Racial Bias in Policing: Police Stop and Searches in England and Wales

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Chapter 5

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Abstract

This chapter probes racial disparities in the police practice of stop and search in England and Wales. Specifically, it examines the hypothesis that "ethnic minorities" suffer two possible disadvantages vis-à-vis the ethnic majority of British Whites: (i) persons belonging to ethnic minorities, and in particular the non-white ethnic minorities, may be victims of racial bias by the police who, in selecting persons for stops, might disproportionately target non-white ethnic minorities; (ii) persons from ethnic minorities — and, again, in particular the non-white ethnic minorities — live disproportionately in Police Areas (hereafter, Areas) in which a large number of stops are conducted relative to the Area population. Consequently, the stop rate for ethnic minorities — defined as the number of stops per 1,000 of ethnic population — could be high because, relative to British Whites, persons from ethnic minorities live in Areas in which the overall stop rate — defined as the number of stops per 1,000 of the Area's population — is high. The chapter proposes a methodology for distinguishing between the bias and location effects. The chapter also examines the pattern of arrests following stops and casts doubt on another hypothesis, namely, that persons from ethnic minorities are stopped more often than their White counterparts because they were more likely to offend.

5.1. Introduction

Stop and search is a police power to stop, question and search a person who is suspected of doing something illegal. Police officers in Britain have the power to stop and search individuals, and any vehicles in which they may be travelling, under a range of legislation including section 1 of the Police and Criminal Evidence Act (PACE) 1984, section 60 the Criminal Justice and Public Order (CJPO) Act 1994, and section 44 of the Terrorism Act 2000.[1] Section 1 of the PACE Act allows a police officer to stop and search a person or vehicle suspected of carrying stolen or prohibited items. Section 60 of the CJPO Act allows a police officer of the rank of inspector or above to issue written authorisation for the stop and search of persons and vehicles if there are reasonable grounds for believing that incidents involving serious violence may occur or that persons are carrying dangerous instruments or offensive weapons without good reason.[2] Until July 2010, section 44 of the Terrorism Act allowed the police to stop and search persons and vehicles for items that might be used in terrorist activities *whether or not there were reasonable grounds to suspect the presence of such items*.[3] According to data released by the UK government, in 2017/18, the latest year for which figures are available, there were a total of 277,378 stop and search (hereafter simply, stops) incidents in England and Wales (hereafter, E&W), down from 299,228 in the previous year.[4]

Since 1992, the Ministry of Justice (MoJ) in Britain, in compliance with the requirement under the Race Relations Act 1976 and the Race Relations (Amendment) Act 2000 to outlaw unlawful discrimination and promote race equality and good race relations, has published information on the ethnicity of persons "in contact" with the criminal justice system (CJS) where "contact" includes being stopped by the police. The person being stopped is usually asked for their ethnicity although the circumstances in which this information is obtained may affect its accuracy: when there is doubt or ambiguity about ethnicity of a person, it is classified as "other".

These MoJ data provide information on stops carried out in 42 Police Areas in each of the 12 years between the financial years 2006/07 and 2017/18.[5] The stops were recorded according to the ethnicity of the person stopped. Sixteen ethnicities were distinguished (British White; Irish White; Other White; Black African; Black Caribbean; Other Black; Indian; Bangladeshi; Pakistani; Mixed: White/Asian; Mixed: White/Black African; Mixed: White/Black Caribbean; Mixed: White/Other; Chinese; Other ethnic). The number of stops for each ethnicity in a Police Area, in a particular year, were published alongside the size of the population of that ethnicity. From this, one could compute the stop rate per 1,000 persons for each ethnicity in each Area for each year of the period 2006/07–2017/18.

The hypothesis that this chapter seeks to scrutinise suggests that, in respect of police stops, ethnic minority groups face two possible disadvantages vis-à-vis the ethnic majority of British Whites: (i) persons belonging to ethnic minorities, and in particular the non-white ethnic minorities, may have been victims of racial bias by the police who, in selecting persons for stops, might have disproportionately targeted non-white ethnic minorities; (ii) persons from ethnic minorities — and, again, in particular the non-white ethnic minorities — lived disproportionately in Police Areas (hereafter, Areas) which conducted a large number of stops relative to the Area population. Consequently, the stop rate for ethnic minorities — *defined as the number of stops per 1,000 of ethnic population* — could be high because, relative to British Whites, persons from ethnic minorities lived in Areas in which the overall stop rate — *defined as the number of stops per 1,000 of the Area's population* — was high.

<Table 5.1 here>

This idea may be made more explicit by observing, as Table 5.1 shows, that in the financial year 2017/18 the stop rate for British Whites was 3 (that is, 3 stops per 1,000 of the population) in contrast to, say, stop rates of: 19 for Black Africans, 26 for Black Caribbeans, 13 for Bangladeshis, and 7 for Pakistanis. Although these rates for 2017/18 were substantially lower than those for 2009/10 (17, 73, 153, 70, and 38 for, respectively, British Whites, Black Africans, Black Caribbeans, Bangladeshis,

and Pakistanis), the inter-ethnic disparity in stop rates has not changed greatly: Black Africans were four times more likely to be stopped than British Whites in 2009/10 and six times more likely in 2017/18; Black Caribbeans were nine times more likely to be stopped than British Whites in 2009/10 and in 2017/18; Bangladeshis were four times more likely to be stopped than British Whites in 2009/10 and in 2017/18; and Pakistanis were twice as likely to be stopped as British Whites in 2009/10 and in 2017/18. Of the main non-white ethnic minorities distinguished in Table 5.1, only Indians had the same stop rate, and Chinese had a lower rate, compared to British Whites.

<Table 5.2 here>

The numbers reported in Table 5.1 should be considered alongside those in Table 5.2 which shows the overall stop rates for the 42 Police Areas in E&W.[6] The most noticeable feature of these results is that the (London) Metropolitan Area — which with over 31,000 officers is the largest police force in E&W — had an average stop rate of 48 over the period 2006/07 to 2017/18 and a rate of 16 in 2017/18; this was considerably higher than the rates in the next five largest police forces in E&W: West Midlands and Greater Manchester (each with over 6,000 officers), West Yorkshire (5,000 officers), Thames Valley (4,000 officers), and Merseyside (3,500 officers).[7] Indeed, in 2017/18, the stop rate for the Metropolitan Area (16/1,000) was twice as high as that of the next highest rate of 7/1,000 in Merseyside. Therefore, just as a rising tide lifts all boats, persons living in the jurisdiction of the Metropolitan Area should, regardless of their ethnicity, expect on average to be subject to a larger number of stops than those living in, say, West Yorkshire. As a corollary, ethnic groups with a disproportionate presence in the Metropolitan Area should, purely by virtue of this fact, expect to be subject to a larger number of stops than groups with a smaller Metropolitan presence.

