UTAH DATA RESEARCH CENTER

Impacts of Intergenerational Poverty on Workforce Metrics

IGP 2020 Longitudinal Research

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Abstract

The intergenerational poverty (IGP) research workgroup seeks to improve understanding of IGP in Utah. This research focuses specifically on workforce and career metrics for adults experiencing IGP with a control, or reference, group of adults using a longitudinal approach. The goal of the study was to determine differences in career growth patterns between the two groups. It was hypothesized that adults impacted by IGP are not as successfully able to build careers when compared to adults not experiencing IGP. From 2013 to 2018, a total of 30,386 adults experiencing IGP and 111,904 control adults were tracked in the Utah unemployment wage record. The number of employers and industries an individual worked in during that time, annual workforce attachment, average annual wages, and the number of years each individual earned no wages were analyzed using regression techniques. Annual wage growth was analyzed using nonparametric Wilcoxon rank sum tests for each paired, consecutive year in the study. It was found that individuals impacted by IGP had significantly more employers, lower workforce attachment, lower average annual wages, lower wage growth over the study period, and spent more years earning no wages than those in the control group. Cumulatively, these measured factors illustrate that individuals experiencing IGP are less able to build successful careers with growing wages when compared to their counterparts in the control group.

Keywords

Intergenerational poverty; workforce attachment; workforce metrics; transmission of poverty

1 | Introduction

1.1 | Background

Intergenerational poverty (IGP) is broadly defined as the transmission of poverty from one generation to the next. Each year in Utah, IGP affects approximately 30,000 to 40,000 adults and even more children. These individuals face many challenges in their daily lives, including adequate access to food and social support. Unfortunately, IGP ultimately impacts educational attainment and the ability to participate in Utah's workforce. In 2019, the Utah Data Research Center (UDRC) published its first longitudinal analysis of IGP in the state of Utah. The 2019 report focused on demographic and educational factors that increase the odds that a person experiences IGP in Utah. The research found that women, Native Americans, and those with low educational attainment were more likely to experience IGP in Utah. The 2019 IGP research also showed that the longer an individual spent using public assistance programs as a child, the more likely that person was to continue using public services as an adult. A person who continues to use public assistance and therefore experiences poverty as an adult is at risk of passing on the effects of poverty to their children. This result is common throughout poverty research and primary literature, where a parent's frequent use of welfare services increases the probability that their children will also use welfare services (Duncan et al. 1998). Furthermore, individuals experiencing IGP had lower annual wages and workforce attachment (average number of quarters worked annually) from 2013-2018 (Martinez 2019). Literature assessing specific impacts of poverty on workforce metrics, such as workforce attachment and annual wage, is very limited. Therefore, this study makes a unique contribution to the field in that it assesses the impacts of poverty on multiple workforce metrics.

This research will provide a longitudinal analysis of workforce attachment, earned wages, and employment patterns of a cohort of individuals experiencing IGP in the state of Utah from 2013 to 2018. The goal of this research is to understand how people affected by IGP connect to the workforce in Utah. Poor workforce performance and connection increases the likelihood of an adult transmitting poverty to their children. Therefore, it is important to understand how people affected by IGP are connected to the workforce so that their needs can be served better and the IGP transmission rate can be lowered.

Specifically, this research focuses on the following objectives: 1) exploring employer and industry counts, years in which a person earned no wages, and workforce attachment for individuals experiencing IGP from 2013 to 2018, and 2) average wage earnings from 2013-2018 for individuals experiencing IGP. This research hypothesizes that: 1) individuals affected by IGP work for significantly more employers and industries and spend more years earning no wages, 2) individuals affected by IGP are significantly less attached to the workforce and spend more time unemployed, and 3) individuals experiencing IGP earn significantly less wages across a span of years (2013 – 2018) as compared to a control group of Utahns.

Careers are frequently defined by continued employment within a single organization (Kalleberg & Mouw 2018). Here, this metric, and related metrics are examined for individuals impacted by IGP in Utah. This research predicts that individuals experiencing IGP do not build long term careers as successfully as those not experiencing IGP. It is predicted this lack of long-term career development limits the earning potential and abilities of affected individuals to support themselves and their families, thus perpetuating the cycle of poverty.

1.2 | Literature Review

The causes of poverty transmission from one generation to the next are socially and economically dependent and complex. The primary literature suggests that poverty transmission arises when parents are lacking in financial or social capital, and therefore fail to pass on necessary resources for educational and workforce success to their children (Corcoran 1995). Intergenerational transmission of poverty may also be caused by exposure to toxic stress during childhood. If resources are limited for a family living in poverty, this can lead to cumulative toxic stress exposure for both parents and their children. Over time, this stress exposure likely impacts children's cognitive and social development (Shonkoff & Garner 2012). Poor social and cognitive development is likely to impact children's health, performance in school, and success in the workforce during adulthood (Shonkoff & Garner 2012).

The number of financial and social resources available to a family are dependent on the parents' ability to obtain and maintain gainful employment. Studies of the impacts of IGP on workforce outcomes are primarily theoretical, and to date, few studies have quantified the impacts of IGP on concrete workforce metrics, such as workforce attachment and wage earnings. However, many studies have examined educational attainment of children from low income families (Jenkins & Siedler 2007). A study of income of American families suggests that family income averaged over multiple years is correlated with child success, where families earning less have lower achieving children than those families earning more (Solon 1992).

Specifically, family income has also been shown to be directly correlated with the number of years of schooling a child completes (Duncan et al. 1998) and probability of high school graduation (Haveman et al. 1997). However, the marginal impacts of increasing family income of families in poverty may be small – there is likely a wealth threshold that must be crossed before educational and therefore workforce outcomes are largely impacted (Levy & Duncan 2000).

