Spring 2022

Single Parenthood and the Gender Wage Gap

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A Senior Project submitted to
the Division of Social Sciences
of
Bard College

by
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Annandale-on-Hudson, New York
May, 2022

Acknowledgements

First and foremost, I want to thank my mom, Susan Scribner, and sister, India Scribner, for their unending love and support. I could not have gotten so far in life, much less completed this paper, without you.

I would also like to thank my advisor, Mike Martell, for his support, encouragement, and faith in my abilities.

Last but not least, I would like to thank Timand Bates and Gavin Behrens for their guidance and reliability.

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Americans have idealized the so-called nuclear family since the mid-twentieth century. This family structure is composed of married, biological, opposite-sex parents, with a bread-winning father and stay-at-home mother. This two-generation household has been the basis for many laws, structures, and systems, even as it has become less common over the last several decades.

This change is due to several factors. California became the first state to enact no-fault divorce law in 1969 (Kay 1987). Nearly all states followed suit over the next 20 years. This was followed by a spike in divorce rates through the early 1980s then a gentle decline over the following three decades (Stevenson and Wolfers 2011). From 1950 to 2010, median age at a woman's first marriage increased from under 21 to almost 27 (Manning 2012). In the period from 1978 to 2010, median age at first birth has significantly increased only for college-educated women (Manning 2012). Marriages have also become less homogeneous, with an increase in interfaith, interracial, and interethnic marriages. Same-sex cohabitation and marriage have become common. There has been a roughly 75 percent increase in proportion of 30–34 year olds who have cohabited from 1987 to 2010 (Manning 2012). More than 20 percent of households with children under 18 were headed by single mothers in 2005 (Manning 2012). In 2009, 30 percent of single-mother homes were headed by a mother with less than a high school education (Manning 2012). Women with less than a high school education are also significantly more likely to be younger and less likely to have planned for the birth than their more educated counterparts.

Stigma may be a significant obstacle for single-parent families and children of the same. The effect of altered parental inputs also begs for study. We must explore the relationship between these new family structures and occupational attainment, as the latter is an essential component of wellbeing and directly contributes to quality of life in adulthood, and has a significant impact on future generations.

1 Introduction

The gender wage gap is the differential in median earnings for full-time female workers relative to full-time male workers. It is often expressed as the ratio of women's earnings to men's earnings. The gender wage gap closed significantly from the mid-nineteenth century until the mid-1990s, at which point it stabilized around a woman making 80 cents for each dollar a man makes (Hegewisch et al. 2010, 2). Per Hegewisch et al. (2010), Gupta (1993), and others, occupational gender segregation is a major contributor to both the wage gap itself and its persistence. Further study is thus imperative. There has also been a rise in the incidence of divorce, single parenthood, cohabitation, and homosexual parents over the last many years, so it has become ever more pressing to understand the economic impact of family structure in childhood on one's career and, implicitly, one's income (Brown and Manning 2009, 86). This essay hopes to illuminate the process by which gender-typical jobs are chosen or avoided by examining the effect of growing up in a nontraditional family on the probability of selecting a gendered occupation.

Occupational segregation is the over- or underrepresentation of a demographic group in a given professional setting (Alonso-Villar and Rio 2014). Occupational gender segregation is deeply embedded in the US labor market. According to one estimate from the US Census Bureau, roughly half of all employed persons would need to change industries in order to end occupational segregation (Stockdale and Nadler 2012, 208). The most gendered occupations, as per 2016 data from the US Census Bureau, include transit and railroad police (0% female); manufactured building and mobile home installers (0% female); natural resources, construction, and maintenance occupations (3.8% female overall); healthcare support occupations (85.5% female overall); preschool and kindergarten teachers (98% female); and nurse midwives (100% female).

In order to ascertain the impact of family structure on gender typicality in the labor market, we need employment data alongside detailed data about upbringing. Therefore, I

have elected to use data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), which has been following a nationally representative cohort of individuals since 1994, with the most recent wave of data collection ending in 2018, when respondents were in their 30s and 40s, and thus well into their working life.

In later chapters of this project, regression analysis will be used to quantify the effect of growing up in a nontraditional family (specifically, a single-parent family) on the probability of selecting a gendered occupation.

2 Context and Motivations

2.1. How do we conceptualize outcomes?

Outcomes of childhood environment can be measured in different ways. One measurement is educational attainment. Boggess (1998), for instance, uses a dummy variable for high school graduation. Still others use a very rough measure of grade advancement (see Rosenfeld 2010). Others use measures of emotional and behavioral health, particularly for young children (see Ram and Hou 2003). Outcomes of adults more generally are quantified by educational attainment (human capital), occupational advancement, and income and wealth, among others. I will be looking at the effect of childhood environment on adult subjects' labor market outcomes.

2.2. Literature review

There is a wide range of different family structures and an even greater variety in the ways they are established. As such, much prior research exists to contextualize this study.

2.2.1. Substitutability of Inputs

Children of married, biological parents are regularly used as the reference case for measures of child welfare when compared to other family structures. Are stepparents, same-sex parents, adoptive parents, or single parents perfect substitutes for "traditional" parents?

If not, how "imperfect" are these inputs? What impact does this have on the child and, ultimately, their career?

The primary parental inputs are time, energy, and money. If nontraditional parents are not perfect substitutes for married biological parents, this may be due to the level of income and its distribution within the household. It can also affect the time the parent or stepparent has to spend with their child(ren). The literature indicates that nontraditional parents may not be perfect substitutes, though the effect varies by classification and attributes of the child.