The final piece of this jigsaw is to note that in 2017/18, on the basis of UK government statistics, 2.7% of British Whites, 19.3% of Black Africans and Black Caribbeans, 12.8% of Indians, 16.5% of Bangladeshis, and 6.6% of Pakistanis lived under the jurisdiction of the Metropolitan Area. There is, therefore, prima facie evidence that part of the reason why people from certain ethnic minorities in

E&W were stopped with greater frequency than British Whites is that they were disproportionately located in the "high stop" Metropolitan Area.

This idea that the stop rate of non-white ethnic minorities was determined by a combination of racial bias and Area presence is made explicit using an analytical model set out in the following section. This model decomposes the overall stop rate in E&W into two parts: a part due to racial bias and a part due to the nature of the distribution of the groups across the Areas. Empirical flesh is then put on the bones of this model using the UK government's stop data with respect to ethnic groups in E&W, discussed above.

5.2. Some Data-Related Issues

As stated in the introductory section, the MoJ in Britain has, since 1992, published information on the ethnicity of persons in contact with the CJS. The data for the 12 (financial) year periods, 2006/07 to 2017/18, which are used in this chapter require amplification on several points.

5.2.1. Stops under the PACE, CJPO, and Terrorism Acts

The MoJ data present information, by ethnicity of detainee, on the stops of persons, and any vehicles in which they may have been travelling, undertaken in each of 42 Police Areas, under three separate pieces of legislation: section 1 of the PACE Act 1984; section 60 of the CJPO Act 1994; and section 44 of the Terrorism Act 2000. Since the number of persons stopped under the CJPO and the Terrorism Acts was small, compared to those stopped under PACE (370,454 stops under PACE and 13,175 under CJPO for England and Wales for the 12 months up to March 2019), it is largely PACE stops that are analysed in this chapter.[8]

5.2.2. The Benchmark Population

The MoJ does not provide information for stops under the PACE and CJPO Acts on whether the detainee was a pedestrian or a motorist.[9] This is an important point because it relates to the appropriate benchmark for measuring racial disparity in stops. Farrell and McDevitt (2010) set out the pros and cons of several possible benchmarks.

The easiest benchmark to use is local census data. These data could be used either in terms of the racial demographics of the resident population, or the resident *driving* population, of an area. This distinction is significant: if, compared to pedestrians, it is motorists who are largely stopped then it is the driving population which is the appropriate benchmark. [10] However, in general, local census data suffer from the flaw that they take no account of persons passing through the area whether as pedestrians or motorists: so, while an area may be characterised by a high level of stops these may be of transients rather than residents.[11] For reasons set out below, this chapter uses the racial demographics of the resident population in the Police Areas of E&W as the benchmark for measuring racial disparity.

1. The public debate in Britain on the incidence and consequences of disparity in stops has taken place entirely in the context of data published by the MoJ on the racial composition of stops and these data have used as their benchmark the resident population of the Police Areas in England and Wales. Consequently, the use of this benchmark ensures that the results of this study are readily interpretable by all the protagonists to the British debate.
2. As pointed out earlier, the data on stops under the PACE Act, which are the focus of this chapter, do not — unlike data on stops under the Terrorism Act — distinguish between stops of pedestrians and stops of motorists. However, the number of stops under the Terrorism Act was very small — none in the 12 months to March 2019 and only 149 in the previous 12 months (Home Office, 2019).[12] So, unlike in the USA, where stops are mostly of motorists, it is not unreasonable to assume that most of the stops in England and Wales, made under the

PACE Act, involved pedestrians.

3. Population figures are based on the 2011 Census from the Office for National Statistics, broken down by ethnicity and police force area. Because stop and search data use the ethnic categories from the 2001 Census, the population data has been re-categorised by the Home Office to match the 2001 categories; the main result of this is that Chinese have been included under the "Other" ethnic group, not among Asians which comprise Indians, Bangladeshis, Pakistanis, and "Other Asians".[13]

5.3. The Decomposition of Stop Rates by Police Area

Suppose there are N persons in a country, M of whom were stopped by the police. Then $\sigma=(M/N)\times 1000$ is defined as the stop rate of that country per 1,000 of its population. Now if the N persons can be subdivided into K mutually exclusive groups, indexed $k=1,\ldots,K$, with N_k persons and M_k stopped persons in each group, where $\sum_{k=1}^{K} N_k = N$ and $\sum_{k=1}^{K} M_k = M$, then the country's stop rate can be written as the weighted average of the groups' stop rates, σ_k the weights being n_k, the shares of each group in the overall population:

$$\sigma = \frac{M}{N} = \sum_{k=1}^{K}\left(\frac{M_k}{N_k}\times\frac{N_k}{N}\right) = \sum_{k=1}^{K}(\sigma_k \times n_k) \tag{5.1}$$

If there are R police areas in the country, indexed $r=1,\ldots,R$, such that N_k^r is the number of persons, and M_k^r is the number of persons stopped, from group k in area r, then the stop rate of group k, $\sigma_k = M_k / N_k$ can be written as the weighted average of the groups' stop rate in each area, the weights being the area shares in the overall population of the group:

$$\sigma_k = \frac{M_k}{N_k} = \sum_{r=1}^{R}\left(\frac{M_k^r}{N_k^r}\times\frac{N_k^r}{N_k}\right) = \sum_{r=1}^{R}(\sigma_k^r \times n_k^r) \quad k=1\ldots K \tag{5.2}$$

where σ_k^r is the stop rate of group k in region r and n_k^r is area r's share of persons from group k.

