

1999

The Economics of Wage Discrimination of Non-whites from 1960 to 1990

Royal E. Washington

Eastern Illinois University

This research is a product of the graduate program in [Economics](#) at Eastern Illinois University. [Find out more](#) about the program.

Recommended Citation

Washington, Royal E., "The Economics of Wage Discrimination of Non-whites from 1960 to 1990" (1999). *Masters Theses*. 1663.
<https://thekeep.eiu.edu/theses/1663>

This is brought to you for free and open access by the Student Theses & Publications at The Keep. It has been accepted for inclusion in Masters Theses by an authorized administrator of The Keep. For more information, please contact tabruns@eiu.edu.

THESIS REPRODUCTION CERTIFICATE

TO: Graduate Degree Candidates (who have written formal theses)

SUBJECT: Permission to Reproduce Theses

The University Library is receiving a number of request from other institutions asking permission to reproduce dissertations for inclusion in their library holdings. Although no copyright laws are involved, we feel that professional courtesy demands that permission be obtained from the author before we allow these to be copied.

PLEASE SIGN ONE OF THE FOLLOWING STATEMENTS:

Booth Library of Eastern Illinois University has my permission to lend my thesis to a reputable college or university or the purpose of copying it for inclusion in that institution's library or research holdings.



Author's Signature

8/9/99

Date

I respectfully request Booth Library of Eastern Illinois University **NOT** allow my thesis to be reproduced because:

Author's Signature

Date

The Economics of Wage Discrimination of Non-whites

From 1960 tp 1990
(TITLE)

Royal E. Washington BY
1954 -

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

Master of Arts

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS

1999
YEAR

I HEREBY RECOMMEND THIS THESIS BE ACCEPTED AS FULFILLING
THIS PART OF THE GRADUATE DEGREE CITED ABOVE

August 9, 1999
DATE

[REDACTED]
ADVISER

August 9, 1999
DATE

[REDACTED]
DEPARTMENT HEAD

Table of Contents

Dedication.....i

Abstract.....ii

Acknowledgements.....iv

Introduction.....1

Explanation of Variables and Results of Tests
Performed.....18

Conclusions.....33

Appendix 1.....42

Appendix 2.....44

Annotated
Bibliography.....45

I would like to dedicate this study to my inspiration and wife of almost a quarter of a century, Dianne. She is a woman who gives meaning to the phrase "stand by your man". While I was in college and grad school, Dianne worked to support our family. She is a big reason that I was able to finish this work. Also, I would like to dedicate this paper to my three children, Roy Jr., Tiffany and Kristina. Thank you for all of your support. I love you.

White people earn more money than non-whites. This is true in most cases even if non-white people perform the same job as white people. Are there reasons for these differences? The purpose of this paper is to discover what those reasons are for the differences in wages and to attempt to discover how much of the difference is really discrimination. Any inequalities that are unexplained may be considered by the author to be discriminatory. Therefore, the hypothesis for this paper is: Income differences between whites and non-whites may be attributed in part to race discrimination.

The statistical method used will be ordinary least square. This will allow the author to run a regression and observe what the correlation or relationship is between the dependent and the independent variables. The regression equation for this model will be

$$Y_i = A + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + \epsilon_i$$

This is saying that the income ratio between non-whites and whites, (Y), is a function of the ratios of percentages of median education levels of non-whites and whites, Ed, (X1); the ratio of non-whites and whites who are married, Marital, (X2); the ratio of the number of non-whites and whites living in an urban area of at least 50,000 or more people, Urban, (X3); the mobility of non-

whites to whites, Mob, (X4); the ratio of the unemployment rate of non-whites and whites, Unem, (X5); the ratio of the number of non-whites and whites employed in manufacturing in thousands, Ind, (X6. B_{i-6} are the partial regression coefficients for variables one through six.

The final model (which included the mobility of non-whites, manufacturing, and marital statistics ratios of non-whites and whites) accounted for 55.85 percent of the income differences between the white and black races. The remaining 44.15 percent that was not accounted for may be due to discrimination. However, the remaining proportion could also be caused by the absence of other significant variables that were not used by this model or it could be caused by random factors.

I would like to thank the professors in the Economics Department at Eastern Illinois University for all of their help. Specifically I would like to thank Dr. Harold Nordin, Dr. Minh Quang Dao, Dr. Lawrence Bates, Dr. Ebrahim Karbassioon and Dr. William Thompson. Their assistance was invaluable.

INTRODUCTION

White people earn more money than non-whites. This is true in most cases even if non-white people perform the same job as white people. Are there reasons for these differences? The purpose of this paper is to discover what those reasons are for the differences in wages and to attempt to discover how much of the difference is really discrimination. Any inequalities that are unexplained may be considered by the author to be discriminatory. Therefore, the hypothesis for this paper is: Income differences between whites and non-whites may be attributed in part to race discrimination.

The topic of job discrimination has received much attention over the last few years because it can affect society as a whole. Job discrimination is very harmful to the group of people that it is being practiced against. It is important to educate people so that they will be aware of job discrimination and not practice it.

Discrimination is making a distinction in favor of or against a person or thing on the basis of the group, class, or category to which the person or thing belongs, rather than according to actual merit. Discrimination also is treatment or consideration of, or making a distinction in favor of or

against, a person or thing based on the group, class, or category to which that person or thing belongs rather than on individual merit.

Discrimination can be good or bad. This article will be confined to discrimination when it is used in a way that is hurtful against certain people or groups of people.

Discrimination and specifically job discrimination exists because people would rather not hire a person or group of people because of their race, creed, color, or religion just because they do not care to be associated with that person or group. It may be because of a belief that people in that particular group are unintelligent, or that they may be lazy, or some other unsubstantiated reason.

Dr. Gary Becker's book, *The Economics of Discrimination* assumed that people had "tastes for discrimination" and these tastes are the most immediate cause of actual discrimination. A "taste for discrimination" is when an employer, employee, or a consumer decides that he or she wants to discriminate and then that person does exactly that. To put it very simply, that person that is discriminating is acting rationally in their own eyes. They are acting in what they consider to be their best interests. "A person who has a 'taste for discrimination' also acts like he is willing to receive less

income in order to act the way that he does. This is because when a person who has a 'taste for discrimination' does so, he increases his marginal utility when he prevents blacks from working with him." (Becker, 1957, p. 16)

When an employer discriminates against employees, he acts as if he incurs non-pecuniary, psychic costs of production by employing them; when an employee discriminates against fellow employees or employers, he acts as if he incurs non-pecuniary, psychic costs of employment by working with them; when a consumer discriminates against products, he acts as if he incurs non-pecuniary, psychic costs of consumption by consuming them. (Becker, 1957, p. 122)

According to Becker, an employer discriminates when he or she refuses to hire someone with a marginal value product greater than marginal cost. Also, he believes that discrimination is a function of employers' tastes, production functions, the amount of competition relative to monopoly, and the amount employed.

Dr. Becker devised what he called a discrimination coefficient. The discrimination coefficient measured the amount or value of the discrimination. Dr. Becker discussed employer or job discrimination, consumer discrimination, and government discrimination. This part of the Review of the Literature will discuss Dr. Becker's coverage of job

discrimination.

It was Dr. Becker's belief that the theories of international trade could be used to discuss the costs of job discrimination. It is believed that countries are better off if they have free trade. Countries will suffer a loss of income if there are barriers to free trade.