Becker (1985), widely regarded as the father of household economics, addresses comparative advantage in that context. Women's earnings and labor force participation rates are positively correlated with rates of divorce. The number of children a woman has, by contrast, decreases as divorce becomes more common (Becker 1985, S34). Becker argues that, relative to men, women's lower earnings from and time spent on market work are a direct consequence of the time and effort taken up by housework (1985, S35-36, S43). Due to economies of scale, even the smallest difference between the outputs of a woman and her husband can lead to complete specialization in either housework or market work (Becker 1985, S56). The fact that those specializing in housework are overwhelmingly women suggests that deeper analysis is warranted.

Becker dances around the issue of maternity, but it hardly stretches the imagination to apply his argument. Since women are virtually always the ones giving birth, any woman who anticipates becoming a mother would know that, even if she and her husband were in all other ways identical, she would be unable to work for a period of time when each future child is born while her husband has no such restriction. During that time, he would accumulate market-oriented human capital, not to mention hours worked, that his previously identical wife would not possess. Therefore, a Beckerian logician could conclude that she should specialize in housework to a greater extent than her husband, as he would ultimately be better suited to market work. Society is, fortunately, moving away from this sort of

thinking.

Boggess (1998) uses data from the 1988 edition of the Panel Study of Income Dynamics (PSID), which includes data for each year since 1968. He examines the effects of family structure on human capital development in children with differing characteristics such as race, ethnicity, gender, household income, whether said income is sufficient given family size and local cost of living, and whether any of the income is received through public assistance or welfare. He distinguishes a large number of family structures for his independent variable and calculates the years a child has spent in each structure. Boggess uses six regression models, controlling for more or different characteristics in each iteration to isolate the effect of years spent in a given family structure. His dependent variable in each case is a dummy variable for high school graduation, assessed when all respondents were at least 20 years old. In general, Boggess shows that nontraditional parents are imperfect substitutes for traditional parents. This could be an income effect, particularly in the case of single parents, or an emotional-relational effect. He finds that having a divorced, widowed, or separated mother leads to a lower probability of high school graduation, though this effect disappears in white female and Black male children, but not Black female children, when controlling for level of income. Receiving public assistance reduces the probability of high school graduation for white children but not for Black children. For all children, however, Boggess finds that each additional year spent in the presence of a stepfather, married or not, has a negative effect on human capital development. In summation, Boggess finds that nontraditional parents are imperfect substitutes but cannot determine the mechanisms through which this manifests.

Rosenfeld (2010) uses data from the 2000 US Census to determine if children of same-sex parents proceed through school as quickly as children with other parental configurations. The census, while providing a much larger sample of same-sex couples than similar studies done previously, puts all children in grades 1 through 8 into two categories, allowing Rosenfeld to determine a child has been retained only if they are at least 11 years old and in grades 1 through 4, or if they are at least 15 years old and in grades 5 through 8. This leads, as

Rosenfeld addresses only in a footnote, to an underestimate of grade retention, capturing only about a quarter of those who are "over-age," and putting into question the usefulness of his results (Rosenfeld 2010, 765). Nevertheless, Rosenfeld finds a small gap in educational outcomes between children of married heterosexual couples and those of same-sex couples, but this gap is eliminated when controlling for socioeconomic status and student characteristics. This is logically appealing given that same-sex couples were more likely to be working-class than opposite-sex couples and, since 89 percent of same-sex couples' children were the result of a prior heterosexual relationship, these children have likely experienced the detrimental effects of family disruption (Rosenfeld 2010, 757–58). The parents of the remaining 11 percent of children must have worked harder and expended more resources to have children than did heteronormative couples. This additional requirement may make them more committed to the "hard work of parenting" (Rosenfeld 2010, 756). Rosenfeld concludes that same sex couples are generally perfect substitutes for opposite sex married couples, and external factors are responsible for any discrepancies in grade retention rates.

In their response to Rosenfeld, Allen, Pakaluk, and Price (2013) replicated Rosenfeld's study using the same data but making same-sex couples the reference category and expanding the sample to include children who were not identified as "own children" of the head of household and those who had not lived at the same address for the past five years. While Allen controls for these factors in his regressions, each may have additional hidden effects or interactions that are not controlled for. Allen, Pakaluk, and Price conclude that same-sex parents are imperfect substitutes for married, heterosexual parents though this study suffers from the same underestimate of grade retention as Rosenfeld's original.

2.2.2. Disruptions

Also affecting the time, energy, and money parents have for their children are the disruptions that often come with the creation of nontraditional family structures – divorce, death, remarriage. These can likewise have a large impact on the child, even if it is of limited

duration.

Ram and Hou (2003) use data from the Canadian National Longitudinal Survey of Children and Youth regarding family structure in each of three data-collection cycles, along with emotional-behavioral reports from parents and, in the latter two cycles, cognitive measures from math and reading tests. They assign children to one of four categories based on family structure in Cycles 1 and 3: intact biological family in both cycles, lone-parent family in both cycles, intact biological family in Cycle 1 to lone-parent family in Cycle 3, or lone-parent family in Cycle 1 and recombined family (stepfamily) in Cycle 3. Ram and Hou find children who experience disruptions in family structure have lower emotional-behavioral scores than children who remain in two-parent families (319). This includes disruptions which predate the study, that is, children who are in a lone-parent family in both the first and last cycle. The difference in economic and familial resources makes nontraditional family structures imperfect substitutes for traditional ones. Even if they were perfectly substitutable, the authors find that disruptions in family structure, in and of themselves, lead to poorer outcomes for the children. This is likely because the time in transition reduces the resources available to children.

