



REPORT OF MARTIN M. SHAPIRO

1. My name is Martin M. Shapiro. I am more than twenty-one years of age, and am under no legal disability of any kind. This report is given in connection with the litigation Chavez v. Illinois State Police et al., case no. 94 C 5307.

QUALIFICATIONS

2. I hold the position of Professor of Psychology at Emory University, Atlanta, Georgia. I have taught courses in statistics for approximately thirty-five years. I received a Ph.D. degree from Indiana University with concentrations in Psychology and Mathematics and have published statistical papers in learned journals and other books. A copy of my Vita is attached to this Report as Exhibit 1. The Vita includes a list of my publications.

3. I have testified as an expert witness in statistics in the United States District Courts in Arkansas, Florida, Georgia, Illinois, Indiana, Kansas, Nebraska, New York, South Carolina, Tennessee, and Texas. The Vita, Exhibit 1, also contains a list of the cases including those in which I have testified at trial or by deposition.

4. My hourly billing rate is \$150 per hour. To date I have been paid \$65,115 for my work in this case.

5. In this Report, I present the results of my statistical analyses of certain databases maintained by the Illinois State Police.

6. In preparing this Report, I have relied on the following materials:

(a) The following files of electronically stored data from the Illinois State Police:

- (i) Citations and Warnings File;
- (ii) Field Report File; and
- (iii) Valkyrie Team Activity Calendar Year 1992.

(b) March 1996 U.S. Census Bureau Technical Working Paper No. 13, "Building a Spanish Surname List for the 1990's. A New Approach to an Old Problem," and associated machine-readable file.

(c) Defendants' Response to Plaintiffs' Seventh Set of Interrogatories Directed to the Illinois State Police.

(d) United States 1990 census data for the State of Illinois and the individual counties within the State of Illinois.

(e) Data from the 1990 Nationwide Personal Transportation Survey sponsored by the United States Department of Transportation, which contains the number and percentage of trips and vehicle miles driven by Black, Hispanic and White, male and female, drivers.

(f) A description of the 22-district organizational structure of the Illinois State Police, each district of which is identified with specific counties.

(g) Illinois State Police Field Report form as well as the associated instructions and computer format.

(h) Illinois State Police Citation Warning Forms as well as the associated instructions and computer format.

(i) Fourth Amended Complaint.

CITATIONS AND WARNINGS

7. The data records in these files identify the officer issuing the Citation or Warning, but they do not identify the race of the individual motorist stopped and issued the Citation or Warning. The rate at which Hispanic drivers were stopped can be reliably, albeit conservatively, estimated by the incidence of Hispanic surnames among the recipients of Citations and Warnings, using the Spanish surname list. The Citations and Warnings data can not be analyzed for African Americans because they do not comprise a cohesive set of surnames, and, therefore, no name-based program exists which would allow the identification of African-Americans in this data. I have been informed by plaintiffs' counsel that ongoing attempts are being made to obtain additional discovery in this case and that, if successful, additional data may be obtained which will

enable the identification of African-Americans in the Citations and Warnings records. In the event such additional data is obtained, I intend to supplement this report.

8. The Citations and Warnings data provided to me and presented in this report appears to be incomplete. I have recently been provided by the State Police with a new set of the Citations and Warnings data, and have been informed by plaintiffs' counsel that the State Police has represented that this new set is a complete set of the data in the State Police Citations and Warnings files for the time period represented in the data. I have been informed by plaintiffs' counsel that the defendants have agreed that I may supplement this report to present my analyses of this recently-provided set of Citations and Warnings data in a supplemental report by March 2, 1999.

9. My analyses included all 5,160,927 records of Citations and Warnings produced by the Illinois State Police that were issued by officers in the eleven districts (4, 5, 6, 7, 9, 10, 11, 12, 13, 17, and 18) identified by the Defendants as districts in which officers were assigned to Operation Valkyrie teams. To each surname in the Citation and Warning files I assigned the estimate of the percent of individuals having that surname who identified themselves to the Census Bureau as Hispanic, based upon the machine-readable file provided with the U.S. Census Bureau Technical Working Paper described above. The method produces an overly conservative estimate of the percent Hispanic because surnames which are unusual, spelled in a variant manner or hyphenated are assigned an estimated percent Hispanic value of zero, even if they are clearly Hispanic, e.g., Garcia-Martinez, composed of the two most common Hispanic surnames, would not be recognized as an Hispanic surname and would be assigned a zero percent Hispanic.

10. The analyses were performed for each Illinois State Police district with an Operation Valkyrie team. The analyses were done separately for Citations and Warnings within each calendar year. The analyses also were done separately for officers who had been assigned at any time to Operation Valkyrie teams and for officers who had never been assigned to the Operation Valkyrie teams. The analyses compare percentages of Hispanic surnames among motorists issued Citations and Warnings by officers assigned to Operation Valkyrie teams to percentages of Hispanic surnames among motorists issued Citations and Warnings by officers who had never been assigned to Operation Valkyrie teams, working in the same Illinois State Police districts during the same periods of time.

Operation Valkyrie Officers Generally.

11. The results of my analyses are attached to this Report, in both tabular (Exhibit 2) and graphic (Exhibit 3) form. The tables contain the mean (average) percent Hispanic surnames among the motorists who were stopped and issued Citations and Warnings.

12. The results of the analyses of the Citation and Warning files, for the period of time prior to the inauguration of the full time Operation Valkyrie teams, which plaintiffs' counsel inform me to be approximately pre-1990, provide clear baseline rates (2%-4%) for Hispanic surname representation among motorists stopped and issued Citations and Warnings.

13. The percentage of Hispanic surnames among motorists stopped and issued Citations and Warnings by officers who had never been assigned to Operation Valkyrie teams remains

within the 2%-4% range after 1990. The percentage of Hispanic surnames among motorists stopped and issued Citations and Warnings by officers who had never been assigned to Operation Valkyrie teams is higher for stops which result in Citations than for stops which result in Warnings.

