**An Analysis of the Gender Poverty Gap using the American Community Survey**

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## Abstract

While much research and media attention continues to be focused on differences in earnings between men and women, differences in poverty status for women and men, or the gender poverty gap, has received less attention despite the finding that female poverty rates consistently exceed those of men. The object of this paper is twofold. First, this paper explores the gender poverty gap using the American Community Survey (ACS) and how this gap varies by state and by demographic groups. I find that female poverty rates were higher than male poverty rates for all demographic groups. Furthermore, the gender poverty gap was largest for the most disadvantaged groups, which are single parents, people without a high school degree, and the unemployed. Second, nested ordinary least squares regression models are used to determine how individual and household characteristics are associated with the gender poverty gap. I find that the gender poverty gap is reduced from 5.44 percentage points when gender is the only control to 1.89 percentage points when individual and household controls are included. While the gender poverty gap is significantly reduced, it is not eliminated when controls are included.

[1] This paper is released to inform interested parties of ongoing research and to encourage discussion of work in progress. Any views expressed are those of the author and not necessarily if the U.S. Census Bureau.
The Census Bureau reviewed this data product for unauthorized disclosure of confidential information and has approved the disclosure avoidance practices applied to this release. CBDRB-FY2020-POP001-0061.

**Introduction**

The existence of a gender wage gap has been the subject of extensive news articles, scholarly studies, congressional hearings, and a push for an equal rights amendment. The gender poverty gap, or the difference in poverty rates between females and males, has received less attention. While many take the gender wage gap as a given, the literature has shown that this gap decreases significantly, but does not disappear altogether, when controlling for characteristics such as education, years of experience, hours worked, and industry and occupation (Blau and Kahn (2017)). This paper explores the gender poverty gap using the American Community Survey (ACS) and how this gap varies by state and by demographic group. Further, this paper examines what happens to the gender poverty gap when individual and household characteristics, such as age, education, marital status, presence and number of children, race and Hispanic origin, nativity status, tenure status, and employment characteristics, are considered.

The poverty gap differs from the wage gap because wages are at the individual level while poverty status is determined at the family level. Thus, spouses and related children are included in the calculation of poverty status. The interpretation of the female poverty rate for adults is muddled because spouse's income is included and the interpretation of the poverty rate for children is muddled because it is based on parental income. The same is true for the male poverty rate.

Because men and women in the same family have an identical poverty status, when comparing the poverty status of men and women, only unmarried women and men age 18 and older are included. This eliminates the impact of spouses or parents earnings, and isolates the study population to identify differences in the poverty status of men and women allowing for the determination of a gender poverty gap. This decision to limit the study to unmarried men and women age 18 and over was also based on prior literature methods (Wiepking and Maas (2005); Fodor and Horn (2015)).

There are two research questions addressed in this paper:

1) What is the size of the gender poverty gap, now and over time, and how does it differ by demographic groups and by state?

2) What happens to the gender poverty gap when individual and household characteristics are used as controls?

To answer the first question, a series of figures are created that show the male poverty rate, the female poverty rate, and the difference in the two rates (the gender poverty gap) divided a number of different ways: by age, marital status, the presence of children in the household, race and Hispanic origin, educational attainment, employment status, nativity, tenure status, and state of residence.

Answering the second question involves running nested ordinary least squares (OLS) regressions using ACS data. The unadjusted model is a regression of poverty status on a female dummy variable for single people age 18 and older. The coefficient on the female dummy variable is the gender poverty gap. There are then a series of models adjusting for different combinations of covariates. The coefficients on the female dummy variable from the regressions are then compared to determine the effects of the observables on the gender poverty gap.

**Literature Review**

The origin of this line of literature derives from research on the "feminization of poverty" in a 1978 article by Diane Pearce. Feminization of poverty refers to the gap in income between men and women that has led to higher poverty rates for females than for males. Furthermore, the "racial feminization of poverty" is a term used in Palmer (1983) to show that minority women are more likely to be poor than minority men or white women. Several studies followed in that vein in order to examine women's poverty along racial and ethnic lines (Hardy and Hazelrigg (1995); Starels, Bould, and Nicholas (1994); Waters and Eschbach (1995)).

A number of studies have examined how the feminization of poverty has changed over time using the Current Population Survey or Decennial Census data (Fuchs (1986); Peterson (1987); McLanahan, Sorenson, and Watson (1989); McLanahan and Kelly (1999); Bianchi (1999)). These studies, taken together, found that there was an increase in the feminization of poverty from the 1950's to the 1990's.

The feminization of poverty and the gender poverty gap refer to the same concept, poverty rates for women are higher than poverty rates for men. This was mostly referred to as the feminization of poverty through the 1990's and more recently referred to as the gender poverty gap. This model is referred to as the gender poverty gap throughout this paper.

Table 1 focuses on papers released over the last 20 years which focus on how individual and household characteristics affect the gender poverty gap. These papers differed in the dataset used, the time period and geography covered, the methods used to measure the gender poverty gap, and the conclusions about which variables were most important in reducing the gender poverty gap. This paper is listed at the end in Table 1 in order to make comparisons.

In this paper, a unique dataset and methodology were used to explore the gender poverty gap in the United States and, for the first time, among the states and the District of Columbia. Only one other study listed in Table 1 used the ACS to study the gender poverty gap, Fontenot et al. (2016). However, this study did not limit itself to unmarried men and women, did not look at the poverty gap below the national level, examined only one year of data, and did not examine if observables, other than age, affected the gender poverty gap.

While a number of studies include the U.S. as a comparison country, only a few focused on the U.S. Of these, only one, Lichtenwalter (2005), looked at sub-national data. While Lichtenwalter (2005) looked at 70 U.S. cities using 2000 Census data, this paper looks at all 50 states and the District of Columbia using current year's data.

This paper is closest in methodology to Elmelech and Lu (2004). Like Elmelech and Lu (2004), this paper uses regression analysis to examine how observables affect the gender poverty gap, although different time periods and datasets were used, Elmelech and Lu did not restrict their study to unmarried people, and different observables were included as explanatory variables in the regressions.

Most importantly, nearly all the variables that the literature has found important in reducing the gender poverty gap were included in this paper in order to determine which variables had an impact on the gender poverty gap.

**Table 1: Review of the Relevant Literature**

| Paper | Dataset | Years | Geography | Findings on what affects the gender poverty gap |
|---|---|---|---|---|
| Christopher et al. (2002) | LIS | 1994-95 | 8 countries* | Women's low labor force participation (LFP), lower wages, and higher incidence of part-time work and single parenthood |
| Elmelech and Lu (2004) | CPS ASEC | 1994-2001 | U.S. | Gender variation in LFP and race |
| Wiepking and Maas (2005) | LIS | 2004 | 22 countries* | Education |
| Mandel and Semyonov (2005) | LIS | 1991-2000 | 20 countries* | Women concentrated in jobs with lower wages |
| Lichtenwalter (2005) | 2000 Census | 2000 | U.S. & 70 cities | Women concentrated in jobs with lower wages |
| Brady and Kall (2008) | LIS | 1969-2000 | 18 countries* | Female LFP and number of children. Part-time work doesn't affect the poverty gap |
| Bastos (2009) | ECHP | 1995-2001 | Portugal | Unemployment most important, but single parenthood and education also contribute |
| Mykyta and Renwick (2013) | CPS ASEC | 1967-2012 | U.S. | Using Supplemental Poverty Measure instead of the Official Poverty Measure decreases the poverty gap |
| Fodor and Horn (2015) | EU-SILC | 2008 | 10 EU countries | Economic growth and generosity of welfare policies |
| Fontenot et al. (2016) | CPS ASEC and ACS | 1967-2014 | U.S. | Age and Race |
| Aisa et al. (2019) | EU-SILC | 2010-2013 | 25 EU countries | Women concentrated in jobs with lower wages and in part-time jobs |
| **Glassman (2020)** | **ACS** | **2005-2018** | **U.S. & states** | **Human capital and labor force characteristics** |

* The U.S. is included as one of the countries in the study.
Note: LIS = Luxembourg Income Study; CPS ASEC = Current Population Survey Annual Social and Economic Supplement; ECHP = European Community Household Panel Survey; EU-SILC = European Union Survey of Income and Living Conditions; ACS = American Community Survey.

