occupation specific hours of work that individuals in that occupation supply. The bottom panel shows coefficient estimates where the outcome variable is the log of the average occupation specific hourly wage.

Figure B.16 Age and Birth-Year Balanced Panels – Occupational Task



Notes: Results are based on the specification presented in equation 1. I restrict the sample to a balanced panel of age and birth year cohorts. The resulting sample are individuals aged 19 to 30 who were born between 1981 to 1992. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies.The figures show coefficient estimates for three different regressions where the outcomes are 1) binary variable equal to one if the predominant tasks in one's occupation are abstract (top panel), 2) binary variable equal to one if the predominant tasks in one's occupation are routine (middle panel), and 3) binary variable equal to one if the predominant tasks in one's occupation are manual (bottom panel).

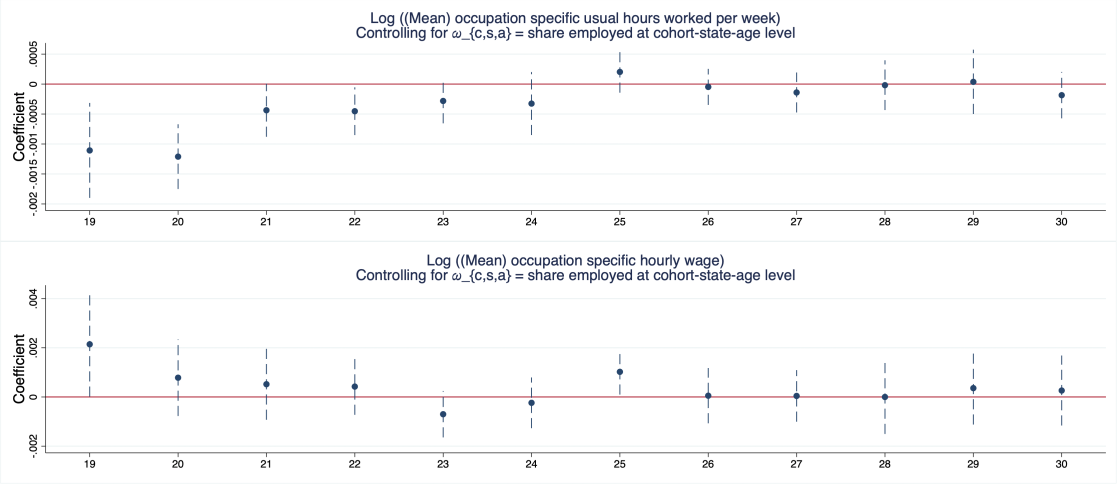
Figure B.17 Age and Birth-Year Balanced Panels – Occupation Injury Rate



Notes: Results are based on the specification presented in equation 1. I restrict the sample to a balanced panel of age and birth year cohorts. The resulting sample are individuals aged 19 to 30 who were born between 1981 to 1992. The figure shows coefficients and confidence intervals clustered at the state level. The figure shows coefficients from regressing log occupation specific injury rates on the unemployment rate at the start of adulthood interacted with age dummies.

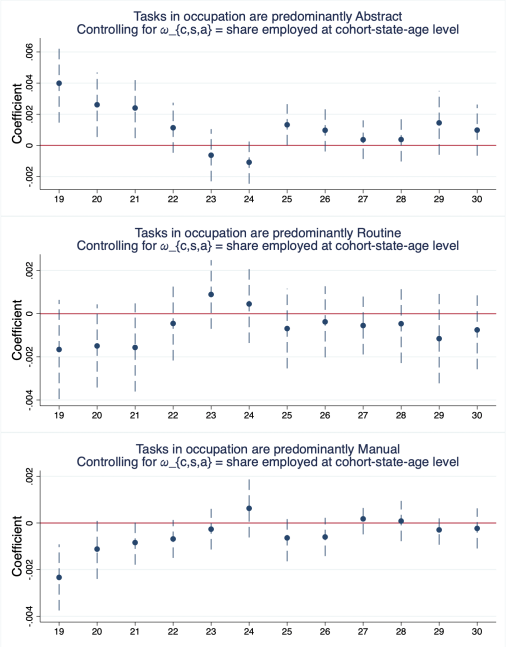
Controlling for Share Employed or Adding a Fixed Effect for Share Employed

Figure B.18 Occupation Hours of Work Hourly Wage – Controlling for Share Employed