Cohabitation has increased significantly over the last few decades as a means of establishing a family unit (Manning 2015). "By age 12, 40 percent of children had spent some time living with parents who were cohabiting" (Manning 2015, 52). The most common type of cohabiting family is a biological mother and her male partner (Manning 2015, 53). Cohabiting families, regardless of biological relationship to child(ren), are marked by greater instability and fewer financial resources when compared to married-parent families (2015, 51, 53). The financial restrictions may be a result of disruptions, of time spent with only one parent before cohabitation began, or of a stepparent who supports their children from a previous relationship, leaving less for stepchildren. Children of cohabiting families are twice as likely to experience poverty as those of married parent families (Manning 2015, 54). Children born to cohabiting, rather than married, parents tend to have worse physical health

outcomes at least through age 12 (Manning 2015, 57). Cohabitating parents may thus be an imperfect substitute for married parents.

Cohabitating stepfamilies experience multiple disruptions, of separation then of recombination, so this can lead to strained household relationships. Brown and Manning (2009) use Add Health to explore family boundary ambiguity, or the difference between parent and child reports of family structure. Increasingly, children grow up with family structures more complex and less defined than a two biological parent family. Cohabitating stepfamilies are the most likely structure to be reported differently by a parent and a child. Using only one perspective, be it the parent's or child's, to determine family structure can bias results of studies. For instance, if an adolescent does not consider a cohabiting stepfather to be part of her family, she may omit him from the household roster even if his income affects her mother's need to work.

2.2.3. Stigma

Even if a step- or single parent is a perfect substitute for married biological parents, social stigma can impede the efficiency of the production function. Meyer (2003) suggests that being a member of a stigmatized group, such as a single-parent family or a same-sex-parent family, can have significant negative consequences on mental and physical health. Those who are also members of minority groups – distinguished by race, ethnicity, sexual orientation, etc. – have compounded stressors. While we may be able to control for effects of the latter using regression analysis, it is worth noting that finding lower outcomes in education or earnings for children of stigmatized family structures could be a result of external, social factors, rather than any "fault" of the parent(s) (Meyer 2003).

The systemic biases towards married, opposite-sex parent families regularly reinforce one's status as a member of a stigmatized family structure. Social stigma can be expressed in how children are treated by their peers, their teachers, or parents of their peers. There are also systemic obstacles for many nontraditional families including recognition of the family

unit. This could be the case for gay parents where one parent is the biological or adoptive parent and the other is not a legally recognized guardian. This also matters for cohabiting stepparents. The tax benefit for married couples gives them a persistent financial advantage. It is plausible that these systemic obstacles decrease the substitutability of nontraditional parents. The social effects might result in children with less developed social skills or more behavioral problems and potentially lower educational outcomes.

2.3. Import of this research

Much research has been done on the varying parental inputs' effects on child success. I will be extending this concept beyond childhood and examining parental inputs' effects on adult outcomes, specifically in the labor market. This research is important because there are ever more nontraditional families and the gender wage gap has stagnated, so determining if one phenomenon can help to solve the other is beneficial to society.

The essential details contributing to outcomes from family structure are parental inputs, disruptions, and stigma. We must understand the underlying causes and mechanisms that affect these three to promote positive outcomes for nontraditional families.

2.4. This research paper

I hypothesize that people who grow up in a nontraditional family environment will be more likely to take gender-nonconforming jobs. Having role models who defy convention (e.g., mothers who engage in market work or fathers who do housework) may alleviate, to an extent, the social pressures to conform to gender norms. People who exist outside of traditional structures may feel more free to break from societal expectations and norms.

Following Brown and Manning (2009), it would be ideal to restrict sample to mother-child pairs that agree or otherwise account for ambiguity. The latter would be especially important if the sample of agreeing pairs in cohabiting or other nontraditional families is too small. Given the restricted-use dataset, I would use the following six categories for

family structure: married biological parents, cohabiting biological parents, married stepparent, cohabiting stepparent, single parent, family boundary ambiguity. Since I must use the public-use data, with its much smaller sample size, I will only use the parent questionnaire to identify family structure and I will distinguish between two-parent, single-mother, and single-father households.

3 Data and Methodology

3.1. About the Sample Data

The National Longitudinal Study of Adolescent to Adult Health (Add Health) has followed some 15,000 subjects from the first wave of data collection in 1994-95 to the fifth wave in 2016-18. Subjects were chosen from a pool of 90,000 students in grades 7 through 12 (for the 1995-96 school year) at 132 schools nationwide. Each of these students filled out a written survey, which was accompanied by a detailed survey from each school's administrator about the school and community as a whole. Wave I in-home interviews were conducted for about 20,000 subjects, including 3,702 interviews for the "saturated sample," for which every student at 16 schools was interviewed. A parent or guardian of each subject also completed a parent questionnaire. Although these respondents were overwhelmingly mothers in the total sample, 16 percent of parents in the public-use dataset did not record their sex (Harris 2013, 4). Researchers conducted 14,738 interviews a year later and again had school administrators complete a survey to round out Wave II.

In 2001 and 2002, 15,170 of the original participants, then aged 18 to 26, and 1,500 of their romantic partners were interviewed for Wave III. In 2008, the fourth wave of data collection involved interviewing 15,701 of the original respondents. Wave V interviewed 12,300 people from 2016 to 2018. Of these, 4,196 are included in the public-use dataset. I use Add Health survey data because it contains both data from both childhood and adulthood that I can leverage to estimate how other characteristics vary by household structure.

