



Statistical Analysis of Complaints in Relation to Ethnicity

Results

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**METROPOLITAN
POLICE**

Working for a safer London

CONTENTS

1. INTRODUCTION	1
2. METHODOLOGY	1
3. RESULTS	3
3.1 'Public Complaints (Recorded) Complainants'	3
3.2 'Public Complaints (Recorded) Officers'	4
3.3 'Stop and Search <u>Only</u> (Recorded)'	6
3.4 'Racial Discriminatory Behaviour Allegations <u>Only</u> (Recorded)'	6
3.5 'Internal Investigations (Recorded) Officers'	7
3.6 'Suspended Officers'	9
3.7 'Written Warnings'	9
3.8 'Informal Discipline as a Result of Investigation' - Public Complaint (<u>excluding</u> Written Warnings)'	10
3.9 'Informal Discipline as a Result of Investigation' - Internal Investigations (<u>excluding</u> Written Warnings)	10
3.10 'Misconduct/Discipline Hearings (Public complaints)'	11
3.11 'Misconduct/Discipline Hearings (Internal Investigations)'	11
3.12 'Dismissals or Required to Resign Sanctions as a Result of Misconduct/Discipline Hearings (Public complaints)'	11
3.13 'Dismissals or Required to Resign Sanctions as a Result of Misconduct/Discipline Hearings (Internal Investigations)'	11
3.14 'Commissioner's Appeal/AC Review (Public complaints)'	11
3.15 'Commissioner's Appeal/AC Review (Internal Investigations)'	11
3.16 'Secretary of State/Police Appeals Tribunal (Public complaints)'	12
3.17 'Secretary of State/Police Appeals Tribunal (Internal Investigations)'	12
3.18 'Grievances'	12
3.19 'Employment Tribunals'	12
3.20 'Civil Actions'	12

APPENDIX A: GRAPHICAL RESULTS OF CHI-SQUARE ANALYSIS

Public Complaints (Recorded) Complainants	A1
Stop and Search <u>Only</u> (Recorded)	A2
Racial Discriminatory Behaviour Allegations <u>Only</u> (Recorded)	A3

1. Introduction

DPS DCC8 (2) have a number of sets of data relating to complaints, such as number of complaints made, number of complaints resulting from Stops and Searches etc. This information is available according to ethnicity of officers.

In April 2002, DPS DCC8 (2) tasked Internal Consultancy to carry out some statistical analysis on this data to ascertain whether a relationship existed between the number of complaints recorded and the ethnic categories. DPS has asked for this analysis to be updated using 2002/03 data. This document is a summary of the updated analysis.

2. Methodology

Internal Consultancy chose chi-squared tests to carry out the analysis because it is appropriate to use on counts of data (e.g. the number of complaints recorded). Chi-squared tests were used to determine whether a relationship existed between the number of recorded complaints and the ethnic groups identified.

Chi-squared calculates an 'expected' value for each count. i.e. if a count was the result of chance, this is the value that would be expected. If the actual numbers are sufficiently different from this, then the result will be statistically significant.

If a result were found to be significant this would mean that a relationship existed between the data (i.e. number of recorded complaints) and the ethnic groups. If a result was not significant then the numbers could be a result of chance and no interpretation of a set of data such as this should be attempted.

Note:

- A significant result suggests that a relationship is present, it cannot offer possible causes of that relationship and conclusions should be avoided;
- Using chi-squared analysis on very large numbers, such as resident population data, can produce a significant test result even where no relationship exists, so analysis using these large datasets should be treated with caution;
- Caution should also be applied when interpreting results from datasets that contain very low numbers as small changes can affect the result quite considerably.
- DPS data is a 'snapshot' of complaints at the time of request. Although the year-end date may be some months before the date of request, the time taken by some boroughs to forward results, particularly of informal resolutions, may mean that the data will have changed if requested at a later date. It is particularly important to be aware of this when looking at low numbers.

