Andrew Singh
Assignment 3 – Research and Analysis 1

Introduction

The Equal Pay Act of 1963 established equitable compensation for both men and women in the same occupation regardless of their race and ethnicity and many other factors. Yet, fifty-seven years later, there is a persistent gap in salary compensation amongst various races and ethnicities. Race and ethnicity, to a certain extent, play a factor in the make-up of an individual's salary compensation.[1] When examining the median hourly wage earned in 2016, Black workers earned 75 percent in comparison to a white worker.[2] Across all races and ethnicities, Asian and White workers out earn Hispanic and Black workers through median weekly earnings ($1,392 and $1,008 vs. $785 and $813).[3]

Education greatly influences the salary compensation and median weekly earnings that a worker receives. As workers invest more into their professional development by attaining higher degrees in their chosen field, their weekly median earnings increase. In an analysis of median annual earnings of full-time year-around workers 25 to 34 years old by the National Center for Education Statistics, their findings found a similar trend where Asian and White workers out earned Hispanic and Black workers by holding Bachelor's degree ($69,100 and $54,700 vs. $49,300 and $49,400).[4]

Particularly in public sector occupations, Black and Hispanic employees work in underrepresented and low-wage local government jobs, while high-wage jobs were disproportionately held by White employees for over 50 years.[5] Within the same study, a dominant driver of wage differences is job segregation, whereby minority races attain a large portion of low-wage jobs. The aim of this research brief was to study if there is a relationship between the race and ethnicity and salary among public sector analysts, controlling for demographic and work factors. A subset of data from the American Community Survey was used, which includes public sector employees who work as analysts. By understanding there are salary differences amongst public sector employees of various races and ethnicities, it is crucial in ensuring there are equitable policies and initiatives being created by various levels of government to diminish the racial pay gap.

Methods

For the research brief, we incorporated publicly available data from the 2016 American Community Survey (ACS) in order to explore and discuss the relationship between the race and ethnicity of public sector analysts and salaries. The ACS is a large, national survey of adults in the United States that collects data on the type of work and

[1] Ashton, Deborah. "Does Race or Gender Matter More to Your Paycheck?" 10, Jul. 2014. Harvard Business Review. 6, Dec. 2018.< https://hbr.org/2014/06/does-race-or-gender-matter-more-to-your-paycheck>
[2] Wilson, Valerie. "Racial inequalities in wages, income, and wealth show that MLK's work remains unfinished."11, Feb. 2018. Economic Policy Institute. 6, Dec. 2020. < https://www.epi.org/publication/racial-inequalities-in-wages-income-and-wealth-show-that-mlks-work-remains-unfinished/>
[3] "Racial Economic Inequality." Inequality.org. 6, Dec 2020. < https://inequality.org/facts/racial-inequality/>
[4] "Status and Trends in the Education of Racial and Ethnic Groups." Feb. 2019. National Center for Educational Statistics. 6, Dec, 2020. <https://nces.ed.gov/programs/raceindicators/indicator_RFD.asp>
[5] Nelson, Julie and Tyrell, Syreeta. "Public Sector Jobs: Opportunities for Advancing Racial Equity." 2015. Racial Equity Alliance. 6, Dec. 2020. < https://racialequityalliance.org/wp-content/uploads/2015/02/Public-Sector-Jobs-Final1.pdf>

demographic characteristics from various households. In 2016, the survey was sent out randomly to a small sample 3.5 million households across the U.S., the District of Columbia, and Puerto Rico, from that 2.23 million households responded to the survey, achieving a response rate of 63%.

Our analysis focused on a small subset of the ACS respondent data where we looked at information from 1,604 public sector employees, who worked as analysts across various levels of government. The inclusion criteria for our dataset was determined by analysts working at least 35 hours a week and at least 48 weeks in the prior year.