Now the stop rate of group *k (k=1…K)* in area *r*, $\sigma_k^r = M_k^r / N_k^r$, can be decomposed as follows:

$$\sigma_k^r = \frac{M_k^r}{N_k^r} = \left(\underbrace{\frac{M_k^r}{M^r}}_{A} / \underbrace{\frac{N_k^r}{N^r}}_{B} \right) \times \underbrace{\frac{M^r}{N^r}}_{C} = \frac{\alpha_k^r}{\beta_k^r} \times \sigma^r \qquad (5.3)$$

The terms $M^r = \sum_{k=1}^{K} M_k^r$ and $N^r = \sum_{k=1}^{K} N_k^r$ in equation (5.3) represent, respectively, the total number of persons stopped and the total number of persons in area *r, (r=1…R)*; the terms *A* and *B*, respectively, M_k^r / M^r and N_k^r / N^r represent the share of group *k* in, respectively, the total number of persons stopped (α_k^r) and the total number of persons (β_k^r) in area *r*; the term *C* represents the overall stop rate of the area with $\sigma^r = M^r / N^r$ being the number of stopped persons in that area per 1,000 persons: so, from equation (5.3), *ceteris paribus* the higher the stop rate of area *r*, σ^r, the higher will be the stop rates of all the groups in area *r*.

Substituting equation (5.3) into equation (5.2) yields the expression for the stop rate of group *k* for the country in its entirety as:

$$\sigma_k = \frac{M_k}{N_k} = \sum_{r=1}^{R} \left(\frac{M_k^r}{N_k^r} \times \frac{N_k^r}{N_k} \right) = \sum_{r=1}^{R} (\sigma_k^r \times n_k^r) = \sum_{r=1}^{R} \left(\frac{\alpha_k^r}{\beta_k^r} \times \sigma^r \right) \times n_k^r \quad k = 1...K \qquad (5.4)$$

Equation (5.4) shows that three forces will shape σ_k, the stop rate of persons from group *k*. The first is the distribution of the members of a group between the various regions as represented by n_k^r . The greater the proportion of persons from the group living in areas with high stop rates (that is, n_k^r is high in regions with high σ^r) the higher will be σ_k . In other words, equation (5.4) demonstrates that the stop rate of a group can change for the worse as its members migrate from low to high stop areas. Secondly, a rising rate in an area will lift all boats — as the stop rate of a region *(σ^r)* rises, so will the stop rate of all the groups located within it.

Lastly, notwithstanding distribution shifts between areas, and changes in the stop rate of areas, a group's stop rate will also depend upon racial bias. This is captured in equation (5.4) by the term α_k^r / β_k^r, the ratio of the group's share in the total of stops in an area (α_k^r) to its share in the area's population (β_k^r). This ratio measures the disproportionality between a group's share of the area's stops and of its population. The greater this disproportionality, the greater the degree of bias against, or in favour of, the groups: the stop rate of a group in area *r* will be higher/lower the larger/smaller the ratio α_k^r / β_k^r.

5.4. An Econometric Model of Stop Rates in England and Wales

Using data provided by the UK government on police stops, discussed above, one could compute the stop rate per 1,000 persons for each ethnicity in each Area for each year of the period 2006/07–2017/18. Consequently, for each of the 8,000 stop rates recorded, there was an associated ethnicity, Area, and year. These stop rates constituted the dependent variable, *Y*, of the analysis and this took values Y_{krt} for $k=1\ldots16,\ r=1\ldots42,\ t=1\ldots12$.

It was hypothesised that *Y* was a function of three determining variables — ethnicity (E), Area (A), and year (T). The novelty about the econometric equation, estimated by Ordinary Least Squares, was that the ethnicity and the area variables were allowed to interact so that the estimated equation was:

$$Y_{krt} = F(E_k \times A_r, T_t) \tag{5.5}$$

This meant that the stop rate of a particular ethnicity *k* (say, Black Caribbean) depended not just on the value of *k* but also on the value of *r* (that is, the area in which ethnic group was located). So, for example, the stop rate associated with Black Caribbeans living under the jurisdiction of the West Midlands police force could be different from that for Black Caribbeans living under the jurisdiction of the Metropolitan police force. Within the context of this "interaction" model, it was then possible

to test whether inter-ethnic differences in stop rates were significantly different *within* areas and whether inter-area differences in stop rates were significantly different *within* ethnicities.

Following the suggestion in Long and Freese (2014), the results from estimating equation (5.5) as an OLS regression model are presented in the form of the predicted stop rates (PSR) computed from the estimated coefficients. These were computed using the method of "recycled predictions", as described in Long and Freese (2014, chapter 4) and in the STATA manual.[14]

Suppose, using the regression estimates, one computes the mean stop rates for each of the 16 ethnic groups as $\hat{\sigma}_k$, *k=1…16*. Since the regression line passes through the mean, the $\hat{\sigma}_k$ will be the sample means. The difference between these mean stop rates will not, however, reflect differences in stop rates between the ethnic groups *which can ascribed entirely to differences in ethnicity*. This is because the mean stop rates, $\hat{\sigma}_k$, conflate differences in ethnicities with differences in the spatial distribution of the ethnic groups. The fact that the stop rate for Black Caribbeans, $\hat{\sigma}_{BC}$ is four times that for British Whites, $\hat{\sigma}_{BW}$ may be partly due to ethnic differences but it may, in part, also be due to the fact that, compared to British Whites, a larger proportion of Black Caribbeans live under the jurisdiction of the Metropolitan Area in which the overall stop rate is high. Computing the mean stop rates over the ethnic groups will not neutralise these spatial differences and, hence, differences between the $\hat{\sigma}_k$ cannot be wholly attributable — though, undoubtedly, some part may be — to differences in ethnicity.

The method of "recycled predictions" isolates the effect of ethnicity on the predicted stop rate. In order to compute these rates, hypothetical scenarios are constructed in which it is assumed that *all* the (nearly 8,000) stops are of persons from ethnic group *k*, where *k* successively takes values from 1 to 16 (that is, runs the gamut of ethnicities); the mean stop rate is then computed for each of these scenarios and denoted $\tilde{\sigma}_k$, *k=1…16*. Since the values of the area variables are unchanged between these hypothetical scenarios, the only difference between them is the ethnicity of the persons

stopped.[15] Consequently, the difference between $\tilde{\sigma}_{BC}$ and $\tilde{\sigma}_{BW}$ would be *entirely* due to differences in ethnicity between Black Caribbeans and British Whites since other relevant differences between them would have been neutralised.