This belief can be applied to two races, the black and the white races. It is in the best interests for both races to trade with each other without discrimination or trade barriers. This is similar to two countries with one being labor abundant and the other being capital abundant. These two races should trade with each other until the marginal product of each input is equal. This would maximize the incomes for both races. But discrimination prevents the marginal products of both inputs from becoming equal. This causes the income for both races to be reduced. Therefore, it would seem that both races would want to avoid discrimination.

Lester Thurow disagreed with Becker. According to Thurow, if Becker's theory is correct, then the empirical results about discrimination and income are incorrect. In fact, it is Becker's belief that if discrimination did lower income, then most rational people could be persuaded to stop

discriminating. Thurow felt that white society could discriminate and not lose income. The white society is the society that is in power. Therefore, this society would be able to make laws that would allow them to discriminate against a certain society (the black society, for instance), and not lose income. Thurow called this monopoly power.

Thurow said that the "discrimination coefficient" that Becker developed was the same as a tariff in trade between two countries. Thurow felt that whites could and did benefit from discrimination. In fact, it was possible, that if the optimal tariff or "discrimination coefficient" could be determined, then the income levels of the whites (discriminators) could be increased. (Thurow, 1969, pp. 113, 115)

Thurow believed that if the discriminators were prejudiced and because of circumstances were not able to discriminate beforehand, then being allowed to discriminate would increase their utility, because they would have to associate with fewer non-whites.

Thurow felt that since non-whites had a higher share of unemployment relative to the amount of non-whites in the work force, then the number of whites employed and therefore their incomes would increase. (Thurow, 1969, p. 118)

This is a reasonable assumption. If non-whites were going to be denied jobs, then it would seem reasonable that those jobs would go to whites. Therefore, Thurow would seem

to be right in this case.

A policy prescription for reducing discrimination is to remove government discrimination since it is the most effective weapon to create and remove the monopoly power behind the different kinds of discrimination. (Carson, 1974, p.9)

Thurow's prescription for eliminating or reducing discrimination is simple in theory, but very difficult to implement. It is next to impossible to get rid of all government discrimination. Why? Because politicians run the government and politicians do not always do what is best for the country but what is best for their constituents or themselves.

Thurow felt that there were seven types of discrimination against non-whites. They are:

1. Employment discrimination - causing non-whites to suffer a large amount of unemployment relative to their numbers in the work force. This is accomplished by placing non-whites in occupations and areas where unemployment is expected to be high.
2. Wage discrimination - non-whites receive less than their fair share in wages relative to their contribution to total output.
3. Occupational discrimination - non-whites are placed in

low-wage occupations.

4. Human capital discrimination - government investment in black education and training is less than the investment in white education and training.

5. Capital discrimination - non-whites are not allowed equal access to capital (for example, being denied loans for no apparent reason). Also they are prevented from efficiently using the capital that they have acquired. This can be accomplished by refusing to sell a piece of property to a black person because he or she is black.

6. Monopoly power discrimination - non-whites are prevented from entering occupations where monopoly power allows higher returns (non-whites are unequally represented in unions).

7. Price discrimination - non-whites must pay higher prices for some things (discrimination in the housing market)
(Thurow, 1969, pp. 117-125)

Marcus Alexis looked at the motivations (particularly the one involved with Becker's assumption that whites did not want to be around non-whites) that cause people to discriminate in the work force. He felt that whites would rather see the incomes of other whites increased rather than the incomes of blacks. (Marshall, 1974, p. 841)

Barbara Bergmann discovered that discrimination can cause occupations requiring equal skill to have different pay scales. She felt this was possible because there are varying degrees of discrimination in different occupations. She used two occupations requiring equal skills, but she assumed that one was prestigious and the other was not. She found that occupational segregation, or the practice of putting non-whites into limited occupations, caused the differences of income. (Marshall, 1974, p. 853)

Although Kenneth Arrow's paper "The Theory of Discrimination" assumed that the productivity of both black and white were equal and was similar to both Becker's and Thurow's assumption of equal productivities, he used neoclassical assumptions of utility and profit maximization to do a study on discrimination.

After accounting for productivity, Arrow wanted to discover the reason for the differences in wages between non-whites and whites. He wanted to explain discrimination without "...lumping social factors into an uninformative category of imperfections or jumping to a precipitate rejection of neoclassical theory." (Marshall, 1974, p. 853)

Arrow started with a simple case of employer

discrimination. He felt that if an employer had a taste for discrimination, then the marginal utility of black labor would be negative. This would cause non-whites to suffer a loss of income. Arrow also felt that discrimination is also costly to the firm, in fact, he felt that it acted as a tax. (Ashenfelter and Rees, 1973, p. 9)

Arrow also prepares an alternative model to employer discrimination; in this case, the employer's action is not based on tastes, but perceptions of reality. If employers believe black workers are less productive than white workers, they will hire blacks only if the wage of blacks < wage of whites. This finding is based on three assumptions: 1) the employer can distinguish between black workers and white workers; 2) the employer must incur some cost before it is possible to determine the employee's true productivity; and 3) the employer has some conception of the distribution of productivities within the black and white groups of workers. (Marshall, 1974, p. 855)

Unlike the national studies above, John H. Carson wrote *The Economics of Racial Discrimination in Louisiana: 1950 - 1971* which focused on the employment opportunities of blacks in Louisiana. Carson identified the important factors of discrimination and discussed how these factors helped or hindered the economic progress of non-whites in Louisiana during this period. Carson focused on both source and form. Source refers to the people who are the cause of the discrimination and form refers to the way that the

discrimination was practiced.

Carson determined that in the 1950's, black relative to white income decreased. He felt that non-whites were discriminated against a great deal more than whites were discriminated against.

But starting in the 60's and continuing to the 70's, black income increased relative to white income. Carson felt that discrimination against non-whites decreased during this period.

He theorized that these decreases were caused by legal, moral and political pressures that were applied during the 60's. But, even though gains were made, wage discrimination still existed in Louisiana. (Carson, 1974, p. 1, 48)

Unlike the previous paper, Herbert Hill's essay entitled "Black Labor and Affirmative Action: An Historical Perspective" discussed how non-whites were treated by labor unions. Hill also wrote about Affirmative Action and whether it should include quotas.

He felt that quotas were essential; without them, there would be no way to measure the progress of blacks in their fight against job discrimination. (Shulman and Darity, 1989, p. 248)

Orley Ashenfelter's article, "Discrimination and Trade Skills" differed from Hill's model in that it was concerned with the means of discrimination. He measured the effects of trade union discrimination on non-whites and females by using the ratio of black to white wages.

Ashenfelter's results showed that there was a higher black to white wage ratio in industries (unskilled labor) where labor unions were present. But at the same time, he also discovered that in markets organized by craft unions, (skilled labor) the wage ratio was similar to the black - white wage ratios in craft markets in unorganized labor markets. Therefore he concluded that trade unions did very little for the black - white wage differentials. (Ashenfelter, and Rees, 1973, pp. 66-67)

A paper written by Finis Welch, "Education and Racial Discrimination", maintained there had been more discrimination of non-whites in education than in the overall labor market.

Welch felt that this discrimination in education resulted in lower wages and fewer jobs in their labor market.

Welch also felt that employee discrimination also caused non-whites to receive lower wages relative to the wages that whites received. He believed that white employees preferred

to work with other white employees rather than black employees. Because of this, employers hired more white employees because they believed that the white employees would be more productive working beside other whites. Therefore, (according to this belief), black employees would be paid less because they were worth less. (Marshall, 1974, p. 853)

Finis Welch uses a model similar to Becker's to demonstrate that discrimination is caused more by employee preferences for working with members of their own race than by employer "taste for discrimination". If a worker's wage is a decreasing function of the proportion of that worker's race in the firm's work force, it is possible to show that cost minimization in competitive equilibrium requires total segregation within a work force rather than combinations of black and white workers receiving different wages, as implied by Becker's model.

