

Gendered labor market decisions among queer and straight couples

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Abstract

Using data from the American Community Survey, I use gay families as a “control” for straight families to examine the degree to which gender impacts families’ choices about who stays home and who goes to work when the family has children. In most families, the person who earns a higher hourly wage works more hours, especially once the family has children. This arrangement maximizes household income. However, there are other concerns that might override this objective – one parent might prefer spending time with children or dislike their job. I find that gay parents experience an earnings gap “bump” of between \$4,000 and \$5,400 when they have children, characterized by the higher earning partner working about one more day per week than the low earning partner (compared to about half a day more when the couple does not have children). This is the gap we can expect when gender is no factor. When we turn to straight couples, however, it becomes clear that gender plays a role, over and above simple personal preferences also present in gay relationships. After controlling for other factors, gay couples experience a post-children bump in their earnings gap that is about 10 percentage points larger than for female-high earner straight couples, and about 10 percentage points smaller than for male-high earner straight couples. High earning women underspecialize in market production compared to what we would expect in a non-gendered relationship, and high earning men overspecialize in market production.

Introduction

The so-called “motherhood penalty” has become an important calling card for feminists fighting for workplace equality. They point out that not only do women earn less than men on average, but that this effect is especially present for mothers. Many have hypothesized that families tend to specialize more once they have children, with one parent taking on more home and childcare duties, and the other parent bearing the responsibility of earning money for the household. However, few have studied how this dynamic functions when there is not a clear gendered way to divide labor – for instance, when both parents have the same gender. While some small-sample, interview-based studies shed light on division of household tasks, no one has used large sample data to study gay parents’ labor market decisions. Studying gay parents’ labor market decisions not only provides information about an understudied group of families, but also enlightens the degree to which gender informs labor market decisions.

Researchers have taken little advantage of the easy availability of data about gay couples available through the United States Census. While the census does not ask about sexual orientation, it does ask the individual filling out the survey to identify the sex of their partner. I use these data to examine, using an OLS multivariate regression, the differential effects of parenthood on gay and straight couples of different gender makeups. Specifically, I examine how earnings gaps between partners are different when people have children and when they do not. I consider gay couples as a “control” for what couples would look like if gender were not a “shortcut” to determine who the primary market worker and who the primary home worker would be.

I find that gay couples fall somewhere in between straight couples with male high earners and straight couples with female high earners. This corroborates my hypothesis that gay couples

might help us understand how families would work if gender was no issue. I find that having children increases the degree to which even high earning straight women are assigned roles as the primary homemaker, whereas high earning men start working more hours. Gay couples are useful because they help us understand what the “midpoint” is – where would couples fall if they could not use gender as a foil. For example, I find that for straight families with male high earners, the man begins working more hours relative to his female partner when the couple has children, whereas in families with female high earners, the woman works fewer hours after they have children. In gay couples, the high earner very slightly increases their hours relative to their partners’, which gives us the idea that, gender aside, having children might lead to slightly more specialization, but not much, and helps us understand that intense household/market specialization is a distinctly gendered choice.

Literature Review

The simplest place to begin is with the existing literature on how parents, in general, are affected by the birth (or adoption) of their children. Budig and England (2010) found that women experience a substantial “penalty” to their earnings when they have a child. This penalty comes in both the form of immediate lost income as they take time off to care for children, but also from future lost income resulting from years of lost work experience. Some others have zoomed in more to examine how and why mothers, in particular, experience this effect, when fathers seem not to. Budig and Hodges (2010) find that employer discrimination and compensating wage differentials for “family-friendly jobs” both play substantial roles, meaning that the penalty comes from both employer decision making and worker decision making. Baxter et al. (2008) in a study of Australian couples found that when heterosexual couples marry and have each child, women tend to take on more and more household tasks, whereas men’s commitment to these

stays essentially constant. Katz-Wise et. al (2010) found that gender role attitudes become more “traditional” (centered on the belief that women ought to be responsible for child and homecare while men ought to be the breadwinners) when couples have their first child, and then even more so after subsequent children. They additionally found that the division of household tasks became more gendered with the arrival of each child. Noonan (2001) made an important connection from here, which was that only an increase in feminine household tasks was associated with a decline in earnings. For instance, someone who did more car maintenance would not experience a decline in pay, but someone who did more childcare would. This then begs the question – how do lesbian and gay couples divide up household work after having a child, and does the division affect relative earnings in the same way? Others have studied how the motherhood penalty might look different for different women. For instance, Budig and Hodges (2010) studied the way that the motherhood penalty looked across different incomes and found that women in the lowest income brackets experienced the most significant motherhood penalties. There has also been some less direct study of motherhood among lesbians.

Some of the research has measured division of household tasks on its way to assessing how well children are adjusted – perhaps in either response to or support of the claims made by some that gay parents should be discouraged from having children. However, the underlying information about division of household tasks is useful for answering the question we are getting at. Kurdek (2007) studied gay and lesbian couples (not necessarily with children) and found that same-gender couples tend to split housework equitably, but that gay men are more likely to designate tasks for each of the partners, whereas lesbian couples are more likely to alternate or divide each task. Goldberg & Perry-Jenkins (2007) and Patterson (1995) both find that there is no substantial change after having a child in the amount of household labor done by each

member of a lesbian couple, although they did find that the biological mother tended to do more childcare, while the non-biological mother took on more of other tasks. Between Kurdek and Goldberg, it seems that at least lesbian couples might go from splitting more “feminine” household tasks (as defined by Noonan), to having one person do most of the feminine household tasks (or at least a greater balance of them). One might wonder whether, as Noonan (2001) found, this might lead to one partner taking a substantial hit to wages, while the other does not. My question is whether we can see this in the data – do we see a more substantial gap in partners’ income when there is a child in the family, even amongst same-gender couples, and does the average income for those couples change overall? If not, we might need to reexamine some of the studies that report that it is changes in household labor that lead to changes in earnings after the birth of a child.