In essence, therefore, in evaluating the effect of two characteristics *X* and *Y* on a particular outcome, the method of "recycled predictions" compares outcomes under two scenarios: first, "all have the characteristic *X*" scenario and, then, "all have the characteristic *Y*" scenario, *with the values of the other variables unchanged between the scenarios.* The difference between the two outcomes is then entirely due to the differences in the attribute represented by *X* and *Y.* The stop rates computed from these hypothetical scenarios ($\tilde{\sigma}_k$) are, hereafter, referred to as the *predicted stop rates* (PSR) for the different ethnic groups and they are to be distinguished from the groups' sample stop rates ($\hat{\sigma}_k$).

5.5. Estimation Results

The results from estimating equation (5.5) are shown in Table 5.3. The column headed "Stop Rate" shows the predicted stop rates (PSR) associated with the various ethnicities, first computed over all police areas and then, separately, for the five largest police areas in E&W: Greater Manchester, Merseyside, Metropolitan, Thames Valley, West Midlands, and West Yorkshire. So, for the areas considered in aggregate, the PSR in terms of the major ethnicities were 12.9 stops/1,000 for British Whites, 22.6 for Black Africans, 62.7 for Black Caribbeans, 8.2 for Indians, 19.9 for Bangladeshis, and 22.3 for Pakistanis. The corresponding sample stop rates ($\hat{\sigma}_k$) were, respectively, 11.6, 42.5, 86.3, 12.7, 37.1, 23.6. The divergence between the sample stop rates, $\hat{\sigma}_k$, and the PSR, $\tilde{\sigma}_k$, will be analysed in detail in a later section but suffice it here to note that, of the ethnic minorities which had a disproportionately large presence in the Metropolitan Area — Black Africans, Black Caribbeans, Indians, Bangladeshis, and Pakistanis — the sample stop rates were greater than the PSR ($\hat{\sigma}_k > \tilde{\sigma}_k$)

while for British Whites, who had a disproportionately small presence in the Metropolitan Area, the sample stop rate was smaller than the PSR ($\hat{\sigma}_k < \tilde{\sigma}_k$).

<Table 5.3 here>

The column in Table 5.3 headed "Marginal Rate" represents, for the relevant ethnic group, the *difference* between the PSR of that group and that of the reference group, denoted by [R], of British Whites. So, for example, the marginal rate of Black Caribbeans was 49.7 points meaning that the PSR of Black Caribbeans (62.7) was 49.7 points greater than the PSR of British Whites (12.9). Dividing these marginal probabilities by their standard errors (shown in the next column) yielded the t-values. These showed whether the marginal rates were significantly different from zero in the sense that the likelihood of observing these values under the null hypothesis that the marginal rates were zero — that is, of no difference between the PSR of the target and reference group — was less than 5% (superscript ** in Table 5.3) or 10% (superscript *).

Although popular discussion of police stops in E&W pits the country's Black, Asian, and Minority Ethnic (BAME) population against its white citizens in order to emphasise the greater frequency with which the former are stopped relative to the latter, the results in Table 5.3 suggest a more subtle unfolding of police attitudes with respect to BAME persons. First, within the BAME group, Indians and Chinese were predicted to have significantly lower stop rates than British whites (respectively, 8.2 and 5.5 versus 12.9). Second, while on average, Black persons were more likely to be stopped than British Whites, within the "Black" category Black Africans had a significantly lower PSR than Black Caribbeans (22.6 versus 62.7). In fact, the gap between the two groups has grown: in 2017/18, the PSR for Black Africans and Black Caribbeans were, respectively, 11.7 and 51.8. Third, the model predicted that, among South Asians, although both Bangladeshis and Pakistanis were significantly more likely to be stopped than British Whites, the predicted stop rate for Pakistanis (22.3) was significantly higher than that for Bangladeshis (19.9). It is very plausible that the higher stop rate for Pakistanis relates to the regularity of Islamic terrorist attacks in E&W since July 2005. Fourth, in

terms of mixed ethnicities, the model's prediction was that White/Asians were significantly less likely to be stopped (6.1/1,000), White/Africans were as likely to be stopped (12.7), and White/Caribbeans were significantly more likely to be stopped (24) than British Whites (12.9).

Following the results for Police Areas in their entirety, the model presents results for the six largest police forces in E&W in terms of the PSR of the different ethnic groups. Of the five major non-white ethnic groups — Black African, Black Caribbean, Indian, Bangladeshi, and Pakistani — the model predicted that in every area: (i) Black Caribbeans were most likely, and Indians least likely, to be stopped; (ii) Black Africans were significantly less likely to be stopped than Black Caribbeans. The predicted experience of Bangladeshis compared to that of Pakistanis was mixed. In Greater Manchester, Merseyside, West Midlands, and West Yorkshire, Bangladeshis were predicted to be significantly less likely to be stopped than Pakistanis but they were predicted to be significantly more likely to be stopped than Pakistanis in the Metropolitan and Thames Valley areas.

<Table 5.4 here>

The results from estimating equation (5.5) are presented in a different form in Table 5.4 in terms of the stop experience of each of six ethnic groups — British White, Black African, Black Caribbean, Indian, Bangladeshi, and Pakistani — for the six Police Areas distinguished. Considered over the 16 ethnicities in their entirety, the most striking feature of these results in Table 5.4 is the high PSR in the Metropolitan Area compared to the other areas. The *overall* PSR for the different areas, arranged in descending order, were Metropolitan (34.6), Merseyside (24.9), West Yorkshire (14.2), Greater Manchester (11.6), Thames Valley (9.8), and West Midlands (6.8), with all the PSR being significantly different from each other. While each ethnicity, in terms of the predicted stop rate, came off worst in the Metropolitan area, the experience of the ethnicities differed across the areas. The highest to lowest ratio of predicted stop rates was 5.2 for British Whites (31.2 in Metropolitan and 6 in West Midlands), 5.8 for Black Africans, 4.5 for Black Caribbeans, 4 for Indians, 9.8 for Bangladeshis, and 1.9 for Pakistanis.

5.6. A Decomposition Method for Measuring Ethnic Bias in Police Stops

The previous section drew a distinction between the *observed stop rates (OSR)* and the *predicted stop rates (PSR)* associated with the different ethnic groups. The OSR were denoted $\hat{\sigma}_k$ and the PSR were denoted $\tilde{\sigma}_k$ for the sixteen groups, *k=1…16*. Since the PSR were computed using the method of "recycled predictions", discussed above, the point was made that differences between the different groups in their PSR could be ascribed *entirely* to ethnic differences. The OSR and the PSR of the different social groups are compared in Figure 1.