Table 1
Descriptive Statistics by Sample – Women

	(1)	(2)	(3)	(4)	(5)	(6)
	Two Parent		Single Mom		Single Dad	
Income Sample	no	yes	no	yes	no	yes
Percentage Female in occupation	57.49	57.90	58.52	58.29	58.15	54.63
	(18.57)	(18.12)	(18.65)	(18.64)	(17.93)	(17.34)
Age at W5 survey	37.27	37.13	37.27	37.26	37.40	36.97
	(1.993)	(1.927)	(1.876)	(1.875)	(2.292)	(2.229)
Hispanic	0.0862	0.0742	0.123	0.117	0.111	0.133
	(0.281)	(0.262)	(0.329)	(0.323)	(0.323)	(0.352)
	[111]	[70]	[33]	[27]	[2]	[2]
White	0.752	0.793	0.515	0.557	0.500	0.467
	(0.432)	(0.405)	(0.501)	(0.498)	(0.514)	(0.516)
	[969]	[749]	[138]	[128]	[9]	[7]
Black	0.120	0.0953	0.328	0.287	0.278	0.267
	(0.325)	(0.294)	(0.470)	(0.453)	(0.461)	(0.458)
	[155]	[90]	[88]	[66]	[5]	[4]
Asian	0.0326	0.0254	0.0112	0.0130	0.0556	0.0667
	(0.178)	(0.157)	(0.105)	(0.114)	(0.236)	(0.258)
	[42]	[24]	[3]	[3]	[1]	[1]
Other race	0.0559	0.0445	0.0933	0.0870	0.0556	0.0667
	(0.230)	(0.206)	(0.291)	(0.282)	(0.236)	(0.258)
	[72]	[42]	[25]	[20]	[1]	[1]
2 or more races selected	0.0388	0.0413	0.0522	0.0565	0.111	0.133
	(0.193)	(0.199)	(0.223)	(0.231)	(0.323)	(0.352)
	[50]	[39]	[14]	[13]	[2]	[2]
Currently married	0.630	0.643	0.470	0.487	0.500	0.467
	(0.483)	(0.479)	(0.500)	(0.501)	(0.514)	(0.516)
	[811]	[607]	[126]	[112]	[9]	[7]
HS or less	0.101	0.0837	0.183	0.165	0.278	0.333
	(0.301)	(0.277)	(0.387)	(0.372)	(0.461)	(0.488)
	[130]	[79]	[49]	[38]	[5]	[5]
Some college or 2-year degree	0.363	0.354	0.437	0.435	0.500	0.400
	(0.481)	(0.478)	(0.497)	(0.497)	(0.514)	(0.507)
	[467]	[334]	[117]	[100]	[9]	[6]
Bachelor's degree or some grad school	0.303	0.307	0.187	0.196	0.111	0.133
	(0.460)	(0.462)	(0.390)	(0.398)	(0.323)	(0.352)
	[390]	[290]	[50]	[45]	[2]	[2]
Master's degree or higher	0.234	0.255	0.194	0.204	0.111	0.133
	(0.423)	(0.436)	(0.396)	(0.404)	(0.323)	(0.352)
	[301]	[241]	[52]	[47]	[2]	[2]
Total HH income 1994		59.71		23.70		37.13
(thousands of USD)		(61.05)		(17.29)		(20.62)
Observations	1288	944	268	230	18	15

Mean coefficients; SD in parentheses; subsample size in brackets.
Odd columns (1, 3, 5) are original sample. Even columns (2, 4, 6) are income subsample.
Source: National Longitudinal Study of Adolescent to Adult Health.

Table 2
Descriptive Statistics by Sample – Men

	(1)	(2)	(3)	(4)	(5)	(6)
	Two Parent		Single Mom		Single Dad	
Income Sample	no	yes	no	yes	no	yes
Percentage Female in occupation	35.39	35.35	35.73	35.31	31.40	31.93
	(22.02)	(22.03)	(22.48)	(22.29)	(22.41)	(23.04)
Age at W5 survey	37.56	37.42	37.87	37.85	37.31	37.21
	(1.944)	(1.924)	(1.921)	(1.949)	(1.940)	(1.966)
Hispanic	0.102	0.0808	0.147	0.122	0.0303	0.0333
	(0.303)	(0.273)	(0.355)	(0.329)	(0.174)	(0.183)
	[113]	[69]	[26]	[18]	[1]	[1]
White	0.765	0.801	0.559	0.605	0.727	0.700
	(0.424)	(0.400)	(0.498)	(0.490)	(0.452)	(0.466)
	[846]	[684]	[99]	[89]	[24]	[21]
Black	0.0913	0.0726	0.260	0.238	0.121	0.133
	(0.288)	(0.260)	(0.440)	(0.427)	(0.331)	(0.346)
	[101]	[62]	[46]	[35]	[4]	[4]
Asian	0.0344	0.0316	0.0282	0.0340	0.0606	0.0667
	(0.182)	(0.175)	(0.166)	(0.182)	(0.242)	(0.254)
	[38]	[27]	[5]	[5]	[2]	[2]
Other race	0.0660	0.0457	0.113	0.0884	0.0606	0.0667
	(0.248)	(0.209)	(0.317)	(0.285)	(0.242)	(0.254)
	[73]	[39]	[20]	[13]	[2]	[2]
2 or more races selected	0.0434	0.0492	0.0395	0.0340	0.0303	0.0333
	(0.204)	(0.216)	(0.195)	(0.182)	(0.174)	(0.183)
	[48]	[42]	[7]	[5]	[1]	[1]
Currently married	0.644	0.658	0.582	0.605	0.576	0.567
	(0.479)	(0.475)	(0.495)	(0.490)	(0.502)	(0.504)
	[712]	[562]	[103]	[89]	[19]	[17]
HS or less	0.218	0.211	0.328	0.299	0.182	0.200
	(0.413)	(0.408)	(0.471)	(0.460)	(0.392)	(0.407)
	[241]	[180]	[58]	[44]	[6]	[6]
Some college or 2-year degree	0.376	0.365	0.475	0.497	0.515	0.500
	(0.485)	(0.482)	(0.501)	(0.502)	(0.508)	(0.509)
	[416]	[312]	[84]	[73]	[17]	[15]
Bachelor's degree or some grad school	0.263	0.275	0.136	0.136	0.212	0.233
	(0.441)	(0.447)	(0.343)	(0.344)	(0.415)	(0.430)
	[291]	[235]	[24]	[20]	[7]	[7]
Master's degree or higher	0.143	0.149	0.0621	0.0680	0.0909	0.0667
	(0.350)	(0.356)	(0.242)	(0.253)	(0.292)	(0.254)
	[158]	[127]	[11]	[10]	[3]	[2]
Total HH income 1994		58.73		25.19		32.87
(thousands of USD)		(62.36)		(24.16)		(17.00)
Observations	1106	854	177	147	33	30