There is also a line of literature that examines intra-household differences in order to relax the assumption that resources are divided equally between couples in a household. This would allow for the inclusion of married couples in poverty gap analysis. However, this is not easy to do. Studies that looked at the distribution of income between men and women in households found that women were disproportionately in the bottom of the income distribution (Sutherland (1997); Corsi, Botti, and D'Ippoliti (2016)). While this is informative, the decision to work at a low paying job, at a part-time job, or not work at all is an endogenous decision that may not be accurately reflecting poverty status.

Complicating matters further, while incomes can easily be allocated to individuals, other types of resources, such as rental and welfare income, or household consumption are not as easily separable. Haddad and Kanbur (1990) studied individual caloric intake in order to examine consumption and found that assuming equal resources among household partners understated the poverty gap. The other literature on consumption attempts to divide consumption in the household among individuals based on sometimes strong assumptions about intra-household allocation (Basu (2006); Lise and Seitz (2011); Browning, Chiappori, and Weiss (2014); Chiappori and Meghir (2015); Cherchye et al. (2015)).

## Data and Methods

The data for this paper comes from the American Community Survey 1-year sample. The ACS is an annual sample of about 3.5 million households. It is the best source of sub-national economic, social,

and employment characteristics and is representative of the nation as well as all 50 states and the District of Columbia. It is a continuous survey and people respond throughout the year. Data for 2018 was collected during the calendar year 2018 but references income for people during the previous 12 months.

Official poverty statistics are calculated using the Current Population Survey Annual Social and Economic Supplement. The official methodology is also used to produce poverty estimates using the ACS. Poverty status is determined by comparing annual income to a set of monetary thresholds that vary by family size, number of children, and the age of the householder. If a family's before-tax money income is less than the dollar value of their threshold, then the family and every individual in the family are considered to be in poverty.[2] The poverty gap is calculated by subtracting the male poverty rate from the female poverty rate. Therefore, a positive poverty gap means that female poverty is higher than male poverty.

Since poverty is determined at the family level, a comparison of male poverty to female poverty would be misleading. There are two main complications. First, parental income significantly influences, if not determines, poverty rates for male and female children. In Table 2, there is no significant difference between male and female poverty rates in 2018 for people under the age of 18. Second, spousal income plays a large part in determining poverty status for married men and women. In Table 2, there is no significant difference in poverty rates for married[3] men and women age 18 and older, while the poverty gap among unmarried[4] adults is 5.4 percentage points.

To avoid these complications, the comparison groups of interest are unmarried men and women aged 18 years old and over. Unmarried people aged 18 and over comprise 39.9 percent of the population, with people under age 18 making up 22.6 percent and married people aged 18 and over making up 37.5 percent.

**Table 2: Gender Poverty Rate Differences for Different Population Breakdowns: 2018**

| | Poverty Rate | | | | Poverty Gap | |
|---|---|---|---|---|---|---|
| | Men | | Women | | | |
| | Est. | S.E. | Est. | S.E. | Est. | S.E. |
| **At least 18 years old and married** | 4.68 | 0.03 | 4.64 | 0.03 | 0.05 | 0.04 |
| **Under 18 years old** | 17.92 | 0.11 | 18.10 | 0.11 | 0.18 | 0.16 |
| **At least 18 years old and unmarried** | 15.39 | 0.05 | 20.83 | 0.07 | *5.44 | 0.09 |

*difference is significant at the 90 percent confidence level.
Source: 2018 American Community Survey.

Table 3 provides some descriptive statistics for all unmarried people aged 18 and over as well as by gender in 2018. Women comprise approximately 53 percent of this subgroup compared to 51 percent of the total U.S. population.

As Shown in Table 3, there are a number of differences in the characteristics of women and men in the subgroup. Adult unmarried women are older than men on average, due to the overrepresentation of women among older singles. These women are more likely than men to be black,

[2] See https://www.census.gov/library/publications/2019/acs/acsbr18-02.html for more information.
[3] A person is only considered married if their spouse is present in the household.
[4] A person is considered unmarried if a spouse is not present in the household.

less likely to be Hispanic, more likely to be widowed, divorced, or separated, and less likely to be never married. Women are more likely than men to be part-time workers or not in the labor force and less likely than men to be full-time workers or unemployed. Women are more than twice as likely to be living with related (biological, adopted, or stepchild) children than men are.[5]

It may initially seem strange that there are large racial differences by gender for Blacks and Hispanics. One would expect that the gender breakdown would be roughly 50/50 for race and ethnic groups. However, this is due to the unique nature of both the poverty universe and the analytical subgroup, which has an over-representation of women among the older single population and excludes people from institutional group quarters, such as correctional facilities and nursing homes. When dropping these restrictions, these racial and demographic differences are significantly smaller.

The four education variables shown in Table 3 indicate the highest level of education among people age 25 and over. For people aged 18 to 24, they were only considered to have achieved a given level of education if they were not currently attending school. All other 18 to 24 years olds were currently enrolled in school. Men were more likely than women to have a high school degree or less as their highest level of education and women were more likely than men to have at least some college as their highest level of education.

There are two variables listed in Table 3 that need some context. "Live in a city" indicates if the person lives in the central city of a metropolitan statistical area. There is no significant difference in the percentage of men and women in the subgroup who live in a city. "Excessive housing costs" identifies if monthly owner or renter costs are greater than 50 percent of household income. A higher percentage of women than men face excessive housing costs.

**Table 3: Characteristics of Unmarried Adults by Sex – 2018**

| | Unmarried, age 18+ | | | | | |
|---|---|---|---|---|---|---|
| | Total[1] | | Men | | Women | |
| | Est. | S.E. | Est. | S.E. | Est. | S.E. |
| **Population (thousands)[2]** | 127,200 | 167.00 | 59,260 | 89.06 | 67,970 | 86.58 |
| **Race[3] and Hispanic Origin[4]** | | | | | | |
| White | 56.67 | 0.04 | 57.10 | 0.05 | 56.29 | 0.04 |
| Black | 16.22 | 0.03 | 14.82 | 0.04 | 17.44 | 0.03 |
| Asian | 4.81 | 0.02 | 4.82 | 0.02 | 4.80 | 0.02 |
| American Indian and Alaska Native | 0.78 | 0.01 | 0.79 | 0.01 | 0.77 | 0.01 |
| Other or multiple races | 2.58 | 0.02 | 2.62 | 0.03 | 2.55 | 0.02 |
| Hispanic | 18.94 | 0.03 | 19.85 | 0.04 | 18.14 | 0.04 |
| **Marital Status** | | | | | | |
| Widowed, divorced, or separated | 42.81 | 0.04 | 34.66 | 0.04 | 49.93 | 0.05 |
| Never married | 57.19 | 0.04 | 65.34 | 0.05 | 50.07 | 0.05 |
| **Employment Status** | | | | | | |
| Full-time worker | 46.63 | 0.04 | 52.63 | 0.06 | 41.40 | 0.07 |
| Part-time worker | 14.26 | 0.03 | 12.48 | 0.05 | 15.81 | 0.04 |
| Unemployed | 4.48 | 0.02 | 5.30 | 0.03 | 3.76 | 0.02 |
| Not in the labor force | 34.63 | 0.05 | 29.59 | 0.06 | 39.03 | 0.06 |

