Does Disparity in Self-Employment Rates Imply Discrimination?
An Empirical Investigation

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Abstract
We investigate whether disparities in self-employment rates across racial or ethnic groups indicate discrimination. We use the 5 percent Public Use Microdata Samples (PUMS) of the 2000 Census of Population and Housing to calculate self-employment rates for whites, African-Americans, Hispanics, and Asians and find disparities between whites and the other groups. However, when we utilize specific Asian groups instead of the broad category of Asian, some disparities are positive (Koreans, for example). We also examine self-employment rates for Chinese by place of birth and find some statistically significant disparities. Given that there are disparities even when they are highly unlikely to be the result of discrimination, we conclude that using the disparities to infer discrimination is not appropriate.

I. Introduction

Self-employment rates in the United States differ widely across racial, ethnic, and gender categories. In general, the self-employment rate of men exceeds that of women, and self-employment rates of whites exceed the self-employment rates of other racial and ethnic groups. Some see these disparities as evidence of discrimination. For example, Blanchflower (2009) documents substantial disparities between whites and minorities, and also argues that there is evidence that some disparities can be attributed to discrimination in small business credit markets. Wainwright (2000) documents substantial disparities in self-employment using 1990 census data and argues that the disparities can be attributed to discrimination. Evidence on

disparities also has been used in the analysis of construction markets in evaluating whether a race-preference program is constitutional (Blanchflower and Wainwright 2005). We offer evidence that casts serious doubt on whether one can infer discrimination from disparities in self-employment rates.

II. Previous Research

Balkin (1989) describes several theories concerning self-employment that economists and sociologists use.[1] Economists primarily use a human capital approach. The individual compares potential monetary and nonmonetary rewards associated with self-employment to those of wage or salary employment and selects the one that maximizes the expected present value of expected utility. Sociological theories focus more on social networks, which link potential entrepreneurs to suppliers, customers, and sources of financial capital. One explanation for the greater extent of self-employment among some groups of Asians relative to some other ethnic or racial groups is that they tend to be part of social networks that provide educational and financial support.

The human capital approach, which focuses on the comparison a person makes between self-employment and working for someone else, introduces an ambiguity into our expectations about the effects of some personal characteristics that might be used in empirical analysis. Self-employment is more attractive than wage or salary employment for two quite different kinds of individuals—one who is "better" than the average worker and one who is "worse" than the average worker. Some workers are "pulled" into self-employment because they are capable in both the technical dimensions of the product or service and in managing people and money. Other workers, however, are "pushed" into self-employment because they cannot hold onto a job, perhaps because they express antipathy to authority. Another possible reason is that they face discrimination in employment markets.

Evans and Leighton (1990) find that the self-employed are more likely to have experienced unemployment than wage employees. This finding is consistent with the push argument. On the other hand, Robinson and Sexton (1994) report that the self-employed are more educated than wage and salary employees. Lunn and Steen (2000) found differences in the effects of education on the likelihood of self-

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[1] He also describes a psychological theory, but we will not use or refer to it.

employment across industries in the United States. That is, self-employment in some industries seemed more consistent with the pull factors but more consistent with the push factors in other industries. Fraser and Greene (2006) find that entrepreneurs tend to be more optimistic than employees, and that both the optimism and the uncertainty they face diminish with time.

For US data, self-employment rates of immigrants tend to be higher than self-employment rates for native-born Americans. Consequently, some researchers have focused on the situations that immigrants confront, especially recent immigrants from Asia and Latin America. Changes in immigration laws in 1965 generated large flows of immigrants from Asia and from Central and South America. The success of some of these groups, particularly the Chinese and the Koreans, has generated a substantial literature concerning the factors that have contributed to their relatively greater success.

Immigrants may have trouble getting a job due to language problems, discrimination, and unfamiliarity with the host country's institutions. Some may opt for self-employment, especially if they can sell their good or service to coethnics. The social networks of some ethnic groups are extensive, which helps potential entrepreneurs obtain financing and business advice useful for establishing a business. Waldringer, Aldrich, and Ward (1990) develop their research agenda by focusing on the interrelationships among the opportunity structure facing immigrants, group characteristics, and ethnic strategies. Sanders and Nee (1996) examined self-employment among immigrants and found that "self-employment is facilitated by social capital present in the family and by personal human capital/class resources of immigrants" (p. 244).