14. An inspection of the graph of the results of my analyses (Exhibits 2 and 3) reveals that the officers assigned to Operation Valkyrie teams statistically significantly stopped and issued Citations and Warnings to a higher percentage of motorists with Hispanic surnames than the officers who had never been assigned to Operation Valkyrie teams. The percentage of Hispanic surnames among motorists stopped and issued Citations and Warnings by officers who had been assigned to Operation Valkyrie teams, beginning in 1990, is two to three times higher than the percentage of Hispanic surnames among motorists stopped and issued Citations and Warnings by officers who had never been assigned to Operation Valkyrie teams. The percent of Hispanic surnames among motorists stopped by officers who had been assigned to Operation Valkyrie teams, beginning in 1990, which result in Warnings is markedly higher than for the percentage of Hispanic surnames among motorists stopped by these same officers, during the same period of time, which result in Citations.

15. The identity of officers assigned to Operation Valkyrie teams at any time during their service had been identified previously by the Defendants, but the dates during which they were actively assigned to Valkyrie teams were not provided. Therefore, the observed doubling and tripling of the percentage of Hispanic surnames among motorists stopped and issued Citations and Warnings by officers assigned to Operation Valkyrie teams, compared to the percentage of

Hispanic surnames among the motorists stopped and issued Citations and Warnings by officers who had never been assigned to Operation Valkyrie teams, is an unduly conservative estimate of the disparity between the two groups of officers. The disparity is diluted by the inclusion of officers within the Valkyrie-team group during periods of time prior to their assignment to Valkyrie teams, during periods of time subsequent to their departure from assignment to Valkyrie teams and during interim periods of time between assignment to Valkyrie teams.

Individual Valkyrie Officers.

16. I present results of analyses, separately for each of the individual officers assigned to Operation Valkyrie teams, of the 1990-1997 data contained in the Citation and Warning files of the Illinois State Police.

17. The method of ascertaining the Spanish surname representation among drivers issued Citations and Warnings is as described above.

18. The analyses were performed for each Illinois State Police district with Operation Valkyrie teams. The analyses were done separately for Citations and Warnings within the period from 1990 to 1997. The analyses also were done separately for each individual officer who had been assigned at any time to the Operation Valkyrie teams. An analysis also was done for the aggregate of the officers in each of these districts who had never been assigned to Operation Valkyrie teams. Therefore, the results of the analyses permit a comparison of the individual officers, who had been assigned at any time to the Operation Valkyrie teams, to each other and to

the aggregate of the officers in the same district who had never been assigned to Operation Valkyrie teams. The analyses compare percentages of Hispanic surnames among drivers issued Citations and Warnings.

19. The analyses described in this section of my report were performed on the Citation and Warning data, beginning in 1990, to represent the beginning of the period during which the proportion of Spanish surnames was markedly increased among motorists stopped and issued Warnings, and to a lesser extent, Citations, by officers who had been assigned at any time to Operation Valkyrie teams.

20. The results of these analyses are shown in the attached table (Exhibit 4) separately for Citations and Warnings within district, and are graphed in the attached figures (Group Exhibit 5). It is clear from an inspection of these results that (1) the representation of Hispanic surnames among the drivers stopped by many of officers who had been assigned at any time to Operation Valkyrie teams was markedly higher than the representation of Hispanic surnames among drivers who were stopped by officers (labeled NON-VALK) who had never been assigned to Operation Valkyrie teams. (2) the representation of Hispanic surnames generally is greater among the recipients of Warnings than the recipient of Citations among those drivers who were stopped and issued Citations and Warnings by officers who had at any time been assigned to Operation Valkyrie teams. and (3) not every individual officer who had been assigned at any time to an Operation Valkyrie teams exhibited these increases in Hispanic surname representation.

Individual Defendant Troopers

21. There are two officers in District 5 who are named in the Complaint as having stopped and searched plaintiff Gregory Lee. See Fourth Amended Complaint, ¶¶ 49-54, ¶¶ 58-63. I have been informed by plaintiffs' counsel that these officers have the following badge numbers: defendant Trooper Lauterbach (3066) and defendant Trooper Fraher (3284). The citation and warning data is presented individually for officer 3284, as well as for all District 5 non-Valkyrie officers as a whole may be seen in Exhibit 4. Officer 3066 was not a Valkyrie team officer, but I have reviewed his data which are as follows:

OFFICER NUMBER	WARNING PERCENT HISPANIC	CITATION PERCENT HISPANIC	NUMBER OF WARNINGS	NUMBER OF CITATIONS
3066	5.6660	5.2481	5133	6537

22. One officer in District 7 is named in the Complaint as the trooper who stopped and searched plaintiff Joseph Gomez. See Fourth Amended Complaint, ¶ 92-125. I have been informed by plaintiffs' counsel that Trooper Tone has badge number 3864. His data may be seen in Exhibit 4, together with the other data for District 7. There also are four officers in District 17 who are named in the Complaint as troopers who stopped and searched plaintiff Peso Chavez. See Fourth Amended Complaint, ¶¶ 24-36. I have been informed by plaintiffs' counsel that these officers have the following badge numbers: defendant Trooper Thomas (1945); defendant Trooper Cessna (3589); defendant Trooper Graham (3755); and defendant Trooper Gillette (3987). Their data also may be seen in Exhibit 4, together with the other data for District 17.

Citations and Warnings for Speeding

23. I have analyzed the Citations and Warning data for the period beginning in 1990 for the percentage of Spanish Surnames within the Speeding Violations (Code 066) issued by officers who had ever been assigned to Valkyrie teams. I analyzed the data for each District, separately, for speed limits 55 mph and above, for recorded speeds which I broke into 5 mph intervals. The results are shown in Exhibit 6, in which the percentage Hispanic surnames are given for each 5 mph interval: 56-60 mph is denoted as sp=60, 61-65 mph is denoted as sp=65, ..., 86-90 mph is denoted as sp=90, and over 90 mph is denoted as sp=95. Speed limits are denoted as sz=55, sz=65, and a few sz=60. Concentrating one's inspection on those data entries for which the number of observations is sufficiently large to generate a statistically reliable estimate of the population percentages, the pattern of the data in Exhibit 6 is clear. The percentage of Hispanic surnames is greatest among drivers who are cited or warned for exceeding the speed limit by only five or ten miles per hour. The effect is especially large in 65 mph speed zones and is greater in some districts than in others.