[5] People are considered parents if they have at least one related or adopted child under the age of 18 living with them.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Educational Attainment**[5] | | | | | | |
| Still in school | 8.90 | 0.02 | 9.44 | 0.03 | 8.44 | 0.03 |
| Less than a high school degree | 12.22 | 0.04 | 12.63 | 0.05 | 11.86 | 0.05 |
| High school degree | 28.50 | 0.06 | 30.62 | 0.07 | 26.65 | 0.07 |
| Some college | 26.42 | 0.04 | 25.07 | 0.05 | 27.60 | 0.06 |
| College degree or higher | 23.96 | 0.06 | 22.24 | 0.06 | 25.45 | 0.07 |
| **Tenure** | | | | | | |
| Homeowner | 54.99 | 0.10 | 54.95 | 0.11 | 55.03 | 0.10 |
| Renter | 45.01 | 0.10 | 45.05 | 0.11 | 44.97 | 0.10 |
| **Nativity** | | | | | | |
| Native born | 85.52 | 0.05 | 85.76 | 0.06 | 85.30 | 0.06 |
| Foreign born | 14.48 | 0.05 | 14.24 | 0.06 | 14.70 | 0.06 |
| **Miscellaneous** | | | | | | |
| Age | 43.84 | 0.01 | 40.71 | 0.02 | 46.58 | 0.01 |
| Parents[6] | 8.27 | 0.02 | 4.62 | 0.03 | 11.45 | 0.04 |
| Live in a city[7] | 37.89 | 0.04 | 37.79 | 0.06 | 37.84 | 0.06 |
| Excessive housing costs[8] | 14.77 | 0.04 | 12.22 | 0.04 | 16.99 | 0.06 |

[1] Totals may not sum due to rounding.
[2] The population subgroup is restricted to unmarried people aged 18 and over in the poverty universe. The poverty universe excludes children under the age of 15 who are not related to the householder, people living in institutional group quarters (e.g., nursing homes or correctional facilities), and people living in college dormitories or military barracks.
[3] Federal surveys give respondents the option of reporting more than one race. This table shows data for people who reported only one race. Native Hawaiians and Other Pacific Islanders and those reporting two or more races are included in the "other or multiple races" category.
[4] Each race category is the non-Hispanic part of the population.
[5] Based on highest level of educational attainment. People age 18 to 24 currently attending school are included in the still in school category.
[6] Individual has at least one related or adopted child under the age of 18 living with them.
[7] Individual lives in the central city of a metropolitan statistical area.
[8] Individual's monthly owner or renter costs are greater than 50 percent of household income.
Source: 2018 American Community Survey.

### Poverty Rate Differences by Gender

The first row in Table 4 presents the poverty rate by gender for all men and women, regardless of age or marital status. As discussed previously, this difference in male and female poverty rates is muted by spousal and parental income. When we restrict to only people aged 18 and over, we see that the poverty gap is larger. When we restrict again to unmarried people, we see an even larger poverty gap. This shows that parental and spousal income masks the differences in poverty between men and women.

**Table 4: Gender Poverty Rate Differences for Different Population Breakdowns: 2018**

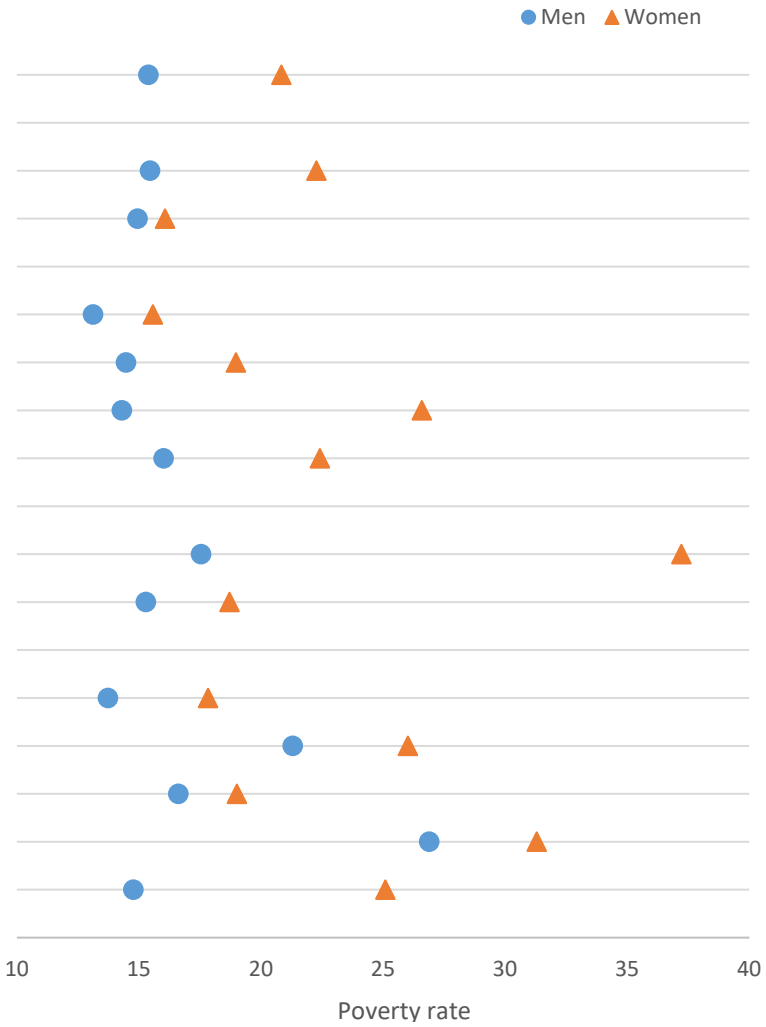
| | Poverty Rate | | | | Poverty Gap | |
|---|---|---|---|---|---|---|
| | Men | | Women | | | |
| | Est. | S.E. | Est. | S.E. | Est. | S.E. |
| **All people** | 11.86 | 0.04 | 14.31 | 0.05 | *2.45 | 0.06 |
| **At least 18 years old** | 9.99 | 0.04 | 13.26 | 0.04 | *3.27 | 0.06 |
| **At least 18 years old and unmarried** | 15.39 | 0.05 | 20.83 | 0.07 | *5.44 | 0.09 |

*difference is significant at the 90 percent confidence level.
Source: 2018 American Community Survey.

Poverty rates by gender are shown by different demographic groups in Figure 1 and by labor market and other characteristics in Figure 4. Female poverty rates are higher than male poverty rates among unmarried people for all demographic groups shown. The largest discrepancy in gender poverty gaps in Figure 1 comes for parents versus people without children. For parents, female poverty rates are approximately 19.7 percentage points higher than male poverty rates, while this difference is only 3.4 percentage points for people without children. This is largely driven by very high poverty rates for single female parents, approximately 37.2 percent.

Figure 1: Poverty Rate Differences for Unmarried People Aged 18 and Over by Gender: 2018

| | Men | Women | Diff |
|---|---|---|---|
| **Overall** | 15.39 | 20.83 | *5.44 |
| **Age** | | | |
| 18 to 64 | 15.45 | 22.27 | *6.82 |
| 65 and over | 14.94 | 16.07 | *1.13 |
| **Marital Status** | | | |
| Widowed | 13.12 | 15.57 | *2.45 |
| Divorced | 14.47 | 18.97 | *4.50 |
| Separated | 14.30 | 26.59 | *12.29 |
| Never married | 16.01 | 22.41 | *6.40 |
| **Children under 18 in the home** | | | |
| Yes | 17.45 | 37.22 | *19.68 |
| No | 15.28 | 18.71 | *3.43 |
| **Race and Hispanic Origin** | | | |
| White, NH | 13.73 | 17.83 | *4.10 |
| Black, NH | 21.30 | 26.02 | *4.72 |
| Asian, NH | 16.61 | 19.01 | *2.40 |
| AIAN, NH | 26.89 | 31.29 | *4.40 |
| Hispanic | 14.77 | 25.09 | *10.32 |




* difference is statistically significant at the 90 percent confidence level.
Note: NH = non-Hispanic
Source: 2018 American Community Survey.