Additionally, classic models of family economics, such as Becker’s model, focus on specialization between household and market production as the key to gains from marriage (1930). Becker contends that there is no reason why women ought to be the household producers and men ought to be the market producers, but that specialization depends on what skills people built during their childhood. Under Becker’s assumption that men always marry women and vice versa, it makes sense that society would choose one gender to specialize in market production, and another to specialize in household production, so that each pairing would have one person specialized in each. However, even if society does continue to train people in this way, gay couples do not get the benefits of being trained since childhood to have different specializations. Some of the studies of gay couples have examined this, but generally in extremely small samples and with a focus on housework, not on earnings. There has been some hypothesizing about how this could affect earnings, but no actual study of it. Looking at what factors influence who stays

in the workforce and makes more money might be generalizable to straight couples, among whom it is almost impossible to control for the effects of gender over the whole life time.

Data

I used the American Communities Survey from 2012-2016. These data are collected from a random sample of American citizens annually, and ask more detailed questions than the census taken every 10 years. The data are arranged by individual, with each individual connected to a household by a unique identifier. Separately, data are available identifying household characteristics. These two sets of data can be matched by the unique household identifier. I consolidated the data into households, leaving only the data about the household overall, the data about the head of the household (who filled out the survey), their partner, married or unmarried, and their children.

In this set, there were approximately 3.4 million families where the household head was in a relationship with another person also living in the household, whether married or unmarried. I dropped all other families from my data, since there is no way to analyze an earnings gap in other types of families. It should be noted that this may have excluded some households where there was a couple, but neither member of the couple was the one filling out the survey. However, the survey only asks the person filling out the survey to indicate each household member's relationship to the survey taker, not the other internal relationships within the family. Thus, there is no apparent way to identify other couples that might exist within a household. I also chose to exclude families where one of the adults in the couple was on active duty in the military, since these households differ substantially from average households in the United States. Furthermore, I excluded two other types of couples. I left out couples for whom the low earner was making no money. While these couples are important, they present two issues for my analysis. First,

practically, I am not able to assess an hourly earnings amount for the low earner in these couples, since I have no reference for how much they might be making, were they working. Second, mathematically, I cannot take the natural log of their earnings. It is, of course, important to consider that in some families, one parent might stop working all together, either when the couple has children or even before that. However, since I cannot consider these parents' wages, their characteristics are nearly impossible for me to assess. This is another disadvantage of not having panel data.

I also left out couples with identical annual earnings (about 775 thousand couples fit this criteria). Again, while these couples are important, I cannot assess a high or low earner, and so they are difficult to use in my analysis. Additionally, judging by the large number of couples in this category, it seems fair to assume that at least some of these couples were listing the household income as the individuals' income. It seems unlikely that nearly a quarter of the dataset would have completely identical earnings, down to the dollar. It is unfortunate to lose such a large number of observations; however, since there is no way to deal with them that seems likely to be an accurate representation of their meaning, I found it most accurate to exclude them altogether. After these eliminations, I am left with approximately 1.5 million observations.

After consolidating by household, I rearranged the data so that rather than being delineated as the partner who filled out the survey and the partner who did not, people within the household were identified as the high earner and the low earner. I identified high and low earners based on total wages for the year. I considered using average hourly earnings. However, number of hours worked can also be substantially affected by the addition of a child to the family, a phenomenon which I analyze separately, so I decided that using total annual wages would capture the entire picture most thoroughly.

As an outcome variable, I considered difference in the natural log of annual wages. I generated this variable as the difference between the high earner's log wages and the low earner's log wages. I considered several explanatory variables that could help explain the difference between two partner's wages. I detail all of the variables considered and their descriptive statistics in Table 1.

Gender: Most importantly, I considered the gender make up of the couple. I considered different gender couples where the man is the highest earner, and where the woman is the highest earner. I also considered same gender couples with men and women. I included each of these categories as an indicator variable, excluding a constant term. I also interacted gender groups over all of the following variables.

I defined same sex households as ones where the survey respondent and their partner (married or otherwise) were of the same sex, and different sex couples as those where they were not. I use gay, same gender, same sex, and lesbian (for woman-woman couples) interchangeably, and straight, different sex, and different gender interchangeably. It is worth mentioning that not everyone in a same gender relationship necessarily identifies as gay – they may identify as bisexual or another orientation. I use these phrases as short hand to describe the couples, not necessarily to describe the people in them.

Children: I also consider whether the couple has at least one child. I hypothesize that, in general, having children will predict higher earnings gaps, although I hypothesize the magnitude will vary across gender groups. I include all of the below variables with and without an interaction with the indicator for having children.

Age Difference: I hypothesize that, the larger the age difference between the higher earner and the lower earner, the larger the earnings gap will be, since an older person will on average have higher earnings. Age difference is represented in terms of years between the high earner and low earner, and is negative if the high earner is younger.

Average Age: I hypothesize that children will have a smaller effect on older couples, since they may be likely to have higher incomes and be more established in their careers, and therefore elect to hire childcare instead of having one person be a caregiver.

Citizenship: The vast majority of my sample is made up of couples where both members are citizens; however, I predict that having either couple not be a citizen will decrease the earnings gap and decrease the effect of children since these couples have lower income on average and therefore might be less likely to give up one person's income when they have children.

Race: I divided all couples into both Black, high earner is white and low earner is Black, high earner is Black and low earner is white, and all other combinations, using both white as a reference group. I grouped all of the other couples together primarily for ease of interpretation. Since white people in the sample had higher earnings overall than Black people in the sample, I hypothesized that white-Black couples would have higher earnings gaps, and vice versa.

Veteran Status: Veterans in the sample made less than non-veterans, so I hypothesized that veteran-non-veteran couples would have smaller earnings gaps, and vice versa. I used couples where neither member was a veteran as my reference group.

Educational Difference: I recoded the education variables as being zero for any amount of education less than kindergarten, with one year added for each year of schooling through college.

I estimated masters and professional degrees as being two years of school, and doctorates as being five years of school. Thus, the values for educational years ranged from zero to 22.

Average Education: Similarly to average age, I hypothesize that having a higher education will predict less of an effect of children, regardless of gender.