Lunn and Steen (2005) document the heterogeneity of self-employment among Asian groups. Using 1990 Census data, they report a range of self-employment rates from 3.06 percent (Laotians) to 24.14 percent (Koreans). Kim, Hurh, and Fernandez (1989) examined differences in self-employment rates among Koreans, Chinese, and Asian Indians in the United States. They suggest that an immigrant who obtained a college education in their native land would be more likely to select self-employment in the United States than either immigrants without a college degree or those who obtained some post-graduate education in the United States, and they found this to be the case for Chinese and Koreans. They also found that, even after controlling for education levels, Korean immigrants showed a consistently higher rate of self-employment than Chinese

immigrants, and that Chinese immigrants had a higher rate than Indian immigrants. In a later paper, Fernandez and Kim (1998) examined differences in self-employment rates and in earnings among Koreans, Chinese, Vietnamese, Guajarati Indians, and non-Guajarati Indians. They find that "Korean immigrants are different from other Asian immigrants in their pattern of intra-group differences in self-employment rates. Among Korean immigrants, proportionally more native-college graduates are engaged in self-employed small business than postcollege or noncollege graduates. In contrast, in the non-Korean Asian groups, noncollege graduates are more likely to be self-employed and postcollege graduates are least likely" (pp. 666–67).

Our approach is to develop an empirical model of self-employment based on human capital theory. We then include dummy variables for the broad racial and ethnic groups often included—African-Americans, Hispanics, and Asians. We find negative disparities for the three groups relative to whites. We then disaggregate Asians into more narrowly defined ethnic groups, such as Koreans, Vietnamese, and so on. We find disparities among these groups. We also look at the Chinese in particular, because many Chinese in the United States were born in countries other than China or the United States. We find disparities among self-employment rates of Chinese based on place of birth. As we go from the broad categories to narrower groups, it becomes increasingly difficult to maintain that the disparities reflect discrimination in markets.

III. Data

The data used for the analyses in this paper are taken from the 5 percent Public Use Microdata Samples (PUMS) of the 2000 Census of Population and Housing. This data set includes a 5 percent sample of the population from each state and the District of Columbia. The PUMS data include detailed information on race, ethnicity, and national origin; this information is not available in other large data sets. We grouped observations by race/ethnicity at different levels of aggregation. The data set is limited to those who are 18 and older and who are working for someone else or are self-employed. There are almost six million observations in the data set. The racial/ethnic classifications, self-employment versus employment for wages and salaries, and all other data are reported by the individual.

Table 1. Self-Employment Rates by Race, Ethnicity, and Asian Heritage

Group	Self-employment rate (%)
Chinese	10.18
Taiwanese	14.94
Filipino	4.89
Japanese	11.60
Asian Indian	9.79
Korean	21.70
Vietnamese	10.01
Cambodian	7.33
Laotian	4.03
Thai	9.28
Pakistani	14.08
Other Asian	8.48
White	13.90
Black	5.69
Hispanic	8.10
All Asians	12.08
All Workers	12.42

Source: 2000 US Census of Housing and Population: 5 Percent Public Use Microdata Samples (PUMS).

Table 1 presents self-employment rates. The overall rate for the data is 12.42 percent, with whites at 13.90 percent and blacks at 5.69 percent. This is a substantial disparity and has prompted much of the self-employment literature. The top part of the table provides self-employment rates of various Asian groups in the United States; self-employment rates vary substantially across the Asian groups. Table 2 provides the means for selected variables for the major groups, broken down by those who are self-employed and those who work for wages or salaries. Again, respondents categorized themselves as self-employed or as employees. The self-employed are older on average than wage and salary workers, and the self-employed are more likely to be married.