Differences among Offense Codes

24. I also have analyzed the percentage of Hispanic surnames represented in each Citation and Warning Offense Code, beginning in 1990, separately for officers who had served on a Valkyrie Team at any time and officers who had never served on a Valkyrie team. The analyses were performed separately for each District in which there were Valkyrie teams. The results are shown in the extensive set of tables in Exhibit 7, in which Valkyrie Team officers are denoted as "Selected." The general pattern in the results is very pronounced, especially within the Warning

Offense Codes. Hispanic Surname representation is large within the more discretionary codes such as a Warning for Speeding (066) or a Warning for Improper Lane Usage (082) or a Warning for Improper Display of License Plate (010), compared to the much smaller Hispanic surname representation within a Warning for Driving with Only One Headlamp (141) for which there is no difference between Valkyrie Team officers and Non-Valkyrie Team Officers.. =

FIELD REPORTS

Methodology.

25. I have analyzed the machine-readable database which is constructed from Illinois State Police Field Reports beginning in 1985 and ending in 1997. The Field Report form permits racial identification of White, Black, American Indian/Alaskan, Mexican, Puerto Rican, Other Hispanic, and Asian Pacific. I have combined the several Hispanic categories into one Hispanic category and primarily have concentrated my analyses on the resulting Hispanic, African-American and White categories. the analyses are attached as Exhibit 3.

26. I have reviewed the data on all Field Reports, and also on a subset of those Field Reports bearing the notation "V" for Valkyrie. In both instances, I have confined my review and analyses to the first named driver, passenger, suspect, or defendant referenced in a Field Report, limiting my analyses to Field Reports and Valkyrie Field Reports for which the data field "How ISP initially notified" was coded as "On View"

25. I also provided plaintiffs' counsel with report numbers of all Valkyrie Field Reports, for the year 1992 contained in the Field Report database that were written by officers who had been assigned to Valkyrie teams, separately for individuals identified in the Field Reports as White, African American and Hispanic. I instructed counsel how to select a random sample of approximately 100 reports for each of the three racial groups. I have been informed by plaintiffs' counsel that, upon review of this sample of Valkyrie Field Reports, a search of an automobile (and sometimes also of a person) is indicated in the narrative portion of the report in approximately 88% of the reports.. In my opinion, this sample is a sufficiently large, stratified sample from which reliable estimates of searches and seizures can be calculated. This sample reflects, within 1%, the number of seizures reported in the Valkyrie Team Activity data base generated by the Illinois State Police. The sample also reflects that the number of searches reported in the Valkyrie Team Activity data base is approximately 3.12 times greater than the corresponding number of Field Reports in the Field Report data base.

26. The 1990 U.S. Census Bureau ethnic data are used in the following analyses of the Field Report data base. The 2-4% baseline rate for individuals of Hispanic origin, determined from the Citation and Warning analyses, corresponds well with the Hispanic percentage for individuals of driving age in Illinois obtained from the 1990 Census data.

27. I have compared state-wide, district-wide and individual-officer counts and percentages, for the three main racial groups, to the available relevant population counts and percentages. The general method of analysis is to compare the actual counts and percentages of the racial groups represented in the Field Reports to the counts and percentages which would be expected to occur if members of the three racial groups were treated equally. The expected counts and percentages sometimes are expressed within ranges because the category "Hispanic" may be defined as one of a set of mutually exclusive and exhaustive categories or as an

overlapping category; conversely, "White" sometimes is defined as "White, not Hispanic" and sometimes is defined simply as "White," and similarly for the other racial groups. The ranges of the population estimates are relatively small and the results of the statistical tests are unaffected.

State-Wide Comparisons.

28. The 1990 census data show that Illinois is 74.8-78.3% White, 14.6-14.8% African-American and 7.9% Hispanic. The racial identifications in the Field Reports are 67.6% White, 24.6% Black and 7.2% Hispanic. Based upon the binomial distribution, the state-wide Black representation in the Field Reports is more than 126.7 standard deviations greater than the Black representation in the Illinois population. Statisticians generally consider a discrepancy of approximately two standard deviations to be statistically significant; the probability of a discrepancy of 1.96 standard deviations occurring by chance is 0.05, i.e., 1-in-20. The probability of a discrepancy as large as 126.7 standard deviations occurring by chance is too small, too remote, to even calculate.

29. The 1990 Nationwide Personal Transportation Survey provides data showing that African-American drivers constitute 10.3% of personal vehicle trips in Illinois and that Hispanic drivers constitute 2.7% of personal vehicle trips in Illinois. Employing these percentages with the binomial distribution, the discrepancy (over-representation) for Black drivers is more than 216.0 standard deviations and the discrepancy (over-representation) for Hispanic drivers is more than 127.4 standard deviations. These discrepancies obviously are again statistically significant and the associated probabilities are again too remote to even calculate. The Nationwide Personal Transportation Survey also provides data showing that African-American drivers constitute 7.8% of personal vehicle miles in Illinois and that Hispanic drivers constitute 1.0% of personal vehicle miles in Illinois. Based upon these percentages, the discrepancy for Black drivers is more than

287.4 standard deviations and the discrepancy for Hispanic drivers is more than 285.1 standard deviations. These discrepancies obviously are again statistically significant and the associated probabilities are again too remote to calculate.

30. Considering the Valkyrie Field Reports, the percentage of Black representation decreases slightly to 22.7% and the Hispanic representation almost triples to 21.0%. Comparing these percentages to the 1990 Census expectations of 14.8% African Americans and 7.9% individuals of Hispanic origin, the binomial distribution shows that the discrepancy for African-Americans is more than 55.8 standard deviations and the discrepancy for Hispanic individuals is more than 53.7 standard deviations. These discrepancies obviously are again statistically significant and the associated probabilities are each less than 1-in-one-thousand-billion. (Considering only Valkyrie reports by officers who had been assigned at any point in time to Valkyrie teams, and considering only the period 1990-1994, the representation of African Americans is 22.8% and the representation of individuals of Hispanic origin is 26.6%.)