Marital Status: I predicted that being married would be associated with an increased earnings gap. People who are married might feel more secure giving up years of work experience to care for children, because they see their specialization as likely to last long term.

Mobility: I consider whether the couple recently “moved in together” – i.e., whether one member of the couple moved and the other did not in the last year. I predict that this might have implications for how established each individual is in their job, and who is perceived as the primary or dominant partner.

Industry: I categorize all workers into one of five industries: business, service, public, manufacturing/manual labor, and scientific industries. In the census, there are also codes for not working within the last five years; however, this applies to none of my sample since I removed non-earners.

Method

The main purpose of my project is to look at how families take on labor market tasks after having children when there is not a clear, “easy” gendered way to divide these tasks, and how that compares to families when there is a gender difference between the partners. Becker hypothesizes that specialization in household and market tasks increases the gains from marriage. He further argues that, while there is no intrinsic reason for women to take on household work and men to take on market work, it makes sense for parents and society to raise one gender to be very good at household production and the other to be very good at market production. Under his assumption that all women marry men and vice versa, this would ensure that there is one person specialized in each type of production in each couple. However, this model does not work quite so well for gay couples. When gay couples start cohabitating or get married, they must make a decision about whether and how much they will specialize, and about who will specialize in what if they do. They cannot make this decision based on gender. As it does for straight couples, this question might become particularly salient when they have children, since the need for household production increases substantially.

There have been several small-sample studies using longitudinal data that focus on how gay couples divide up specific household tasks. However, no one has conducted an analysis on a large sample that examines actual earnings for members of gay couples and compares them to straight couples in similar situations. My project aims to construct the earnings trajectories for gay and straight couples before and after they have children.

There is a severe problem of heterogeneity between couples who have children and couples who do not. For instance, while there is a well-known “motherhood penalty” among straight women based on longitudinal data, cross sectional data show that on average, women

with children have higher incomes than those without. This makes sense, as people might be more likely to choose to have children when they have sufficient financial resources to support them.

To avoid some of this heterogeneity, I have two approaches. The first is that rather than examining absolute income, I examine income gaps between partners and income gaps between partners as a ratio of total family income as an outcome variable. Not only does this serve my goal of examining how household and their members are affected by children, but it also eliminates some of the unobserved heterogeneity between people who have children and people who do not. The second approach is that I will control for some of the main factors considered in most wage equations, including occupation, age, educational attainment, and race. I will also likely examine the gap in hours worked between partners. However, despite these fixes, it is undeniable that there is a selection issues that cannot be entirely accounted for in my model.

Most similar studies of heterosexual couples use longitudinal data to consider changes in income and hours worked before and after children enter the family. However, there is no longitudinal data available that has a substantial sample of gay couples, especially not with children. Peterson et al. use Norwegian data to study employees using repeated cross sectional data (2010). They control for much of the unobserved heterogeneity by controlling for specific occupational codes, which are also included in the census data I am using. Another study does use cross sectional data to examine the motherhood penalty among straight women (Glauber, 2018). They attempt to control for major factors impacting wages and argue that other studies have found that only 15 to 30% of the wage penalty comes from unobserved heterogeneity. Although longitudinal data would be most useful, lacking that, observing the earnings gap rather than absolute earnings, controlling for major factors impacting wages, and accepting prior

literature that estimates the portion of penalty that is relatively small should make our estimates fairly useful.

In order to estimate this, I set the gap between $\ln(\text{wages})$ as the outcome variable $[\ln(\text{wage}_{\text{high earner}}) - \ln(\text{wage}_{\text{low earner}})]$. I used a simple OLS regression (Equation 1). With respect to gender make up of the couple, I used no constant in my regression. I included an indicator variable for each gender make up (opposite sex, male is high earner; opposite sex, female is high earner; same sex women; same sex men) and interacted all these indicator variables over all other variables in the model. The variables interacted in the model were: age difference; average age; difference in years of education; average years of education; citizenship status; race; mobility status; marital status; industry; and veteran status. For those of these that are categorical, I omit one category, as listed in the Data section of this paper. I include all of these variables, interacted with gender make up. I additionally include the variable-gender interaction interacted again with an indicator variable for whether or not they have children. I used robust standard errors to account for any possible heteroskedasticity.

Additionally, I ran identical regressions with the difference in $\ln(\text{hourly wages})$ and the difference in weekly work hours as the outcome variables. By examining these, we can see where difference in overall annual wages derive from for each group. I note that hourly wages are calculated by adding up the individual's reported number of work hours and then dividing their total earnings by that figure. This means that if people are slightly misestimating or rounding their work hours, it may appear that hourly earnings are higher for people who work fewer hours, even if that is not a precisely accurate description of pay and how it is determined.

My primary interest in these regressions is the “child effect” – the coefficient on the child-interacted variables. I examine the null hypothesis that children have no effect for each

gender group by jointly testing the significance of the coefficients on all of the child-interacted variables for each gender group. I am interested in whether this effect is driven by a change in work hours, hourly wages, or both, and whether this varies by gender group. Specifically, I want to know whether straight families send their higher earner into the workforce more or less frequently than gay couples, and whether this is mediated by the gender of the high earner.

I also look at whether there are differences in how couples from different demographic groups experience having children and the effects on their earnings. I test the null hypothesis that the child effect of a demographic for each gender group is identical, in addition to examining the individual coefficients. Notably, the same sizes for gay couples, especially gay men with children, are substantially smaller than for straight couples. Thus, I am mindful even of statistically insignificant results.

Separately, I considered a different model. In this model (Equation 2), I first use a number of individual characteristics (sex, age, race, marital status, whether they had moved in the last year, whether they were in the military or a veteran, and how many years of education they had) to predict each individual's earnings. I use separate regressions for gay women, gay men, straight men, and straight women. I then calculate the residuals for each individual.

After doing this I run an identical regression to the one used in my first method. As you can see in Equation 2, this yields a slightly different model than the first method. It eliminates an issue of scaling that can make the results from my first method difficult to interpret, and also fixes some of the selection issue by looking at each individuals' earnings before combining them as a couple.