IV. Empirical Analysis

To begin, we estimate the determinants of self-employment for white males only with the goal of seeing how well the explanatory variables function. The basic model has a dummy variable for self-employment as the dependent variable (1 = self-employed). Consequently, we use a probit model to estimate the coefficients. We assume that the likelihood of self-employment increases at a decreasing rate with the worker's age (or experience), so we include both age and age squared

Table 2. Means of Selected Variables by Self-Employment (SE) and by Working for Wages and Salaries (WS)

Variables	Total	Whites	Blacks	Hispanics	Asians
Age					
SE	44.5	44.9	43.1	40.3	44.7
WS	38.9	39.7	38.7	34.9	38.4
Hours worked					
SE	47.8	48.1	45.3	45.2	49.1
WS	43.7	44.1	42.0	42.5	42.5
Less than high					
school	12.1%	9.5%	17.7%	40.5%	13.0%
SE	13.6%	8.8%	16.3%	42.7%	11.2%
WS					
High school					
SE	25.8%	26.6%	27.8%	21.4%	14.6%
WS	27.6%	28.2%	32.9%	24.1%	13.1%
Some college					
SE	28.2%	28.8%	30.0%	22.4%	21.3%
WS	30.6%	31.8%	33.5%	22.5%	23.0%
College graduate					
SE	18.8%	19.6%	13.3%	8.0%	25.8%
WS	18.3%	20.4%	12.1%	7.1%	28.4%
Postcollege					
SE	15.1%	15.5%	11.2%	7.7%	25.3%
WS	9.9%	10.8%	5.2%	3.6%	24.3%
Married					
SE	74.4%	75.6%	59.3%	67.9%	80.6%
WS	60.4%	63.4%	48.2%	42.5%	61.8%

Source: 2000 US Census of Housing and Population: 5 Percent Public Use Microdata Samples (PUMS).

as independent variables. Hours worked per week is another independent variable included in the analysis. As table 2 shows, married workers are more likely to be self-employed, so we include a dummy variable for married workers. We also include a variable for physical disability; some studies found that disabled workers are more likely to be self-employed, perhaps as a "push" variable.

Census data provide little information about respondents' wealth or savings. We use the home's stated value when owned by a family as a proxy for resources available to start a business. We include dummy variables for whether the person is a US citizen, lives in an urban area, and is fluent in English, and variables indicating whether someone is an immigrant and how long ago they immigrated to the

United States. Many Asians and Hispanics in the sample are immigrants, so these control variables are useful. Finally, we include dummy variables for education levels and for the worker's industry.

Table 3. Probit Analysis, All Workers. Dependent Variable: Self-Employment

Independent variables	Coefficient (white males)	Coefficient (all workers)
Age	0.0081***	0.0521***
Age squared	−0.0000***	−0.0000***
Hours	0.0015***	0.0006***
Married	0.0151***	0.0185***
Disabled	−0.0030***	0.0039***
Urban	−0.0301***	−0.0191***
US citizen	0.0067***	−0.0017**
Fluent	−0.0192***	−0.0098***
House value	0.0002***	0.0002***
HS graduate	−0.0031***	−0.0002
Some college	0.0015**	0.0019***
College graduate	−0.0076***	−0.0051***
Postcollege	−0.0059***	−0.0039***
Immigrated 1995–2000	−0.0019***	−0.0081***
Immigrated 1990–94	0.0282***	0.0142***
Immigrated 1980–89	0.0481***	0.0262***
Immigrated 1970–79	0.0413***	0.0192***
Immigrated before 1970	0.0120***	0.0094***
Agriculture	0.3631***	0.2541***
Mining	−0.0840***	−0.0580***
Construction	0.1098***	0.0834***
Manufacturing	−0.1218***	−0.0813***
Transportation	−0.0686***	−0.0453***
Wholesale	−0.0506***	−0.0329***
Retail	−0.0280***	−0.0131***
Finance	0.0049***	−0.0111***
Female		−0.0410***
Black		−0.0387***
Hispanic		−0.0306***
Asian		−0.0151***
Other		−0.0103***
Pseudo R-squared	0.1647	0.1354
Observations	2,379,799	5,953,303

Note: (***), (**), (*) indicate -value < 0.01, 0.05, and 0.10 respectively.
Source: 2000 US Census of Housing and Population: 5 Percent Public Use Microdata Samples (PUMS).

The first two columns of table 3 provide the estimated coefficients for the probit analysis of white male workers. All of the coefficients are statistically significant, although this is to be expected given the large number of observations. Most of the signs on coefficients are as expected—the probability of self-employment increases with age but at a decreasing rate. A greater home value is associated with a greater probability of self-employment, and married

workers are more likely to be self-employed. For white male workers, immigrants in that group are more likely to be self-employed, with the exception of those who most recently migrated to the United States. The education variables are somewhat mixed, perhaps showing a pattern more in line with the "push" model than the "pull" model.