31. Comparing the representation of African Americans and individuals of Hispanic origin in the Valkyrie reports to the expected percentages of personal trips or mileage, as described in the Nationwide Personal Transportation Survey, results in even greater over-representation of Black and Hispanic drivers than in any of the previous comparisons, all of the discrepancies having chance probabilities too small to even calculate.

District and Individual Defendant Officer Analyses

32. This section presents the analyses for each of the districts which were identified as having a Valkyrie team.

District 4.

33. All Field Reports. The 1990 Census data show that Cook county, which is the only county within Illinois State Police District 4 has a Black population of driving age equal to 23.85%. Similarly, the 1990 Census data show that the Cook county has an Hispanic population of driving age equal to 11.78%. The Field Reports from Illinois State Police District 4 have a Black representation of 51.94% and an Hispanic representation of 9.31%. Comparing the African-American percentage in the population with the percentage of Black representation in the Field Reports, using the binomial distribution, the over-representation of African Americans in the Field Reports is equal to more than 87.1 standard deviations, with an associated probability less than 1-in-one-thousand-billion. Comparing the population percentage with the Field Report percentage of individuals of Hispanic origin, using the binomial distribution, the under-representation of Hispanic individuals in the Field Reports is equal to more than 10.1 standard deviations, with an associated probability less than 1-in-one-billion.

34. Valkyrie Field Reports: Considering the Field Reports from District 4 which are designated as "Valkyrie," the percentage of Black representation increases to 61.4% and the Hispanic representation decreases slightly to 8.0%. Comparing these percentages to the District 4 driving age population of 23.85% African American and 11.78% individuals of Hispanic origin, the binomial distribution shows that the discrepancy for African Americans is more than 20.0 standard deviations and the discrepancy for individuals of Hispanic origin is less than 2.7 standard deviations. The discrepancy for the African Americans obviously is again statistically significant and the associated probability is less than 1-in-one-thousand-billion. The discrepancy for individuals of Hispanic origin is not statistically significant. (Considering only Valkyrie reports by officers who had been assigned at any point in time to Valkyrie teams, and considering only the period 1990-1994, the representation of African Americans is 63.2% and the representation of individuals of Hispanic origin is 7.6%.)

District 5.

35. All Field Reports. The 1990 Census data show that the three counties comprising Illinois State Police District 5 have Black populations of driving age equal to 0.06%, 0.52% and 10.03% with an overall percentage equal to 8.39%. Similarly, the 1990 Census data show that the three counties comprising Illinois State Police District 5 have Hispanic populations of driving age equal to 2.01%, 4.06% and 5.05% with an overall percentage equal to 4.72%. The Field Reports from Illinois State Police District 5 have a Black representation of 28.7% and an Hispanic representation of 7.9%. Comparing the African-American percentage in the population with the percentage of Black representation in the Field Reports, using the binomial distribution, the over-representation of African Americans in the Field Reports is equal to more than 66.9 standard deviations, with an associated probability less than 1-in-one-thousand-billion. Comparing the population percentage with the Field Report percentage of individuals of Hispanic origin, using the binomial distribution, the over-representation of Hispanic individuals in the Field Reports is equal to more than 13.7 standard deviations, with an associated probability less than 1-in-one-thousand-billion.

36. Valkyrie Field Reports: Considering the Field Reports from District 5 which are designated as "Valkyrie," the percentage of Black representation decreases slightly to 27.5% and the Hispanic representation more than doubles to 17.4%. Comparing these percentages to the District 5 driving age population of 8.39% African American and 4.72% individuals of Hispanic origin, the binomial distribution shows that the discrepancy for African Americans is more than 20.8 standard deviations and the discrepancy for individuals of Hispanic origin is more than 18.0 standard deviations. These discrepancies obviously are again statistically significant and the associated probabilities are less than 1-in-one-thousand-billion. (Considering only Valkyrie reports by officers who had been assigned at any point in time to Valkyrie teams, and considering

only the period 1990-1994, the representation of African Americans is 26.5% and the representation of individuals of Hispanic origin is 18.3%.)

Individual Officers in District 5.

37. I have selected two officers in District 5, who are named in the complaint as the troopers who stopped and searched plaintiff, Gregory Lee, Defendant Trooper Lauterbach (3066) and Defendant Trooper Fraher (3284). The Field Report data from District 5 for these officers are presented individually. In spite of the relatively small number of Field Reports filed by each Officer, the pattern of an over-representation of African Americans and individuals of Hispanic origin are evident in the Field Reports.

38. Trooper Lauterbach. The data for Officer 3066 are shown in the following table in comparison to the driving age representation of the racial groups in the population of District 5. An inspection of the table reveals a large discrepancy between the number of White individuals actually represented in Officer 3066's Field Reports and the number of White individuals which one would expect, based upon the 86.9% White representation in the population. Based upon the binomial distribution, the under-representation of White individuals, and the corresponding over-representation of Black and Hispanic individuals is more than 7.5 standard deviations.

Officer 3066	Black	Hispanic	White	Total
Actual Reports	31	7	53	91
Expected Number	7.64	4.28	79.08	
Population Percent	8.4%	4.7%	86.9%	

with an associated probability of less than 1-in-one-million.

39. Trooper Fraher. The data for Officer 3284 are shown in the following table in comparison to the driving age representation of the racial groups in the population of District 5. An inspection of the table reveals a large discrepancy between the number of White individuals actually represented in Officer 3284's Field Reports and the number of White individuals which one would expect, based upon the 86.9% White representation in the population. Based upon the binomial distribution, the under-representation of White individuals, and the corresponding over-representation of Black

Officer 3284	Black	Hispanic	White	Total
Actual Reports	29	3	57	89
Expected Number	7.48	4.18	77.34	
Population Percent	8.4%	4.7%	86.9%	

and Hispanic individuals is more than 6.3 standard deviations, with an associated probability of less than 1-in-one-million.