Mean coefficients; SD in parentheses; subsample size in brackets.
Odd columns (1, 3, 5) are original sample. Even columns (2, 4, 6) are income subsample.
Source: National Longitudinal Study of Adolescent to Adult Health.

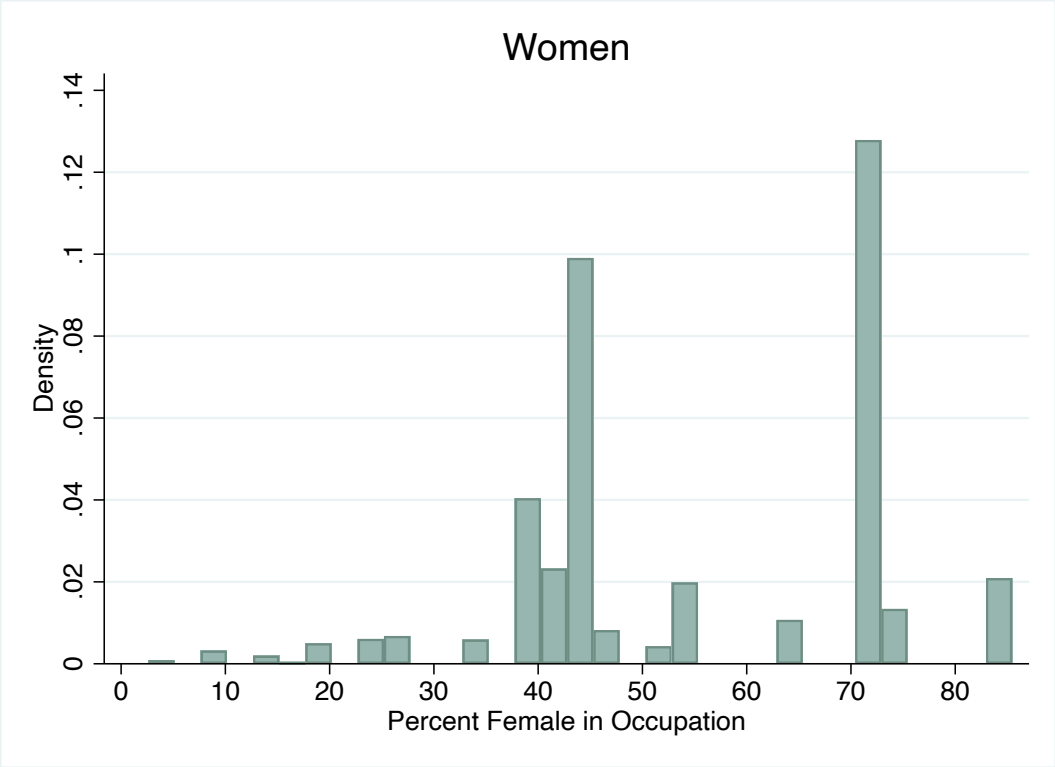

Figure 1: Distribution of female respondents by percent female in occupation.
Source: Add Health, Wave V, and US Census Bureau, 2016 estimates

3.2. Descriptive Statistics

I will now summarize the descriptive statistics in tables 1 and 2 and comment on notable features. Notable differences for women include mean of the Black indicator, who made up only 12 percent of the two-parent original sample but around 30 percent each in the original single mom and single dad samples. For the original sample of men, 9 percent of two-parent households have Black sons, 26 percent of single mothers do, and only 12 percent of single fathers do.

Among women, the proportion of two-parent households with a Black daughter is substantially lower in the parental income sample as compared to the original sample. The parental income sample is about 24 percent smaller overall, but the number of Black women with two parents is about 40 percent smaller. The number of single-mother households with Black daughters, however, is 25 percent smaller. The number of two-parent households with