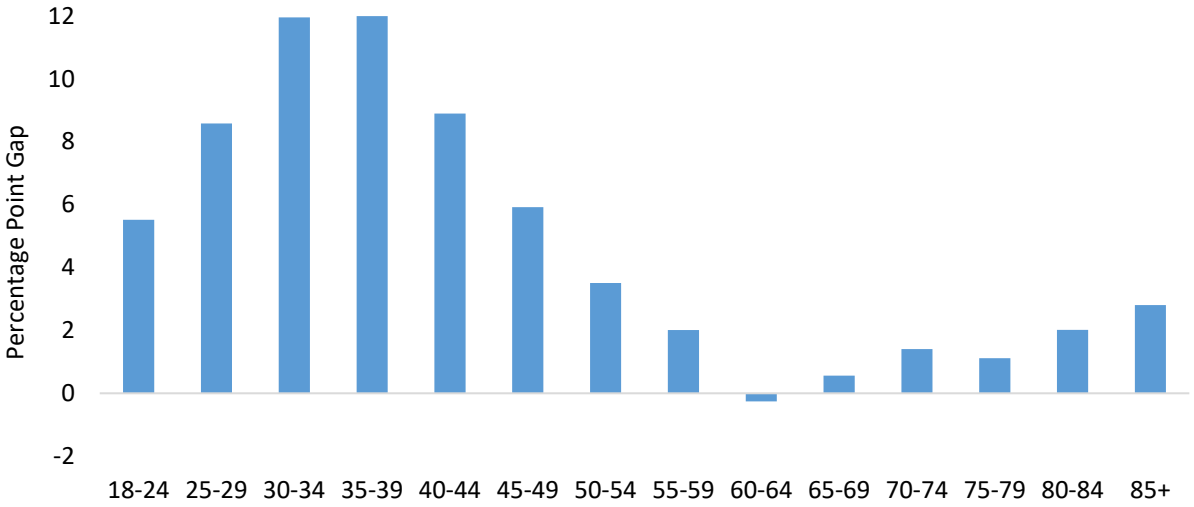
In the marital status category, the largest gender poverty gap is for people who are separated while the smallest is for widows. Not coincidentally, 13.1 percent of separated people have related children under age 18 living with them while only 2.3 percent of widows have related children under age 18 living with them. The five categories under race and Hispanic origin are mutually exclusive. The

largest gender poverty gap occurs among Hispanics while the smallest is among Asians. This paper focuses on the gender gap, but the racial poverty gap is glaring as well. While women have higher poverty than men within each race group, the same is not true across race groups. For example, Black men have a higher poverty rate than White or Asian women.

The differences by age category are striking. The poverty gap is 6.8 percentage points for 18 to 64 year olds and 1.1 percentage point for those age 65 and older. This gap stems from large differences in poverty rates between women of different age groups. The poverty rate for men in the younger age category is 0.5 percentage points higher than the rate for men in the older age category while this difference is 6.2 percentage points for women.

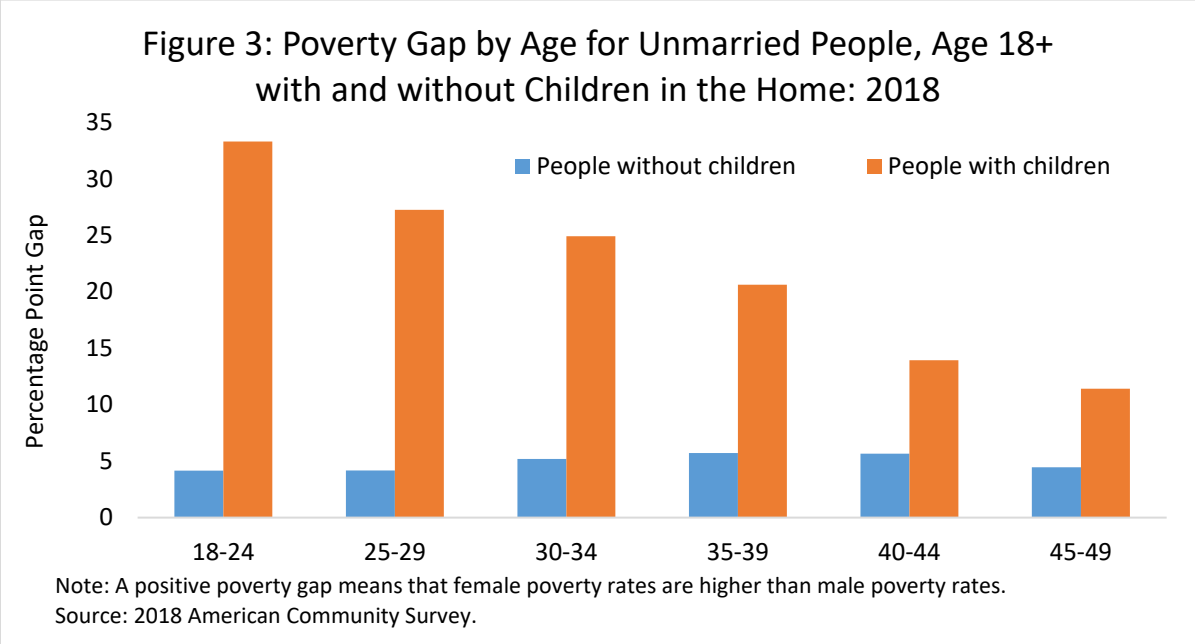
To delve deeper into gender differences by age, the gender poverty gap is shown by age increments in Figure 2. The gender poverty gap is 5.5 percentage points for the youngest age group (ages 18 to 24) and is highest among men and women in their thirties (approximately 12 percentage points). The poverty gap decreases as men and women age past 39 until age 60-64, where there is no significant difference between male and female poverty rates. The poverty gap was approximately 3 percentage points or less for those age 65 years and over.

Figure 2: Gender Poverty Gap for Unmarried People, Age 18+ by Age: 2018




Note: A positive poverty gap means that female poverty rates are higher than male poverty rates.
All gaps are significant at the 90 percent confidence level except for the 60-64 age category.
Source: 2018 American Community Survey.

The large poverty gap for adults under age 50 is largely due to single mothers being significantly worse off and more prevalent than single fathers. In Figure 3, the gender poverty gap for people living with and without related children is shown for age categories between age 18 and 49. The gender poverty gap among those without children is between 4 and 6 percentage points for people under age 50, while the gender poverty gap is over 20 percentage points among parents under age 40 and over 10 percentage points for parents 40 to 49 years old.




In Figure 4, there are some additional breakdowns of the gender poverty gap for 2018. The gender poverty gap is largest among more disadvantaged groups, people without a high school degree and the unemployed.

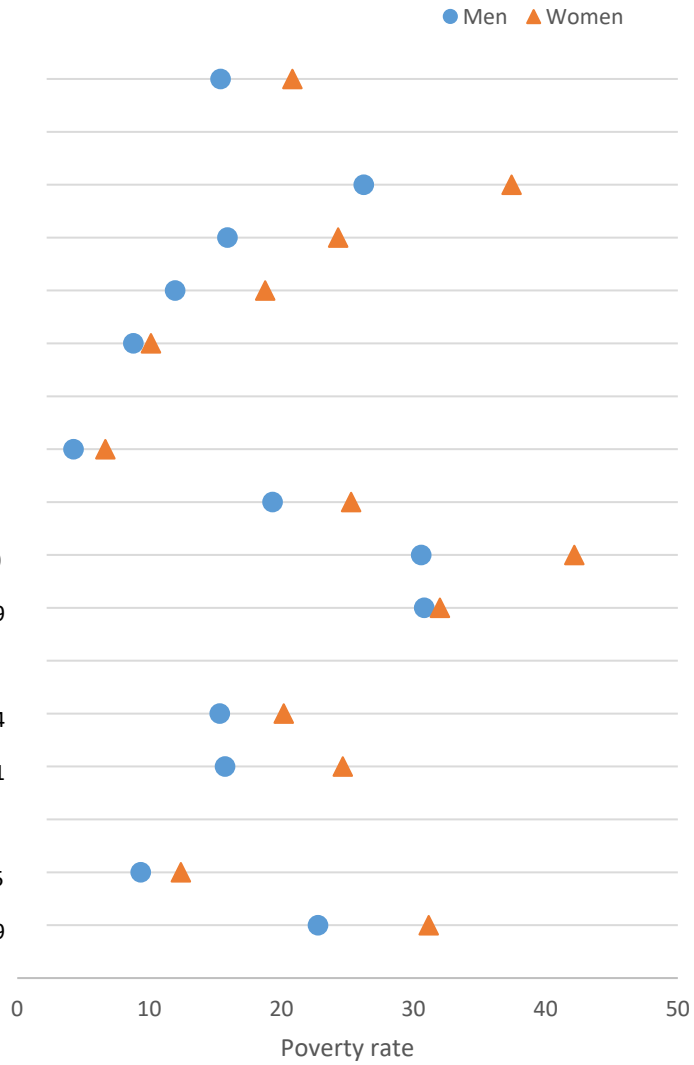
More specifically, poverty gaps between men and women vary significantly across education categories. There is an approximately one percentage point gender poverty gap among the college educated, but larger than a 6 percentage point poverty gap within each of the other educational attainment levels.