Much of the work on the economics of discrimination assumes blacks and whites to be perfect substitutes. However, Welch and others point out that blacks might be complementary to white workers, making segregation impossible. This would be the case, for example, if white foremen worked with all-black work forces and required a premium to do so equal to a coefficient of discrimination. This would increase the employer's cost of hiring blacks, who could therefore only be hired if wages of blacks < wages of whites. (Marshall, 1974, p. 853).

In another paper about the means of discrimination, "Career Wage Mobility", James P. Smith pointed out that black men were not allowed to get jobs with growth potential because

of discriminating forces. Smith also discovered that while black men consistently earned less money than white men, the wage differential decreased in every decade except the 1970's, from the 1940's through the 1980's.

Smith used data from published census data using occupational distributions of the work force. (Shulman and Darity, 1989, pp. 109-125)

"Racial Differentials in Male Unemployment Rates: Evidence from Low-Income Urban Areas" was written by Duane Leigh and V. Lane Rawlins. Leigh and Rawlins tried to discover how important race and age were in the determination of racial differences in the employment rate of males 16-21 and 22-34 living in low-income areas. *The Census Employment Survey* was used as a source. They found that race discrimination explained approximately 50 per cent of the differences in the unemployment rates of non-whites and whites. Leigh and Rawlins concluded that non-whites are mainly limited to the secondary market of employment and are the first to become unemployed. (Leigh and Rawlins, 1974, pp. 150-157)

George Borjas penned an article entitled "The Measurement of Race and Gender Wage Differentials: Evidence from the

Federal Sector". Borjas discussed wage differentials in government agencies that are based on race and sex. He grouped all of the government agencies into one large firm. His goal was to prove that race and sex differentials could help in the measuring and interpreting of wage differentials. He discovered that federal agencies usually had both large race and sex differentials.

Borjas's article showed that even in federal agencies there is some measure of sex and racial discrimination.

Borjas also felt that the low relative wage of black women was due to the fact that they were females and not because they were black. He also discovered that women in the work force accounted for no more than 25 per cent of the unexplained general wage differential in federal agencies.

(Borjas, 1983, pp. 79-91)

"Race and Human Capital" by James Smith, asked if human skills differences between non-whites and whites decreased during the late twentieth century, why did income ratios only start decreasing in the 1960's? Smith used data on education, literacy, jobs and income starting from 1890. He concluded that even though education incomes of both whites and non-whites increased, the increase was greater for whites.

Starting in the late 1960's, black income increased more relative to white income. This was caused by a relative increase in the human capital of blacks which resulted in their relative earnings also increasing. (Smith, 1984, pp. 685 - 698)

"Race and Gender Wage Inequality in Services and Manufacturing" was written by Edward Montgomery and William Wascher. This article looked at the amount and source of race and gender wage differentials in the service and manufacturing sectors. Montgomery and Wascher found that the unexplained wage differential between non-whites and whites was approximately 50% lower in the service sector. While the discriminating differential or wage gap has decreased in the service sector, non-whites, minorities, or females are not better off. This is because average wages are lower in the service sector. (Montgomery and Wascher, 1987, pp 284 -289)

George Borjas article "Race, Turnover, and Male Earnings" discussed racial differences in turnover rates, monetary consequences of turnover, and the effects of turnover on the racial wage differential. He found that young white males were more likely to quit their jobs than young black males, but that there was no difference in turnover between mature

(45-59 years old) black and white males. Borjas discovered that a young white male who kept the same job for two years received a 32.9 cent increase in wages for the two year period; however, a young black male only received a 24.5 cent increase. Mature white males who stayed on the same job for two years also gained more than mature black males. He also showed that the change in the discriminatory differential was 8.5 cents. (Borjas, "Race, Turnover, and Male Earnings" 1984, pp. 73-89)

Alan Blinders article "Wage Discrimination: Reduced Form and Structural Estimates" attempted to discover how much of the black-white differences in wages is because of the better education that whites receive. He discovered that about 60 % of the black-white difference can be accounted for by the education difference. (Blinder, 1973, pp. 436 - 455)

"Faculty Salaries: Is There Discrimination by Sex, Race, and Discipline?" is a study that was written by Nancy Gordon, Thomas E. Morton, and Ina C. Braden. The purpose of this study was to see how much of a relationship there was between salary and explanatory variables such as age, education, race and sex. The data for this study came from a large urban university. Only full-time academic employees were used.

Salary was estimated to be a function of race, years at the university, education level, age, and department. This estimate was done twice, once with men and women separated and once with all of the full-time academic employees together, with sex as another independent variable.

Gordon, Morton, and Braden discovered that black men and women both earned considerably more than similar white men and women. The amounts were 14% more for black men and 7.5% more for black women. They felt that the reason for this was

because of the high demand for black professors and the small number of black professors that were available. (Gordon, Morton, and Braden, 1974, pp. 419-427)

The purpose of "Racial Discrimination in American Industry" was to measure the amount of racial discrimination and to study the relationship between industry profits and discrimination. It was written by William S. Comanor.

An increase in profitability from 8 per cent to 12 per cent after taxes would be associated with an increase in the industry discrimination coefficient by eight percentage points. (Comanor, 1974, p. 377)

Comanor's study showed that discrimination was pretty much the norm in the American economy. He showed that discrimination increased when profits increased. In fact, his study suggested there was more discrimination in the skilled job market and the more profitable industries. (Comanor, 1973, pp. 363-378)

The previous studies examined discrimination, why people discriminated and the effect of that discrimination on both the one being discriminated against and the one doing the discrimination.

This study will be different from those cited in that the author's purpose is to try to determine why there are income

differences between whites and non-whites. Data such as education levels and marital status will be used to explain why these differences exist. Since the Review of the Literature is concerned with the discrimination of nonwhites and not discrimination by sex or discipline, only information about race will be discussed.

EXPLANATION OF THE VARIABLES
AND RESULTS OF TESTS PERFORMED

The statistical method used will be ordinary least square. This will allow the author to run a regression and observe what the correlation or relationship is between the dependent and the independent variables.

A regression is a formula used to find what effect one or more things (independent variables) have on something else (dependent variable, in this case income differentials). The regression assumes that only one independent variable changes at a time. The other variables will remain constant. The regression equation for this model will be

$$Y_i = A + B_1X_{i1} + B_2X_{i2} + B_3X_{i3} + B_4X_{i4} + B_5X_{i5} + B_6X_{i6} + \epsilon_i .$$

This is saying that the income ratio between non-whites and whites, (Y), is a function of the ratios of percentages of median education levels of non-whites and whites, Ed, (X1); the ratio of non-whites and whites who are married, Marital, (X2); the ratio of the number of non-whites and whites living in an urban area of at least 50,000 or more people, Urban, (X3); the mobility of non-whites to whites, Mob, (X4); the ratio of the unemployment rate of non-whites and whites, Unem, (X5); the ratio of the number of non-whites and whites

employed in manufacturing in thousands, Ind , (X_6). B_i 's are the partial regression coefficients for variables one through six.

The constant, A , is the intercept, and is expected to be positive.