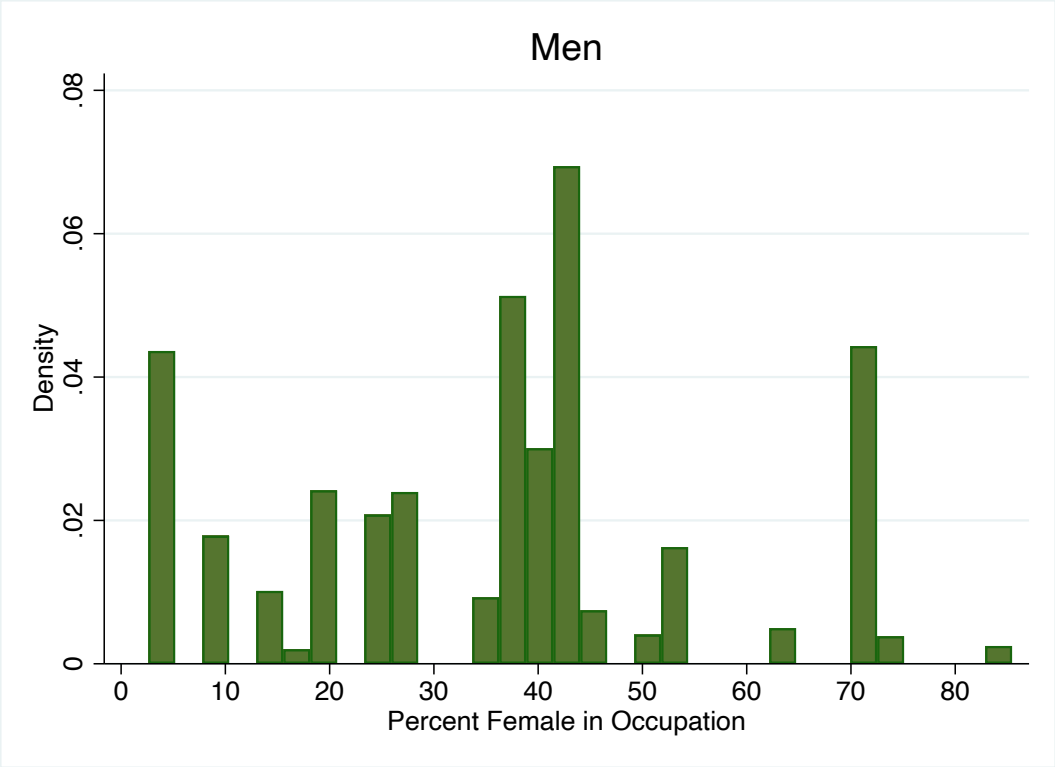

Figure 2: Distribution of male respondents by percent female in occupation.
Source: Add Health, Wave V, and US Census Bureau, 2016 estimates

a Hispanic daughter is 37 percent smaller. The number of single-mother households with a Hispanic child, however, is only 15 percent smaller. The most substantial differences appear in the two-parent subsamples, suggesting that, perhaps, two-parent families were less willing to share their income level. Ultimately, none of these differences are statistically significant. There are, however, significant differences between the incomes of two-parent, single-mother, and single-father households.

Parental income is, as expected, much lower for single-parent households. For single mothers, it averages $27,600, less than half of the mean two-parent household income, $58,320. Single father income is higher, which is consistent with the gender wage gap, but still far lower than two-parent income, as expected for a single earner.

Educational attainment is also lower for children of single-parent households, though there is a significant difference between men and women, which is consistent with trends in higher education. The proportion of men with single parents who have graduate degrees is

less than half the size of men with two parents.

Men's occupations average more than 20 percentage points less female than women's occupations. As shown in figures 1 and 2, there are significant discontinuities in the distribution of Add Health respondents' occupations.

The relationships shown in tables 1 and 2 cannot be parsed without further study, such as a regression analysis.

3.3. Regression specifications

$$Y_i = \alpha + \beta_1 SingleMom_i + \beta_2 SingleDad_i + \beta X_i + \epsilon_i \quad (1)$$

This equation allows me to estimate marginal effects of growing up with a single parent on the femininity of one's occupation (β_1 and β_2) independent of the controls listed below. The variables of interest are $SingleMom$ and $SingleDad$, which are equal to 1 if parent sex is female or male, respectively, and their most recent relationship has ended,[1] their current marital status is never married, widowed, divorced, or separated,[2] and they have no current partner.[3] The reference category is married parents. While roughly a quarter of responding parents in this sample did not record their sex, very few of these were single parents, and they have all been dropped from the sample.

Controls include age, age squared, race, Hispanic ethnicity, if respondent is currently married, and level of education. Age is measured at time of Wave V interview. I control for age and education because occupational attainment can be circumscribed by both. There are sixteen levels of education recorded in Add Health (question H5OD11), ranging from "some high school or lower" to "completed post-baccalaureate professional degree (such as law, medicine, nursing)". Because these are so stratified, sample sizes in each level were quite small. Therefore, I have grouped education levels for the education vector into high school or

1. Answer to PA43 is "no."
2. Answer to PA10 is 1, 3, 4, or 5.
3. Answer to PB2 is 7, "legitimate skip [no current partner]."

lower (reference category); technical/vocational education, associate degree, or some college; bachelor's degree or some graduate school; and master's degree or higher. Race and ethnicity data are taken from Wave I (questions H1GI4, H1GI6, H1GI8). Binary options within the *Race* vector are white, Black, Asian, other (including American Indian/Native American), and 2 or more races. White is the reference category. The value of $ParentIncome$ is given in thousands and obtained from the parental questionnaire. It represents total household income from all sources, before taxes, for 1994 (question PA55). The variable $Married$ is equal to one based on marital status, where other options are widowed, divorced, separated, and never married (question H5HR1). Cohabitation or marital status can affect whether or not the respondent needs to work and, if so, how much. Because of the high correlation between cohabitation and marital status and the ease of determining the latter, marital status alone was used.

3.4. Expected results

I expect the coefficients on $SingleMom$ and $SingleDad$ to be positive, and that of $SingleMom$ to be significant. I expect the coefficients on higher education to be positive. I expect the coefficient on $Married$ to be negative and significant, as people with a working partner may be free to choose a female-dominated occupation that pays less than a male-dominated one. Individuals with non-working partners may experience the opposite effect. Tradition suggests that men will work whether their partners do or not and are by definition more likely than women to be found in (higher-paying) male-dominated fields (Pleck 1977; Jacobsen and Rayack 1996). Therefore, since most marriages are between a man and a woman, it is most likely women who will take lower-paying jobs as a result of marriage.