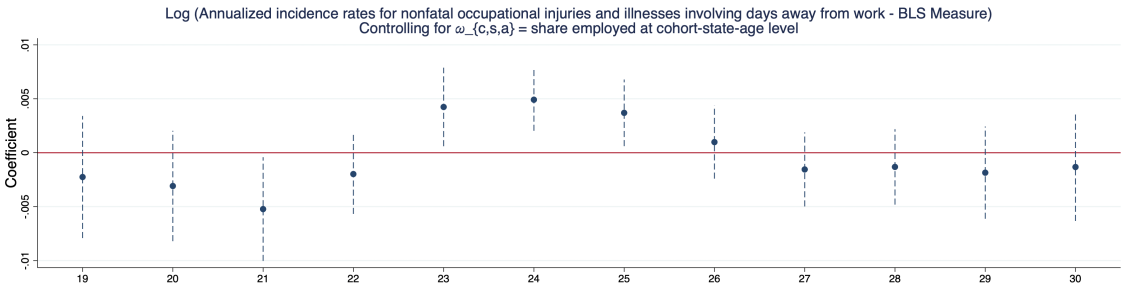
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The regression additionally includes a control $\omega_{c,s,a}$ that accounts for the share of young adults who are employed at the cohort-state-age level. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. The top and bottom panels are based on the main sample of all 19 to 30 year olds observed between 2000 to 2022. The top panel shows coefficient estimates ($\beta_a' s$) from regression 1 where the outcome variable is the log of the average occupation specific hours of work that individuals in that occupation supply. The bottom panel shows coefficient estimates where the outcome variable is the log of the average occupation specific hourly wage.

Figure B.19 Occupational Task – Controlling for Share Employed



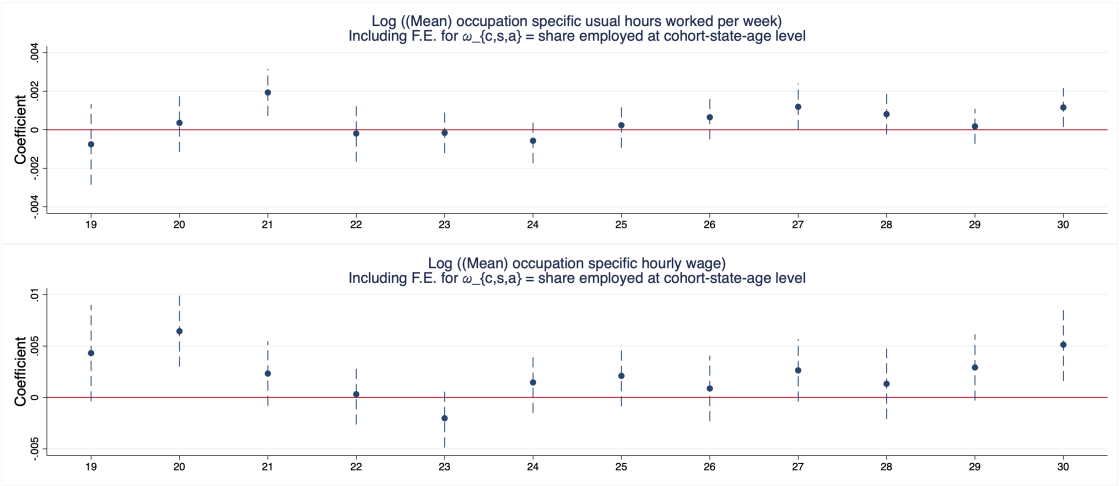
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The regression additionally includes a control $\omega_{c,s,a}$ that accounts for the share of young adults who are employed at the cohort-state-age level. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. Results are based on the main sample of all 19 to 30 year olds observed between 2000 to 2022. The figures show coefficient estimates for three different regressions where the outcomes are 1) binary variable equal to one if the predominant tasks in one's occupation are abstract (top panel), 2) binary variable equal to one if the predominant tasks in one's occupation are routine (middle panel), and 3) binary variable equal to one if the predominant tasks in one's occupation are manual (bottom panel).