There is a similar story with employment status. The gender poverty gap for part-time workers is more than twice as large as among full-time workers and the gap for unemployed workers is nearly twice that of part-time workers. Finally, there is a significantly larger poverty gap for the foreign born and renters than among native born and homeowners, respectively.

While female poverty rates are higher than male poverty rates for all demographic groups in Figures 1 and 4, there are some groups for which the gender poverty gap is not very large. The smallest gender poverty gaps occur for people 65 and over, people with at least a college degree, and those not in the labor force.

Figure 4: Poverty Rate Differences for Unmarried People Aged 18 and Over by Gender: 2018

| | Men | Women | Diff |
|---|---|---|---|
| **Overall** | 15.39 | 20.83 | *5.44 |
| **Education** | | | |
| No high school degree | 26.23 | 37.42 | *11.19 |
| High school degree | 15.91 | 24.29 | *8.38 |
| Some college | 11.95 | 18.77 | *6.82 |
| College degree or higher | 8.79 | 10.12 | *1.33 |
| **Employment Status** | | | |
| Full-time | 4.26 | 6.67 | *2.41 |
| Part-time | 19.32 | 25.27 | *5.95 |
| Unemployed | 30.57 | 42.17 | *11.60 |
| Not in labor force | 30.80 | 31.99 | *1.19 |
| **Nativity** | | | |
| Native born | 15.33 | 20.17 | *4.84 |
| Foreign born | 15.73 | 24.64 | *8.91 |
| **Tenure status** | | | |
| Homeowners | 9.34 | 12.39 | *3.05 |
| Renters | 22.76 | 31.15 | *8.39 |



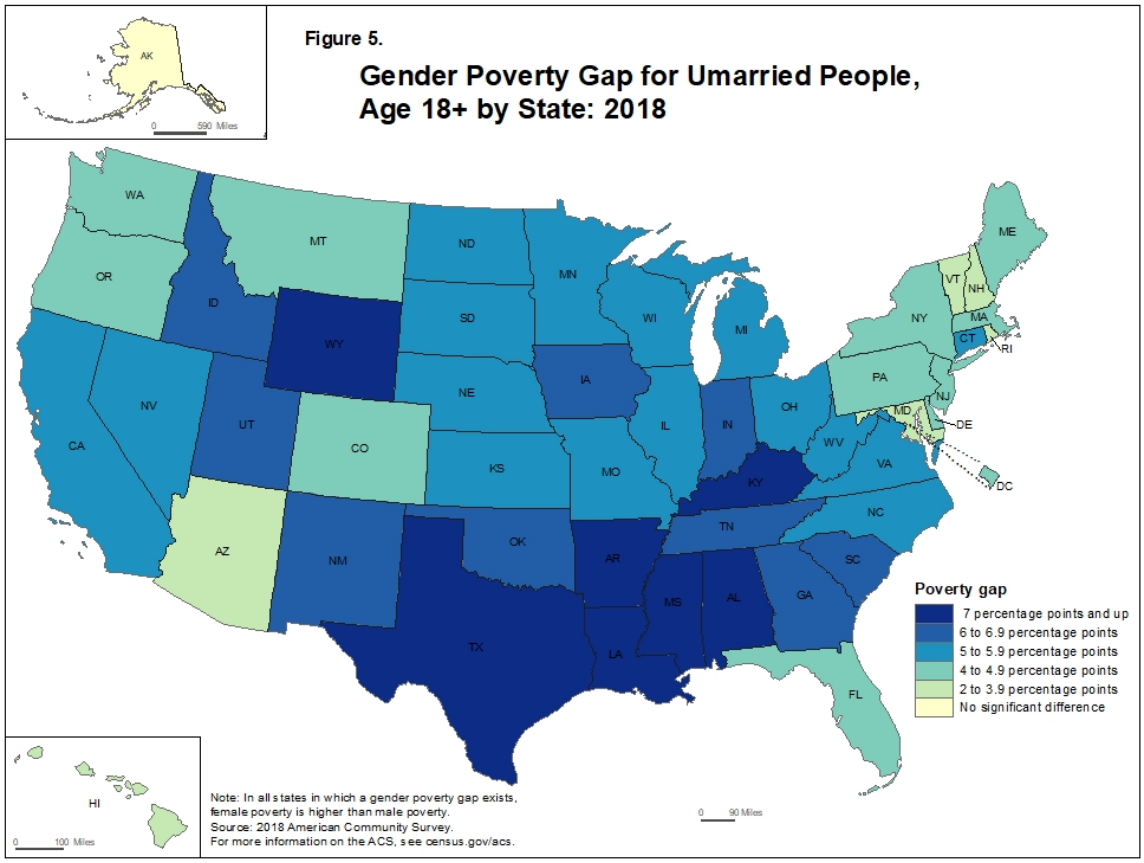

* difference is statistically significant at the 90 percent confidence level.
Source: 2018 American Community Survey.

**Gender Poverty Gap by State**

The national gender poverty gap for 2018 was 5.4 percentage points, as shown in Table 4. However, there was significant variation in gender poverty gaps among the states.[6] Females had higher poverty rates in all states except for Alaska, in which there was no significant difference among male and female poverty rates. In other words, there was no gender poverty gap in Alaska. Wyoming had among the highest gender poverty gaps at 11.8 percentage points while Rhode Island had among the lowest at 2.5 percentage points. A map of the gender poverty gap by state is shown in Figure 5. The

[6] A table of male and female poverty rates and poverty gaps by state is in the appendix.

largest gender poverty gaps were concentrated in the South while the smallest gender poverty gaps were concentrated in the Northeast.




Over time, the national gender poverty gap decreased from 7.47 percentage points in 2005 to 5.44 percentage points in 2018. The gender poverty gap significantly decreased in 34 states from 2005 to 2018, did not significantly increase in any states, and did not change significantly in 16 states and the District of Columbia.

**Multivariate Regression Models**

One of the main aims of this paper was to examine what happens to the gender poverty gap when individual and household characteristics are taken into account. This is done to control for differences in social, demographic, and labor force characteristics among men and women in order to identify the isolated impact of being female on poverty rates by comparing women to their most alike male counterparts. In Table 5, results from four nested OLS regression models are shown with poverty rate as the dependent variables and female as the key independent variable along with a different number of observables. Model 1, controlling only for gender, is the poverty gap that has been used up to this point throughout this paper. The coefficient on female represents the unadjusted gender poverty gap for unmarried adults 18 years and older. In this case, the poverty gap is 5.44 percentage

points meaning that the female poverty rate is 5.44 percentage points higher than the poverty rate for males in 2018.

In model 2, race and family characteristics are added as explanatory variables. Once these characteristics are included, the poverty gap is reduced by 0.92 percentage points to 4.52 percentage points.