3.5. Regression Results

Three models of the regression were run because, while parental income may well have an impact on myriad aspects of a person's life, controlling for total household income in 1994

Table 3
Regression Results – Women

	(1) Original Sample	(2) Income Sample	(3) Income Sample
Two parents	-	-	-
	(.)	(.)	(.)
Single mom	1.639	0.989	0.466
	(1.275)	(1.376)	(1.395)
Single dad	1.143	-1.851	-2.092
	(4.113)	(4.566)	(4.584)
Age at W5 survey	-9.740	-13.33	-13.13
	(8.360)	(10.16)	(10.14)
Age squared	0.132	0.185	0.182
	(0.112)	(0.137)	(0.136)
Hispanic	2.081	2.945	2.715
	(1.812)	(2.018)	(2.012)
White	-	-	-
	(.)	(.)	(.)
Black	-0.957	-1.019	-1.269
	(1.478)	(1.765)	(1.779)
Asian	0.309	-2.277	-1.791
	(2.565)	(3.189)	(3.212)
Other race	-0.607	-1.165	-1.326
	(2.362)	(2.722)	(2.713)
Mixed race	1.878	1.323	1.287
	(2.445)	(2.770)	(2.777)
Currently married	2.356*	3.285**	3.332**
	(0.994)	(1.128)	(1.128)
HS or less	-	-	-
	(.)	(.)	(.)
Some college or 2-year degree	9.052***	7.935***	7.978***
	(1.813)	(2.117)	(2.117)
Bachelor's degree or some grad school	3.190	2.441	2.698
	(1.850)	(2.132)	(2.133)
Master's degree or higher	7.872***	6.952**	7.565***
	(1.838)	(2.119)	(2.134)
Total HH income 1994			-0.0182**
			(0.00703)
Constant	229.2	289.9	287.1
	(155.2)	(188.2)	(187.8)
Observations	1575	1190	1190
R^2	0.038	0.039	0.042

Standard errors in parentheses.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4
Regression Results – Men

	(1) Original Sample	(2) Income Sample	(3) Income Sample
Two parents	-	-	-
	(.)	(.)	(.)
Single mom	3.030	2.753	2.798
	(1.811)	(1.994)	(2.007)
Single dad	-3.502	-2.718	-2.682
	(3.627)	(3.982)	(3.986)
Age at W5 survey	8.668	11.74	11.76
	(9.588)	(10.79)	(10.80)
Age squared	-0.119	-0.161	-0.162
	(0.128)	(0.144)	(0.144)
Hispanic	-0.700	-0.881	-0.866
	(2.554)	(3.022)	(3.026)
White	-	-	-
	(.)	(.)	(.)
Black	3.098	3.531	3.538
	(1.912)	(2.449)	(2.452)
Asian	-4.680	-4.791	-4.766
	(2.786)	(3.391)	(3.394)
Other race	4.720	4.031	4.042
	(2.926)	(3.587)	(3.589)
Mixed race	2.245	3.201	3.201
	(3.151)	(3.374)	(3.376)
Currently married	-3.589**	-3.914**	-3.914**
	(1.219)	(1.412)	(1.412)
HS or less	-	-	-
	(.)	(.)	(.)
Some college or 2-year degree	4.162**	4.893**	4.874**
	(1.518)	(1.740)	(1.745)
Bachelor's degree or some grad school	14.74***	14.64***	14.59***
	(1.658)	(1.893)	(1.940)
Master's degree or higher	25.99***	25.70***	25.63***
	(1.865)	(2.124)	(2.152)
Total HH income 1994			0.00170
			(0.0101)
Constant	-129.8	-185.0	-185.4
	(179.3)	(201.6)	(201.7)
Observations	1319	1033	1033
R^2	0.146	0.139	0.139

Standard errors in parentheses.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

reduced the overall sample size by 691 people or 24 percent and it is impossible to say if missingness of parental income data is random. If missingness is not random, or uniformly distributed across income groups, then simply removing observations with missing values could bias results. Changes between models 1 and 2 in the coefficients of interest suggest that missingness is not, in fact, random, though it is not clear how. The first model, column 1 in Tables 3 and 4, does not control for parent income and has a gross sample size of 2,894. The second model, column 2 in both tables, shows the results of the same specifications on the sample with data for parental income, without controlling for it. The third model, column 3 in both tables, shows the results of a regression that controls for parental income. The latter two models have a gross sample size of 2,223.

The results in table 3 suggest that, for women, the coefficient of interest is not statistically significant but its magnitude suggests that having a single mother might matter. When controlling for parental income, the coefficient decreases considerably. The difference between coefficients in model 2 (0.989) and model 3 (0.466) proves that this is not a sample effect. Given that the coefficient on $SingleDad$ changes its sign when the sample changes, little can be inferred from it.

The coefficients on $SingleDad$ for male children exhibit an interesting pattern. The painfully small sample size limits the usefulness of the results, but they suggest that having a single father may reinforce traditional gender norms. For men with single fathers, while none of the coefficients of interest are statistically different from zero, the coefficients of interest are of similar magnitude but opposite sign to those of $SingleMom$, suggesting that having a single mother makes a man more likely to take a gender-nonconforming job, while having a single father makes him more likely to take a gender-conforming job.

The effect of parental income is interpreted at the per mille level because income is recorded in thousands of dollars. The coefficients on parental income represent, for women, a statistically significant 18 percent decrease in percentage female in occupation. For men, there is an insignificant positive effect of less than two percent. Most coefficients generally

are not very different between models 2 and 3, suggesting that missingness of parental income does not have a large effect on the explained portions of variance. A notable exception is the halving between models 2 and 3 of the coefficient on $SingleMom$ for women. Part of the reason for the magnitude of this effect, as well as those of higher education, is the uneven distribution of occupations. See figures 1 and 2.