Results

Gender and Children

Across the board, couples with children have larger earnings gaps than couples without them. However, the magnitude of the difference varies substantially (Table 2). On one end of the spectrum, opposite sex families with male high earners have earnings gaps \$6,860 larger if they are parents than they do if they are not parents. Opposite sex couples where the female is the high earner, on the other hand, barely experience a bump in the earnings gap - \$1,503. Gay couples are somewhere in the middle. Gay men experience a more increased earnings gap with children of \$5,345. Gay women see their earnings gap increase \$4,025.

However, when we control for all of the other factors, the results change in magnitude, although not in nature. For straight couples, families with male high earners have earnings gaps about 17.6% larger when they have children than when they do not. When the woman is the high earner, on the other hand, the earnings gap actually shrinks when the couple has children – about 3.3%. This is a 21 percentage point difference from straight couples with male high earners. Gay men and lesbian couples fall almost precisely in the middle, experiencing 8.3% and 7.4% bumps in the earnings gap with children, respectively.

Regardless of gender, it appears that couples with children either take advantage of an existing differential in earnings to assign the childcare responsibilities to the lower earner, or allow one person to take a hit to their earnings to care for the child. To some degree, this corroborates Becker's argument that gendered division of labor is not necessary for specialization within the household – even when gender is not available as an indicator of who should “stay home,” it seems that families still make a choice to assign one person the primary

care duties. However, it also shows that gender does play an important role in the division of labor within the household; families with a “traditional” structure of the male as the breadwinner seem to specialize most intensely. If gender were not a factor, it seems that couples would expect their earnings gap to be between \$4,000 and \$5,400 larger when they have children, all else held equal. However, when gender comes into the equation, couples “overspecialize” in families where the man is the high earner, and “underspecialize” in families where the woman is.

This is corroborated by examining the residuals (Table 2a). We can see that in general the high earner makes more than they would be predicted to make and/or the low earner makes less. This becomes even more true across all groups when the couple has children – these residual gaps become larger, meaning that the couple is further specializing away from their predicted earnings in order to maximize household utility. In other words, compared to before having children, the earnings gap not only becomes larger, but the individuals’ earnings stratify more from their predicted level, with the home-production specialist making less than expected, and the market-production specialist making more than expected.

We can dig further into this claim by looking at working hours. Do couples specialize in terms of hours spent in the workplace when they have children?

The change in the number of hours worked illuminates part of the story about where the earnings gaps originate (Table 3). For straight, male high-earner couples, there is a significant increase in the gap in hours worked when the couple has children. This shows that couples may choose to specialize (or take advantage of existing specialization) when they have children. For couples where the woman is making more money, on the other hand, the high earning woman works fewer hours relative to her male partner after they have children. This means that her higher earnings are generated by higher wages, not by a choice not to specialize. Neither type of

gay couple shows a significant difference in the gap in hours works before and after children. However, both near significance and both show a slight increase in the gap in hours worked between the low and high earner. Again, we can use this as a reference point – one would expect that the person who can more efficiently produce market labor would take on more working hours, and the other partner would take on household production. There might be other countervailing factors, such as preferences of who prefers to spend time with children or who likes their job more. Gay couples tell us that we would only expect a bump in the gap in hours worked of about an hour per week; however, it seems that straight couples factor gender into their choices in a way that substantially changes their decision making.

For all types of couples, there is a significant increase in the gap between the partners' hourly wages when the couples have children. Predictably, perhaps, based on the discussion of work hours, women in opposite sex couples where they are the high earners see the biggest increase in the earnings gap. This is likely at least in part from reverse causality – the main reason why the woman would be a high earner is that she has higher hourly wages, since we know she does not, on average, work many more hours. Additionally, there is a mathematical relationship between the woman's annual earnings and hourly earnings that may convolute the results.

Overall, we find that in about 17.9% of opposite sex households without children where the high earner is a woman, she works less hours, even though she makes a higher hourly wage. This means that these families are choosing to specialize their highest earner out of the workforce. This is true, on the other hand, for only 7.3% of male high earner households. This shows that being a female high earner household does not imply that the family has specialized in a non-traditionally gendered way. When men are high earners, it's typically because, in part,

they have specialized as the main income earner by working more hours. When women are high earners, however, it is more likely that they are still the specialized “household production” partner. Gay couples float in the middle – about 14% (gay women) to 14.6% (gay men) of the time, their higher earner is working fewer hours, despite making a higher wage.

These differences are even more stark when couples have children. In households with children and women who are high earners, 25.6% of the women work fewer hours, even though they make a higher hourly wage; compared to only 5.5% of men in households where they are the high earners. Gay women have this set up about 12.3% of the time when they have children; for gay men the figure is 11.4%

We know, of course, that there might be many factors going into a couple’s decision about which partner specializes in market versus household production. For instance, one partner may prefer spending time in the home, or might dislike their job in the first place and be grateful to get away from it. Gay couples give us a good baseline for how often these concerns override maximizing household earnings, without considering gender. It seems that, if it were not for gendered expectations about who ought to stay home, about 14.3% of families would choose not to make their highest earner their primary market worker. However, in about 17.9% of families where the woman makes a higher hourly wage, the family still chooses for the man to work more hours. This means that about 3.6% of these couples are making a gendered specialization choice. On the other hand, in families where the man makes a higher wage, only 7.3% send the woman into the labor market. However, if we look at gay couples, we would expect 14.3% of the couples to choose for the higher earner to stay home because of their preferences. Thus, about 7% of these couples are making a choice that they might not make, gender held equal.

Considering the percent of straight couples who have male versus female high earners, this means that about 5.89% of couples are making choices that reflect gendered decision making.

This figure rises substantially when couples have children. It seems that gay parents are slightly more likely to want to maximize income once they have children – only about 11.85% of them let other concerns override that consideration. This means that in families where the man makes more, 6.35% of families are making a gendered choice to send the (higher paid) man into the labor force, even when, if gender were not a factor, other concerns or preferences might outweigh his higher earnings. In families where women are the higher hourly earners, families are even more likely once they have children to still have the woman work fewer hours than the man – 13.75% of families with high women earners have this dynamic. Overall, 8.72% of straight families' decisions about who will be the primary worker seem to be driven by gender.