Figure B.20 Occupation Injury Rate – Controlling for Share Employed



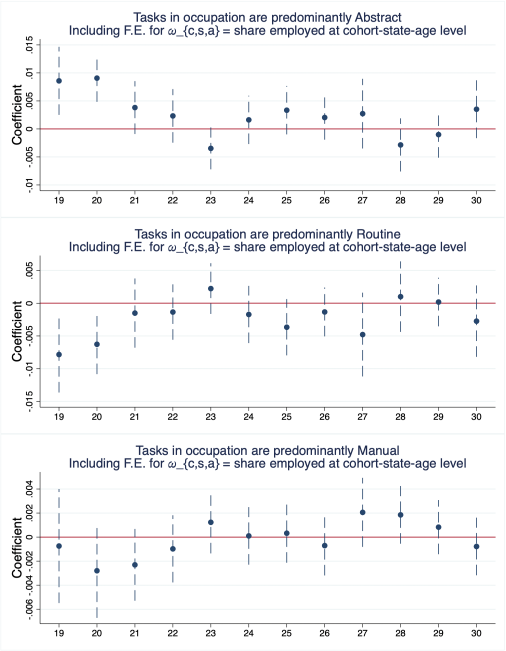
Notes: Results are based on the specification presented in equation 1. The regression uses data from the ACS from 2000 to 2022 for individuals aged 19 to 30. The regression additionally includes a control $\omega_{c,s,a}$ that accounts for the share of young adults who are employed at the cohort-state-age level. The figure shows coefficients and confidence intervals clustered at the state level. The figure shows coefficients from regressing log occupation specific injury rates on the unemployment rate at the start of adulthood interacted with age dummies.

Figure B.21 Occupation Hours of Work Hourly Wage – Fixed Effect for Share Employed



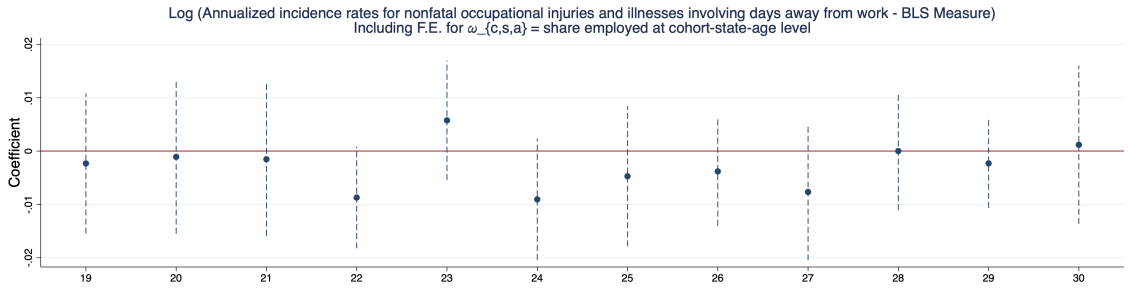
Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The regression additionally includes a fixed effect $\omega_{c,s,a}$ that accounts for the share of young adults who are employed at the cohort-state-age level. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. The top and bottom panels are based on the main sample of all 19 to 30 year olds observed between 2000 to 2022. The top panel shows coefficient estimates ($\beta_a's$) from regression 1 where the outcome variable is the log of the average occupation specific hours of work that individuals in that occupation supply. The bottom panel shows coefficient estimates where the outcome variable is the log of the average occupation specific hourly wage.

Figure B.22 Occupational Task – Fixed Effect for Share Employed



Notes: Results are based on the specification presented in equation 1, using data from the ACS from 2000 to 2022. The regression additionally includes a fixed effect $\omega_{c,s,a}$ that accounts for the share of young adults who are employed at the cohort-state-age level. The figures show coefficients and confidence intervals clustered at the state level. The figures show coefficients from regressing specified outcome variables on unemployment rates at the start of adulthood interacted with age dummies. Results are based on the main sample of all 19 to 30 year olds observed between 2000 to 2022. The figures show coefficient estimates for three different regressions where the outcomes are 1) binary variable equal to one if the predominant tasks in one's occupation are abstract (top panel), 2) binary variable equal to one if the predominant tasks in one's occupation are routine (middle panel), and 3) binary variable equal to one if the predominant tasks in one's occupation are manual (bottom panel).

Figure B.23 Occupation Injury Rate – Fixed Effect for Share Employed



Notes: Results are based on the specification presented in equation 1. The regression uses data from the ACS from 2000 to 2022 for individuals aged 19 to 30. The regression additionally includes a fixed effect $\omega_{c,s,a}$ that accounts for the share of young adults who are employed at the cohort-state-age level. The figure shows coefficients and confidence intervals clustered at the state level. The figure shows coefficients from regressing log occupation specific injury rates on the unemployment rate at the start of adulthood interacted with age dummies.