The coefficient for some college education or a two-year degree, significant at the 1 percent level for male subjects, increases by more than 0.7 percentage points when the sample is restricted to those with parental income data. The sample of men with this level of education is 25 percent smaller when the sample is restricted. The proportion of children of single parents also increases slightly relative to those with two parents.

The magnitude and significance of the coefficients on higher education, especially for men, are surprising. While the number of observations for single-parent households is small, there are hundreds of observations from two-parent households, suggesting that those with higher levels of education may be more likely to take jobs with a greater proportion of women. The uneven distribution of the dependent variable, namely, the percentage of people in an occupation who identify as female, is likely a factor in the magnitude of the coefficients.

The r-squared values are on par with those of Burn and Martell (2022). They are low because there are uncountably many factors affecting one's choice of occupation.

4 Discussion

Broadly, the results show that having a single mother may increase the femininity of one's occupation, increasing gender conformity for women and decreasing it for men. The effect was much more pronounced for men than it was for women. They also indicate that, for men, having a single father may decrease the femininity of one's occupation, increasing gender conformity. However, none of the coefficients of interest were statistically different from zero. Results for women with a single father were inconclusive. The results for men showed opposite effects of similar magnitude from having a single mother or single father,

though the single father sample was very small.

Some of the control variables were statistically significant. An increase of $1000 in annual household income led to an 18 percent decrease in percentage female of occupation for women. Higher education also had a significant positive effect on percentage female of occupation, especially for men. The magnitude of this effect and the education effects are likely due to the discontinuous nature of the dependent variable.

5 Conclusion and Directions for Future Work

I used data from Waves I (1994-1995) and V (2016-2018) of the National Longitudinal Study of Adolescent to Adult Health to determine correlation between growing up with a single parent and the gender conformity of one's occupation, as measured by percentage female of occupation. The latter was based on national data from 2016, the first year of data collection for Wave V.

The results of this analysis might not be statistically significant but they do suggest, especially in the case of men, that having a single parent leads to choosing an occupation conforming to the gender of one's parent. Single mothers are several times more common than single fathers. While we do not have occupation details for parents, it is reasonable to assume that many of the single mothers are in female-dominated jobs. That assumption is circumstantially upheld by their relatively low level of income, since female-dominated occupations tend to pay less than male-dominated ones. Whether the positive effect stems from an underlying tendency to follow in a parent's footsteps or increased comfort working with women, the opposite effect from having a single father suggests these factors could work in either direction.

Children of single parents may be more likely to take occupations dominated by the gender of their parent than children of two-parent families. However, the results for female children of single fathers were ambiguous. This effect could be due to children modeling their parent's behavior. For men, having a single mother might lead to less gender conformity

in occupation. For women, having a single mother might lead to more gender conformity in occupation. Single mothers are far more common than single fathers, and those with male children could be helping to reduce occupational segregation and the gender wage gap. Since female-dominated jobs tend to pay less than male-dominated ones, this may not be the optimal result for these men, although as an occupation becomes more male-dominated, its median wage may increase.

Interventions to help mitigate the gender wage gap are myriad, but I will focus on a few. Social programs could target single mothers to encourage them to take gender-nonconforming occupations, which could raise household incomes and model having a male-dominated occupation. These programs targeting single mothers could include job training, networking, mentoring, or entrepreneurship opportunities. Raising household income would not only have an immediate beneficial effect for single mothers, it would also substantially increase the likelihood of a daughter of a single mother taking a more male-dominated occupation. The more numerous the approaches, the more people a program is likely to reach.

It is also essential to bolster enforcement of existing equal pay laws. The federal government could mandate contractors to make their salaries public knowledge. Advocacy groups could adopt a "name and shame" approach to convince corporations to embrace wage transparency.

Other policies might target children of single parents. Policies to benefit children of single parents could include after-school programs, additional college counseling, and teacher training to prevent bias and help teachers understand additional responsibilities children of single parents often have. If it is not possible or politically viable to directly target children of single parents, targeting children based on household income would be a reasonable proxy.

There may be other unobservable mechanisms at play. These include effects of peers, media, economic necessity, geography (ability or willingness to travel for education or employment – Americans are known for being relatively immobile), or simple preference. Any or all of these could impact choice of occupation.

Further research would shed more light on this topic. One could use propensity score matching to evaluate the effect of single parenthood on gender typicality in the labor market. A propensity score matching model matches subjects of interest (i.e., children of single parents) with one or more control subjects having similar characteristics. Using the saturated sample from Wave I of Add Health, for which all students at 16 schools were interviewed, subjects with single parents would be matched with one or more subjects with two parents from their same school, helping to control for geographic fixed effects and quality of education. This sample, with its social network data, could allow for measurement of peer effects on gender attitudes.

Barak, Feldman, and Noy (1991) explore the effect of parents' attitudes towards women and the gender typicality of their occupations on the gender typicality of preschoolers' alleged vocational interests. They find that the traditionality of mother's occupation, though not whether the mother works at all, has a significant positive effect on the traditionality of the child's vocational interests. Applying Barak, Feldman, and Noy's (1991) approach to young adults in the labor market by conducting a similar study to mine but using traditionality of mother's occupation as an independent variable could yield interesting results.

A significant limitation of this study is the sample size. Ideally, I would have had access to the restricted-use sample, which would have roughly tripled my sample size, and there would have been more information on the nature of parents' employment. If I could design my own survey in the style of Add Health, I would oversample children of single parent households, collecting information about the nature of parents' employment in addition to data about demographics and local trends in employment and gender attitudes. I could create an index in the style of Vella (1994) to determine parent gender attitudes and see how they affect children's gender attitudes once grown up. There could also be oversampling of other nontraditional family types, including same-sex parents and multi-generational or extended-family households to enrich literature in this subject area.

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