In order for a chi-squared test to be valid, a calculation should not contain any 'expected' value less than 1 or more than 20% of values less than 5. Because some of the numbers that DCC8 (2) collected were very low, this meant that a number of tests that Internal Consultancy performed were invalid. In an attempt to validate the tests, three years' data received from DCC8 (2) were aggregated in order to produce sufficiently high 'expected' values. In some cases 'other ethnicity' was removed from the three years' aggregated data, as the expected values were too small to be used. The tables were also collapsed; to form 2x2 tables containing just 'visibly ethnic minority' groups (VEM) and 'white' categories. The validation criterion for a 2x2 table with an overall total greater than 40, is that none of the 'expected' values should be less than 1.

In order to perform chi-squared analysis both the number of complaints recorded and the population within each ethnic group was required. For instance, in the category 'Public Complaints (Recorded) Officers', the required information was: the number of complaints recorded within a given year according to ethnic group, as well as the total number of officers employed during the same time period according to ethnic group. Difficulties were encountered in attempting to obtain data for the relevant populations. These are explained in the results section of this report.

3. Results

Three years' data was supplied by DCC8 (2): 2000/2001, 2001/2002 and 2002/2003. The results of the chi-squared tests are outlined in this section, with tables for those tests where it was considered appropriate to interpret the results.

3.1 'Public Complaints (Recorded) Complainants'

The required population for this test was 'the number and ethnicity of people who come into contact with the Metropolitan police'. The population used for this test was the estimated resident population of London in the 2001 Census, as this was the best data available. However, it was acknowledged that this data source was unsatisfactory because use of this data is based on the assumption that contact with the police is proportional to the resident population, when both research and available data suggest that visible ethnic minorities come into contact with the police in numbers disproportional to resident population, as both victims¹ and suspects². Note that in addition to this, 14.3% of the total public complainants were recorded with unknown ethnicity. It is unlikely that this 14.3% is proportional to the population that has been recorded. For these reasons, extreme caution needs to be applied when considering the results of the test, as they could be an incorrect representation of the real situation.

The population data used in the previous analysis was derived from the 1991 census data so it is inadvisable to compare the results in this report to those of April 2002.

The result of this test was both valid and significant. This means that the data used showed that a relationship existed between the number of public complaints and the ethnic group. A far higher number of complaints recorded were from black and other ethnic members of the public than would be expected if the numbers were the result of chance. A lower number of complaints were recorded from white and Asian members of the public than would be expected if the numbers were the result of chance. Table 1 compares the actual complaints recorded with those expected using chi-square analysis. A graph displaying the actual number of complaints recorded during 2002/03, compared to the number expected, is shown at Appendix A1.

¹ Home Office Research Study 223: Crime, Policing and Justice, the Experience of Ethnic Minorities, Findings from BCS (2000)

² Source data: PIB - arrests by ethnicity between October 2002 and September 2003, show white 57.7%, black 29.3%, Asian 9.2%, 'other' 3.7% and unknown 0.1%.

Table 1. The actual number of public complaints recorded during 2002/03, by ethnicity, compared to those expected using chi-square analysis

Ethnicity	Asian	Black	Other	White	Total
No Complaint	925866	886946	253821	5095845	7162478
Expected	925775	887425	253877	5095401	
Complaint	223	780	142	1283	2428
Expected	314	301	86	1727	
Total	926089	887726	253963	5097128	7164906

3.2 'Public Complaints (Recorded) Officers'

The population used for this test was the number of officers employed by the MPS during 2002/03 according to ethnic group. It should be noted that police officer populations are a measure of all officers and not just those that come into contact with the public. There may be different proportions of officers in non-operational posts, and this has the potential to offer a result that is not consistent with the true picture. There may potential for an 'operational policing measure' to provide a more accurate picture for this type of analysis but this would require further investigation.

The result of this test was both valid and significant. This means that the data used showed that a relationship existed between the number of public complaints and the ethnic group. A higher number of complaints were recorded against black officers than would be expected if the numbers were the result of chance. Table 2 compares the actual complaints recorded to those expected using chi-square analysis.