<Figure 1 here>

Following from these observations, the difference in OSR between two groups — say, Black Caribbeans and British Whites (respectively, $\hat{\sigma}_{BC}$ and $\hat{\sigma}_{BW}$) — may be written as:

$$\overbrace{\hat{\sigma}_{BC} - \hat{\sigma}_{BW}}^{Z} = \overbrace{(\tilde{\sigma}_{BC} - \tilde{\sigma}_{BW})}^{A} + \left[\overbrace{(\hat{\sigma}_{BC} - \tilde{\sigma}_{BC})}^{B} - \overbrace{(\hat{\sigma}_{BW} - \tilde{\sigma}_{BW})}^{C} \right] \qquad (5.6)$$

In the following discussion, it is assumed that $\hat{\sigma}_{BC} > \hat{\sigma}_{BW}$ that is, the term Z>0 . The term *A* in equation (5.6) represents the difference in PSR between Black Caribbeans and British Whites, that is, the difference in stop rates which is *solely* due to ethnic difference. Consequently, this difference represents ethnic bias by the police in deciding who to stop. The term *B* in equation (5.6) represents the difference for Black Caribbeans in their OSR and PSR. The OSR is based on Black Caribbean coefficients applied to Black Caribbean attributes which is the spatial distribution of Black Caribbeans, while the PSR is based on Black Caribbean coefficients applied to the collective attributes of all the ethnicities.

The term *B* can, therefore, be interpreted as a measure of the "inferiority" of the spatial distribution of Black Caribbeans over the collective distribution of all the ethnicities. Similarly, the term *C* can be interpreted as a measure of the "inferiority" of the attributes of British Whites over the collective

distribution of all the ethnicities.[16] The difference between the two terms *B* and *C* in equation (5.6) is a measure of the *relative* inferiority of the spatial distribution of Black Caribbeans vis-à-vis British Whites.

From the above discussion, the term $\delta = A / Z$ represents the proportion of the overall difference in stop rates between an ethnicity and British Whites that is due to ethnic bias. The term $\lambda = (B - C) / Z$ represents the proportion of the overall difference between that ethnicity and British Whites which is the result of the relative inferiority (in spatial distribution) of that ethnicity vis-à-vis British Whites. In this context, there are four possibilities:

1. $A>0$ and $(B-C)>0$. In this situation, $Z>0$ partly because of bias against an ethnic group ($\delta>0$) and partly because of the relative inferiority in the spatial distribution of that group vis-à-vis British Whites ($\lambda>0$). In this situation, $A<Z$ so that $0<\delta<1$.
2. $A>0$ and $(B-C)<0$. In this situation, $Z>0$ despite the relative *superiority* of the spatial distribution of that group vis-à-vis British Whites ($\lambda<0$) because the effect of ethnic bias exceeds the effect of spatial superiority ($\delta>|\lambda|$). In this situation, $A>Z$ so that $\delta>1$.
3. $Z>0$ when $A<0$ and $(B-C)>0$. In this situation, $Z>0$ despite bias in favour of an ethnicity because its relative inferiority in spatial distribution ($\lambda>0$) offsets this bias. In this situation, $|A|<|Z|$ so that $-1<\delta<0$.
4. $Z<0$ when $A<0$ and $(B-C)>0$. In this situation, $Z<0$ because bias in favour of an ethnicity is not offset by its relative inferiority in spatial distribution ($\lambda>0$). In this situation, $|A|>|Z|$ so that $\delta<-1$.

The terms *B* and *C* in equation (5.6) could be positive or negative. If, say, $C<0$, then $\hat{\sigma}_{BW} < \tilde{\sigma}_{BW}$ and the OSR of British Whites is smaller than the stop rate which would result if British Whites were assigned the general spatial distribution. This implies that British Whites have a spatial distribution which is superior to the general distribution. On the other hand, if $C>0$, then $\hat{\sigma}_{BW} > \tilde{\sigma}_{BW}$ and the OSR of British Whites is larger than the stop rate which would result if British Whites were assigned the

general spatial distribution. This implies that British Whites have a spatial distribution which is inferior to the general distribution.

If $B>0$, then $\hat{\sigma}_{BC} > \tilde{\sigma}_{BC}$ and the OSR of Black Caribbeans is larger than the stop rate which would result if Black Caribbeans were assigned the general level of characteristics. This implies that Black Caribbeans have a spatial distribution which is inferior to the general population. On the other hand, if $B<0$, then $\hat{\sigma}_{BC} < \tilde{\sigma}_{BC}$ and the OSR of Black Caribbeans is smaller than the stop rate which would result if Black Caribbeans were assigned the general level of characteristics. This implies that Black Caribbeans have a spatial distribution which is superior to the general population.

<Table 5.5 here>

Table 5.5 shows the empirical results corresponding to equation (5.6). The gaps in the observed stop rates (OSR) between Black Africans, Black Caribbeans, Indians, Bangladeshis, Pakistanis, and Chinese and the comparator group, British Whites, were, respectively: 31, 75, 1, 26, 12, and -5 while the gaps in the predicted stop rates (PSR) between the same groups and British Whites were, respectively: 10, 50, -5, 7, 9, and -7. Since the gaps in the PSR are interpreted as due to ethnic bias, the results in Table 5.5 suggest that:

1. For Black Africans, 32% of the difference in observed stop rates between them and British Whites (10/31) was due to ethnic bias against Black Africans with the remaining 68% of the difference (21/31) due to the unfavourable spatial distribution of Black Africans relative to British Whites. So, in terms of equation (5.6), Z>0, A>0, B>0, and C>0 for Black Africans.
2. For Black Caribbeans, 67% of the difference in observed stop rates between them and British Whites (50/75) was due to ethnic bias against Black Caribbeans with the remaining 33% of the difference (25/75) due to the unfavourable spatial distribution of Black Caribbeans relative to British Whites. So, in terms of equation (5.6), Z>0, A>0, B>0, and C>0 for Black Caribbeans.