There are two important caveats to note. First, these estimates are conservative because they assume that earnings amounts are exogenous. Women are the lower earners in their families about 67.6% of the time, and many researchers have documented that this may be a result of sexism or at least of gendered expectations and norms. This could include both workplace sexism and choices made by women based on gendered expectations to take lower paying jobs, or jobs that they can work part time. Thus, in reality, the “gendered” nature of specialization is likely more extreme than our findings indicate.

Second, many may point out that it could be the case that women systematically prefer not to be the primary workers, or that men prefer not to be the primary homemakers or caregivers. This is true; however, these differences in preference still reflect a gendered dynamic – the point is not to place blame or to attribute these differences to sexism, necessarily, but to ascertain the degree to which preferences are personal versus socialized, gendered, or systematic.

We can tell that these differences are significant, even when controlling for all basic factors that predict wages.

A second question that will help illuminate how these decisions are made is whether different characteristics impact couples differently, with and without children, depending on the genders of the couples (Table 4). I also considered several possible influencers of wage gaps, including the combination of the partners' citizenship status, race, age, education, and industry. I attempted to construct a typical wage function but adjust it to reflect the study of a couple's wage gap, rather than just the wage of a single person. I consider, in turn, some of these factors, and discuss their implications for the study of gendered wage gaps.

Age

I studied two measures of age: the average age of the two members of the couple and the difference in the couples' ages. Age difference almost certainly affects different gender groups differently as those groups have children. For all gender groups, a larger age gap increases the impact of having children on the wage gap. This is most true for same sex women – for each year of age difference between the high and low earner, there is a 0.8% larger increase in the earnings gap when the family has children. The smallest effect is for same sex men, where the effect is tiny and non-significant. Opposite sex couples with men and women high earners see 0.3% and 0.5% bumps in the effect of children on the earnings gap for each additional year of age difference, respectively. Using age as a proxy for work experience, this reflects that, in couples where one partner has much more work experience, the couple may be more likely to engage in specialization. Some of this may come from the higher earner having a higher salary because they are established in their field, rather than because they went into a more lucrative job in the

first place. This could lead the couple to feel that establishment is important and worth preserving when deciding who should continue being the primary worker in the family.

The effects of age difference corroborate this hypothesis. For four out of the three gender groups, a higher average age is associated with a decreased impact of children on the earnings gap. This may be because older couples are likely to both be established in their careers (e.g. have worked at one place for a long time, have built connections in their industry, etc.) and therefore may be more likely to hire child care or otherwise find ways to avoid having to specialize one member out of the workforce. The only exception is among opposite sex couples with male high earners. For these couples, the older they are, the more having a child increases their earnings gap. There are several possible reasons for this, including the well documented discrimination against older women in the workplace and the cultural ethos that women's "biological clocks are ticking" to have children.

Citizenship

I examined the effects of citizenship status on the child earning gap effect for different gender compositions of families. Extremely broadly, while having either or both members of the couple seems to increase the earnings gap without children (regardless of the couple's gender composition), it seems to decrease positive effect of children on the earnings gap. This is true regardless of whether the high earner, the low earner, or both are non-citizens. Not all these results are significant; however, they do all move in the same direction. This may be in part because families with any parent who is a non-citizen make less money overall on average. Families where both earners are citizens make an average of \$91,824 annually, whereas families where one or both earners are not citizens make only \$69,591. Couples where neither member is a citizen are the lowest earners, with an average total income of \$63,494. If couples do not have

a high income to begin with, they may be reluctant to pull one member from the workforce and sacrifice needed income.

The only category for which there is a significant difference between different gender groups is the comparison between couples where both members are citizens and where neither member is a citizen. Again, these all move in the same direction, but it seems that same sex women who are both non-citizens experience very little, if any, earnings gap increase when they have children. The same is true for gay men, to a slightly lesser degree. For straight couples, while both being non-citizens does seem to decrease the effect of having children on the earnings gap, it does not eliminate the effect.

Marriage

Marriage seems to increase the earnings gap (in the absence of children) for all groups, except female high-earner opposite sex households. For these families, being married actually decreases the earnings gap, and this is even more true if there are children in the household. This may be because specializing confers less “risk” for the “homemaking” partner when there is more assurance that the relationship will last. Individuals in relationships might be more willing to forego years of work experience, promotions, or other things that would increase their earnings long term because they believe that the relationship is likely to last. Since this dynamic is gendered because of a societal norm that women should specialize in non-market work, even high earning women might be pulled by the dynamic to specialize in household production. Indeed, married women who earn more than their husbands barely work more hours – only about 50 minutes more per week on average. This is true *even though* they are able to make more per hour.

When couples have children, the effects of marriage on the change in the earnings gap varies by gender composition. For opposite sex male high earner and same sex male couples, being married increases the positive effect of children on the earnings gap. This finding aligns with the discussion about specialization in a marital relationship – people may be less reluctant to specialize with the security of marriage, and this may be even more true if the relationship is or appears to be strengthened by the presence of shared children. For opposite sex couples with female high earners and same sex female, the opposite is true. Having children narrows the earnings gap compared to unmarried couples, although by almost four times as much for the opposite sex couples than for the same sex couples.

Education

I considered two metrics of education: average education and the difference in years of education between the two partners. Across the board, in couples without children, higher average education translated to a larger earnings gap. This may be for similar reasons that having one or both partners be non-citizens has a similar effect: families with more education may have higher base incomes, and therefore may be more likely to have one person specialize. Considering couples where the average education level is at least college degree (16 years of education) versus where the average education when the average education is less than a college degree, the more educated couples have an average total income of \$141,309, whereas the less educated couples have an average total income of \$69,553.

When couples have children, we see different effects of education between gay and straight couples on the changing earnings gap. For straight couples, having children reduces the effect of education on the earnings gap. This may be because educated families now have more financial needs (children are expensive) and thus experiences an income effect that encourages

both partners to work. For gay families, however, having children increases the positive effect of education on the earnings gap, though the change is not statistically significant.