DISTRICT 6

40. All Field Reports: The 1990 Census data show that the three counties comprising Illinois State Police District 6 have Black populations of driving age equal to 0.14%, 3.87% and 6.77% with an overall percentage equal to 4.15%. Similarly, the 1990 Census data show that the three counties comprising Illinois State Police District 6 have Hispanic populations of driving age equal to 0.42%, 3.87% and 6.77% with an overall percentage equal to 4.18%. The Field Reports from Illinois State Police District 6 have a Black representation of 29.3% and an Hispanic representation of 13.15%. Comparing the population percentage with the percentage of Black representation in the Field Reports, using the binomial distribution, the over-representation of African Americans in the Field Reports is equal to more than 110.0 standard deviations, with an

associated probability too small to even calculate. Comparing the population percentage with the Field Report percentage of Hispanic representation, using the binomial distribution, the over-representation of Hispanic individuals in the Field Reports is equal to more than 39.1 standard deviations, with an associated probability less than 1-in-one-thousand-billion.

41. Valkyrie Field Reports: Considering the Field Reports from District 6 which are designated as "Valkyrie," the percentage of Black representation decreases to 23.6% and the Hispanic representation more than doubles to 33.9%. Comparing these percentages to the District 6 driving age population of 4.15% Black and 4.18% Hispanic, the binomial distribution shows that the discrepancy for African Americans is more than 36.1 standard deviations and the discrepancy for individuals of Hispanic origin is more than 55.0 standard deviations. These discrepancies obviously are again statistically significant and the associated probabilities are each less than 1-in-one-thousand-billion. (Considering only Valkyrie reports by officers who had been assigned at any point in time to Valkyrie teams, and considering only the period 1990-1994, the representation of African Americans is 24.0% and the representation of individuals of Hispanic origin is 32.7%.)

DISTRICT 7

42. All Field Reports: The 1990 Census data show that the four counties comprising Illinois State Police District 7 have Black populations of driving age equal to 1.09%, 4.96%, 0.16% and 6.07% with an overall percentage equal to 3.33%. Similarly, the 1990 Census data show that the four counties comprising Illinois State Police District 7 have Hispanic populations of driving age equal to 1.21%, 2.19%, 0.55% and 4.50% with an overall percentage equal to 3.60%. The Field Reports from Illinois State Police District 7 have a Black representation of 13.45% and an Hispanic representation of 5.28%. Comparing the African-American percentage in the population with the percentage of Black representation in the Field Reports, using the

binomial distribution, the over-representation of African Americans in the Field Reports is equal to more than 30.9 standard deviations, with an associated probability less than 1-in-one-thousand-billion. Comparing the population percentage with the Field Report percentage of individuals of Hispanic origin, using the binomial distribution, the over-representation of Hispanic individuals in the Field Reports is equal to more than 7.2 standard deviations, with an associated probability less than 1-in-one-million.

43. Valkyrie Field Reports: Considering the Field Reports from District 7 which are designated as "Valkyrie," the percentage of Black representation increases slightly to 14.1% and the Hispanic representation more than doubles to 11.3%. Comparing these percentages to the District 7 driving age population of 5.33% African American and 3.60% individuals of Hispanic origin, the binomial distribution shows that the discrepancy for African Americans is more than 24.0 standard deviations and the discrepancy for individuals of Hispanic origin is more than 14.8 standard deviations. These discrepancies obviously are again statistically significant and the associated probabilities are less than 1-in-one-thousand-billion. (Considering only Valkyrie reports by officers who had been assigned at any point in time to Valkyrie teams, and considering only the period 1990-1994, the representation of African Americans is 13.4% and the representation of individuals of Hispanic origin is 12.9%.)

44. Individual Officer in District 7 I have selected one officer in District 7, who is named in the complaint as the trooper who stopped and searched plaintiff Joseph Gomez. Trooper

Officer 3864	Black	Hispanic	White	Total
Actual Reports	90	44	349	483
Expected Number	25.60	17.39	440.01	
Population Percent	5.3%	3.6%	91.1%	

Tone (3864). The Field Report data from District 7 for this officer is presented separately. The discrepancy between the racial representations in the Field Reports of Officer 3864 and the expected numbers, if the three racial groups were treated equally, is statistically significant. Based upon the binomial distribution, the under-representation of White individuals, and the corresponding over-representation of Black and Hispanic individuals is more than 14.5 standard deviations. The probability that the racial representations in the reports of Officer 3864 would occur by chance is less than one-in-one-billion.

45. The Valkyrie Field Report data also may be statistically analyzed for Officer 3864. The Valkyrie data for Officer 3864 are shown in the following table in comparison to the driving age representation of the racial groups in the population of District 7. The discrepancy between the racial representations in the Field Reports of Officer 3864 and the expected numbers, if the three racial groups were treated equally, is statistically significant. Based upon the binomial distribution, the under-representation of White individuals, and the corresponding over-representation of Black and Hispanic individuals, is more than 9.85 standard deviations. The

Officer 3864	Black	Hispanic	White	Total
Actual Reports	44	21	176	241
Expected Number	12.77	8.67	219.55	
Population Percent	5.3%	3.6%	91.1%	

probability that the racial representations in the Valkyrie Field Reports of Officer 3864 would occur by chance is approximately one-in-one-billion.

DISTRICT 9

46. All Field Reports: The 1990 Census data show that the seven counties comprising Illinois State Police District 9 have Black populations of driving age equal to 0.11%, 0.22%, 5.01%, 0.05%, 0.08%, 3.99% and 0.40% with an overall percentage equal to 1.20%. Similarly, the 1990 Census data show that the seven counties comprising Illinois State Police District 9 have Hispanic populations of driving age equal to 0.37%, 0.26%, 0.96%, 0.31%, 0.29%, 0.67% and 0.63% with an overall percentage equal to 0.59%. The Field Reports from Illinois State Police District 9 have a Black representation of 23.6% and an Hispanic representation of 5.4%. Comparing the population percentage with the percentage of Black representation in the Field Reports, using the binomial distribution, the over-representation of African Americans in the Field Reports is equal to more than 262.5 standard deviations, with an associated probability too small to even calculate. Comparing the population percentage with the Field Report percentage of Hispanic representation, using the binomial distribution, the over-representation of Hispanic individuals in the Field Reports is equal to more than 80.1 standard deviations, with an associated probability which is also too small to calculate.