Intergenerational poverty, and resulting poor workforce performance metrics, has been shown to disproportionately affect some marginalized groups (Martinez 2019). Groups disproportionately affected by IGP in Utah include women and Native Americans (Martinez 2019). Women, especially those that are single mothers, are much more likely to experience IGP due to the hardships of maintaining stable employment while raising children (Lombardy & Coley 2013). Furthermore, poverty can cause women to be malnourished during pregnancy, and the effects of this malnourishment can be passed on to children (Lombardy & Coley 2013). Malnourished children are more likely to have developmental and cognitive issues, which can limit their educational attainment and future ability to maintain stable employment as adults (Delisle 2008). Children coming from impoverished families are also more likely to experience strong negative events in their personal health when compared to wealthy families, which decreases their long term health (Case et al. 2002).

Career mobility literature suggests that career mobility is strongly tied to intergenerational economic mobility and thus escape from cyclical poverty. Career mobility is frequently obtained by remaining with a single employer over a period of time, but can also be obtained by switching employers (Kalleberg & Mouw 2018). Staying within the same employer or organization for a long period of time opens up opportunity for wage increases and promotion within the organization (Fuller 2008). Similarly, remaining within the same industry for a long period of time can increase a worker's skill set and open opportunities for advancement and promotion within the industry. On the other hand, it occasionally happens individuals sometimes obtain higher salaries by pursuing promotions at other employers, but this usually is only the case for early career employees (Fuller 2008). If upward movement is limited within a worker's current employer, it is advantageous to switch employers to gain a promotion and higher salary (Kalleberg & Mouw 2018).

Many individuals affected by intergenerational poverty may work low-wage jobs for long periods of time (Martinez 2019). There is a lack of consensus in the literature as to whether or not working in a low-wage job for a length of time allows the individual any upward career mobility or if low-wage jobs are 'dead-end' careers (Kalleberg & Mouw 2018). It is likely that low-wage jobs in some industries offer mobility, while other industries do not (Fitzgerald 2006; Kalleberg & Mouw 2018). It is also possible that low-wage jobs lead to higher-paying opportunities for some, but not all (Mosthaf et al. 2009). Women, especially those women that work part-time, have been found to be particularly vulnerable to remaining in low-wage jobs without advancement opportunities (Mosthaf et al. 2009). Individuals experiencing poverty, especially women, may also face longer periods of unemployment – in the case of women, for child-bearing responsibilities. Mosthaf et al. also found that working a low-wage job decreases the probability of earning high wages in the future (2009). This effect may be partially a result of social and class stigmas surrounding those that work in certain low-wage jobs (Kalleberg & Mouw 2018).

Individuals impacted by IGP likely face, or have faced in the past, barriers in obtaining a postsecondary degree. The impacts of postsecondary education on an individual's earning potential over time is well-documented. For example, according to US Bureau of Labor Statistics (BLS), attainment of a bachelor's degree increases an individual's wages by approximately $500 weekly in 2019 when compared to earnings of a person with only a high school diploma (Bureau of Labor Statistics 2020). Those individuals with an associate's degree earned about $140 per week more than those with only a high school diploma (BLS 2020). Furthermore, while wages of college graduates have not risen significantly in the past twenty years or so, the annual wages of individuals with only a high school diploma have decreased (Abel & Deitz 2014). Individuals with a college degree are also much less likely to be unemployed throughout their lifetime when compared to individuals with only a high school diploma (Abel & Deitz 2014). Obtainment of a postsecondary degree has the potential to drastically improve the career prospects and lifetime income of those experiencing IGP.

2 | Methods

2.1 | Data

This research employed a cohort study of a case-control group. In a cohort study, metrics for a cohort of individuals are tracked longitudinally over time and then leveraged in statistical analyses. A control group is included in analyses for comparison. In this research, the control group generally experiences many of the same conditions

as the IGP (case) group, but not to the same extent or length of time as the IGP group. Exploring differences between the two groups within the study cohort provides insight as to why some people experience IGP and others with similar demographic and financial circumstances do not.

The IGP and control groups within the cohort here are defined by months of public assistance usage as adults and as children. Specifically, those experiencing IGP used public assistance services for twelve or more months as adults and twelve or more months as children. The individuals in the control group used public assistance services for less than twelve months as adults or less than twelve months as children. Each adult in this study used public assistance for at least one month in 2012. The cohort was provided by the management information systems (MIS) team housed within the Department of Workforce Services. These cohort data obtained from MIS also included demographic data, such as race, ethnicity, educational level, age, veteran status, and gender for each individual. Quarterly wages, employers, and industry data were sourced from the unemployment insurance (UI) wage record system.

For the industry type and employer count analyses, a single employer for each individual in the cohort was extracted from the UI records for each year from 2013 to 2018. This employer was the employer for which the individual earned the highest wages in each year. Within the UI wage record, a person may have multiple employers per quarter or calendar year. This step of narrowing data to one employer was necessary for simplification of analyses and results. By counting employers and industry types in this manner, the focus is on the person's primary employer. Secondary jobs (lower wage compared to primary) are not considered in this research. The associated North American Industry Classification System (NAICS) code for this same, primary employer was selected for each individual for each year. This industry (NAICS code) is herein considered that individual's industry of employment for that year. It should be noted that is possible that an individual worked for many employers in a single year or even quarter. Furthermore, each employer in the UI database is assigned only one NAICS code, so employers that have many employees in different fields may have inaccurate industry codes for certain employees' roles within the company.