Table 2. The actual number of public complaints of officers recorded during 2002/03, by ethnicity, compared to those expected using chi-square analysis

Ethnicity	Asian	Black	Other	White	Total
No Complaint	469	508	317	22795	24089
Expected	482	539	311	22757	
Complaint	101	129	51	4107	4388
Expected	88	98	57	4145	
Total	570	637	368	26902	28477

Because officers of 2 years' service or less are more likely to be in contact with the public, and are less experienced, it was felt appropriate to undertake further investigation of this group. Internal Consultancy wanted to ascertain whether the proportion of ethnicity differed for these officers, as well as to find out whether the pattern of complaints varied from that of the service as a whole. A DPS complaints and internal investigations report³ indicated that 19% of complaints were recorded against officers with less than 2 years' service, with these officers being 22% of the total workforce. This would suggest that there were proportionally slightly fewer complaints recorded against the less experienced officers during 2002/03. However, data from HR indicated that 19% of officers have 2 years' service or less, suggesting no disproportionality.

Data from HR suggested there were proportionally more VEM officers with less than 2 years' service than when the whole of the Service was considered. See Table 3 for details (these figures should be treated with some caution as, whilst there is a minor discrepancy of 0.2% more officers in the total DPS data compared to that of time-banded HR data, the numbers of officers in each ethnic category differs by up to 2.0%).

Table 3. The percentage of police officers with two years' service or less compared to the whole Service, by ethnicity.

Ethnicity	Asian	Black	Other	White
% Officers less than 2 years' service	4.20	3.37	2.40	90.03
% All officers	2.00	2.24	1.29	94.47

In order to ascertain whether the pattern of complaints, with regard to ethnicity, changed for officers with less experience, the chi-squared test was performed using complaints recorded and population data for officers with two-years' service or less.

The result of this test was valid but not significant, meaning there was no association found between the number of public complaints recorded and the ethnicity of officers with two years' service or less. Any differences could be the result of chance and no further interpretation of these results should be undertaken.

³ Analysis Bulletin No. 7: Officer Length of Service Profiles Public Complaints and Internal Investigations May 2003

3.3 'Stop and Search Only (Recorded) Complaints'

The population used was the number of people stopped and searched during 2002/03 according to ethnicity. Note that for the year, 8.9% of the stops and searches recorded 'ethnicity unknown'. It is unlikely that this 8.9% is proportional to the population that has been recorded.

The result of this test was both valid and significant. This means that the data used showed that a relationship existed between the number of complaints made, as a result of stops and searches, and the ethnic group.

A lower number of complaints were received from both white and Asian complainants than expected, and a higher number of complaints recorded were from black complainants than would be expected if the numbers were a result of chance. Table 4 compares the actual complaints recorded as a result of stop & searches, during 2002/03, compared to those expected using chi-square analysis. A graph displaying the actual number of complaints recorded during 2002/03, compared to the number expected, is shown at Appendix A2.

Table 4. The actual number of public complaints resulting from Stop & Searches recorded during 2002/03, by ethnicity, compared to those expected using chi-square analysis

Ethnicity	Asian	Black	Other	White	Total
No Complaint	31811	89986	5348	130773	257927
Expected	31804	90022	5349	130742	
Complaint	16	101	5	63	176
Expected	23	65	4	94	
Total	31827	90087	5353	130836	258103

3.4 'Racial Discriminatory Behaviour Allegations Only (Recorded)'

The required population for this test, and that used, was as outlined in 3.1, with the same data problems. As mentioned in 3.1, extreme caution needs to be applied when considering the results of the test, as they could be an incorrect representation of the real situation. In addition, note that for the year, 12.5% of the allegations were recorded as made by complainants of unknown ethnicity. It is unlikely that this 12.5% is proportional to the population that has been recorded.

The result of this test was both valid and significant. This means that the data used showed that a relationship existed between the number of public complaints and the ethnic group. A far higher number of allegations of

discriminatory behaviour recorded were from black and other ethnic members of the public than would be expected if the numbers were a result of chance. Far fewer allegations of discriminatory behaviour recorded were from white members of the public than would be expected if the numbers were a result of chance. Table 5 compares the actual complaints recorded with those expected using chi-square analysis. A graph of the actual number of complaints recorded during 2002/03, compared to the number expected, is shown at Appendix A3.