The second regression in table 3 analyzes the entire population, and we now add the dummy variables for minority groups and gender. The results are in the column to the right in table 3. The coefficients on women and each of the minority groups broadly defined are negative and statistically significant, although the very large sample size increases the likelihood of statistical significance. There is little change in the coefficients of the other explanatory variables.

In table 4, we replace the variable for Asians from table 3 with individual dummy variables for the ethnicity or nationality of the Asians in our data set. The results for the race-nationality-gender variables are the only coefficients reported, since there is little difference in the coefficients of the other explanatory variables compared with the results in table 3. There is a lot of variation among the Asian groups, with four having positive coefficients, although two are not statistically significant. Koreans stand out with a large positive coefficient relative to the omitted category of white males. There is considerable heterogeneity among Asians with respect to self-employment. The coefficient on Asians as a group was negative, but several groups within the category of Asian have positive coefficients, and several groups are not statistically different from white males.

We examine Asians further by limiting our sample to Asians in a pair of regressions. Table 5 provides the coefficients for the explanatory variables for all Asians in our sample. Differences in results between Asians and whites (table 3) show up as levels of magnitude but normally not in terms of the sign of the coefficient. For example, the construction industry has a positive coefficient for both, but the size of the coefficient for Asians is about half that for whites. Manufacturing is negative for both, but is about –.12 for whites and –.08 for Asians.

Table 6 provides the estimates for all Asians, but with dummy variables for the different ethnic/national groups. Only the coefficients on the dummy variables for the ethnic groups are provided, and Koreans are the omitted category in the regression. All

groups have negative and statistically significant coefficients, indicating a lower likelihood of self-employment for these group members relative to Koreans. For several groups, the magnitude of the coefficient is larger than the magnitudes we found for the major groups relative to whites in table 3.

Table 4. Probit Analysis, All Workers. Dependent Variable: Self-Employment

Country of birth	Coefficient	Z-score
Female	−0.0410	164.01
Black	−0.0387	93.00
Hispanic	−0.0295	64.16
Other	−0.0100	13.59
Asian Indian	−0.0161	11.18
Cambodian	−0.0041	0.72
Chinese	−0.0193	16.27
Filipino	−0.0540	46.05
Japanese	−0.0135	7.19
Korean	0.0777	36.66
Laotian	−0.0429	7.82
Pakistani	0.0270	4.25
Taiwan	0.0001	0.25
Thai	−0.0138	2.71
Vietnam	0.0028	0.08
Other Asian	−0.0098	3.62
Female	−0.0326	3.33
Thai	−0.0380	2.17
USA	−0.0604	6.59
Other	−0.0409	4.21
Pseudo R-squared	0.1364	
Observations	5,952,309	

Source: 2000 US Census of Housing and Population: 5 Percent Public Use Microdata Samples (PUMS).

Table 5. Probit Analysis, All Asians. Dependent Variable: Self-Employment

Independent variables	Coefficient
Age	0.0070***
Age squared	−0.0001***
Hours worked	0.0013***
High school	0.0111***
Some college	0.0009
College graduate	−0.0122***
Postcollege	−0.0082***
Female	−0.0295***
Married	0.0246***
Disabled	0.0128***
Value of house	0.0001***
Resides in city	−0.0305***
US citizen	−0.0326***
Fluent in English	−0.0344***
Immigrated 1995–2000	−0.0234***
Immigrated 1990–94	−0.0106***
Immigrated 1980–89	0.0139***
Immigrated 1970–79	0.0190***
Immigrated before 1970	0.0188***
Agriculture	0.1240***
Mining	−0.0499***
Construction	0.0493***
Manufacturing	−0.0818***
Transportation and utilities	−0.0441***
Wholesale trade	0.0005
Retail trade	0.0250***
Finance	−0.0200***
Pseudo R-squared	0.1355
Observations	208,329

Note: (***), (**), (*) indicate p-value < 0.01, 0.05, and 0.10 respectively.
Source: 2000 US Census of Housing and Population: 5 Percent Public Use Microdata Samples (PUMS).