Workforce attachment metrics, including employer count from 2013-2018, workforce attachment, and industry count from 2013-2018, were determined after narrowing down employer and industry data to one employer and industry per individual per year, as described in the previous paragraph (employer with highest total annual wage was selected). Employer count was the number of unique, 'highest wage earning' employers an individual had from 2013-2018. Similarly, industry count was the number of unique, 'highest wage-earning' industries an individual was employed in from 2013-2018. Workforce attachment was the average annual number of quarters each individual earned wages in from 2013-2018. Earned wages in a quarter in the UI record are assumed to mean that the individual was employed in that quarter. If an individual was not employed at all during a single year or multiple years, zeroes were included in the average. Years of no wage earning, or unemployment, were also determined using the UI wage records. An individual had to earn no wages in any quarter to be counted as not employed in that year.

Wages were summed annually for each individual using quarterly UI wage records. Annual wage from 2013-2018 was averaged for each individual in the cohort. If an individual did not earn any wages in a given calendar year, zeroes were included in the 2013-2018 average. Summed annual wages are inclusive of all wages reported to UI records regardless of the employer from which they came.

2.2 | Data Analysis

The relationships between the five workforce metrics and IGP were evaluated using regression techniques. Specifically, these five workforce metrics were workforce attachment, industry count, employer count, number of years where no wages were earned, and average annual wage were the dependent variables in the linear models. For each of these workforce metrics, a separate model was created to assess how those impacted by IGP compare with those in the control group for each workforce metric. A total of five models were created. Employer counts, industry counts employed, and number of years where a person earned no wages analyses employed negative binomial regressions to account for zero-inflated count data, while average annual wage and average workforce attachment models were linear regressions. Average wage and workforce attachment models do not include individuals who had $0 wages or workforce attachment values of zero in all years, as these data would cause the dataset to violate the assumptions of normality needed for linear regression. IGP status was included as a factor in each model, where each individual belonged to either the IGP group or the control group. Demographic factors were independent variables in each of the four models in addition to IGP status. Demographic factors were included as covariates to account for the differences in workforce habits and experiences in each demographic group. The demographic factors included were race, ethnicity, gender, age, and

education level. Race and ethnicity were each coded as separate factors in the model, since individuals may report a single race/ethnicity or a combination of races/ethnicities. The basic model structure for each workforce metric is as follows:

Workforce Metric ~ IGP /Control + White + Hispanic + Asian + Black + Native American + Pacific Islander + Other Race + Gender + Age

The linear models described above were employed to determine whether or not individuals affected by IGP are 1) employed by significantly more employers, 2) work in significantly more industries, 3) are significantly less attached to the workforce, and 4) if they earn significantly less wages across the study time period than individuals in the control group. From these four metrics, a sense of the propensity of individuals affected by IGP to build careers and maintain a level of income can be gained. After completing the model analyses, 95% confidence intervals were calculated for all coefficients. Variance inflation factors (VIF) were calculated for each model, and no single factor had values above 2 for any factor in any model; therefore there is no evidence of multicollinearity.

An annual wage growth analysis was performed for 2013 cohort of adults experiencing IGP and the control group. Annual wage growth was calculated by determining the annual wages for adults affected by IGP and the control group. The previous year's mean annual wage was subtracted from each year's mean, and then divided by the previous year's mean to determine percent growth. To test for statistically significant differences in annual wage growth between the two groups, Wilcox non-parametric tests were performed. The mean annual percent differences for each group of individuals is reported separately. Individuals who earned $0.00 in wages in any or all years are included in these analyses. All analyses were performed in R v3.5.2 (R Core Development Team 2018).

3 | Results

3.1 | Summary of Cohort

There were a total of 142,287 adults in the 2013 cohort examined in this research. Of the cohort, 30,387 were impacted by IGP, and 111,900 were in the control group. Adults in the study were aged 21-41 in 2012. The mean age of individuals experiencing IGP was 28.6, and the mean age of the control group was 30.6. Individuals affected by IGP were primarily female (67.0%). Only 31.9% of the individuals impacted by IGP were male. Similarly, more than half of the control group was female – 57.4% of individuals were female in the control group and 41.3% of adults were male in the control group (Table 1).

Most adults impacted by IGP had only a high school level education (52.7%), followed by less than a high school level education (21.1%), and a post-secondary certificate (7.3%). Only 6.7% of adults experiencing IGP had a college degree (associate level or higher) in 2012. A small portion of the individuals affected by IGP reported having no education or were marked as unknown (4.9%). In the control group, most adults had a high school level education (46.6%), 11.5% had less than a high school level of education, 8.3% had a post-secondary certificate, 13.8% had a college degree (associate level or higher). 7.1% of control adults were marked as having no education or an unknown education level (Table 1).

Most individuals affected by IGP in this study were White (68.5%), followed by Native American (5.9%). Blacks made up 2.3% of the individuals experiencing IGP, Asians 0.8%, and Pacific Islanders 0.9%. 0.6% of adults affected by IGP reported their race as 'other.' 13.6% of the individuals impacted by IGP were Hispanic. Similarly, in the control group, most individuals were White (55.11%), followed by Native American (2.1%). Asians, Blacks and Pacific Islanders made up much smaller portions of the group with 1.5%, 1.8%, and 1.2%, respectively. 8.3% of control adults were Hispanic. 0.6% of control adults reported their race as 'other.' A large portion of the control group did not have a race designation (Table 1).

Note that demographic data percentages may not add up to 100% due to missing or overlapping data. For example, individuals may report more than one race or ethnicity.

3.2 | Industry

After correcting for the effects of demographics and education level, individuals experiencing IGP did not work in a significantly different number of industries from 2013 to 2018 compared to the control group (Table 1). Individuals affected by IGP worked in 1.4 industries on average from 2013 to 2018, and individuals in the control group also worked in 1.4 industries on average. Means reported here are raw data means; demographic differences are not accounted for in these means.