Table 5. The actual number of allegations of discriminatory behaviour recorded during 2002/03, by ethnicity, compared to those expected using chi-square analysis

Ethnicity	Asian	Black	Other	White	Total
No Allegation	926060	887615	253947	5097116	7164738
Expected	926067	887705	253957	5097009	
Allegation	29	111	16	12	168
Expected	22	21	6	119	
Total	926089	887726	253963	5097128	7164906

3.5 'Internal Investigations (Recorded) Officers'

The result of this test was valid and significant, meaning there was a relationship found between the number of internal investigations and the ethnic groups.

A higher number of internal investigations were recorded of black and Asian officers than would be expected if the numbers were a result of chance. Table 6 compares the actual internal investigations recorded, during 2002/03, compared to those expected using chi-square analysis.

Table 6. The actual number of internal investigations recorded during 2002/03, by ethnicity, compared to those expected using chi-square analysis

Ethnicity	Asian	Black	Other	White	Total
No Investigation	547	608	358	26340	27868
Expected	557	623	360	26313	
Investigation	23	29	10	562	609
Expected	13	14	8	589	
Total	570	637	368	26902	28477

The DPS complaints and internal investigations report, referred to in Section 3.2, indicates that 32% of internal investigations were recorded against officers with 2 years' service or less, when these officers were just 22% of the total workforce. In order to ascertain whether the pattern of internal investigations, with regard to ethnicity, changed for officers with less experience, the chi-squared test was performed using internal investigation and population data of officers with two-years' service or less.

The result of this test was valid and significant, meaning there was a relationship found between the number of internal investigations and the ethnic groups.

A higher number of internal investigations were recorded of Asian, black and other ethnic officers with up to two years of service than would be expected if the numbers were a result of chance. Table 7 compares the actual internal investigations recorded, during 2002/03, to those expected using chi-square analysis.

Table 7. For officers with two years' service or less, the actual number of internal investigations recorded during 2002/03, by ethnicity, compared to those expected using chi-square analysis

Ethnicity	Asian	Black	Other	White	Total
No Investigation	214	173	121	4748	5256
Expected	221	177	126	4732	
Investigation	15	11	10	163	199
Expected	8	7	5	179	
Total	229	184	131	4911	5455

3.6 'Suspended Officers'

The results for this test were not valid, as three of the 'expected' values were less than 1. In an attempt to produce sufficiently high 'expected' values to validate the test, the table was collapsed, to form 2x2 tables containing just VEM and 'white' categories. Having carried out the procedure the test was valid but not significant. Meaning, there was no association found between the number of suspended officers and whether they were VEM or white. No further interpretation of these results should be undertaken.

3.7 'Written Warnings'

The result of this test was valid and significant, meaning there was a relationship found between the number of written warnings and the ethnic groups.

A higher number of written warnings recorded were for black, Asian and other ethnic officers than would be expected if the numbers were a result of chance. Table 8 compares the actual written warnings recorded, during 2002/03, compared to those expected using chi-square analysis.

Table 8. The actual number of written warnings recorded during 2002/03, by ethnicity, compared to those expected using chi-square analysis

Ethnicity	Asian	Black	Other	White	Total
No Written Warning	556	619	358	26618	28178
Expected	563	630	364	26594	
Written Warning	14	18	10	284	299
Expected	7	7	4	308	
Total	570	637	368	26902	28477

The previously mentioned DPS complaints and internal investigations report (section 3.2) indicates that approximately 36% of written warnings were issued against officers with 2 years' service or less, when these officers were just 22% of the total workforce. In order to ascertain whether the pattern of written warnings, with regard to ethnicity, changed for officers with less experience, the chi-squared test was performed using written warnings and population data of officers with two-years' service or less.

The results for this test were not valid, as three of the 'expected' values were less than 5. No further interpretation of the results for officers with 2 years' service or less should be undertaken.

3.8 'Informal Discipline as a Result of Investigation' - Public Complaint (excluding Written Warnings)

In order to validate the test, three years' data was used. The result from this test was valid but not significant, meaning there was no association found between informal discipline (excluding written warnings) as a result of investigation arising from public complaints and the ethnicity of officers. Any differences could be the result of chance and no further interpretation of these results should be undertaken.