The independent variables used were the race and ethnicity of public sector analysts and the dependent variable examined was salary. We incorporated demographic characteristics (race/ethnicity, gender, age, and education level) and work characteristics (type of analyst, level of government, geographic area, and salary) in our analysis. We examined the bivariate relationship between public sector analyst's characteristics and mean annual salary, by implementing an ANOVA statistical test. We created a multivariate model using a linear regression test, where we examined the relationship between race/ethnicity and salary among public sector analysts, controlling for demographic and work factors.

Results

Two-thirds of the sample of public sector analysts identify as White (non-Hispanic) employees (69%), while a multitude of ethnic races (Black, Hispanic, Asian, and Other) comprise the remainder of the positions (31%). Overall, 90% of all employed analysts hold a bachelor's degree, with most holding just a bachelor's degree and others completing a graduate degree. In terms of the gender identity representation of public sector analysts, females are slightly less likely to be employed in these positions compared to males (52 % vs 48%).

Public sector analysts hold positions mostly at the federal-level compared to state-level government (52% vs 29%). Over 30% of analysts are employed in operations systems analyst positions, while only a small percentage are employed as financial analysts (9%). Analysts hold positions all over the United States, with a plurality working in the South Atlantic region (42%). The mean annual salary for a public sector analyst is $83,835.

Applying a bivariate analysis, we found a significant relationship between race/ethnicity and the mean salary earnings of public sector analysts. Public sector analysts who identified as White (Non-Hispanic) earned $9,742.06 more on average than analysts who identified as Hispanic. Minority public sector analysts identifying as (Asian, Hispanic, Black (non-Hispanic, and Other) earned a mean annual salary less than that of White (non-Hispanic) analysts ($81,986.34, $75,642.06, $84,995.05, and $74,365.52 vs. $85,384.12 respectively).

Other characteristics were related to salary such as gender identity, level of government and education level. In terms of gender identity, we found a statistically significant relationship where female public sector analysts earned $7,633.20 less on average than male analysts. Analysts employed in federal government out-earned analysts employed in both state and local governments ($97,067.15 vs. $66,951.82 and $73,667.97 respectively). Analysts who held a master's degree or higher earned substantially more on average than analysts holding an associate's degree or higher.

In multivariate analysis, we found the salary differences amongst public sector analysts continued when controlling for the public sector analyst's demographic and work characteristics. The multivariate model showed there was less of a statistical significance in the bivariate model in terms of a difference in the salary compensation analysts identifying as Asian or Other. Black (non-Hispanic) public sector analysts earned $5,385.50 less than White (non-Hispanic) analysts.

The multivariate model estimated that the mean annual salary for male public analysts was approximately $92,772.91 compared to female public sector analysts earning $88,245.16, adjusting for confounding variables in the model. Adjusting for the other variables, public sector analysts who were in the age group of 56-70 earned $24,876.45 more on average than analysts who were 18-35 years of age. Analysts who held an Associate's degree made $19,659.60 less on average than analysts who held a Master's degree, controlling for the demographic and work factors in the model.

Discussion

When examining the relationship of public sector analysts' race and ethnicity and their salary, controlling for confounding variables in the model, the differences in their salary compensation did not change drastically. White (non-Hispanic) analysts who identified as males were more likely to hold high paying positions in government rather than minority public sector analysts, which is also stated in the findings of Nelson and Tyrell's report (2015). The salaries earned by Asian and White (non-Hispanic) public analysts were higher than those of Black (non-Hispanic) and Hispanic/Latino analysts, similar to the median weekly earnings findings stated by Inequality.org.

Taking note of the salary compensation differences of public sector analysts in various levels of government based on race and ethnicity is startling to see. It is important for various levels of government to ensure effective compensation policies are created and put in place to compensate public sector analysts fairly based on their skillset and education level. Furthermore, it might be worthwhile to introduce racial bias training for hiring managers or for every government employee to remove existing implicit biases in order to reduce salary differences.

The limitations of our research were using a small subset of the American Community Survey for our findings, which limited our research extensively to investigate the true relationship between race and ethnicity and salary. Another limitation, was income is self-reported on the survey taken from by households, this might have led to an overstated or understated mean annual salary findings in our model. Future research will be needed in this area to explore the true differences amongst race and ethnicities by using the latest dataset and findings from the American Community Survey to see if these findings have changed or persisted.