In model 3, I control further for human capital and labor market. These account for educational attainment, labor force status, and industry. The inclusion of these variables reduces the poverty gap by 1.67 percentage points to 2.85 percentage points.

Model 4, the full model, adds household characteristics to model 3 as controls. These variables are whether the household is a renter or a homeowner, lives inside of or outside of a city, faces excessive housing costs or not, and the state of residence. Tenure status is included because, as shown in Figure 4, it affects the poverty status of men and women differently. More specifically, the gender poverty gap for homeowners is 3.1 percentage points, while it is 8.4 percentage points for renters. Excessive housing costs is included because high housing costs can help push people into poverty and, as shown in Table 3, excessive housing costs disproportionately affect women, which may help explain some of the gender poverty gap.[7] These variables reduce the poverty gap by 0.96 percentage points to 1.89 percentage points.

Model 4 represents the full model for the gender poverty gap used for the remainder of the analysis. In model 1, gender explains 0.49 percent of the variation in poverty while in model 4 gender along with the other explanatory variables explain 28.87 percent of the variation in poverty. The inclusion of all demographic, social, and economic variables reduces the poverty gap by 3.55 percentage points, from 5.44 percentage points to 1.89 percentage points. Though there is a large reduction in the poverty gap after including education and labor force variables, race and family variables, and other explanatory variables, controlling for these characteristics does not completely eliminate the gap in poverty rates between men and women.

[7] Although poverty and excessive housing costs are both measured using income, there are important reasons for including the variable as a control. There is an article on UK poverty in 2013 about how high housing costs can lead to poverty for families. See https://www.jrf.org.uk/report/links-between-housing-and-poverty for more details. There is also an Urban Institute blog about how reducing the costs of housing can lift people out of poverty. See https://www.urban.org/urban-wire/reduce-poverty-improving-housing-stability for more details.

| Table 5: Poverty Gaps for Unmarried People, Age 18+ Accounting for Different Combinations of Observables: 2018 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
| | Est. | S.E. | Est. | S.E. | Est. | S.E. | Est. | S.E. |
| **Female** | ***0.0544** | **0.0006** | ***0.0452** | **0.0006** | ***0.0285** | **0.0006** | ***0.0189** | **0.0005** |
| **Age** | | | *0.0001 | Z | *-0.0031 | Z | *-0.0027 | Z |
| **Black[1]** | | | *0.0655 | 0.0008 | *0.0459 | 0.0008 | *0.0110 | 0.0008 |
| **Asian[1]** | | | *0.0095 | 0.0015 | *0.0038 | 0.0014 | *0.0101 | 0.0013 |
| **American Indian, Alaska Native[1]** | | | *0.1226 | 0.0033 | *0.0735 | 0.0031 | *0.0762 | 0.0029 |
| **Other race[1]** | | | *0.0261 | 0.0018 | *0.0100 | 0.0017 | 0.0005 | 0.0016 |
| **Hispanic[1]** | | | *0.0256 | 0.0009 | -*0.0027 | 0.0008 | *-0.0046 | 0.0008 |
| **Widowed/divorced/separated[2]** | | | *-0.0255 | 0.0008 | *-0.0060 | 0.0007 | *-0.0085 | 0.0007 |
| **Number of children** | | | *0.0882 | 0.0005 | *0.1032 | 0.0005 | *0.0734 | 0.0005 |
| **Foreign born[6]** | | | *0.0156 | 0.0009 | *0.0256 | 0.0009 | *0.0138 | 0.0008 |
| **In school[3]** | | | | | *-0.0810 | 0.0012 | *-0.0756 | 0.0011 |
| **Less than high school degree[3]** | | | | | *0.0798 | 0.0009 | *0.0673 | 0.0009 |
| **Some college[3]** | | | | | *-0.0213 | 0.0007 | *-0.0209 | 0.0007 |
| **College degree or higher[3]** | | | | | *-0.0517 | 0.0008 | *-0.0441 | 0.0007 |
| **Not in the labor force[4]** | | | | | *0.2949 | 0.0010 | *0.2460 | 0.0009 |
| **Part-time worker[4]** | | | | | *0.1691 | 0.0009 | *0.1331 | 0.0008 |
| **Unemployment[4]** | | | | | *0.2727 | 0.0014 | *0.2257 | 0.0013 |
| **Renter[5]** | | | | | | | *0.0740 | 0.0005 |
| **Live in a city** | | | | | | | *0.0178 | 0.0006 |
| **Excessive housing costs** | | | | | | | *0.2584 | 0.0007 |
| **Industry dummy variables** | No | | No | | Yes | | Yes | |
| **State fixed effects** | No | | No | | No | | Yes | |
| **R squared** | 0.0049 | | 0.0274 | | 0.1637 | | 0.2887 | |

**Reference groups:** [1] White; [2] Never married; [3] High school degree; [4] Full-time worker; [5] Owners; [6] Native born.
* Statistically different from zero at the 90 percent confidence level
Z Rounds to zero.
Source: 2018 American Community Survey

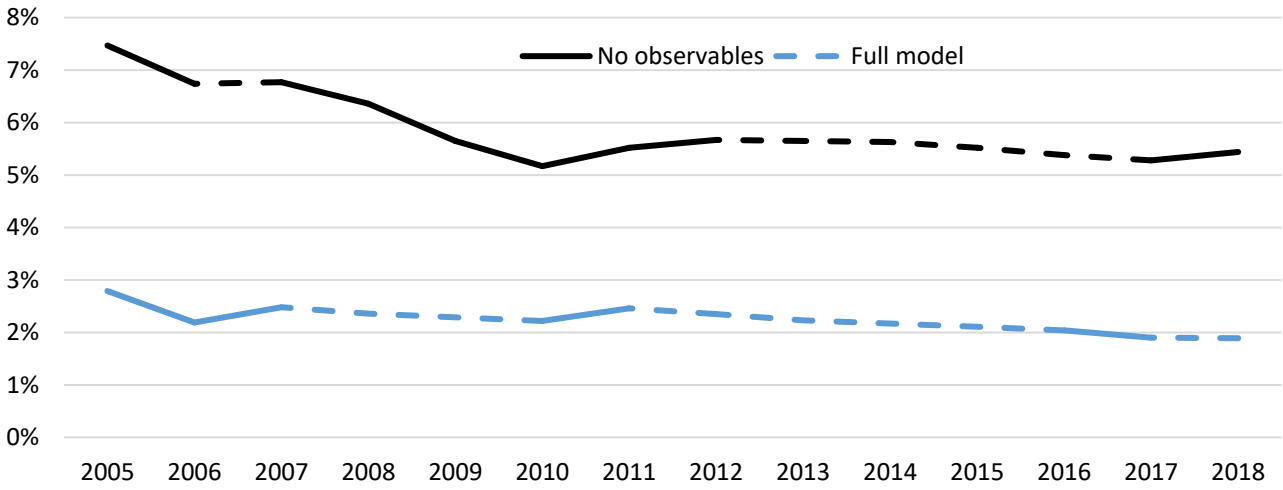
In Figure 6, the poverty gap is shown over time from 2005, the first year ACS data is available, to 2018, the most recently published data. Model 1, which includes no controls, and model 4, which is the full model that includes all observables, are compared. Between 2005 and 2018, the gender poverty gap without controlling for observables decreased by 2.0 percentage points, a reduction of 27.2 percent. This reduction in the gender poverty gap was due to an increase in male poverty rates and a decrease in female poverty rates between 2005 and 2018.[8] During the same time period, the poverty gap using the full model decreased by 0.9 percentage points, a reduction of 32.3 percent.