3.9 'Informal Discipline as a Result of Investigation' - Internal Investigations (excluding Written Warnings)

The results for this test were not valid, as three of the 'expected' values were less than 5. In an attempt to produce sufficiently high 'expected' values to validate the test, the table was collapsed, to form 2x2 tables containing just VEM and 'white' categories. Having carried out the procedure the test was valid but not significant. Meaning, there was no association found between the number of informal discipline (excluding written warnings) as a result of internal investigations and whether the officers were VEM or white. No further interpretation of these results should be undertaken.

3.10 'Misconduct/Discipline Hearings (Public complaints)'

The results for this test were not valid, as three of the 'expected' values were less than 5. In an attempt to produce sufficiently high 'expected' values to validate the test, the table was collapsed, to form 2x2 tables containing just VEM and 'white' categories. Having carried out the procedure the test was valid but not significant. Meaning, there was no association found between the number of misconduct/discipline hearings and whether the officers were VEM or white. No further interpretation of these results should be undertaken.

3.11 'Misconduct/Discipline Hearings (Internal Investigations)'

The results for this test were not valid, as three of the 'expected' values were less than 5. In an attempt to produce sufficiently high 'expected' values to validate the test, the table was collapsed, to form 2x2 tables containing just VEM and 'white' categories. Having carried out the procedure the test was valid but not significant. Meaning, there was no association found between the number of misconduct/discipline hearings resulting from internal investigations and whether the officers were VEM or white. No further interpretation of these results should be undertaken.

3.12 'Dismissals or Required to Resign Sanctions as a Result of Misconduct/Discipline Hearings (Public complaints)'

Results for all tests undertaken with this data were not valid. No further interpretation of these results should be undertaken.

3.13 'Dismissals or Required to Resign Sanctions as a Result of Misconduct/Discipline Hearings (Internal Investigations)'

The results for this test were not valid, as three of the 'expected' values were less than 5. In an attempt to produce sufficiently high 'expected' values to validate the test, the table was collapsed, to form 2x2 tables containing just VEM and 'white' categories. Having carried out the procedure the test was valid but not significant. Meaning, there was no association found between the number of dismissal or 'required to resign sanctions', arising from misconduct or discipline hearings resulting from internal investigations, and whether the officers were VEM or white. No further interpretation of these results should be undertaken.

3.14 'Commissioner's Appeal/AC Review (Public complaints)'

Results for all tests undertaken with this data were not valid. No further interpretation of these results should be undertaken.

3.15 'Commissioner's Appeal/AC Review (Internal Investigations)'

The results for this test were not valid, as three of the 'expected' values were less than 1. In an attempt to produce sufficiently high 'expected' values to validate the test, the table was collapsed, to form 2x2 tables containing just VEM and 'white' categories. Having carried out the procedure the test was valid but not significant. Meaning, there was no association found between the number of Commissioner's Appeals or AC Reviews resulting from internal

investigations and whether the officers were VEM or white. No further interpretation of these results should be undertaken.

3.16 'Secretary of State/Police Appeals Tribunal (Public complaints)'

Results for all tests undertaken with this data were not valid. No further interpretation of these results should be undertaken.

3.17 'Secretary of State/Police Appeals Tribunal (Internal Investigations)'

Results for all tests undertaken with this data were not valid. No further interpretation of these results should be undertaken.

3.18 'Grievances'

Whilst DCC8 (2) supplied data on the number of grievances we understand that this may include grievances from both civil staff and officers. In order to carry out an analysis a breakdown of the grievances from officers and civil staff, plus the overall population of civil staff would be required. This information was not readily available at the time of writing this report but further work could be carried out if required.

3.19 'Employment Tribunals'

Whilst DCC8 (2) supplied data on the number of employment tribunals we understand that this may include tribunals involving both civil staff and officers. In order to carry out an analysis a breakdown of the tribunals involving officers and civil staff, plus the overall population of civil staff would be required. This data was not readily available at the time of writing this report but further work could be carried out if required.

3.20 'Civil Actions'

Whilst DCC8 (2) supplied data on the number of civil actions this may include a mixture of cases brought by the public, civil staff and officers. In order to carry out an analysis a breakdown of the cases together with the corresponding populations able to bring claims would need to be known. This information was not readily available at the time of writing this report but further work could be carried out if required.