The dependent variable, the ratio of non-white to white median income will be less than one if white median income exceeds non-white median income and greater than one if white median income is less than non-white median income. Over the period in question, the ratio of non-white median income to white income remained relatively constant. The regression equation embodies a hypotheses concerning what affects this ratio. The ratio of non-white to white income should be directly or positively related to variable one, ED , the ratio of non-white to white education. As non-white education approaches that of whites, their median income should rise relative to white median income. Since financial needs are greater in families, incomes should be higher among the married. Thus the ratio of non-white to white median income should be directly related to X_2 , or $MART$, the marriage ratio.

As the percentage of non-whites that are married approaches that of whites, non-white median income should rise relative

to white median income. Families living in urban centers should earn more than their rural counterparts. Thus the ratio of non-white to white median income should rise as the ratio of non-white to white urban families, URBAN, rises. The next variable, MOB or X4, is a dummy variable. Dummy variables have only two values, zero and one. This value of this variable will be zero from 1960 through 1964.

Thereafter, its value will be one. The reasoning for this is that The Civil Rights Act of 1964 went into effect in 1965.

Therefore, it became illegal to deny someone a job because of the color of his or her skin. The ratio of non-white to white median income should rise because the mobility of non-whites increased relative to that of whites, because non-white families would be able to move where jobs are best. The ratio of non-white to white median income should be inversely related to the unemployment ratio, UNEM, variable X5. As unemployment increases among non-whites, their incomes should decrease relative to white income. The ratio of non-white to white median income should also be positively related to the manufacturing ratio, X6, IND. As the number of non-whites working in manufacturing rises relative to the number of whites, non-white income should increase relative to white

income.

The ratio of median black education levels compared to median white education levels ranged from 75 percent in 1960 to 98 percent in 1990. The ratio of unemployment rates between the races remained fairly constant. While there was some variation during the years, from 1960 through 1990 the ratio was approximately two times as many non-whites unemployed as to whites. In 1960, the ratio of black employment in the manufacturing industry was 83 percent of the white employment level. By 1990 the ratio had risen to a level of 120 percent. Marital levels between the two races ranged from 87 percent in 1960 to 60 percent in 1990. The ratio of non-whites compared to whites residing in urban areas rose from 104 percent in 1960 to 120 percent in 1990. This means that according to the author's predictions, ED, MOB, IND and URBAN should have caused the income ratio to move closer to one while UNEM and MART should have decreased that ratio.

The estimated regression for this model is:

$$Y = 0.57 - 0.02X_{1i} + 0.11X_{2i} - 0.11X_{3i} + 0.07X_{4i} + 0.01X_{5i} - 0.01X_{6i}$$

* (-0.10) (0.53) (-0.49) (4.68) (0.25) (-0.54)

SUMMARY
OUTPUT

Regression Statistics	
Multiple R	0.756592
R Square	0.572432
Adjusted R Square	0.465540
Standard Error	0.019765
Observations	31

ANOVA

	df	SS	MS	F	Significance F
Regression	6	0.012553	0.002092	5.355248	0.001247
Residual	24	0.009376	3.90686E		
Total	30	0.021929			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.571806	0.385341	1.483893	0.150852	-0.223500	1.367112
X1ED	-0.016325	0.157238	-0.103824	0.918171	-0.340849	0.308199
X2MART	0.107523	0.204449	0.525918	0.603770	-0.314438	0.529486
X3URBAN	-0.105987	0.215055	-0.492835	0.626607	-0.549840	0.337866
X4MOB	0.067188	0.014343	4.684172	9.27024E	0.037584	0.096791
X5UNEM	0.007431	0.030164	0.246361	0.807497	-0.054825	0.069688
X6IND	-0.010045	0.018515	-0.542552	0.592441	-0.048258	0.028167

*T-statistics

The first test was for multicollinearity.

Multicollinearity is a problem if any of the independent variables are significantly correlated with any other independent variable. That is to say if the relationship between the thing that is being measured (Y) and one of the variables that is being used to see the effect it has on Y, Marital for example, is greater than the relationship between

any two independent variables, Unem and Marital for example, multicollinearity does not exist.

A correlation matrix was formed. Using the formula of "r divided by the square root of 1 minus r squared divided by n-2" produces a t statistic. This is where r is the sample correlation between any pair of independent variables. This t statistic was then compared to the t table. Any calculated t statistic larger than the corresponding number in the t table would indicate the presence of multicollinearity. Multicollinearity does exist in this model. Severe multicollinearity does exist in this model. In fact, the multicollinearity problem could have caused some of the signs of the regression's coefficients to be reversed. The following table is the correlation matrix.

	X1ED	X2MART	X3URBAN	X4MOB	X5UNEM	X6IND	Y
X1ED	1						
X2MART	-0.959437	1					
X3URBAN	0.952146	-0.941246	1				
X4MOB	0.593584	-0.605437	0.557640	1			
X5UNEM	0.529550	-0.613734	0.490670	0.067804	1		
X6IND	0.488234	-0.526915	0.533501	0.174918	0.607749	1	
Y	-0.090467	0.086889	-0.133985	0.534924	-0.301809	-0.243888	1
	-18.32678						
	-15.00873	-15.00873					
	3.971993	3.617696	3.617696				
	3.361767	-4.186210	3.032484	0.365983			
	3.012698	-3.338592	3.396779	0.956716	4.121286		
	-0.489189	0.469692	-0.728098	3.409468	-1.704793	-1.354273	

Autocorrelation is the next test. It occurs when the error terms in one year affects the size of the error

terms in other years.

The most reliable way to check autocorrelation is to use the Durbin-Watson Statistic. The Durbin-Watson Statistic is a measurement of autocorrelation in this model. At the 0.05 level of significance the test for autocorrelation is inconclusive since the Durbin-Watson Statistic of 1.77802 is greater than the dl value of 1.09 and less than the du value of 1.84. There is a possibility that the model has an autocorrelation problem.

The third test was for heteroscedasticity. It is a violation of the assumption that the error terms have the same variance. Error terms can be defined as any other random factors other than the independent variables that may affect the value of the dependent variable.

A Chi-square test was performed to test for heteroscedasticity. The residuals (the differences between the actual values of the dependent variable and its predicted or fitted values) were found and then squared. A least squares regression was performed on the data using the residuals squared as the dependent variable and the predicted value of the dependent variable as the independent variable. After the least squares regression is performed, the R-squared

value is multiplied by the number of observations. This number is then compared to the Chi-squared value from the table using one degree of freedom. If the value given by the model is less than the value in the table, heteroscedasticity is not present. The table value at the 0.05 level is 43.773. In this model, the calculated Chi-squared value is 14.77056. As a result, heteroscedasticity is not a problem in this model.

Another test was the F-test. This test is used to check the overall significance of the regression model. It lets the user know if there is a linear relationship between the dependent variable and at least one of the independent variables. The F-test statistic for this model is 5.355249 which is larger than the critical F-statistic 0.05 level which is 2.5082. This test shows that there is a linear relationship between the dependent variable and one of the independent variables. This is an important conclusion. This is confirmed by the significance F-statistic which is 0.001248.

In this equation, ED or X1 had a negative influence on the dependent variable Y. As stated earlier, this could have been caused by the multicollinearity problem. However, this

is not what the sign of the coefficient of this variable was expected to be. For every one percent increase in ED (with all the other independent variables held constant), Y will decrease by 0.01633 percent.

Mart or X2 was also expected to have a positive influence on the dependent variable. It had the correct sign. Y will increase by 0.107524 percent if Mart increases by one percent.

URBAN or X3 was the second variable that had the opposite influence on Y than was expected. An increase of one percent in URBAN will cause a 0.10599 decrease in the dependent variable.