As shown in Figure 6, neither poverty gap experienced a continuous year over year decrease over the time period. The gender poverty gap using model 1 decreased significantly each year from 2005 to 2010, except for 2006 to 2007 when the change was not significant. The poverty gap reached a low in 2010 and has increased or shown no significant change every subsequent year since 2010.[9] Conversely, the poverty gap controlling for observables using the model 4 specification did not change

[8] The male poverty rate increased from 15.2 percentage points in 2005 to 15.6 percentage points in 2018 while the female poverty rate decreased from 22.4 percentage points in 2005 to 20.7 percentage points in 2018.
[9] Significant increases occurred in 2011, 2012, and 2018.

significantly in all but 4 years. The poverty gap decreased significantly from 2005 to 2006 and from 2016 to 2017 and the poverty gap increased significantly from 2006 to 2007 and from 2010 to 2011.

Figure 6: Poverty Gap for Unmarried People, Age 18+ Over Time, Model 1 vs. Model 4: 2005 to 2018




Note: Dashed portions of the time trend indicate insignificant changes from year to year.
Source: 2005 through 2018 American Community Surveys.

**Discussion and Conclusion**

The purpose of this paper was to examine the gender poverty gap for unmarried people age 18 years and older. Further, I wanted to examine how the gender poverty gap differed by state and over time and what happened to the gender poverty gap when individual characteristics were included as controls.

The results of this paper can be divided into two main areas. The first is poverty rate differences by gender. In this section, poverty rates were shown for men and women by different demographic and labor force characteristics and for men and women by state and the District of Columbia for 2018. It was striking that female poverty was higher than male poverty for every demographic group examined. Furthermore, the gender poverty gap was largest for the most disadvantaged groups, which were single parents, people without a high school degree, and the unemployed. However, there were a few groups, such as people age 65 and over, people with a college degree, and those not in the labor force, that had relatively small poverty gaps. Furthermore, there were significant differences in the gender poverty gap by state with no poverty gap present in one state, Alaska.

The second area is the multivariate regression models. Results from regression models on the gender poverty gap reflect an unadjusted poverty gap of 5.44 percentage points in 2018. Controlling for differences in race and family characteristics reduced the gap by 0.92 percentage points. This was largely due to the high poverty rates for women with children, as shown in Figure 1, and the fact that women were more likely to be single parents, as shown in Table 3.

Human capital and labor force characteristics further reduced the gap by 1.67 percentage points. This is largely due to higher poverty rates for unemployed women and women without a high school degree as shown in Figure 4. Interestingly, human capital and labor force characteristics had a larger impact on the gender poverty gap than racial and family characteristics. Finally, household characteristics further reduced the gap by 0.96 percentage points. There was an overall reduction of 3.55 percentage points in the gender poverty gap when all controls were used, resulting in a gender poverty gap of 1.89 percentage points.

Gender poverty gaps displayed in official reports mask the true gender poverty gap because poverty status is determined at the family level. This means that spousal and parental income affect male and female poverty. To study the gender poverty gap, one needs to look at unmarried men and women age 18 years and over. As shown in each section of this paper, the gender gap for single adults was partially explained by racial and family characteristics, labor force characteristics, and the state one resides in. However, it is important to keep in mind that even with the inclusion of racial, family, labor force, and other explanatory variables, a gender poverty gap still existed.

The main limitation of this paper is that it focuses solely on the gender poverty gap among unmarried adults. While this is informative and necessary for the methodology of the paper, it is incomplete. Ideally, I would like to be able to comment on the gender poverty gap for all adults. To do this accurately, I would need to assign poverty status to married couples individually. This is problematic because it is possible a husband has no income because his wife has a good paying job and he is staying home with the children. It then would be inaccurate to assign him to be in poverty and her to not be in poverty. The literature has attempted to solve this problem in different ways none of which I find to either be adequate or achievable using the ACS. I plan to address this limitation and design a method to assign individual poverty status in a future paper.

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## Appendix

**Table A-1: Poverty Rate Differences by Gender and Demographics (unmarried people, age 18+) - 2018**

| | Poverty Rate | | | | Percentage Point Difference[1] | |
|---|---|---|---|---|---|---|
| | Men | | Women | | | |
| | Est. | Std. Err. | Est. | Std. Err. | Est. | Std. Err. |
| **Overall[2]** | 15.39 | 0.05 | 20.83 | 0.07 | *5.44 | 0.09 |
| **Age** | | | | | | |
| 18 to 64 | 15.45 | 0.06 | 22.27 | 0.08 | *6.82 | 0.10 |
| 65 and over | 14.94 | 0.12 | 16.07 | 0.11 | *1.13 | 0.16 |
| **Marital Status** | | | | | | |
| Widowed | 13.12 | 0.19 | 15.57 | 0.12 | *2.45 | 0.22 |
| Divorced | 14.47 | 0.10 | 18.97 | 0.11 | *4.50 | 0.15 |
| Separated | 14.30 | 0.14 | 26.59 | 0.21 | *12.29 | 0.25 |
| Never married | 16.01 | 0.07 | 22.41 | 0.09 | *6.40 | 0.11 |
| **Race[3] and Hispanic origin[4]** | | | | | | |
| White | 13.73 | 0.07 | 17.83 | 0.09 | *4.10 | 0.11 |
| Black | 21.30 | 0.18 | 26.02 | 0.17 | *4.72 | 0.25 |
| Asian | 16.61 | 0.23 | 19.01 | 0.29 | *2.40 | 0.37 |
| American Indian and Alaska Native | 26.89 | 0.64 | 31.29 | 0.71 | *4.40 | 0.96 |
| Hispanic | 14.77 | 0.14 | 25.09 | 0.17 | *10.32 | 0.22 |
| **Educational Attainment[5]** | | | | | | |
| No high school degree | 26.23 | 0.19 | 37.42 | 0.22 | *11.19 | 0.29 |
| High school degree | 15.91 | 0.09 | 24.29 | 0.13 | *8.38 | 0.16 |
| Some college education | 11.95 | 0.08 | 18.77 | 0.11 | *6.82 | 0.14 |
| College degree or higher | 8.79 | 0.09 | 10.12 | 0.10 | *1.33 | 0.13 |
| **Employment Status** | | | | | | |
| Full-time | 4.26 | 0.04 | 6.67 | 0.05 | *2.41 | 0.06 |
| Part-time | 19.32 | 0.16 | 25.27 | 0.17 | *5.95 | 0.23 |
| Unemployed | 30.57 | 0.29 | 42.17 | 0.31 | *11.60 | 0.42 |
| Not in labor force | 30.80 | 0.12 | 31.99 | 0.13 | *1.19 | 0.18 |
| **Parents[6]** | | | | | | |
| Yes | 17.54 | 0.27 | 37.22 | 0.21 | *19.68 | 0.34 |
| No | 15.28 | 0.05 | 18.71 | 0.07 | *3.43 | 0.09 |
| **Nativity** | | | | | | |
| Native born | 15.33 | 0.05 | 20.17 | 0.07 | *4.84 | 0.09 |
| Foreign born | 15.73 | 0.17 | 24.64 | 0.19 | *8.91 | 0.25 |
| **Tenure** | | | | | | |
| Homeowners | 9.34 | 0.06 | 12.39 | 0.07 | *3.05 | 0.09 |
| Renters | 22.76 | 0.10 | 31.15 | 0.11 | *8.39 | 0.15 |

[1] Totals may not sum due to rounding.

[2] The population subgroup is restricted to unmarried people aged 18 and over in the poverty universe. The poverty universe excludes children under the age of 15 who are not related to the householder, people living in institutional group quarters (e.g., nursing homes or correctional facilities), and people living in college dormitories or military barracks.

[3] Federal surveys give respondents the option of reporting more than one race. This table shows data for people who reported only one race. Native Hawaiians and Other Pacific Islanders and those reporting two or more races are included in the "other or multiple races" category.

[4] Each race category is the non-Hispanic part of the population.

[5] Based on highest level of educational attainment. People age 18 to 24 currently attending school are included in the still in school category.

[6] Individual has at least one related or adopted child under the age of 18 living with them.