Most covariates included in the model were statistically significantly related to an individual's industry count. Males worked in significantly more industries than females did. Those with no education/unknown education level worked in the fewest industries, while those who completed a post-secondary certificate worked in the most industries. Of the racial and ethnic groups, Whites worked in the fewest industries, and Pacific Islanders worked in the most. Age was negatively associated with the number of industries a

Table 1: Demographic summaries for individuals impacted by IGP and the control used in this research.

	IGP	Control	% IGP	% Control
Gender				
Female	20,362	64,197	67.01%	57.37%
Male	9,688	46,247	31.88%	41.33%
Unknown or unreported	337	1,460	1.11%	1.30%
Race				
Asian	240	1,689	0.79%	1.51%
Black	713	2,021	2.35%	1.81%
Native American	1,797	2,298	5.91%	2.05%
Pacific Islander	265	1,365	0.87%	1.22%
White	9,578	61,670	31.52%	55.11%
Other	185	671	0.61%	0.60%
Ethnicity				
Hispanic	4,143	9,256	13.63%	8.27%
Mean Age	28.62	30.57		
Education				
Less than High School	6,418	12,911	21.12%	11.54%
High School Level	16,008	52,102	52.68%	46.56%
Postsecondary Certificate	2,209	9,274	7.27%	8.29%
College Degree	2,045	15,454	6.73%	13.81%
None or Unknown	3,707	22,163	12.20%	19.81%
Total	30,387	111,904		

person worked in, where older people worked in significantly fewer industries than younger people (Table 1).

Individuals impacted by IGP worked in similar industries over the study period. Administrative and support services and the food industry employed the largest portion of those included in the study. Education service employers also employed a large portion of control individuals in this study, those individuals impacted by IGP were not employed in large numbers in this industry in 2013 (Figs. 1 & 2; Table 2).

3.3 | Employer Count

Overall, individuals impacted by IGP had statistically significantly more employers over the time period examined in this research (2013-2018) (Table 3). The effects of race, ethnicity, gender and educational attainment were corrected for using the linear model described in the methods section. Individuals affected by IGP had an average of 1.7 (a 6.25% increase over the control group) employers, while the control had an average of 1.6 employers. Means reported here are raw data means; demographic differences are not accounted for in these means.

Aside from this difference in the IGP group versus the control group, males had significantly more employers than females did. The level of educational attainment a person had also impacted the number of employers they had from 2013-2018. Compared to having a high school level of education, having a post-secondary certificate increased the number of employers an individual had. Having a college degree, less than a high school level of education, or having no or an unknown level of education slightly decreased the number of employers an individual had (Table 3). Age was negatively associated with the number of employers an individual had.

Table 2: Negative binomial regression coefficients and 95% confidence intervals for unique employment industry count (2013-2018). Numbers in parentheses indicate 95% confidence interval ranges.

Model Term	Estimate	95% Confidence Interval
Control	-0.01	(-0.02, 0.001)
Male	0.09***	(0.08, 0.10)
PostSecondary Certificate	0.06***	(0.05, 0.08)
College Degree	0.03***	(0.01, 0.04)
Less than HS	-0.17***	(-0.18, -0.15)
None/Unknown Education	-0.43***	(-0.45, -0.40)
Native American	-0.12***	(-0.15, -0.09)
Asian	0.04	(-0.001, 0.09)
White	0.02***	(-0.03, -0.01)
Hispanic	0.07***	(0.05, 0.08)
Pacific Islander	0.12***	(0.08, 0.16)
Black	0.07***	(0.03, 0.10)
Other Race	0.05	(-0.01, 0.11)
Age	-0.05***	(-0.06, -0.05)
Model Intercept	0.38***	(0.37, 0.40)
Observations	124,314	

3.4 | Years of No Wage Earning

Adults impacted by IGP spent significantly more years earning no wages from 2013 to 2018 as compared to the control cohort. Adults affected by IGP earned no wages an average of 3.2 years (a 9.37% increase over the control group), and the control group earned no wages an average of 2.9 years. Means reported here are raw data means; demographic differences are not accounted for in these means.

Females were more likely than males to experience years where they earned no wages. Pacific Islanders, Asians, and Hispanics had the fewest years of unemployment, while Native Americans were likely to spend the most years earning no wages. The remaining races and ethnicities had non-significant coefficient estimates (Table 4). Those individuals with a postsecondary degree were less likely to spend years earning no wages when compared to those who only had a high school level of education. Those with less than a high school level of education were more likely to spend years earning no wages compared to those with a high school level education (Table 4).

3.5 | Workforce Attachment

Adults affected by IGP had significantly lower workforce attachment from 2013 to 2018 compared to control adults. (Note, the linear regression for workforce attachment omits adults who were not employed at any time during the study period: 44,160.) Adults experiencing IGP had a mean workforce attachment of 1.5 (a 13% decrease compared to control) quarters worked per year, while control group adults had a mean workforce attachment of 1.7 quarters worked per year. Means reported here are raw data means; demographic differences are not accounted for in these means.

Aside from this main result, demographic groups within the analysis had varying levels of workforce attachment. The model estimated that males were significantly more attached to the workforce than females in the study, and that Pacific Islanders and Asians were the most attached racial/ethnic group, while Native Americans were the least workforce-attached racial group (Table 5).

Education also impacted how attached individuals were to the workforce. Those with no education

Table 3: Negative binomial regression coefficients and 95% confidence intervals for unique employer count (2013-2018). Numbers in parentheses indicate 95% confidence interval ranges.