For all types of couples without children, a higher educational gap translates to a higher earnings gap. This makes sense intuitively – if you have much more education than your partner, you would expect to make substantially more than they do. For all types of couples, an having children either further increases the effects of education or has no effect. This is especially true for opposite sex, male high earner couples and same sex men. This may be because couples choose to more aggressively specialize once they have children, and who has more education is likely a good proxy for who would be the better person to specialize in market production. For opposite sex couples, specialization along traditional male-female lines is already normed, especially when the couple has children, so it is unsurprising that the man having more education would lead him to take on even more labor market specialization. Noonan (20XX) found that gay men are more likely to assign specific tasks to each member of the couple, whereas lesbians are more likely to share each task. Gay men's tendency to use education as an indicator for specialization after having children might corroborate this finding, as it shows that they are using a visible characteristic (education) to divide tasks in an efficient manner.

Mobility

Mobility – whether people have been at the same address for the last year – has some of the biggest impacts on the earnings gap of any characteristic. In particular, if the low earner moved in with the high earner, it implies an increased wage gap of between 15.4% (for opposite sex couples with female high earners to 19.7% (for same sex male couples). This could be

spurious – the higher earner might have a nicer home, which causes the lower earner to move in, or causal – one partner leaves their job or takes a lower paying job to move in with the other partner. Notably, having children substantially reduces this effect for all groups; however, the magnitude of this reduction is substantially less among opposite sex, female high earner families than among other groups. This may be because women with children who have men moving into their homes may be more likely to have had the children from another previous relationship, whereas in the other gender groupings, it may be more likely that the couple is moving in together because they are having a child. Thus, for straight women, having a partner move in with them might represent less of a disruption in their careers than it does for other couples.

The Average Family

Consider a family where the high earner is 40 years old and the low earner is 38. The high earner works in business, and the low earner works in the service industry. Both are citizens, both are white, and neither is a veteran. They have lived together in the same home for over a year, and they are married. They have the same level of education – 14 years. If this is a lesbian couple, their earnings gap without children is \$30,993, and with children is about \$3,500 higher at \$34,597. For gay men, the earnings gap without children is \$45,432, and actually drops with children to \$42,756. If that family is composed of a straight couple with no children where the woman is a higher earner, they have a predicted earnings gap of \$23,442. If they have a child, that rises only \$1,500 to \$25,080. If the man is the high earner, on the other hand, their earnings gap is \$44,285 without children, and rises nearly \$10,000 to \$52,384 with children.

This demonstration shows the ways that straight couples specialize differently from gay couples – less when the woman is the high earner, and more when the man is.

Conclusion

I find that gender plays a substantial role in the division of labor in households, and how that division changes when the couple has children. Gay couples provide a useful reference for understanding how families would function if gender were not a defining difference between the two partners. Studying gay families illuminates the “gender neutral” level of specialization before and after children. They provide a useful model of how maximizing family income balances with personal preference to determine who the primary earner for the household will be. Straight families with high earning women, by comparison, underspecialize – that is, the high earning woman works fewer hours relative to her partner than we would expect. Families with high earning men, on the other hand, overspecialize. The men work more than we would expect them to. This contradicts the narrative that men work more because they can make more and that families are therefore making a rational choice to assign them the role of primary earner. While this may be true for some families, and this may be part of the decision making process, comparing straight couples to gay couples shows us that straight families specialize in a way that cannot be explained by gender neutral preferences or by exogenous realities that lead to men being higher earners overall.

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Table 1: Variable names and information**Table 1a: Indicator Variables**

Variable Name	Mean (Standard Deviation)	Variable Name	Mean (Standard Deviation)
CITNEITHER	0.3416 (0.1816)	BOTHVET	0.0047 (0.0690)
CITHIGH	0.0254 (0.1573)	NOT-VET	0.0469 (0.2114)
CITLOW	0.1693 (0.1290)	EDDIF	0.4307 (2.870)
WHITE-BLACK	0.0046 (0.0683)	EDAVG	14.82 (2.704)
BOTHBLACK	0.0419 (0.2003)	HIGHSCIENCE	0.0613 (0.2400)
BLACK-WHITE	0.0045 (0.0674)	HIGHPUBLIC	0.0202 (0.1409)
OTHERRACE	0.3353 (0.4721)	HIGHSERVICE	0.2004 (0.4003)
MARRIED	0.9027 (0.2962)	HIGHMANU	0.1913 (0.3933)
BOTHMOVE	0.2991 (0.4578)	LOWSCIENCE	0.0553 (0.2287)
HIGHMOVE	0.0071 (0.0840)	LOWPUBLIC	0.0094 (0.0967)
LOWMOVE	0.0093 (0.0961)	LOWSERVICE	0.2431 (0.4289)
VET-NOT	0.0697 (0.2546)	LOWMANU	0.0995 (0.2994)

Table 1b: Continuous Variables

Variable	High Earners	Low Earners	Difference
Age	45.52 (11.85)	44.71 (12.10)	0.8062 (5.1314)
Education	15.28 (2.93)	14.96 (2.82)	0.3197 (2.7445)
Annual Wages	\$75,214.19 (68,463.53)	\$31,948 (26,839.55)	\$43,265.35 (61,097.14)
Hourly Wages	\$33.20 (38.56)	\$16.71 (17.50)	\$16.49 (37.42)
Hours Worked Weekly	43.92 (9.65)	36.21 (12.07)	7.7064 (14.3964)
Residuals	21298.63 (64067.16)	-7770.10 (28,518.43)	29,069.94 (63,431.80)

Equation 1

$$lwagpdif = OSMale * X\beta_{OSMale}' + OSFemale * X\beta_{OSFemale}' + SSMale * X\beta_{SSMale}' + SSFemale * X\beta_{SSFemale}' + Children * (OSMale * X\gamma_{OSMale}' + OSFemale * X\gamma_{OSFemale}' + SSMale * X\gamma_{SSMale}' + SSFemale * X\gamma_{SSFemale}')$$

X is a vector of characteristics containing:

- Average age
- Difference in ages
- Citizenship status indicator variables (both are citizens is baseline)
 - Neither citizen
 - High earner only is citizen
 - Low earner only is citizen
- Race indicator variables (both white is baseline)
 - White-Black
 - Both Black
 - Black-white
 - Any other combination
- Mobility indicator variables (neither moved is baseline)
 - Both moved
 - High earner only moved
 - Low earner only moved
- Veteran status indicator variables (neither is veteran is baseline)
 - Veteran-not a veteran
 - Not a veteran-veteran
 - Both veterans
- Difference in years of education
- Average years of education
- High earner occupation indicator variables (business industry is baseline)
 - Science
 - Public
 - Service
 - Manual Labor
- Low earner occupation indicator variables (business industry is baseline)
 - Science
 - Public
 - Service
 - Manual Labor

β_{OSMale} is a vector of coefficients for OSMale couples

$\beta_{OSFemale}$ is a vector of coefficients for OSFemale couples

β_{SSMale} is a vector of coefficients for OSMale couples

$\beta_{SSFemale}$ is a vector of coefficients for OSFemale couples

γ_{OSMale} is a vector of coefficients for Children interacted with OSMale couples

$\gamma_{OSFemale}$ is a vector of coefficients for Children interacted with OSFemale couples

γ_{SSMale} is a vector of coefficients for Children interacted with SSMale couples

$\gamma_{SSFemale}$ is a vector of coefficients for Children interacted with SSFemale couples

Equation 2

$$LWAGP = \beta X + e$$

$$LWAGP - \widehat{LWAGP} = \hat{e}$$

$$\widehat{e}_H - \widehat{e}_L = Y_H - Y_L - \hat{\beta}(X_H - X_L) = \gamma Z + u$$

where F are family characteristics

$$Y_H - Y_L = \beta(X_H - X_L) + \gamma Z + u$$

Table 2a: Earnings gaps across gender groups

Gender	Count	Percent with Children	Average Earnings Gap without Children	Average Earnings Gap with Children	P-value (F-statistic) Null: children have no effect on the earnings gap for this gender group
OS-Male	1,748,800	58.85	\$56,263*	\$63,123	p<.0001 (F=148.91)
OS-Female	854,437	47.28	\$34,281	\$35,784	p<.0001 (F=32.00)
SS-Male	17,441	12.67	\$61,725	\$67,070	p=.0235 (F=1.62)
SS-Female	17,941	28.94	\$42,058	\$46,083	p=.0007 (F=2.12)

Table 2b: Residual gaps across gender groups

Gender	Count	Percent with Children	Average Residual Gap without Children	Average Residual Gap with Children	P-value (F-statistic) Null: children have no effect on the earnings gap for this gender group
OS-Male	1,748,800	58.85	15,527	17,800	p<.0001 F(26,1553189)=26.98
OS-Female	854,437	47.28	54,225	56,886	p<.0001 F(26, 1553189)=17.1
SS-Male	17,441	12.67	49,198	55,833	p=.0165 F(26, 1553189)=1.68
SS-Female	17,941	28.94	31,520	36,091	p=.1020 F(26,1553189)=1.36

*This seemed larger than I would expect, so I also calculated the figures in this column using the 2010-2014 ACS data. The comparable figure in these data for OS-Male couples is \$49,699. This number (and the average household income) is likely larger than among the population because this only includes households that are couples, and not households that are single parent homes.

Table 3: Work hour gaps across gender groups

Gender	Average Work Hour Gap without Children	Average Work Hour Gap with Children	P-value (F-statistic) Null: children have no effect on the work hour gap for this gender group
OS-Male	8.96	11.16	P<.0001 (F=134.75)
OS-Female	3.14	1.105	P<.0001 (F=17.58)
SS-Male	5.53	6.79	P=.0778 (F=1.42)
SS-Female	5.54	6.54	P=.1329 (F=1.31)

Table 4: Average hourly earnings gaps across gender groups

Gender	Average Work Hour Gap without Children	Average Work Hour Gap with Children	P-value (F-statistic) Null: children have no effect on the average hourly earnings gap for this gender group
OS-Male	\$18.58	\$19.12	p<.0001 (F=64.17)
OS-Female	\$14.44	\$15.64	p<.0001 (F=16.56)
SS-Male	\$23.86	\$24.01	p=.0047 (F=1.87)
SS-Female	\$15.05	\$15.98	p=.0140 (F=1.70)

Table 5: Effects on earnings gaps for gendered couples
Representation of coefficients for log wage gap estimation