47. Valkyrie Field Reports: Considering the Field Reports from District 9 which are designated as "Valkyrie," the percentage of Black representation increases slightly to 24.7% and the Hispanic representation approximately quadruples to 22.6%. Comparing these percentages to the District 9 driving age population of 1.20% Black and 0.59% Hispanic, the binomial distribution shows that the discrepancy for African Americans is more than 85.1 standard deviations and the discrepancy for individuals of Hispanic origin is more than 113.2 standard deviations. These discrepancies obviously are again statistically significant and the associated probabilities are again too small to even calculate. (Considering only Valkyrie reports by officers who had been assigned at any point in time to Valkyrie teams, and considering only the period 1990-1994, the representation of African Americans is 25.9% and the representation of individuals of Hispanic origin is 26.6%.)

DISTRICT 10

48. All Field Reports: The 1990 Census data show that the nine counties comprising Illinois State Police District 10 have Black populations of driving age equal to 8.30%, 1.75%, 0.08%, 0.32%, 10.13%, 0.05%, 0.05%, 0.06% and 8.04% with an overall percentage equal to 6.59%. Similarly, the 1990 Census data show that the seven counties comprising Illinois State Police District 10 have Hispanic populations of driving age equal to 2.08%, 0.72%, 1.35%, 0.23%, 0.40%, 0.24%, 0.20%, 0.18% and 1.25% with an overall percentage equal to 1.15%. The Field Reports from Illinois State Police District 10 have a Black representation of 22.7% and an Hispanic representation of 2.2%. Comparing the population percentage with the percentage of Black representation in the Field Reports, using the binomial distribution, the over-representation of African Americans in the Field Reports is equal to more than 78 standard deviations, with an associated probability less than one-in-one-thousand-billion. Comparing the population percentage with the Field Report percentage of Hispanic representation, using the binomial distribution, the over-representation of Hispanic individuals in the Field Reports is equal to more than 10 standard deviations, with an associated probability less than one-in-one-billion.

49. Valkyrie Field Reports: Considering the Field Reports from District 10 which are designated as "Valkyrie," the percentage of Black representation increases to 30.9% and the Hispanic representation increases approximately seven-fold to 15.3%. Comparing these percentages to the District 10 driving age population of 6.59% Black and 1.15% Hispanic, the binomial distribution shows that the discrepancy for African Americans is more than 26.1 standard deviations and the discrepancy for individuals of Hispanic origin is more than 35.3 standard deviations. These discrepancies obviously are again statistically significant and the associated probabilities are both less than one-in-one-thousand-billion. (Considering only Valkyrie reports by officers who had been assigned at any point in time to Valkyrie teams, and considering only the

period 1990-1994, the representation of African Americans is 30.8% and the representation of individuals of Hispanic origin is 18.1%.)

DISTRICT 11.

50. All Field Reports: The 1990 Census data show that the five counties comprising Illinois State Police District 11 have Black populations of driving age equal to 2.60%, 3.58%, 5.53%, 0.05% and 24.60% with an overall percentage equal to 13.57%. Similarly, the 1990 Census data show that the five counties comprising Illinois State Police District 11 have Hispanic populations of driving age equal to 0.47%, 0.87%, 0.98%, 0.66% and 1.31% with an overall percentage equal to 1.09%. The Field Reports from Illinois State Police District 11 have a Black representation of 48.1% and an Hispanic representation of 2.8%. Comparing the population percentage with the percentage of Black representation in the Field Reports, using the binomial distribution, the over-representation of African Americans in the Field Reports is equal to more than 118.0 standard deviations, with an associated probability too small to even calculate. Comparing the population percentage with the Field Report percentage of Hispanic representation, using the binomial distribution, the over-representation of Hispanic individuals in the Field Reports is equal to more than 17.7 standard deviations, with an associated probability less than 1-in-one-thousand-billion.

51. Valkyrie Field Reports: Considering the Field Reports from District 11 which are designated as "Valkyrie," the percentage of Black representation decreases by one-half to 23.3% and the Hispanic representation increases more than ten-fold to 28.4%. Comparing these percentages to the District 11 driving age population of 13.57% Black and 1.09% Hispanic, the binomial distribution shows that the discrepancy for African Americans is still greater than 7.9 standard deviations, with an associated probability less than 1-in-one-million, and the discrepancy for individuals of Hispanic origin is more than 73.0 standard deviations. The discrepancy in

Hispanic representation obviously is statistically significant and the associated probability is less than 1-in-one-thousand-billion. (Considering only Valkyrie reports by officers who had been assigned at any point in time to Valkyrie teams, and considering only the period 1990-1994, the representation of African Americans is 16.8% and the representation of individuals of Hispanic origin is 40.5%.)

DISTRICT 12.

52. All Field Reports: The 1990 Census data show that the ten counties comprising Illinois State Police District 12 have Black populations of driving age equal to 0.06%, 0.03%, 0.04%, 0.29%, 0.04%, 3.67%, 0.01%, 0.85%, 3.21% and 0.10% with an overall percentage equal to 1.19%. Similarly, the 1990 Census data show that the ten counties comprising Illinois State Police District 12 have Hispanic populations of driving age equal to 0.23%, 0.34%, 0.33%, 0.35%, 0.35%, 0.64%, 0.27%, 0.30%, 0.49% and 0.39% with an overall percentage equal to 0.39%. The Field Reports from Illinois State Police District 12 have a Black representation of 13.9% and an Hispanic representation of 4.6%. Comparing the population percentage with the percentage of Black representation in the Field Reports, using the binomial distribution, the over-representation of African Americans in the Field Reports is equal to more than 120 standard deviations, with an associated probability too small to even calculate. Comparing the population percentage with the Field Report percentage of Hispanic representation, using the binomial distribution, the over-representation of Hispanic individuals in the Field Reports is equal to more than 69.3 standard deviations, with an associated probability which is also too small to calculate.