MOB or X4's expectation was indeterminate because while job mobility allows non-whites to move where jobs are best, it could also be an indicator of poor job security. In this regression it has a positive influence on Y. However, since this is a dummy variable, MOB will not increase. Overall, MOB caused the income ratio to increase by 0.067188 percent.

The expectation of UNEM or X5 was that it would have a negative influence on income differences between non-whites and whites. This expectation was incorrect. When UNEM increases by one percent, then Y will increase by 0.007431 percent.

It was incorrectly assumed that IND or X6 would have a positive influence on the dependent variable of Y. An increase of one percent in IND will cause a 0.01005 percent decrease in the dependent variable.

In this equation the only significant variable is MOB. A second regression was run without ED. This independent variable was dropped because it was the most least significant variable of the first regression. The new equation is:

$$Y_t = 0.562 + 0.118X_{1t} - 0.117X_{2t} + 0.067X_{3t} + 0.008X_{4t} - 0.010X_{5t}$$

$$* \quad (0.68) \quad (-0.63) \quad (4.78) \quad (0.25) \quad (-0.55)$$

SUMMARY
OUTPUT

Regression Statistics	
Multiple R	0.756465
R Square	0.572240
Adjusted R Square	0.486688
Standard Error	0.019370
Observations	31

ANOVA

	df	SS	MS	F	Significance F
Regression	5	0.012549	0.002509	6.688811	4.42071E
Residual	25	0.009380	3.75227E		
Total	30	0.021929			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.561710	0.365419	1.537164	0.136814	-0.190885	1.314306
X2MART	0.117995	0.174285	0.677022	0.504608	-0.240952	0.476943
X3URBAN	-0.116622	0.185314	-0.629321	0.534848	-0.498284	0.265039
X4MOB	0.067122	0.014043	4.779691	6.59471E	0.038199	0.096044
X5UNEM	0.007487	0.029557	0.253309	0.802100	-0.053386	0.068361
X6IND	-0.009807	0.018005	-0.544688	0.590793	-0.046890	0.027275

*T-statistic

This caused the Adjusted R-square to increase from 0.4655

to 0.4866. Therefore, ED will remain out of the model.

A third regression was run without UNEM. This independent variable was dropped because it was the second least significant variable from the first regression. The new regression is:

$$Y = 0.624 + 0.089X_{1r} - 0.139X_{2r} + 0.065X_{3r} - 0.008X_{4r} .$$

* (0.69) (-0.88) (5.47) (-0.49)

SUMMARY
OUTPUT

Regression Statistics	
Multiple R	0.755739
R Square	0.571142
Adjusted R Square	0.505164
Standard Error	0.019018
Observations	31

ANOVA

	df	SS	MS	F	Significance F
Regression	4	0.012525	0.003131	8.656553	1.39840E
Residual	26	0.009404	3.61722E		
Total	30	0.021929			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.623983	0.265451	2.350649	0.026603	0.078339	1.169627
X2MART	0.088769	0.128256	0.692126	0.494993	-0.174865	0.352403
X3URBAN	-0.139323	0.159257	-0.874831	0.389675	-0.466682	0.188035
X4MOB	0.065345	0.011945	5.470380	9.75463E	0.040791	0.089899
X6IND	-0.007680	0.015637	-0.491123	0.627459	-0.039824	0.024464

*T-statistic

One again the adjusted r-square increased from 0.4866 to 0.505 when UNEM was removed from the regression. It too, will no longer be a part of the model.

A fourth regression was run without URBAN. This

independent variable was dropped because it was the third least significant variable from the first regression. The new regression is:

$$Y = 0.398 + 0.187X_{1i} + 0.066X_{2i} - 0.009X_{3i} .$$

* (3.08) (5.51) (-0.61)

SUMMARY
OUTPUT

Regression Statistics	
Multiple R	0.747341
R Square	0.558518
Adjusted R Square	0.509465
Standard Error	0.018936
Observations	31

ANOVA

	df	SS	MS	F	Significance F
Regression	3	0.012248	0.004082	11.38592	5.25573E
Residual	27	0.009681	3.58578E		
Total	30	0.021929			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.397708	0.059445	6.690259	3.50859E	0.275735	0.519681
X2MART	0.187397	0.060884	3.077908	0.004742	0.062472	0.312322
X4MOB	0.065535	0.011891	5.511203	7.73913E	0.041136	0.089934
X6IND	-0.009377	0.015449	-0.606990	0.548928	-0.041077	0.022322

*T-statistic

Once again, the same result was achieved. The adjusted r-square increased from 0.505 to 0.509 when the independent variable URBAN was removed. Therefore, it too will no longer be a part of this model.

However, when the fourth least independent variable from the first regression, MART, was dropped, the adjusted R-squared decreased from 0.509 to 0.361.

$$Y = 0.575 + 0.043X_{1r} - 0.009X_{2r} .$$

* (4.02) (-2.35)

SUMMARY
OUTPUT

Regression Statistics	
Multiple R	0.635307
R Square	0.403615
Adjusted R Square	0.361017
Standard Error	0.021612
Observations	31

ANOVA

	df	SS	MS	F	Significance F
Regression	2	0.008851	0.004425	9.474804	7.20053E
Residual	28	0.013078	4.67092E		
Total	30	0.021929			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.575735	0.015662	36.75803	3.04984E	0.543651	0.607819
X4MOB	0.043086	0.010719	4.019573	3.98713E	0.021129	0.065043
X6IND	-0.034925	0.014871	-2.348453	0.026142	-0.065389	-0.004462

*T-statistic

Therefore, MART will be kept in the model. The following model is the final model of this paper.

$$Y = 0.398 + 0.187X_{1r} + 0.066X_{2r} - 0.009X_{3r}$$

* (3.08) (5.51) (-0.61)

*T-statistic

It was noted previously that the first regression had severe multicollinearity. Therefore, there is no way of knowing if the appropriate variables were dropped. However, the original correlation matrix shows that there is no

multicollinearity between the final three independent variables. Therefore, it appears that multicollinearity is not a problem in the final model.

Before the three insignificant variables were dropped, the R-squared was 0.5724 and the adjusted R-square was 0.4655. The final model had a R-squared value of 0.5585 and an adjusted R-square value of 0.5095. This is significant because the difference between the R-square value and the adjusted R-square value has been narrowed.

What did this paper accomplish? The final model (which included the mobility of non-whites, manufacturing, and marital statistics ratios of non-whites and whites) accounted for 55.85 percent of the income differences between the white and black races. The remaining 44.15 percent that was not accounted for may be due to discrimination. However, the remaining proportion could also be caused by the absence of other significant variables that were not used by this model or it could be caused by random factors.

CONCLUSIONS

The hypothesis for this model is that discrimination causes the income of non-whites to be less than the income of whites. As a consequence, non-whites are denied jobs in the primary market where they are qualified. This paper hypothesizes the Civil Rights Act of 1964 decreased job discrimination. Also, I hypothesize that since black education levels (used as a proxy for non-white job productivity) have increased, differences in income for whites and non-whites should have decreased. Large differences between the incomes of non-whites and whites would indicate that job discrimination still exists.

To discriminate in the labor force means to refuse to hire someone because of their race, creed, religion, or other non-economic reason. In short, it means that someone will not be hired because the employer is discriminating.

Sometimes people think that non-whites are dangerous or lazy. Prejudice prejudges a person before he or she is given a chance to prove himself or herself. Prejudice reduces economic efficiency because the most efficient person is not hired.