3. For Indians, ethnic bias worked in their favour but spatial distribution worked against them: $Z>0$, $A<0$, and $(B-C)>0$. Consequently, with ethnic bias but no spatial handicap, the difference in OSR between Indians and British Whites would have been -5; without ethnic bias but with spatial handicap, the difference in OSR between Indians and British Whites would have been 6. The overall difference was 1.
4. For Bangladeshis, 27% of the difference in observed stop rates between them and British Whites (7/26) was due to ethnic bias against Bangladeshis with the remaining 73% of the difference (19/26) due to the unfavourable spatial distribution of Bangladeshis relative to British Whites. So, in terms of equation (5.6), $Z>0$, $A>0$, $B>0$, and $C>0$ for Bangladeshis.
5. For Pakistanis, 75% of the difference in observed stop rates between them and British Whites (9/12) was due to ethnic bias against Pakistanis with the remaining 25% of the difference (3/12) due to the unfavourable spatial distribution of Pakistanis relative to British Whites. So, in terms of equation (5.6), $Z>0$, $A>0$, $B>0$, and $C>0$ for Pakistanis.
6. For Chinese, as for Indians, ethnic bias worked in their favour but spatial distribution worked against them but, unlike Indians, not by as much to offset the positive bias: $Z<0$, $A<0$, and $(B-C)>0$. Consequently, with ethnic bias but no spatial handicap, the difference in OSR between Chinese and British Whites would have been -7; without ethnic bias but with spatial handicap, the difference in OSR between Chinese and British Whites would have been 2. The overall difference was -5.

5.7. Is Racial Bias in Police Stops Necessarily Bad?

The idea that persons belonging to some groups are more disposed to criminal activity than others is not new. Under the Criminal Tribes Act of 1871, certain groups in India were deemed to be Criminal Tribes because their members were “addicted to the systematic commission of non-bailable offences”. Once a tribe became “notified” as criminal, all its members were required to register with the local magistrate, failing which they would be charged with a crime under the Indian Penal Code.

This Act was repealed in 1952 but replaced by the Habitual Offenders Act 1952 which gave police the power to investigate a suspect's criminal tendencies and whether his occupation was "conducive to [a] settled way of life" (Resist Initiative International, 2007).

In the West, the study of the relation between race and crime has a long history in the discipline of criminology and the study of criminal justice (Greene and Gabbidon, 2009). Summarising the evidence for the USA, Sampson and Wilson (2009, p.37) argue that "the evidence is clear that African Americans face dismal and worsening odds when it comes to crime in the street and incarceration". A parallel field of study — comprehensively surveyed in Piqero *et al.* (2003) — has been of "criminal careers": the longitudinal sequence of offences committed by an individual offender. They make the point that research on criminal careers has generated a wealth of information about the relationship between past and future criminal activity and helped to isolate important life circumstances and events related to changes in criminal activity over time. However, notwithstanding this research, little is known about how criminal careers vary across race and gender.

Elliot (1994), using National Youth Survey data to study violent offenders, found that in the US, at the age of 17, 36% of African American males and 25% of White males reported committing one or more violent offences and that twice as many African American males continued their violent careers into their 20s and were thus likely to have longer criminal careers. However, in Britain the evidence points in a different direction. Sharp and Budd (2003) in their analysis of the Offending, Crime, and Justice Survey, found that, after controlling for age, White and Mixed Race respondents had, in 2003, higher rates of (self-reported) offending than Black and Asian respondents; nonetheless, people from ethnic minorities were more likely to have contact with the CJS than persons who were White.

A justification for racial disparity in stops might lie in racial disparity in offences. If persons belonging to racial minorities offended, or were thought to offend, disproportionately to their

numbers in the population, then "targeting"' such persons as candidates for stops could, arguably, be construed as *efficient,* rather than *biased,* policing: the efficient deployment of police resources in preventing crime *requires* racial disparity in stops. On this argument, racial disparity in the selection of persons who are stopped does not necessarily mean that such selection is underpinned by *bias.*

The efficiency argument has been made most strongly by Smith (1997), though not, it should be emphasised, in the context of race. He argues that the police responded to "cues that were objectively related to offending when making stop decisions"[17] and that, in making this response, the police were necessarily selective in their targets since "the relationships between age and sex and offending were extremely robust and strong....if the police were to stop the same proportion of old ladies as young men, that would be evidence of bias because old ladies are far less likely to be law-breakers" (p. 330).

This argument translates into the context of this chapter by substituting "Whites" for "old ladies" and "Blacks" for "young men". This is similar to the "statistical discrimination" hypothesis for explaining racial disparity in the labour market (Phelps, 1972). Employers believe that, *on average*, productivity levels differ between racial groups, though not necessarily for racial reasons. However, since employers cannot observe everything they wish to know about the productivity of *individual* job candidates, they use race as a predictor of the candidates' abilities.[18]

Farrrell and McDevitt (2010) have stated that "one of the most challenging concepts in racial profiling research has been the relation between disparity and discrimination" and suggested that researchers must "ultimately decide what level of disparity is sufficient to indicate discrimination" (p. 82). The implication of these observations is that even if one accepts the argument that, for reasons of efficiency, there is racial disparity in stops, it still leaves open the possibility that this *exceeds (*or *falls short* of) the disparity required by efficiency considerations. There is consensus among researchers on racial profiling that disparity of treatment does not necessarily equate to biased treatment (Farrell and McDevitt, 2006). However, the important question which the protagonists in the debate have not been

able to answer satisfactorily is this: how much of the racial disparity in stops can be justified on efficiency grounds and how much is the result of bias? Furthermore, does the efficiency/bias composition of stops vary by racial group, so that some groups suffer relatively more than others?

The idea of comparing disparities in stops and offences to arrive at a measure of bias is well established in the criminology literature. For example, Lamberth (1998) in his study of police stops on the New Jersey turnpike found that while African Americans comprised 13.5% of the turnpike's driving population and 15% of the turnpike's speeders, they constituted 35% of the drivers pulled over: from this disjoint between disparity in stops and speeding, he concluded that the offence of "Driving While Black" was alive and well on the New Jersey turnpike.