53. Valkyrie Field Reports: Considering the Field Reports from District 12 which are designated as "Valkyrie," the percentage of Black representation decreases slightly to 12.5% and the Hispanic representation increases approximately eight-fold to 34.1%. Comparing these percentages to the District 12 driving age population of 1.19% Black and 0.39% Hispanic, the

binomial distribution shows that the discrepancy for African Americans is more than 26.2 standard deviations and the discrepancy for individuals of Hispanic origin is more than 136 standard deviations. These discrepancies obviously are again statistically significant: the probability associated with the discrepancy for the African American population is less than one-in-one-thousand-billion and probability associated with the Hispanic population is too small to even calculate. (Considering only Valkyrie reports by officers who had been assigned at any point in time to Valkyrie teams, and considering only the period 1990-1994, the representation of African Americans is 12.9% and the representation of individuals of Hispanic origin is 36.9%.)

DISTRICT 13.

54. All Field Reports: The 1990 Census data show that the seven counties comprising Illinois State Police District 13 have Black populations of driving age equal to 0.08%, 9.24%, 4.08%, 1.73%, 9.37%, 0.29% and 1.88% with an overall percentage equal to 4.53%. Similarly, the 1990 Census data show that the seven counties comprising Illinois State Police District 13 have Hispanic populations of driving age equal to 0.23%, 1.63%, 0.37%, 0.49%, 0.85%, 0.28% and 0.64% with an overall percentage equal to 0.78%. The Field Reports from Illinois State Police District 13 have a Black representation of 15.9% and an Hispanic representation of 3.3%. Comparing the population percentage with the percentage of Black representation in the Field Reports, using the binomial distribution, the over-representation of African Americans in the Field Reports is equal to more than 02.3 standard deviations, with an associated probability too small to even calculate. Comparing the population percentage with the Field Report percentage of Hispanic representation, using the binomial distribution, the over-representation of Hispanic individuals in the Field Reports is equal to more than 32.6 standard deviations, with an associated probability which is also too small to calculate.

55. Valkyrie Field Reports: Considering the Field Reports from District 13 which are designated as "Valkyrie," the percentage of Black representation increases to 18.9% and the Hispanic representation increases approximately seven-fold to 23.8%. Comparing these percentages to the District 13 driving age population of 4.63% Black and 0.78% Hispanic, the binomial distribution shows that the discrepancy for African Americans is more than 21.1 standard deviations and the discrepancy for individuals of Hispanic origin is more than 81 standard deviations. These discrepancies obviously are again statistically significant and the associated probabilities are less than one-in-one thousand-billion for the African American population and too small to even calculate for the Hispanic population. (Considering only Valkyrie reports by officers who had been assigned at any point in time to Valkyrie teams, and considering only the period 1990-1994, the representation of African Americans is 17.6% and the representation of individuals of Hispanic origin is 31.4%.)

DISTRICT 17

56. All Field Reports: The 1990 Census data show that the three counties comprising Illinois State Police District 17 have Black populations of driving age equal to 0.13%, 1.12% and 0.15% with an overall percentage equal to 0.85%. Similarly, the 1990 Census data show that the three counties comprising Illinois State Police District 17 have Hispanic populations of driving age equal to 2.39%, 2.45% and 2.11% with an overall percentage equal to 2.43%. The Field Reports from Illinois State Police District 17 have a Black representation of 11.5% and an Hispanic representation of 11.5% also. Comparing the population percentage with the percentage of Black representation in the Field Reports, using the binomial distribution, the over-representation of African Americans in the Field Reports is equal to more than 87.8 standard deviations, with an associated probability too small to even calculate. Comparing the population percentage with the Field Report percentage of Hispanic representation, using the binomial distribution, the over-

representation of Hispanic individuals in the Field Reports is equal to more than 44.5 standard deviations, with an associated probability less than 1-in-one-thousand-billion.

57. Valkyrie Field Reports: Considering the Field Reports from District 17 which are designated as "Valkyrie," the percentage of Black representation remains relatively unchanged at 11.4% and the Hispanic representation more than triples to 39.1%. Comparing these percentages to the District 17 driving age population of 0.85% Black and 2.11% Hispanic, the binomial distribution shows that the discrepancy for African Americans is more than 36.9 standard deviations and the discrepancy for individuals of Hispanic origin is more than 76.6 standard deviations. These discrepancies obviously are again statistically significant and the associated probabilities are each less than 1-in-one-thousand-billion. (Considering only Valkyrie reports by officers who had been assigned at any point in time to Valkyrie teams, and considering only the period 1990-1994, the representation of African Americans is 11.2% and the representation of individuals of Hispanic origin is 41.3%.)

Individual Officers in District 17:

58. I have selected four officers in District 17 who are named in the Complaint as the troopers who stopped and searched plaintiff Peso Chavez: Defendant Trooper Thomas (1945); Defendant Trooper Cessna (3589); Defendant Trooper Graham (3755); and Defendant Trooper Gillette (3987).

59. The Field Report data from District 17 Officers Number 1945, 3589, 3755 and 3987 are presented individually. Again the pattern of an over-representation of African Americans and individuals of Hispanic origin are evident in the Field Reports. In District 17, the number of reports for three of the Officers are large enough to be amenable to statistical analysis.

60. Trooper Thomas: The data for Officer 1945 are shown in the following table in comparison to the driving age representation of the racial groups in the population of District 17.

Officer 1945	Black	Hispanic	White	Total
Actual Reports	47	55	162	264
Expected Number	2.24	6.34	255.29	
Population Percent	0.85%	2.4%	96.7%	

The discrepancy between the racial representations in the Field Reports of Officer 1945 and the expected numbers, if the three racial groups were treated equally, is statistically significant. Based upon the binomial distribution, the under-representation of White individuals, and the corresponding over-representation of Black and Hispanic individuals is more than 32.1 standard deviations. The probability that the racial representations in the reports of Officer 1945 would occur by chance is too small to calculate.