Model Term	Estimate	95% Confidence Interval
Control	-0.04***	(-0.05, -0.02)
Male	0.12***	(0.11, 0.13)
PostSecondary Certificate	-0.08***	(-0.11, -0.05)
College Degree	0.05*	(0.001, 0.09)
Less than HS	-0.02***	(-0.04, -0.01)
None/Unknown Education	0.10***	(0.09, 0.12)
Native American	0.15***	(0.11, 0.20)
Asian	0.11***	(0.08, 0.15)
White	0.04	(-0.02, 0.11)
Hispanic	0.06***	(0.05, 0.08)
Pacific Islander	0.01	(-0.01, 0.02)
Black	-0.16***	(-0.18, -0.15)
Other Race	-0.47***	(-0.49, -0.44)
Age	-0.05***	(-0.06, -0.05)
Model Intercept	0.58***	(0.57, 0.60)
Observations	124,314	

or an unknown level of education were the least attached to the workforce, where those with a college degree were the most attached to the workforce. There was no significant relationship between age and workforce attachment.

Table 4: Negative binomial regression coefficients for number of calendar years during the study (2013-2018) an individual earned no wages. Numbers in parentheses indicate 95% confidence interval ranges.

Model Term	Estimate	95% Confidence Interval
Control	-0.08***	(-0.09, -0.06)
Male	-0.10***	(-0.12, -0.09)
PostSecondary Certificate	-0.06***	(-0.08, -0.04)
College Degree	-0.10***	(-0.12, -0.08)
Less than HS	0.16***	(0.14, 0.18)
None/ Unknown Education	0.30***	(0.28, 0.32)
Native American	0.06***	(0.03, 0.10)
Asian	-0.12***	(-0.18, -0.07)
White	-0.01	(-0.02, 0.01)
Hispanic	-0.11***	(-0.13, -0.09)
Pacific Islander	-0.20***	(-0.26, -0.14)
Black	-0.03	(-0.07, 0.01)
Other Race	0.03	(-0.05, 0.10)
Age	0.004	(-0.003, 0.01)
Model Intercept	1.13***	(1.11, 1.15)
Observations	124,314	

3.6 | Annual Wages

After using the linear model to account for differences in demographics and age, adults impacted by IGP had significantly lower annual wages (across the study period - 2013 to 2018) than the control group. (Note, the linear regression for annual wage does not include those who earned $0 wages in all years of the study period: 44,160 individuals). Including those who earned $0 wages, adults affected by IGP earned $6,474.50 on average annually, while control group adults earned $10,967 on average, annually. Not including those who earned $0 wages, adults impacted by IGP earned $9,936.84, while control group adults earned $15,666.32. Means reported here are raw data means; demographic differences are not accounted for in these means.

Males in this study earned significantly higher annual wages than females. Of racial and ethnic groups, Native Americans and Blacks earned the lowest annual wages, while Pacific Islanders and Hispanics earned the highest annual wages. Education level affected average annual wages as well, where those with a college degree earned the most, while those with less than a high school level of education or no education/unknown education level earned the least (Table 6). Age was significantly associated with annual wage, where older individuals earned more than younger individuals (Table 6).

Table 5: Workforce attachment (2013-2018; number of quarters in which wages were earned annually) linear regression coefficients and 95% confidence intervals. Numbers in parentheses indicate 95% confidence interval ranges.

Model Term	Estimate	95% Confidence Interval
Control	0.18***	(0.16, 0.20)
Male	0.09***	(0.08, 0.11)
PostSecondary Certificate	0.03*	(0.003, 0.06)
College Degree	0.14***	(0.11, 0.16)
Less than HS	-0.22***	(-0.25, -0.20)
None/Unknown Education	-0.31***	(-0.35, -0.27)
Native American	-0.17***	(-0.22, -0.11)
Asian	0.15***	(0.08, 0.23)
White	0.04***	(0.02, 0.06)
Hispanic	0.19***	(0.16, 0.22)
Pacific Islander	0.19***	(0.11, 0.27)
Black	-0.05***	(-0.11, 0.01)
Other Race	-0.10	(-0.21, 0.01)
Age	-0.01	(-0.02, 0.0002)
Model Intercept	2.25***	(2.22, 2.27)
Observations	88,844	

3.7 | Median Wage & Wage Growth

Adults impacted by IGP had lower median and mean wages when compared to adults in our control group across all study years (Table 7). (Note that annual wages expressed in this section include individuals that may have earned $0 wages in a year.)

(Fig. 3)

For both adults experiencing IGP and the control group of adults, wages grew annually from 2013 to 2018. All Wilcox non-parametric tests were significant ($p<0.05$), except for the wage growth between 2017 and 2018, which was not significantly different between the adults impacted by IGP and the control group. Wages for the control group generally grew significantly more than the group of adults experiencing IGP (Table 8, Fig.4), except for the increase from 2017 to 2018, where wages of adults experiencing IGP grew more than the control group. However, the difference in wage growth between the two groups of adults was not statistically different for 2017-2018 (Table 8).

4 | Discussion

Individuals affected by IGP were more likely to work for more employers, have lower annual workforce attachment, lower annual wages, and significantly lower wage growth in most years when compared to a control group. Individuals experiencing IGP also spent significantly more calendar years earning no wages than those in the control group. Individuals impacted by IGP appear to switch employers more frequently and spend longer periods of time earning no wages. Cumulatively, these factors indicate that adults experiencing IGP are not as effectively able to build careers and have weak workforce attachment when compared to adults in the control group, who experienced significantly higher wage growth during the study period. The level of education of the two groups likely plays a large role in the ability of each to obtain career-building employment.

Those impacted by IGP may face many hardships throughout their lifetimes that make career development more difficult when compared to the control group in this study. For example, women in both the control group and those impacted by IGP appeared less able to build stable long-term careers when compared to men. Specifically, women spent more years unemployed than men did (Table 3), had lower workforce attachment (Table 4), and earned lower annual wages (Table 5) than men in this research. Women also disproportionately experience IGP in Utah compared to men (Martinez

Table 6: Annual wage (averaged across study period for each study individual; 2013–2018) regression coefficients and 95% confidence intervals. Numbers in parentheses indicate 95% confidence interval ranges.