On November 27, 1992, PRIMETIME, a television show on

NBC, featured a story about discrimination. They recruited two young men, one white and one non-white; both went to the same employment agency to look for work. The white man was treated courteously while the non-white man was not treated courteously. The work opportunities offered to the non-white man were for menial jobs. When the African-American followed up one of the leads at a local dry cleaning establishment, an employee of the cleaning firm told him that the job had been filled. The white man also went to the same establishment and was told by a different employee that the job was open. Both men returned to the cleaning firm, and the non-white man was told again that the job had been filled, this time by the employee who had just told the white man that it was open. The white man was told later that the job was still open.¹

¹ As an African-American, I have also experienced job discrimination. I graduated from a local junior college with an associate's degree in marketing and with a GPA of 3.97 based on a scale of 4.0. I applied for employment at several local banks but was not granted one interview. I was told that no jobs were available. A white female was hired, however, at one of the banks. This woman had been a classmate at the same college. The female was hired even though she had not graduated and thus was less qualified. Was there discrimination? I think so! However, there are other possible explanations such as she knowing someone at the bank.

Chapter one discussed a number of studies that dealt with income differences between non-whites and whites. Some of the income differences could not be accounted for. That is, assuming that the productivity between the two races is equal, then education, job experience, residence, secondary job employment, and other variables failed to explain income differences.

Chapter 2 discussed the variables used to explain the relationships of income differences of white to nonwhite as the differences of education, unemployment, marital status, urban living, employment mobility and manufacturing to the nation' income. It then explained the tests used, their purpose and results and why changes in the tests were made. This last chapter will attempt to offer possible explanations why the results of the relationships shown by the tests differed from the predicted results.

It cannot be argued that discrimination is residual in the regression equation mentioned above. I have hypothesized that the independent variables influence the ratio of non-white to white median income. The independent variables themselves are affected by discrimination. If non-white income is low due to discrimination, then non-whites are

unable to afford higher education and the higher incomes associated with more education. In addition, discrimination through entrance examinations may keep non-whites from entering higher education and thus keep their incomes lower than white incomes. Discrimination that creates low income may make it difficult for non-whites to contemplate marriage and families. Thus discrimination may affect the variable X2. Discrimination may increase unemployment rates among non-whites and thus reduce the ratio of non-white to white median incomes. Discrimination may affect mobility as well, either decreasing or increasing the variable depending on whether it impacts more on job security or the ability to move because of wealth levels. Thus discrimination may work through the independent variables. Discrimination, however, may work directly to reduce income rather than through the independent variables when non-whites are not given the chance to work where qualified.

The ratio or percentage in income between races is the dependent variable, however, it is not a measurable way that discrimination can be revealed. There are other possible ways that discrimination can be shown such as: limited promotion of qualified non-whites, undesirable job placement, and

unbearable working conditions of jobs performed by non-whites. But gathering the data in these areas for measurement was not feasible.

Income ratios as a unit of measurement are important. Since The Civil Rights Act of 1964, income differences due to job discrimination should have been eliminated. If two people are doing the same job and everything pertaining to the performance of that job is equal, then they should be paid the same. This is an important part of the Equal Opportunity Law, which is adjunct to the Civil Rights Act. This means that everyone should be rewarded equally for the same job.

While differences in income are inevitable, everyone should be given the same opportunity to succeed. Accidents of birth, such as 'being born on the right side of the tracks' should not be the deciding factor when determining success. Equal opportunity means that something like race, creed, or religion should not be a factor that decides how much income a person earns.

The ratio of the dependent variable remained constant with non-whites median income 58 percent of the white median income in 1960. In 1990, the ratio was the same.

Perhaps the quality of education is one explanation for

the inverse relationship of education to income. Investments in education can increase productivity of both the current and future periods; the latter because of the cumulative effect of education. So it seems that the quality of education is important. Even if the quantity of education levels between the black and white races are equal or even close to being equal, doesn't that mean that the quality of education is equal?

Bussing was introduced because judges thought that segregation was unfair to black students. The black schools were inferior to white schools because the better teachers, books, and learning materials were placed in the white schools. Also teacher/student ratios were higher at the black schools than at white schools. Of course, one of the reasons for this was that more money per student was being spent at the white schools.

According to the results of various studies, teachers of non-white students consistently performed at a lower level than teachers of white students. (1966 Ashenfelter et al., p. 68)

Desegregation helped black students reduce the difference in the quality of education between the two races in some

areas by mixing the races, thus providing better teachers, materials, buildings, environment, etc., along with greater financial support.

There is evidence that black students were starting to catch up with white students through desegregation as the differences in performance narrowed. (Ashenfelter et al, 1973, p. 72)

Even if black and white students have the same amount of education, there may be significant differences because of quantity differences in funding and teacher preparation. This could affect the productivity of black students. This suggests that black schools were discriminated against in funding. Of course, the lesser amount of funding may have been because non-whites did not own a lot of property and therefore paid very little in property taxes.

Since non-whites owned little or no property, they were not allowed to have a voice in the distribution of taxes to fund schooling. Therefore, they always came up short when the funding for black schools was decided. (Welch, 1967, p. 225)

There was an inverse relationship of the unemployment ratio to the income ratio which was surprising. One explanation for this could be the type of jobs that non-whites

obtain. There is evidence that the labor market is made up of the independent primary segment, which consists of good-paying jobs such as managerial or professional jobs. Crafts such as electricians are also in this group. This segment offers good benefits and opportunities for advancement. The subordinate primary is another segment that offers good-paying jobs. An example of a subordinate primary job would be a teaching job in a high school. One major difference between this and the independent primary segment is that advancement in the subordinate primary depends mainly on tenure or seniority. These two segments have been typically composed of more whites than non-whites.

Usually non-whites are employed in industries that pay the minimum wage. Opportunities for advancement are rare in these jobs. Examples of these types of jobs, called secondary segment jobs, are janitors or work in the fast food industry.

If non-whites are to achieve income equality, they must obtain a higher proportion of the independent primary and the subordinate primary jobs and less of the secondary segment jobs. (Waddoups and Assane, 1972 p. 36)

URBAN is another variable that was not expected to have an inverse relationship with the dependent variable. A reason

for this could be that non-whites in urban areas earn less than whites in urban areas. This could be because a number of good paying jobs that were found in large cities relocated to the suburbs. While these jobs are still located in urban areas, perhaps they are out of reach for most non-whites because they lack reliable transportation. Another reason could be that non-whites simply do not want to work a large distance from their homes and therefore do not attempt to obtain a higher paying job in the suburbs, especially the white suburbs.

IND was the last variable that was not expected to have an inverse relationship with the dependent variable. However, there may be a simple reason for this. The ratio of manufacturing income relative to GDP fell from 27 percent in 1960 to 18 percent in 1990. Therefore, manufacturing is a declining industry and consequently pay scales in this industry will decrease. Since the ratio of manufacturing income relative to the GDP has fallen consistently throughout the years, it would be logical to assume that the median income in this industry would also decrease. Therefore, if the ratio of non-whites relative to whites increases, the non-white median incomes would decrease.

The disparity in income between races is harmful to whites in that businesses sometimes pay more than what they should to a white person. This increase in cost sometimes results in no increase in production. Therefore, this makes a firm less competitive. In the long run, if other firms hire qualified people regardless of their race and pay them according to their qualifications, their costs will be lower, and they will hopefully drive the discriminators out of business.

How can this wage ratio between races be evened out? Listed below are some factors that may help if they are properly used.

Education and contact with other racial groups are two ways to help change discriminatory practices. People need to be taught that people are people no matter what the color of their skin. We are all basically the same. No one racial group has more intelligence than any other racial group. There is no "master" race. If given the same education and job opportunities, an individual or a racial group can perform any job as well as an individual or any other racial group. This is certainly true when it comes to nationalities and females especially as time passes.