<Table 5.6 here>

Table 5.6 shows the proportion of stops which lead to an arrest, firstly for all Police Areas in E&W and then in the Metropolitan Area. This proportion can be identified as the "arrest rate" of stops as an instrument of policing. What is clear from Table 5.6 is that the arrest rate of stops has increased both in E&W and in the Metropolitan Area: it was 11.2% in 2006/07 (meaning that 11.2% of all stops were followed by an arrest) in E&W, dipping to between 8% and 9% in the period 2008/09 to 2011/12, before rising to around 16% between 2015/16 and 2018/19. Table 5.6 also shows that Black Caribbeans were more likely to be arrested after being stopped than other ethnicities: in E&W in 2018/19, 19.4% of Black Caribbeans, compared to 15.8% of all ethnicities, were arrested following a stop and this difference in arrest rates has existed since 2011/12 in E&W and since 2006/07 in the Metropolitan Area. The next section presents an analysis, using Bayes' Theorem, of police stops and arrests in the Metropolitan Area based on data for the 13-year period 2006/07 to 2018/19.

5.8. A Bayesian Analysis of Stops and Arrests

Let B and $\overline{B}$ denote, respectively, the events that a person who is stopped is, or is not, Black. Let A and $\overline{A}$ denote, respectively, the events that a person is, or is not, arrested after a stop. Then, the probabilities that a person is/is not arrested (following a stop), given that he/she is Black are, respectively:

$$\begin{aligned} P(A \mid B) &= \frac{P(B \mid A)P(A)}{P(B)} \\ P(\overline{A} \mid B) &= \frac{P(B \mid \overline{A})P(\overline{A})}{P(B)} \end{aligned} \tag{5.7}$$

Then the *risk ratio* (RR) associated with being Black is:

$$\phi^B = \frac{P(A \mid B)}{P(\overline{A} \mid B)} = \frac{P(B \mid A)}{P(B \mid \overline{A})}\frac{P(A)}{P(\overline{A})} = \frac{P(B \mid A)}{P(B \mid \overline{A})}\frac{P(A)}{1-P(T)} = \Phi^B \frac{P(A)}{1-P(A)} \tag{5.8}$$

where: $\Phi^B = \dfrac{P(B \mid A)}{P(B \mid \overline{A})}$ is the so-called *Bayes factor* (BF) applied to persons who are Black.

The RR is the odds of a null hypothesis being true (*A*: the person is arrested) to another, competing, hypothesis being true ($\overline{A}$: person is not arrested) *under a particular set of data* (the person is Black). On the other hand, the BF is the *odds of the data being observed* (the person is Black) when the null hypothesis is true (*A*: the person is arrested) to when the alternative hypothesis is true ($\overline{A}$: person is not arrested).

The BF provides a measure of whether the data (the "appearance" of the person) have increased or decreased the odds of the null hypothesis, against the alternative hypothesis, being true: $\Phi^B > 1$, signifies that the odds of being arrested, relative to not being arrested, have increased if the person is Black; $\Phi^B < 1$, signifies that these odds have decreased.

However, in cases of stopping potential offenders, the natural question to ask is the following: given that two persons — one Black, the other non-Black — present themselves before a police officer, what is the ratio of their probabilities of being arrested? In other words, the relevant "risk ratio" for

the security officials is $\frac{P(A \mid B)}{P(A \mid \overline{B})}$: what are the odds that the hypothesis (namely, a person is arrested) is true under two different "pieces" of information — the person is Black, the person is not Black? This ratio may be evaluated as:

$$\psi^A = \frac{P(A \mid B)}{P(A \mid \overline{B})} = \frac{P(B \mid A)P(A)}{P(B)} \frac{P(\overline{B})}{P(\overline{B} \mid A)P(A)} = \frac{P(B \mid A)}{P(\overline{B} \mid A)} \frac{P(\overline{B})}{P(B)} = \Omega^A \frac{P(\overline{B})}{P(B)} \tag{5.9}$$

where: $\Omega_T = \frac{P(B \mid A)}{P(\overline{B} \mid A)}$ may be termed the *inverse Bayes factor* (IBF) applied to persons who are suitable for arrest. Intuitively, the IBF is the odds-ratio of the null hypothesis being true (a person is suitable for arrest) under one set of data (the person is Black) against it being true under an obverse set of data (the person is not Black). If $\Omega^A > 1$, one is more likely to observe the null hypothesis (*A*: the person is arrested) under one set of data (*B*: the person is Black), than under the obverse ($\overline{B}$: the person is not Black).

<Table 5.7 here>

Table 5.7 shows the total number of stops, and subsequent arrests, made by the police in the Metropolitan Area over the 13-year period 2006/07 to 2018/19: in this period, the Metropolitan police made 4,424,709 stops and, following these stops, made 448,773 arrests, yielding an arrest rate of 10.1%. Of the total number of stops, 46.6% were of White persons and 30.8% were of Blacks while of the total number of post-stop arrests, 45.1% were of White persons and 34.4% were of Blacks.

Using the data in Table 5.7, the BF (Φ^A) and the IBF (Ω^A) values, and their associated risk ratios, ϕ^B and ψ^A, may be calculated by comparing Blacks with non-Blacks:

$$P(B \mid A) = \frac{154,603}{448,783} \text{ and } P(B \mid \overline{A}) = \frac{1,207,609}{3,975,926} \Rightarrow \Phi^B = 1.13$$

$$P(B \mid A) = \frac{154,603}{448,783} \text{and } P(\overline{B} \mid A) = \frac{294,180}{448,783} \Rightarrow \Omega^A = 0.53$$

$$P(A) = \frac{448,783}{4,424,709} \text{ and } P(\overline{A}) = \frac{3,975,926}{4,424,709} \Rightarrow \phi^B = 0.127$$

$$P(B) = \frac{1,362,212}{4,424,709} \text{ and } P(\overline{B}) = \frac{3,062,497}{4,424,709} \Rightarrow \psi^A = 1.19$$

The value of the BF shows that *if a person stopped was arrested,* the chances of him being Black were 13% higher ($\Phi^B = 1.13$) compared to the chances of him being Black *if he was not arrested* ($\Phi^B = P(B \mid A) \big/ P(B \mid \overline{A})$). On the other hand, the value of IBF shows that *if a person stopped was arrested,* their chances of being Black would be slightly more than a half of the likelihood of an arrested person not being Black ($\Omega^A = P(B \mid A) \big/ P(\overline{B} \mid A) = 0.53$). So, in answer to the question facing a police officer — namely, what are the odds that the hypothesis (namely, a person is arrested) is true if the person is Black/not Black — the chances of a Black person being arrested after a stop are 19% higher than for a non-Black person.