Model Term	Estimate	95% Confidence Interval
Control	3,856.28***	(3,607.32, 4,105.24)
Male	6,004.34***	(5,802.78, 6,205.91)
PostSecondary Certificate	729.14***	(387.45, 1,,070.83)
College Degree	5,178.95***	(4,892.27, 5,465.62)
Less than HS	-2,103.79***	(-2,398.71, -1,808.86)
None/Unknown Education	-2,098.53***	(-2,518.65, -1,678.40)
Native American	-2,883.50***	(-3,484.11, -2,282.98)
Asian	579.28	(-277.49, 1,436.04)
White	-254.33*	(-470.46, -38.20)
Hispanic	1,317.41***	(985.22, 1,649.59)
Pacific Islander	1,679.06***	(818.12, 2,539.99)
Black	-2,615.43***	(-3,303.93, -1,926.93)
Other Race	-1,994.92**	(-3,221.33, -768.52)
Age	663.98***	(561.98, 765.99)
Model Intercept	8,712.71***	(8,412.48, 9,012.95)
Observations	88,844	

Table 7: Significance of Wilcox test comparisons between annual wage growth for individuals impacted by IGP and the control group. Wilcox test tests for difference in wage growth between the two groups. All were significantly different except for the growth from 2017 to 2018, which was not significantly different for IGP and control groups. This analysis include individuals who earned $0 wages for any year(s).

Years	IGP Wage Growth	Control Group Wage Growth	W-Statistic	p-value
2013-2014	13.00%	14.50%	448814303.5	<0.0001***
2014-2015	11.20%	13.00%	426881084.5	<0.0001***
2015-2016	6.80%	9.40%	430091368.5	<0.0001***
2016-2017	7.10%	8.40%	412961711	<0.0001***
2017-2018	12.40%	8.40%	393629156.5	0.074

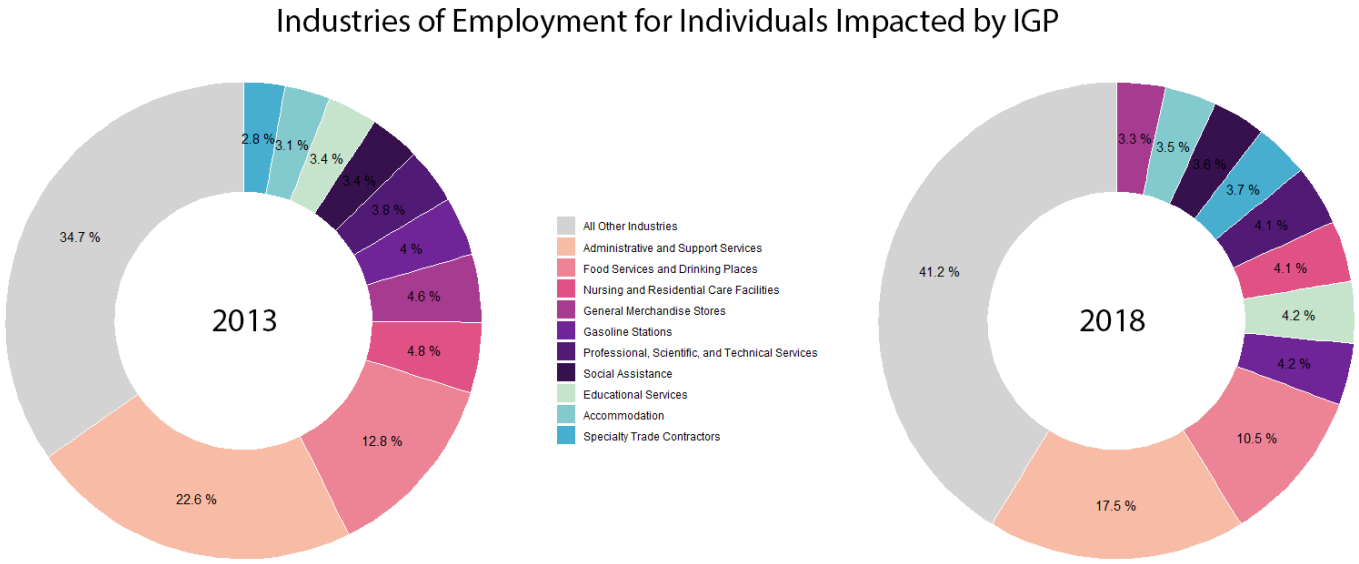

Figure 1: Top 10 industries for employment for the 2013 intergenerational poverty (IGP) cohort (by percent of cohort) in 2013 and 2018. Industries not included in the top ten are categorized here as "other". Industry categories are sourced using high-level NAICS (North American Industry Classification System) codes and ordered by percentage.