Source: 2018 American Community Survey.

| Table A-2: Poverty Rate differences for unmarried people, age 18+ by gender by state – 2018 | | | | | | |
|---|---|---|---|---|---|---|
| | Poverty Rate | | | | Percentage Point Difference[1] | |
| | Men | | Women | | | |
| | Est. | Std. Err. | Est. | Std. Err. | Est. | Std. Err. |
| **United States** | 15.39 | 0.05 | 20.83 | 0.07 | *5.44 | 0.09 |
| **Alabama** | 19.09 | 0.43 | 27.36 | 0.52 | *8.27 | 0.68 |
| **Alaska** | 14.96 | 1.02 | 16.11 | 0.99 | 1.15 | 1.43 |
| **Arizona** | 15.97 | 0.36 | 19.66 | 0.45 | *3.69 | 0.57 |
| **Arkansas** | 19.00 | 0.74 | 28.29 | 0.67 | *9.29 | 1.00 |
| **California** | 13.94 | 0.15 | 18.96 | 0.16 | *5.02 | 0.22 |
| **Colorado** | 12.49 | 0.32 | 17.30 | 0.41 | *4.81 | 0.52 |
| **Connecticut** | 13.01 | 0.51 | 18.04 | 0.50 | *5.03 | 0.71 |
| **Delaware** | 14.74 | 0.98 | 18.74 | 1.13 | *4.00 | 1.50 |
| **District of Columbia** | 16.52 | 0.93 | 20.96 | 1.09 | *4.43 | 1.44 |
| **Florida** | 15.07 | 0.28 | 19.46 | 0.21 | *4.39 | 0.35 |
| **Georgia** | 15.51 | 0.35 | 21.87 | 0.33 | *6.36 | 0.48 |
| **Hawaii** | 11.50 | 0.68 | 14.55 | 0.66 | *3.05 | 0.95 |
| **Idaho** | 15.66 | 0.82 | 21.72 | 0.90 | *6.06 | 1.22 |
| **Illinois** | 14.75 | 0.27 | 20.26 | 0.26 | *5.51 | 0.37 |
| **Indiana** | 16.06 | 0.38 | 22.05 | 0.41 | *5.99 | 0.56 |
| **Iowa** | 15.78 | 0.57 | 22.52 | 0.56 | *6.74 | 0.80 |
| **Kansas** | 16.90 | 0.71 | 22.36 | 0.67 | *5.46 | 0.97 |
| **Kentucky** | 20.04 | 0.52 | 27.17 | 0.61 | *7.13 | 0.81 |
| **Louisiana** | 20.38 | 0.57 | 28.46 | 0.58 | *8.08 | 0.82 |
| **Maine** | 16.50 | 0.73 | 21.22 | 0.86 | *4.72 | 1.13 |
| **Maryland** | 11.36 | 0.37 | 15.15 | 0.36 | *3.79 | 0.52 |
| **Massachusetts** | 13.06 | 0.29 | 17.15 | 0.32 | *4.09 | 0.43 |
| **Michigan** | 17.67 | 0.25 | 22.81 | 0.29 | *5.14 | 0.38 |
| **Minnesota** | 13.56 | 0.39 | 18.66 | 0.38 | *5.10 | 0.55 |
| **Mississippi** | 21.96 | 0.82 | 30.64 | 0.76 | *8.69 | 1.11 |
| **Missouri** | 16.62 | 0.42 | 21.57 | 0.40 | *4.95 | 0.58 |
| **Montana** | 18.83 | 1.03 | 22.99 | 1.06 | *4.16 | 1.48 |
| **Nebraska** | 15.70 | 0.59 | 21.43 | 0.63 | *5.73 | 0.86 |
| **Nevada** | 14.07 | 0.46 | 19.29 | 0.58 | *5.22 | 0.74 |
| **New Hampshire** | 10.76 | 0.68 | 14.52 | 0.68 | *3.76 | 0.96 |
| **New Jersey** | 10.94 | 0.31 | 15.52 | 0.31 | *4.59 | 0.44 |
| **New Mexico** | 21.19 | 0.85 | 27.37 | 0.67 | *6.18 | 1.08 |
| **New York** | 15.08 | 0.19 | 19.96 | 0.23 | *4.89 | 0.30 |
| **North Carolina** | 16.38 | 0.38 | 22.01 | 0.41 | *5.63 | 0.56 |
| **North Dakota** | 18.06 | 1.01 | 23.23 | 1.30 | *5.17 | 1.65 |
| **Ohio** | 17.50 | 0.29 | 22.72 | 0.35 | *5.22 | 0.45 |
| **Oklahoma** | 18.42 | 0.48 | 24.73 | 0.44 | *6.31 | 0.65 |
| **Oregon** | 17.02 | 0.53 | 21.22 | 0.45 | *4.20 | 0.69 |
| **Pennsylvania** | 16.22 | 0.29 | 20.62 | 0.27 | *4.41 | 0.39 |
| **Rhode Island** | 16.20 | 0.91 | 18.75 | 0.97 | *2.55 | 1.33 |
| **South Carolina** | 17.54 | 0.50 | 23.70 | 0.44 | *6.16 | 0.66 |
| **South Dakota** | 19.85 | 1.03 | 24.88 | 1.16 | *5.03 | 1.55 |
| **Tennessee** | 17.52 | 0.50 | 24.14 | 0.46 | *6.62 | 0.68 |
| **Texas** | 14.71 | 0.18 | 22.00 | 0.22 | *7.29 | 0.28 |
| **Utah** | 12.55 | 0.71 | 19.46 | 0.67 | *6.91 | 0.97 |
| **Vermont** | 16.40 | 1.14 | 19.96 | 1.26 | *3.56 | 1.70 |
| **Virginia** | 13.79 | 0.34 | 18.93 | 0.35 | *5.14 | 0.49 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Washington** | 14.41 | 0.29 | 18.60 | 0.36 | *4.19 | 0.46 |
| **West Virginia** | 22.36 | 0.74 | 28.13 | 0.89 | *5.78 | 1.16 |
| **Wisconsin** | 15.15 | 0.39 | 20.59 | 0.42 | *5.44 | 0.57 |
| **Wyoming** | 12.75 | 1.39 | 24.50 | 1.58 | *11.76 | 2.11 |

[1] Totals may not sum due to rounding.
Note: The poverty rates and poverty gaps do not include observables.
Source:2018 American Community Survey

**Table A-3: Percent Difference between Unmarried Women and Men, Age 18+: 2005 to 2018**

| | Poverty Gap | | | |
|---|---|---|---|---|
| | **Model 1** | **Std. Err.** | **Model 4** | **Std. Err.** |
| **2018** | *0.0544 | 0.0006 | *0.0189 | 0.0005 |
| **2017** | *0.0528 | 0.0006 | *0.0190 | 0.0006 |
| **2016** | *0.0538 | 0.0006 | *0.0204 | 0.0005 |
| **2015** | *0.0552 | 0.0006 | *0.0211 | 0.0005 |
| **2014** | *0.0563 | 0.0006 | *0.0217 | 0.0005 |
| **2013** | *0.0565 | 0.0006 | *0.0223 | 0.0006 |
| **2012** | *0.0567 | 0.0006 | *0.0235 | 0.0005 |
| **2011** | *0.0552 | 0.0006 | *0.0246 | 0.0006 |
| **2010** | *0.0517 | 0.0007 | *0.0222 | 0.0006 |
| **2009** | *0.0565 | 0.0007 | *0.0229 | 0.0006 |
| **2008** | *0.0636 | 0.0007 | *0.0236 | 0.0006 |
| **2007** | *0.0677 | 0.0007 | *0.0248 | 0.0006 |
| **2006** | *0.0674 | 0.0007 | *0.0219 | 0.0006 |
| **2005** | *0.0747 | 0.0007 | *0.0279 | 0.0006 |

Note: Model 1 is based solely on gender. No observables are included.
Model 4 is the full model including all observables.
Source: 2005-2018 American Community Surveys.