Table 1. Characteristics of Public Sector Analysts

Characteristics	Percentage or Mean (n=1,604)
Demographic Characteristics	
Race/Ethnicity (%)	
White (non-Hispanic)	67.1
Black (non-Hispanic)	11.3
Hispanic	7.9
Asian	10.0
Other	3.6
Gender (%)	
Female	51.9
Male	48.1
Age (in years) (%)	
18-35	24.0
36-45	23.9
46-55	29.3
56-70	22.8
Education level (%)	
Associate's Degree	9.9
Bachelor's Degree	49.6
Master's Degree or higher	40.6
Work Characteristics	
Type of Analyst (%)	
Management analyst	17.7
Budget analyst	13.2
Financial analyst	9.3
Computer systems analyst	23.9
Operations research analyst	35.8
Level of Government (%)	
Federal	51.8
State	29.1
Local	19.1
Geographic Area (%)	
New England	2.9
Mid-Atlantic	9.0
East North Central	6.7
West North Central	4.2
South Atlantic	41.6
East South Central	2.4
West South Central	8.5
Mountain	5.5
Pacific	19.4
Annual salary (mean)	$83,835

Table 2. Bivariate Relationships between Public Sector Analysts Characteristics and Salary

Characteristics	Mean Annual Salary ($)
Demographic Characteristics	
Race/Ethnicity **	
White (non-Hispanic)	85,384.12
Black (non-Hispanic)	84,995.05
Hispanic	75,642.06
Asian	81,986.34
Other	74,365.52
Gender ***	
Female	80,166.15
Male	87,799.35
Age (in years) ***	
18-35	67,634.81
36-45	87,642.82
46-55	89,075.74
56-70	90,162.57
Education level ***	
Associate's Degree	71,691.77
Bachelor's Degree	79,110.44
Master's Degree or higher	92,552.38
Work Characteristics	
Type of Analyst **	
Management analyst	79,703.52
Budget analyst	79,659.91
Financial analyst	85,538.91
Computer systems analyst	82,227.60
Operations research analyst	88,047.48
Level of Government ***	
Federal	97,067.15
State	66,951.82
Local	73,667.97
Geographic Area ***	
New England	84,673.91
Mid-Atlantic	81,231.94
East North Central	75,937.38
West North Central	68,556.72
South Atlantic	94,717.84
East South Central	77,328.95
West South Central	73,657.35
Mountain	69,485.23
Pacific	76,891.64

*p<.05, **p<.01, ***p<.001

Table 3. Multivariate Regression Model Examining the Relationship between Public Sector Analysts' Race/Ethnicity and Salary, Controlling for Demographic and Work Characteristics

Characteristics	Regression Coefficient
Constant	92,77.91
Race/Ethnicity	
White (non-Hispanic)	-
Black (non-Hispanic)	-5,385.50**
Hispanic/Latino	-5,027.44**
Asian	764.03
Other	-5,234.97
Gender	
Female	-4,527.75*
Male	-
Age (in years)	
18-35	-
36-45	19,359.68***
46-55	23,812.24***
56-70	24,876.45***
Education level	
Associate's Degree	-19,659.60***
Bachelor's Degree	-9,300.91***
Master's Degree or higher	-
Type of Analyst	
Management analyst	-
Budget analyst	-1,856.51
Financial analyst	3,598.35
Computer systems analyst	1632.35
Operations research analyst	1,263.84
Level of Government	
Federal	-
State	-27,140.35***
Local	-19,760.05***
Geographic Area	
New England	-
Mid-Atlantic	-4,509.49
East North Central	-12,855.78**
West North Central	-23,010.85***
South Atlantic	-1,269.84
East South Central	-11,960.94
West South Central	-12,166.65**
Mountain	-14,625.62**
Pacific	-2,251.22

$*p<.05, **p<.01, ***p<.001$