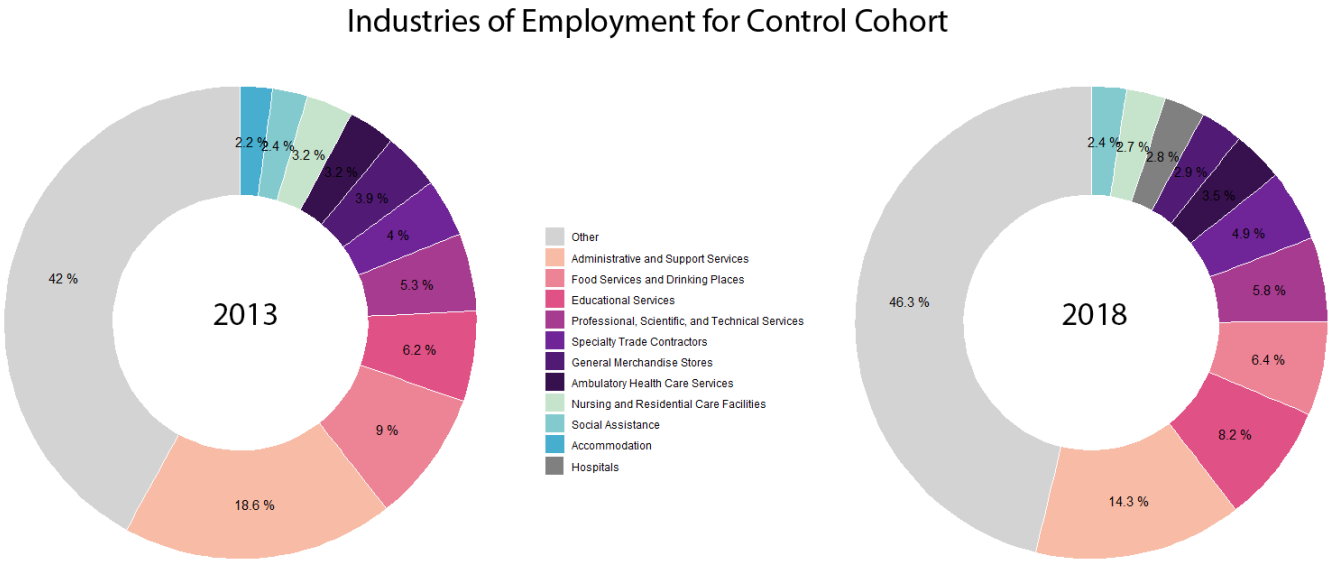

Figure 2: Top 10 industries for employment (by percent of cohort) for the 2013 control cohort in 2013 and 2018. Industries not included in the top ten are categorized here as "other". Industry categories are sourced using high-level NAICS (North American Industry Classification System) codes and ordered by percentage.

Table 8: Annual median wages in US dollars for individuals experiencing IGP and the control group.

Year	IGP Median Wages (USD)	Control Median wages (USD)	IGP Mean Wages (USD)	Control Mean Wages (USD)
2012	10,073.00	13,610.00	12,242.02	16,031.45
2014	11,159.00	15,981.50	13,647.78	18,313.34
2015	12,111.00	18,250.00	14,674.47	20,415.20
2016	13,364.50	20,439.50	15,805.63	22,124.70
2017	14,291.00	22,299.00	16,824.08	23,736.16
2018	16,005.00	23,749.00	18,479.33	24,954.87

2019). These results are likely in part produced by the need for mothers to take on more childcare responsibilities than fathers – a Pew Research survey in 2015 found that working mothers felt they bore more childcare and household responsibilities than men, even when both parents were working full time (Pew Research Center 2015). Women, especially single mothers, may also bear other burdens that men do not, such as housekeeping tasks or other emotional labor associated with raising a family (Boca et al. 2020). Race and ethnicity also play a role in determining one's odds of experiencing IGP in Utah (Martinez 2019). Similar results were found in this study, where race and ethnicity significantly impacted some workforce metrics analyzed here.

Different industries may offer different advancement opportunities for low-wage or entry level workers (Fitzgerald 2006). This study found that individuals impacted by IGP in Utah are largely employed in administrative support industries, food and drinking service-sector industries, and gasoline stations. Administrative support and service industry jobs include jobs such as office clerks, janitors, security guards, and groundskeepers. Food and drinking service sector jobs include workers such as servers, restaurant counter-attendants, caterers, and bartenders. Service industry jobs are notorious for their lack of fringe-benefits, such as paid leave and health insurance, and lack of upward career mobility opportunity (Nelson 1994). Difficulties paying for healthcare costs and lack of time off likely keeps individuals in these industries on public assistance programs. These aspects of the service industry positions that those impacted by IGP frequently work in may be contributing to the cyclical nature of poverty.

One of the largest positive influencers on workforce success for both individuals in the control group and those affected by IGP is attainment of a college degree. At the national level, as educational attainment increases, employment rates increase (National Center for Education Statistics 2020). However, obtainment of a postsecondary degree can be difficult for those experiencing poverty. For example, Pell grant recipients, who must have qualifying financial need to be eligible for Pell grants, graduate from college at lower rates than individuals from higher-earning households at the national level (non-Pell eligible) (Ginder et al. 2018). It is not known how many individuals in this study were Pell eligible or Pell recipients, but many people affected by IGP would likely qualify for Pell grants based on income level, as any family with less than $60,000 annual income can likely qualify for Pell aid of some amount, and families with annual income less $26,000 automatically have $0 expected financial contribution to college, which typically qualifies them for Pell grants (US Department of Education 2020). While those with college degrees in this study worked in more industries and for more employers during the study period, they also had significantly higher workforce attachment, wage earnings, and significantly lower number of years where they earned no wages. However, individuals impacted by IGP may face many more barriers to obtaining a college degree than those individuals that come from higher income families. The impacts of chronic poverty began at a young age for children in affected families: children with low socioeconomic status experience reduced language development (Justice et al. 2019), and impact children's success and attachment to the workforce (Duncan, Ziol-Guest & Kalil 2010). A study using families in the Panel Study of Income Dynamics (PSID) found that individuals who experienced poverty during early childhood (ages zero to five) had reduced earning as adults and worked fewer hours as adults (Duncan, Ziol-Guest & Kalil 2010).