Table 6. Probit Analysis, All Asians. Dependent Variable: Self-Employment

Ethnic group	Coefficient	Z-score
Asian Indian	−0.0188	9.50
Cambodian	−0.0414	10.18
Chinese	−0.0528	34.56
Filipino	−0.0790	53.01
Japanese	−0.0419	21.52
Laotian	−0.0577	15.39
Pakistani	−0.0231	5.92
Taiwan	−0.0314	8.41
Thai	−0.0459	13.04
Vietnam	−0.0370	20.08
Other Asian	−0.0415	18.88
Other	−0.0409	4.21
Pseudo R-squared	0.1578	
Observations	208,329	

Source: 2000 US Census of Housing and Population: 5 Percent Public Use Microdata Samples (PUMS).

Many people in the United States identify themselves as Chinese. However, there has also been a sizable diaspora of Chinese across much of Asia, and many recent immigrants to the United States from Asian countries other than China identify themselves as Chinese. We examine self-employment by place of birth for Chinese people in the United States. Table 7 provides the estimated coefficients for our basic model when the data sample is limited to those who indicated that they are ethnic Chinese. Again, the pattern of coefficients is similar to those we have seen in other regressions.

However, self-employment rates for Chinese in the United States differ by place of birth. Table 8 provides the self-employment rates for Chinese by place of birth. Self-employment rates range from a low of 6.54 percent (Indonesia) to a high of 19.54 percent (Cambodia). Table 9 provides the estimated coefficients for self-employment by place of birth (with Cambodia used as the omitted category) using our standard model. All of the coefficients for other places of birth are negative and most are statistically significant. Chinese born in the United States have a 6 percent lower probability of being self-employed than Chinese born in Cambodia.

Table 7. Probit Analysis, All Chinese. Dependent Variable: Self-Employment

Independent variables	Coefficient
Age	0.0080***
Age squared	−0.0001***
Hours worked	0.0012***
High school	0.0068
Some college	0.0040
College graduate	−0.0077**
Postcollege	−0.0271***
Female	−0.0279***
Married	0.0206***
Disabled	0.0191***
Value of house	0.0001***
Resides in city	−0.0688***
US citizen	0.0036
Fluent in English	−0.0110***
Immigrated 1995–2000	−0.0327***
Immigrated 1990–94	−0.0165***
Immigrated 1980–89	0.0071*
Immigrated 1970–79	0.0171***
Immigrated before 1970	0.0189***
Agriculture	0.2551***
Mining	−0.0024
Construction	0.0593***
Manufacturing	−0.0780***
Transportation and utilities	−0.0606***
Wholesale trade	0.0108**
Retail trade	0.0100**
Finance	−0.0134***
Pseudo R-squared	0.1269
Observations	48,863

Note: (***), (**), (*) indicate p-value < 0.01, 0.05, and 0.10 respectively.
Source: 2000 US Census of Housing and Population: 5 Percent Public Use Microdata Samples (PUMS).

Table 8. Self-Employment Rates by Place of Birth, Ethnic Chinese

Place of birth	Self-employment rate (%)
Burma	9.87
Cambodia	19.54
China	9.84
Hong Kong	9.56
Indonesia	6.54
Korea	15.69
Malaysia	8.25
Philippines	10.67
Singapore	11.33
Taiwan	13.17
Thailand	12.21
Vietnam	10.32
United States	9.07
All Chinese	10.18

Source: 2000 US Census of Housing and Population: 5 Percent Public Use Microdata Samples (PUMS).

Table 9. Probit Analysis, Chinese Workers by Country of Birth.
Dependent Variable: Self-Employment

Country of birth	Coefficient	Z-score
Burma	–0.0497	4.47
China	–0.0640	5.91
Hong Kong	–0.0533	6.19
Indonesia	–0.0523	4.38
Korea	–0.0264	1.82
Malaysia	–0.0440	4.13
Philippines	–0.0423	3.81
Singapore	–0.0220	1.42
Taiwan	–0.0326	3.33
Thai	–0.0380	2.17
USA	–0.0604	6.59
Other	–0.0409	4.21
Pseudo R-squared	0.1303	
Observations	49,863	

Source: 2000 US Census of Housing and Population: 5 Percent Public Use Microdata Samples (PUMS).