Characteristic		Category	Opposite Sex Male		Opposite Sex Female		Same Sex Male		Same Sex Female		Null: Child effect is equal for all gender groups
			No Child	Child Effect	No Child	Child Effect	No Child	Child Effect	No Child	Child Effect	
Age Difference			-.00008 (.00031)	.00303 (.00041)	-.00784 (.00041)	.00506 (.00059)	.0082 (.0011)	.0000 (.0032)	-.0006 (.0015)	.0088 (.0025)	p<.0001 (F=5.43)
Citizenship (compared to both being citizens)	Neither are citizens	0.111 (0.011)	-0.117 (0.012)	0.005 (0.018)	-0.005 (0.021)	0.090 (0.094)	-0.14 (0.16)	0.30 (0.13)	-0.42 (0.19)	p<.0001 (F=9.64)	
	Only high earner is a citizen	0.223 (0.010)	-0.121 (0.012)	0.161 (0.013)	-0.091 (0.017)	0.296 (0.045)	-0.248 (0.14)	0.173 (0.074)	-0.22 (0.12)	p=0.2035 (F=1.53)	
	Only low earner is a citizen	0.051 (0.011)	-0.070 (0.014)	0.032 (0.016)	-0.024 (0.021)	0.124 (0.060)	-0.01 (0.17)	0.04 (0.09)	-0.07 (0.15)	p=0.2798 (F=1.28)	
Race (compared to both white)	White/Black	0.016 (0.024)	-0.071 (0.032)	0.079 (0.019)	0.024 (0.025)	0.052 (0.062)	0.08 (0.25)	0.006 (0.089)	-0.12 (0.16)	p=0.0980 (F=2.10)	
	Both Black	-0.1101 (0.0076)	-0.1503 (0.0095)	0.01975 (0.0090)	0.030 (0.011)	-0.069 (0.068)	0.08 (0.12)	0.093 (0.052)	- 0.1258037 (-.083286)	p<.0001 (F=59.71)	
	Black/White	-0.109 (0.018)	-0.095 (0.022)	0.049 (0.033)	0.045 (0.046)	-0.027 (0.074)	-0.35 (0.25)	-0.001 (0.097)	-0.169 (0.194)	p=0.0125 (F=3.62)	
	Any Other Combination	-0.01792 (0.0051)	-0.0981 (0.0062)	0.02785 (0.0069)	0.0150 (0.0088)	0.014 (0.026)	-0.119 (0.077)	0.047 (0.032)	-0.0659 (0.059)	p<.0001 (F=43.35)	
Married (compared to unmarried)			0.0320 (0.0045)	0.0874 (0.0068)	-0.0763 (0.0060)	-0.0433 (0.0093)	0.044 (0.021)	0.0379 (0.060)	0.0511 (0.023)	-0.013 (0.041)	p<.0001 (F=53.79)
Mobility (compared to neither moving)	Both moved	0.1223 (0.0050)	-0.0231 (0.0068)	0.0969 (0.0069)	-0.0000 (0.0099)	0.040 (0.028)	-0.0127 (0.094)	0.056 (0.030)	-0.0229 (0.060)	p=0.2272 (F=1.45)	
	High earner moved	0.023 (0.014)	-0.096 (0.020)	0.032 (0.017)	-0.012 (0.029)	0.147 (0.063)	-0.253 (0.21)	-0.027 (0.064)	0.17 (0.13)	p=0.0134 (F=3.57)	
	Low earner moved	0.186 (0.010)	-0.138 (0.017)	0.154 (0.015)	-0.020 (0.023)	0.197 (0.052)	-0.07 (0.16)	0.183 (0.056)	-0.135 (0.106)	p=0.0007 (F=5.68)	
Veteran Status (compared to neither being a veteran)	Veteran/Not a Veteran	0.0038 (0.0044)	0.0064 (0.0062)	0.028 (0.025)	0.054 (0.033)	-0.005 (0.042)	0.09 (0.11)	0.0631 (0.0522)	-0.085 (0.096)	p=0.2659 (F=1.32)	
	Both Veterans	-0.069 (0.020)	0.033 (0.025)	0.010 (0.025)	0.0059 (0.034)	-0.10 (0.11)	0.30 (0.28)	0.03 (0.11)	-0.38 (0.24)	p=0.0691 (F=0.41)	
	Not a Veteran/Veteran	-0.046 (0.020)	0.0341 (0.026)	0.0853 (0.0060)	-0.0415 (0.0090)	0.086 (0.046)	-0.18 (0.14)	-0.027 (0.056)	0.04 (0.10)	p=0.281 (F=3.83)	
Education Difference			0.02932 (0.00061)	0.00839 (0.00078)	0.00493 (0.00082)	0.0028 (0.0010)	0.0181 (0.0033)	0.0092 (0.0091)	0.0203 (0.0040)	-0.0068 (0.0072)	p=0.0001 (F=7.07)
Industry (High earner) – compared to	Science	0.1776 (0.0083)	-0.028 (0.010)	0.0380 (0.0061)	0.01602 (0.0081)	0.071 (0.036)	0.09 (0.10)	0.052 (0.034)	-0.068 (0.063)	p=0.0106 (F=3.74)	
	Public	-0.1622	-0.039	-0.052	0.042	-0.092	0.00	-0.123	0.20	p=0.0068	

business		(0.0089)	(0.010)	(0.024)	(0.032)	(0.088)	(0.19)	(0.065)	(0.12)	(F=4.05)
	Service	-0.1400 (0.0043)	-0.0120 (0.0056)	-0.0086 (0.0053)	0.0145 (0.0074)	-0.111 (0.024)	0.086 (0.078)	-0.037 (0.028)	-0.023 (0.054)	p=0.0159 (F=3.45)
	Manufacturing	-0.1073 (0.0042)	-0.0348 (0.0054)	-0.025 (0.010)	0.015 (0.014)	-0.087 (0.039)	0.030 (0.090)	0.004 (0.043)	0.017 (0.077)	p=0.0029 (F=4.67)
Industry (Low earner) – compared to business	Science	-0.0308 (0.0052)	-0.0828 (0.0065)	-0.021 (0.012)	0.041 (0.016)	0.053 (0.041)	0.096 (0.109)	0.045 (0.037)	-0.031 (0.071)	p<.0001 (F=23.32)
	Public	0.015 (0.019)	-0.101 (0.024)	-0.004 (0.012)	-0.065 (0.016)	0.064 (0.089)	-0.40 (0.26)	-0.00 (0.76)	-0.03 (0.13)	p=0.1233 (F=1.92)
	Service	0.2033 (0.0038)	0.0302 (0.0049)	0.1159 (0.0058)	0.01933 (0.0080)	0.269 (0.023)	-0.084 (0.074)	0.255 (0.026)	0.071 (0.052)	p=0.2442 (F=1.39)
	Manufacturing	0.0846 (0.0070)	0.00089 (0.0091)	0.0344 (0.0060)	0.0130 (0.0082)	0.205 (0.036)	-0.110 (0.094)	0.150 (0.043)	-0.020 (0.080)	p=0.4136 (F=0.95)
Average Age		0.01051 (0.00013)	0.010 (0.010)	0.01214 (0.00018)	-.00434 (.00028)	0.00870 (0.00095)	-0.0027 (0.0032)	0.00725 (0.00093)	-0.0068 (0.0021)	p<.0001 (F=116.69)
Average Education		0.01925 (0.00080)	-0.0023 (0.0010)	0.0180 (0.0011)	-0.0093 (0.0014)	0.0143 (0.0050)	0.015 (0.013)	0.0134 (0.0055)	0.007 (0.010)	p=0.0002 (F=6.59)

*Bolded figures are significant at .05