4.1 | Limitations

The data used in this study are limited in a few ways. First, the UI wage record omits self-employed and federal employees. Therefore, some individuals may falsely appear to have earned no wages in a

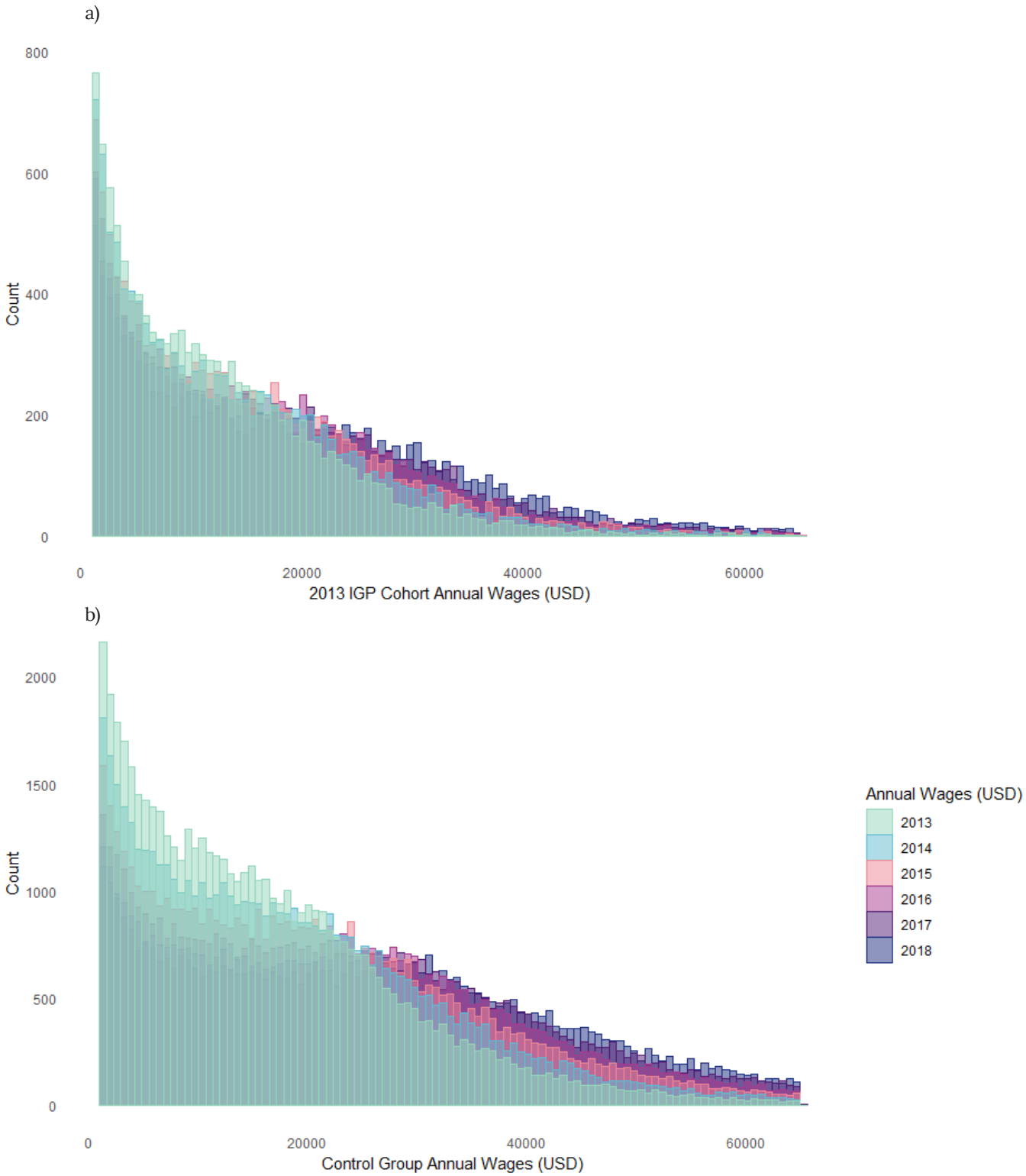

Figure 2: a) Histogram of annual wages in US dollars for individuals experiencing IGP and b) histogram of annual wages in US dollars the control group. Notice the increase in wage distribution from 2013 to 2018 for the control group, while the distribution of the wages of those impacted by IGP remains relatively the same from 2013 to 2018.

given quarter. Second, due to research deadlines and for the sake of simplicity, individuals who worked for multiple employers during a single quarter were only counted as having one employer during that time period, thus decreasing their total employer count and potentially industry count. Industry codes (NAICS codes) are also limited in that large companies have an umbrella code that may not accurately characterize all employees in the company. Third, individuals who moved away from Utah after they were identified as experiencing IGP will not show up in the Utah UI wage record database. There is also no way to identify whether or a not an individual in this study moved away during the time period. As result, those that moved out of Utah from 2013 onward may be misrepresented by this research.

It is important to note that careers can sometimes be advanced by moving employers, so a change in employer does not always indicate a person is not building a long-term career or moving toward a career goal. Some individuals may also choose to take a lower paying job or job at a different company in order to have more free time for childcare or other responsibilities.

Lastly, it is possible that some individuals in this study obtained more education during the study time period (2013-2018), that would not be captured in this dataset, since the demographic information is based on what was reported in 2012. As a result, their highest level of education may be outdated in this research.

4.2 | Future Research

Should additional data about the IGP cohorts become available, research should focus on the impacts of single parenthood on IGP and workforce outcomes. Single parents likely face more challenges in maintaining employment when compared to those in nuclear families. Future research could examine the impact of the COVID-19 pandemic on the individuals impacted by IGP relative to the control cohort used in this research. Lastly, future research could also examine the number and types of jobs that individuals affected by IGP who work multiple jobs have. Many individuals in this study may work multiple part time jobs, reducing time they have for household duties or childcare.

5 | Conclusion

In sum, this research determined adults impacted by IGP in the 2013 cohort worked for more unique employers, earned lower wages annually, and were less attached to the workforce from 2013 to 2018 as compared to a control group of adults in Utah. Adults affected by IGP were more likely to work in service sector jobs than adults in the control group. Adults experiencing IGP appear to be less able to obtain or maintain careers that promote upward mobility and stable income as compared to the control group in this study.

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