5.9. Conclusions

The question is whether the fact that the chances of a Black person being arrested after a stop are 19% higher than for a non-Black person is enough to justify the very high stop rates of Black persons noted in Table 5.1. In the absence of such justification, the damage caused to race relations, through the large-scale stopping of innocent Blacks — by an essentially "White" police force — has to be the central point of concern about the implementation of stops in England and Wales.[19] As Borooah (2011) has written, the notion that black boys and men are more likely to be stopped by the police than their white counterparts has been a feature of British life (Ryder, 2009). In the USA, Black motorists reported being stopped more often than White motorists and, when stopped,

disproportionately believed that race was the reason for the stop (Engel and Calnon, 2004; Reitzel and Piquero, 2006).[20]

A reason for persisting with stops, notwithstanding their ineffectiveness and intrusiveness, is provided by McConville *et al.* (1991, 1997) who argue that "the aims of stops and arrests are often not to enforce the law *per se* but to secure broader objectives: the imposition of order, the assertion of authority, the acquisition of information" (McConville *et al.*, 1991, p.16). On the assertion of authority argument, stops are a valuable tool of policing precisely because they are intrusive and humiliating.

If racial disparity is due to the presence of racist officers, rather than to organisational policies, then the question arises as to the source of prejudice. It could be conscious, explicit prejudice upon which officers act through their own volition (Becker, 1957; Fiske, 1998) or it could be unconscious prejudice which is triggered in certain circumstances and upon which the protagonists have little control. To paraphrase Graham and Lowery (2004), under unconscious thought processes actions leading to the disparate treatment of racial minorities are unintentional, involuntary, and effortless. If racial disparity in the treatment of minorities is based upon prejudice, conscious or unconscious, then the issue is about the training police officers should receive in order to overcome negative stereotypes: recent findings (Lowery *et al.,* 2001) focus on the important role of good inter-racial/ethnic social relations in altering negative perceptions.

With the publication of the MacPherson report in 1999 into the death of the Black teenager Stephen Lawrence (Home Office, 1999) the term "institutional racism" has been applied to the attitudes of the police — and, indeed, several other public bodies — towards minority groups. This form of racism was defined by the report's author, Sir William MacPherson, as the "collective failure of an organisation to provide an appropriate and professional service to people because of their colour, culture, or ethnic origin...[which] through unwitting prejudice, ignorance, thoughtlessness, and racist stereotyping disadvantages minority ethnic people". Ten years after the death of Stephen Lawrence,

however, Commander Cressida Dick, then Head of the Metropolitan Police's Diversity Directorate, warned: "It is very difficult to imagine a situation when we will say we are no longer institutionally racist" (Dick, 2003).

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Notes

[1] The precursor to these Acts was the Vagrancy Act 1824 under sections 4 and 5 of which it was "illegal for a suspected person or reputed thief to frequent or loiter in a public place with intent to commit an arrestable offence". The use by the police of the power provided by this Act, to stop and search persons they suspected of criminal activity, whether real or intended (the "sus law"), fuelled the resentment which underpinned the Bristol (St. Paul's) riots of 1980 and the riots in London (Brixton), Liverpool (Toxteth), and Leeds (Chapeltown and Handsworth) in 1981. In the wake of Lord Scarman's inquiry into the causes of these riots the "sus law" was withdrawn and replaced by subsequent Acts which empowered the police to stop and search individuals and their vehicles only when they had "reasonable suspicion" that an offence had been committed.

[2] The powers relate to pedestrians and vehicles in a specified locality, for a specified period, not exceeding 48 hours at a time.

[3] Following a ruling by the European Court of Human Rights in January 2010, the police in Britain can no longer stop and search under section 44 of the Terrorism Act 2000 without having to show reasonable suspicion of terrorist activity.

[4] See: https://www.ethnicity-facts-figures.service.gov.uk/crime-justice-and-the-law/policing/stop-and-search/latest

[5] It should be pointed out that an unknown number of persons were stopped *without being searched* presumably because police suspicions were allayed after a conversation with the detainee.

[6] Stops by the British Transport Police have been omitted from the analysis.

[7] See https://www.statista.com/statistics/877540/leading-police-forces-by-officer-numbers-in-the-uk/ (accessed 10 January 2020). After the Metropolitan force, the next largest police forces in the UK were Scotland (17,000 officers) and Northern Ireland (just under 7,000 officers).

[8] In the year ending March 2019, stop and search powers under section 47A of the Terrorism Act were not used. In the previous year, there were 149 stop and searches under section 47A of this Act (Home Office, 2019).

[9] However, for stops under section 44 of the Terrorism 2000 Act, the MoJ did provide a breakdown by pedestrians and motorists.
[10] The racial demographics of the driving and the resident populations could be very different (Greenwald, 2003).
[11] To correct for the effect of transients requires observers to record the race and ethnicity of pedestrians and/or drivers (Lamberth, 1998). Another way of obtaining estimates of the driving population is the use of accident data (Alpert *et al.*, 2004; Farrell and McDevitt, 2006).
[12] 145 of these 149 searches were conducted by the British Transport Police (Home Office, 2018, p.26)
[13] See: https://www.ethnicity-facts-figures.service.gov.uk/crime-justice-and-the-law/policing/stop-and-search/latest#methodology (accessed 13 January 2020).
[14] See: https://www.stata.com/manuals13/rmlogitpostestimation.pdf (accessed 23 September 2017).
[15] STATA's margin command performs these calculations.
[16] In 2017/18, 19.3% of Black Caribbeans, 2.7% of British Whites, and 4.9% of the total population lived in the Metropolitan Police Area.
[17] Examples of such cues are provided in Smith and Gray (1983).
[18] For example, in 2018/19, only 8% of the total number of arrests in E&W, but 20% of the total arrests of Black persons, were the result of stops (MoJ, 2019, p. 20). In 2007, in view of a spate of knife crimes in London, Keith Jarrett, the President of the National Black Police Officers Association in Britain, asked for an increase in the number of stops of Black persons in order to reduce the amount of gun and knife crime (*The Daily Telegraph*, 21 October 2007).
[19] The Metropolitan Police stopped nearly 17% of Blacks in its Area (168 per 1,000), with only 12% of stops leading to arrests.
[20] Ryder (2009), a Black, Cambridge-educated lawyer wrote: "if you have never been stopped and searched when you have done nothing wrong, it may be hard to explain the impotence you feel...the uncertainty [you experience in future meetings with a police officer] can eat away at you...it is not only you who lives with it, but your parents, your siblings, your partner, even your children".