V. Discussion

If the explanatory variables used in table 3—the worker's personal characteristics and the industry in which the worker is employed or self-employed—explained all of the pattern of self-employment, the coefficients on the dummy variables for race, gender, ethnicity, and national origin would not be statistically different from zero. But we have seen that many of these dummy variables are negative and statistically significant. Often, regressions such as those reported in table 3 are used to indicate that there are negative and statistically significant disparities between minorities and whites with respect to self-employment. If the negative coefficients indicate disparities and possible discrimination, then how do we interpret the negative coefficients reported in tables 7 and 9? Are Chinese workers in the United States being discriminated against relative to Koreans, or are Chinese workers born in Burma discriminated against relative to Chinese workers born in Cambodia?

Several factors may be involved. First, there are likely important cultural differences across groups that our model does not pick up; these differences may show up in propensities to seek self-employment. For some groups, the literature already acknowledges institutional factors that aid members of various groups, whether in providing financial capital or providing business support. The differences among Chinese workers by place of birth may partially be due to both cultural differences among the Chinese diaspora or cultural differences among the nations of origin. Claar et. al. (2012) examine whether cultural differences matter in entrepreneurship.

They find that MBA students in universities in the United States, Poland, and Armenia have similar total scores on a personality instrument but that the students differed in specific areas, indicating some cultural differences.

Immigration also impacts the decision to be self-employed or not. Immigrants are not random samples of the inhabitants of the countries from which they migrated. Chinese who came to the US from countries other than China, such as Thailand or Indonesia, are descended from people who made earlier decisions to leave China. The experiences of Chinese in countries other than China may have differed substantially. According to Sowell (1996), the experiences of Chinese in Thailand differed from the experiences of Chinese in Malaysia. Sowell (2004) reports that 60 percent of students who left Malaysia to study at the university level were Chinese even though Chinese make up a much smaller portion of the population. One reason for the exodus is affirmative action programs favoring Malays over Chinese and Indians in Malaysia.

Almost 84 percent of Asians in our sample immigrated to the United States. Some came as children and others as adults. Even though Chinese have lived in the United States since the latter part of the nineteenth century, the majority of the Chinese in our sample also immigrated to the United States. For Asian groups other than Chinese or Japanese, the number of US-born workers is miniscule. The decision to enter self-employment for people who immigrated to the United States is likely to reflect their experiences both in the United States and in their country of origin. Someone who is entrepreneurial is less likely to leave the land of their birth if the country provides good opportunities for entrepreneurship. On the other hand, someone who is entrepreneurial is more likely to immigrate to the United States if they live in a land that is more hostile to entrepreneurship.

Our data do not allow us to test for the effect of social networks or social capital in the self-employment decision. Kim, Hurh, and Fernandez (1989) examined differences in self-employment among Asian Indians, Chinese, and Koreans in the United States. They find differences even after controlling for education and other variables, with Koreans persistently more likely to be self-employed. The sociological literature focuses more on heterogeneity among groups than the economics literature does. Some suggest that Korean immigrants often establish a business in fields with low start-up costs, such as groceries, but move into more lucrative lines of business

later. Lunn and Steen (2005) find evidence that the specific industries Koreans are in is related to how long they have been in the United States, which is consistent with this claim.

Based on our results, we suggest that Asians should not be lumped into one category when looking at outcomes such as self-employment. We also think that immigration should be examined more closely. There are several dimensions at which self-selection is relevant: the decision to migrate and the decision to seek self-employment rather than employment are two important factors. The empirical literature on discrimination in self-employment is lacking, at least with respect to Asians.

Finally, we question the model's ability to identify discrimination in the self-employment regressions. Regression results for dichotomous dependent variables are more difficult to interpret than for coefficients when the dependent variable is a continuous variable. Further, most of the explanatory variables are also dummy variables. For a negative coefficient on ethnic groups to indicate an important disparity for which one might infer discrimination, it is necessary for the other explanatory variables to explain the pattern of self-employment well. If the national origin of Chinese workers is important, then the other variables are not adequately explaining the pattern of self-employment. Some important considerations are being left out—perhaps cultural or social capital considerations. The disparities reported cannot be used to infer that markets reflect discrimination, nor do they prove discrimination in evaluating the constitutionality of race preference programs. It is hard to imagine that the disparities in tables 6 or 8 reflect discrimination, so we should not presume that the disparities in table 3 or in other disparity studies reflect discrimination.

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