Contact with other racial groups is also essential if we are to eliminate racial practices. Being around or socializing with a different racial groups would reinforce the idea that we are all basically alike. People would see the foolishness in thinking that all non-whites are dumb, for example. People would see that they share common interests and goals. Also, in the right atmosphere they would realize that to consider only one racial group for a certain job would be doing an injustice to themselves.

Government intervention could be utilized to eliminate the potential discrimination coefficient. Since affirmative action has not been very successful in seeing that discrimination does not occur by sex, race, or national origin, perhaps something else needs to be done. In fact, some white males, who in the past have received the benefit of discrimination, have recently filed reverse discrimination suits when the discrimination was not to their benefit. Also, some members who by either race or religion have been discriminated against have taken advantage of affirmative action by receiving promotions and raises they have not earned or deserved.

A potential solution would be that companies could be required by the government to document why a particular person was hired, given a promotion, or received a raise. Information that was used to make this decision would have to be kept for a certain period of time and used as primarily evidence when required. This information would include data on all of the applicants who applied for the job or promotion. Employers would have to say what factors made them come to a particular decision. In essence, the best person for the job would be awarded the position. This regulation could be enforced by the Equal Employment Opportunity Commission. Penalties could be civil penalties. This government enforcement would give all persons the incentive to qualify themselves for particular positions. Affirmative action can sometimes create a disincentive for one to continue one's education if the minority member feels that he or she will receive a position or promotion regardless of their qualifications or lack of qualifications. There has to be efforts made so this does not happen.

Also, this oversight power by the government would help to further eliminate the educational differences between races. As non-whites began to realize that education would

benefit them, more would continue their education. This would have a domino effect as their children and their children's children would encourage their children to earn degrees and advanced degrees.

In addition to these benefits, perhaps better treatment of minorities in the labor force would improve race relations. This in turn could lead to increased production. Better production could lead to more profits for business owners. More profits could improve the economy. In short, everyone could benefit if this income disparity were eliminated.

This paper can not separate out individual influences to determine a discrimination value, if in fact there is discrimination. There are income differences but how much can be ascribed to discrimination is impossible to determine by this study because of the problem of multicollinearity and the potential problem of autocorrelation. With greater refinements of information and added information, there is a possibility that a discrimination value can be determined by the methods used.

Appendix 1

All of the following information is from the Statistical Abstract of the United States. The following information will list the year and table the information was derived from.

	Education	Industry	Marital
1960	1964 Table 146	1969 Table 325	1962 Table 41
1961	1964 Table 146	1969 Table 325	1962 Table 41
1962	1964 Table 147	1969 Table 325	1963 Table 43
1963	1964 Table 147	1969 Table 325	1964 Table 38
1964	1964 Table 148	1969 Table 325	1965 Table 38
1965	1966 Table 155	1969 Table 325	1966 Table 40
1966	1967 Table 156	1969 Table 325	1967 Table 40
1967	1968 Table 156	1969 Table 325	1968 Table 44
1968	1969 Table 152	1969 Table 325	1969 Table 45
1969	1970 Table 154	1969 Table 325	1970 Table 42
1970	1971 Table 162	1976 Table 602	1971 Table 46
1971	1972 Table 169	1976 Table 602	1972 Table 49
1972	1973 Table 175	1979 Table 687	1973 Table 52
1973	1974 Table 187	1977 Table 662	1974 Table 53
1974	1975 Table 191	1977 Table 662	1975 Table 52
1975	1976 Table 198	1977 Table 662	1976 Table 53
1976	1977 Table 217	1977 Table 662	1977 Table 59
1977	1978 Table 226	1978 Table 681	1978 Table 60
1978	1979 Table 231	1979 Table 687	1979 Table 62
1979	1980 Table 238	1980 Table 697	1980 Table 66
1980	1981 Table 231	1981 Table 675	1981 Table 61
1981	1982-83 Table 226	1982-83 Table 651	1982-83 Table 65
1982	1984 Table 222	1984 Table 696	1984 Table 61
1983	1985 Table 214	1985 Table 676	1985 Table 55
1984	1986 Table 216	1986 Table 680	1986 Table 57
1985	1987 Table 198	1987 Table 658	1987 Table 64
1986	1988 Table 202	1988 Table 627	1988 Table 58
1987	1989 Table 212	1989 Table 642	1989 Table 60
1988	1990 Table 217	1990 Table 645	1990 Table 57
1989	1992 Table 220	1991 Table 652	1991 Table 58
1990	1992 Table 220	1992 Table 629	1992 Table 57

	Urban	Income	Unemployment
1960	1971 Table 15	1962 Table 447	1963 Table 290
1961	1971 Table 15	1963 Table 454	1963 Table 290
1962	1971 Table 15	1964 Table 459	1964 Table 293
1963	1971 Table 15	1965 Table 472	1965 Table 300
1964	1971 Table 15	1966 Table 477	1965 Table 300
1965	1971 Table 15	1967 Table 472	1965 Table 300
1966	1971 Table 15	1968 Table 472	1967 Table 317
1967	1971 Table 15	1970 Table 473	1967 Table 317
1968	1971 Table 15	1970 Table 486	1970 Table 321
1969	1971 Table 15	1971 Table 500	1971 Table 335
1970	1973 Table 17	1972 Table 533	1972 Table 351
1971	1973 Table 17	1973 Table 543	1973 Table 358
1972	1974 Table 16	1974 Table 570	1974 Table 555
1973	1982-83 Table 24	1975 Table 590	1974 Table 555
1974	1982-83 Table 24	1975 Table 639	1975 Table 571
1975	1982-83 Table 24	1976 Table 664	1976 Table 582
1976	1982-83 Table 24	1978 Table 747	1977 Table 642
1977	1982-83 Table 24	1978 Table 747	1978 Table 667
1978	1982-83 Table 24	1980 Table 763	1979 Table 671
1979	1982-83 Table 24	1980 Table 704	1980 Table 682
1980	1982-83 Table 24	1981 Table 782	1981 Table 661
1981	1982-83 Table 24	1982-83 Table 713	1982-83 Table 656
1982	1982-83 Table 24	1984 Table 782	1984 Table 699
1983	1982-83 Table 24	1985 Table 736	1985 Table 680
1984	1982-83 Table 24	1986 Table 743	1986 Table 684
1985	1982-83 Table 24	1987 Table 731	1989 Table 647
1986	1982-83 Table 24	1988 Table 651	1989 Table 647
1987	1982-83 Table 24	1989 Table 724	1989 Table 647
1988	1982-83 Table 24	1990 Table 716	1990 Table 652
1989	1982-83 Table 24	1991 Table 721	1991 Table 659
1990	1982-83 Table 24	1992 Table 695	1992 Table 635

Appendix 2

Data

	X1ED	X5UNEM	X6IND	X2MART	X3URBAN	X4MOB	Y
1960A	0.752293578	2.04	0.828751161	0.866673	1.041668	0	0.588190
1961A	0.752293578	2.083333	0.828751161	0.866673	1.041668	0	0.522082
1962A	0.728813559	2.244897	0.828751161	0.814408	1.041668	0	0.533910
1963A	0.728813559	2.137254	0.828751161	0.806965	1.041668	0	0.529169
1964A	0.741666667	2.130434	0.828751161	0.830335	1.041668	0	0.560601
1965A	0.75	1.803921	0.828751161	0.825098	1.041668	1	0.553835
1966A	0.743801653	2.205882	0.828751161	0.818412	1.041668	1	0.599326
1967A	0.752066116	2.257142	0.828751161	0.815872	1.041668	1	0.621343
1968A	0.768595041	2.09375	0.828751161	0.778130	1.041668	1	0.625489
1969A	0.786885246	2.064516	0.828751161	0.773773	1.041668	1	0.632121
1970A	0.786885246	1.822222	0.997643612	0.785985	1.122785	1	0.614526
1971A	0.827868852	1.833333	0.997643612	0.762783	1.122785	1	0.606288
1972A	0.853658537	2	0.934929178	0.744082	1.122785	1	0.583664
1973A	0.861788618	2.069767	0.934929178	0.719969	1.122785	1	0.588623
1974A	0.862903226	1.98	0.09349585	0.728453	1.122785	1	0.594757
1975A	0.879032258	1.782051	0.09349585	0.735501	1.122785	1	0.600324
1976A	0.89516129	1.871428	0.934929178	0.702314	1.122785	1	0.594627
1977A	0.912	2.112903	0.934929178	0.713998	1.122785	1	0.590106
1978A	0.936	2.288461	0.934929178	0.689671	1.122785	1	0.600957
1979A	0.952	2.215686	0.934929178	0.686411	1.122785	1	0.567944
1980A	0.967741935	2.095238	1.122104498	0.692301	1.197536	1	0.578615
1981A	0.96031746	2.119402	1.039037522	0.630926	1.197536	1	0.564102
1982A	0.968253968	2.197674	1.193398779	0.652413	1.197536	1	0.552696
1983A	0.968253968	2.321428	1.190145563	0.630049	1.197536	1	0.563571
1984A	0.968253968	2.446153	1.187958357	0.611559	1.197536	1	0.557393
1985A	0.968503937	2.435483	1.176936769	0.609996	1.197536	1	0.575809
1986A	0.968503937	2.416666	1.213908271	0.634618	1.197536	1	0.575826
1987A	0.976377953	2.452830	1.184857744	0.632625	1.197536	1	0.568357
1988A	0.976377953	2.489361	1.184486846	0.616416	1.197536	1	0.569922
1989A	0.976377953	2.533333	1.197737562	0.604683	1.197536	1	0.561750
1990A	0.976377953	2.404255	1.199314995	0.604683	1.197536	1	0.580333

Annotated Bibliography

Books

Ashenfelter, O. & Rees, A. (1973). Discrimination in the Labor Markets. Princeton, N. J.: Princeton University Press

Becker G. (1957). The Economics of Discrimination. Chicago: The University of Chicago Press

Carson J. H. (1974). The Economics of Racial Discrimination in Louisiana: 1950 -1971. Baton Rouge: Louisiana State University

Darity, W. and Shulman, S. (1989). The Question of Discrimination. Middletown, Con: Wesleyan University

Kain, J. (1969). Race and Poverty. Englewood Cliffs, N. J.: Prentice-Hall Inc.

Lester, R. (1980). Reasoning About Discrimination. Princeton, N. J. Princeton University Press

Lunddahl, M, & Wadensjo, E. (1984) Unequal Treatment: A Study In The Neo-classical Theory Of Discrimination. New York: New York University Press

Pascal, A. (1972). Racial Discrimination in Economic Life. Lexington, Mas: D. C. Heath and Company

Shekib, A. (1973). Personnel Testing and Equal Employment Opportunity: An Overview, Empirical Evidence, and Appraisal. Murfreesboro, Ten: Business and Economic Research Center Middle Tennessee State University

Work J. (1984). Race, Economics, and Corporate America. Wilmington, Del: Scholarly Resources

U. S. Bureau (1960-1992). Census Statistical Abstract of the United States 11th ed. Washington D. C.

U. S. Department of Education (1991). Digest of Educational Statistics. Washington, D. C.

The Annual Report of The Council of Economic Advisors (1998). Economic Report of the President. Washington. D. C.

Anonymous Capital and Discrimination

Journals

Ashenfelter O. (1972) Racial discrimination and trade unionism. Journal of Political Economics, May - June 1972 435-464.

Ashenfelter O., & Tarissig M. (1971) Discrimination and income differential: Comment. American Economic Review, Sep. 1971 746-750.

Behrman J., & Birdsall N. (1983). Quality of schooling: Quantity alone is misleading. American Economic Review,

Dec. 1983 928-946.

Bell D. (1974). Why participation rates of black and white wives differ. Journal of Human Resources, Fall 1974 465-479.

Bergmann B. (1971). The effect on white incomes of discrimination in employment. Journal of Political Economics, March - April 1971 294-313.

Blinder A. (1973). Wage discrimination: Reduced form and structural estimates. Journal of Human Resources, Fall 1973 436-455.

Borjas G. (1984). Race, turnover, and male earnings. Industrial Relations Winter. 1984 73-89.

Borjas G. (1983). The measurement of race and gender wage differentials: Evidence from the federal sector. Industrial Labor Relations Review. Oct. 1983 79-91.

Comanour W. (1973). Racial discrimination in american industry Economica. Nov. 1973 363-378.

Darity W. & Myers S. (1980). Changes in black - white income inequality 1968-1978. Review of Black Political Economics. Summer 1980 356-379.

Flanagan R. (1976). On the stability of the racial unemployment differential. American Economic Review. May

1976 302-308.

Flanagan R. (1974). Labor force experience, job turnover, and racial wage differentials. Review of Economical Statistics. Nov. 1974 521-529.

Gilroy C. (1975). Investment in human capital and black-white unemployment. Monthly Labor Review. July 1975 13-21.

Gordon N., Morton T., & Braden I. (1974). Faculty salaries: Is there discrimination by sex, race, and discipline? American Economic Review. June 1974 419-427.

Gwartney J. (1970). Discrimination and income differentials: Reply. American Economic Review. June 1970 751-755.

Gwartney J., and McCoffree K. (1971). Variance in discrimination among occupations. Southern Economic Journal. Oct. 1971 141-155.

Hoffman E. (1976). Faculty salaries: Is there discrimination by sex, race, and discipline? Additional evidence American Economic Review. March 1976 196-198.

Hyton K. (1984). Illusory wage differentials: Comments. American Economic Review. Dec. 1984 1124-1127.

Killingsworth M., & Reimers C. (1983). Race, ranking, promotions, and pay at a federal facility: A logit

analysis. Industrial and Labor Review. Oct. 1983 92-107.

Leigh, D. & Rawlins, V. (1974). Racial differentials in male unemployment rates: Evidence from low income urban areas. Review of Economics and Statistics. May 1974 150-157.

Leigh D. and Rawlins V. (1973). On the stability of relative black-white unemployment. Monthly Labor Review. May 1973 30-32.

Marshall R. (1974). The economics of racial discrimination: A survey. Journal of Economic Literature. Sep. 1974 849-871.

Reid C. (1976). Some evidence on the effect of manpower training programs on the black/white wage differential. Journal of Human Resources. 1976 402-410.

Smith J. (1984). Race and human capital. American Economic Review. Sep. 1984 685-698.

Smith S. (1976). Pay differentials between federal government and private sector workers. Industrial Labor Relations Review. Jan. 1976 179-197.

Waddoups, Jeffery and Assane, Djeto; (1972). Intersegment and racial differences in nonemployment mobility. The American Economist. Spring 1972 35-43.

Welch F. (1975). Human capital theory: Education, discrimination, and life cycles. American Economic Review.

May 1975 63-73

American Broadcasting Company, (1992). Primetime. Nov. 1972