61. The Valkyrie Field Report data also may be statistically analyzed for Officer 1945. The Valkyrie data for Officer 1945 are shown in the following table in comparison to the driving age representation of the racial groups in the population of District 17. The discrepancy between the racial representations in the Field Reports of Officer 1945 and the expected numbers, if the three racial groups were treated equally, is statistically significant. Based upon the binomial distribution, the under-representation of White individuals, and the corresponding over-representation of Black and Hispanic individuals, is more than 28.6 standard deviations. The

Officer 1945	Black	Hispanic	White	Total
Actual Reports	17	47	71	135
Expected Number	1.15	3.24	130.55	
Population Percent	0.85%	2.4%	96.7%	

probability that the racial representations in the Valkyrie Field Reports of Officer 1945 would occur by chance is too small to calculate. Hispanic individuals, considered alone, represent 34.8% of the Valkyrie Field Reports of Officer 1945, even though they represent only 2.4% of the driving age population.

62. Trooper Cessna: The data for Officer 3589 are shown in the following table in comparison to the driving age representation of the racial groups in the population of District 17. The discrepancy between the racial representations in the Field Reports of Officer 3589 and the expected numbers, if the three racial groups

Officer 3589	Black	Hispanic	White	Total
Actual Reports	30	139	136	305
Expected Number	2.59	7.32	294.94	
Population Percent	0.85%	2.4%	96.7%	

were treated equally, is statistically significant. Based upon the binomial distribution, the under-representation of White individuals, and the corresponding over-representation of Black and Hispanic individuals is more than 50.9 standard deviations. The probability that the racial representations in the reports of Officer 3589 would occur by chance is too small to calculate.

63. The Valkyrie Field Report data also may be analyzed statistically for Officer 3589. The Valkyrie data for Officer 3589 are shown in the following table in comparison to the driving age representation of the racial groups in the population of District 17. The discrepancy between

Officer 3589	Black	Hispanic	White	Total
Actual Reports	15	122	77	214
Expected Number	1.82	5.14	206.93	
Population Percent	0.85%	2.4%	96.7%	

the racial representations in the Valkyrie Field Reports of Officer 3589 and the expected numbers. if the three racial groups were treated equally, is statistically significant. Based upon the binomial distribution, the under-representation of White individuals, and the corresponding over-representation of Black and Hispanic individuals, is more than 49.7 standard deviations. The probability that the racial representations in the Valkyrie Field Reports of Officer 1945 would occur by chance is too small to calculate. Hispanic individuals, considered alone, represent 57.0% of the Valkyrie Field Reports of Officer 1945, even though they represent only 2.4% of the driving age population.

64. Trooper Graham: The database contains 45 Field Reports for Officer 3755. The data for Officer 3755 are shown in the following table in comparison to the driving age representation of the racial groups in District 17. The exact probability of obtaining the

Officer 3755	Black	Hispanic	White	Total
Actual Reports	6	4	35	45
Expected Number	0.38	1.08	43.52	
Population Percent	0.85%	2.4%	96.7%	

observed under-representation of White individuals, and the corresponding over-representation of African-American and Hispanic individuals, in the Field Report would occur by chance is approximately 1-in-10,000.

65. Trooper Gillette: The data for Officer 3987 are shown in the following table in comparison to the driving age representation of the racial groups in the population of District 17.

Officer 3987	Black	Hispanic	White	Total
Actual Reports	61	124	247	432
Expected Number	3.67	10.39	417.7	
Population Percent	0.85%	2.4%	96.7%	

The discrepancy between the racial representations in the Field Reports of Officer 3987 and the expected numbers, if the three racial groups were treated equally, is statistically significant. Based upon the binomial distribution, the under-representation of White individuals, and the corresponding over-representation of Black and Hispanic individuals is more than 45.9 standard deviations. The probability that the racial representations in the reports of Officer 1945 would occur by chance is too small to calculate.

66. The Valkyrie Field Report data also may be analyzed statistically for Officer 3987. The Valkyrie data for Officer 3987 are shown in the following table in comparison to the driving age representation of the racial groups in the population of District 17. The discrepancy between the racial representations in the Valkyrie Field Reports of Officer 3987 and the expected numbers, if the three racial groups were treated equally, is statistically significant. Based upon the binomial

Officer 3987	Black	Hispanic	White	Total
Actual Reports	30	104	132	267
Expected Number	2.27	6.41	258.2	
Population Percent	0.85%	2.4%	96.7%	

distribution, the under-representation of White individuals, and the corresponding over-representation of Black and Hispanic individuals, is more than 43.2 standard deviations. The probability that the racial representations in the Valkyrie Field Reports of Officer 3987 would occur by chance is too small to calculate. Hispanic individuals, considered alone, represent 39.0% of the Valkerie Field Reports of Officer 3987, even though they represent only 2.4% of the driving age population.

DISTRICT 18.

67. All Field Reports: The 1990 Census data show that the five counties comprising Illinois State Police District 18 have Black populations of driving age equal to 0.02%, 0.09%, 0.44%, 0.73% and 2.26% with an overall percentage equal to 0.96%. Similarly, the 1990 Census data show that the five counties comprising Illinois State Police District 18 have Hispanic populations of driving age equal to 0.19%, 0.25%, 0.44%, 0.34% and 0.66% with an overall percentage equal to 0.42%. The Field Reports from Illinois State Police District 18 have a Black representation of 8.2% and an Hispanic representation of 2.8%. Comparing the population percentage with the percentage of Black representation in the Field Reports, using the binomial distribution, the over-representation of African Americans in the Field Reports is equal to more than 52.4 standard deviations, with an associated probability too small to even calculate. Comparing the population percentage with the Field Report percentage of Hispanic representation, using the binomial distribution, the over-representation of Hispanic individuals in the Field Reports is equal to more than 26 standard deviations, with an associated probability which is less than one-in-one-thousand-billion.

68. Valkyrie Field Reports: Considering the Field Reports from District 18 which are designated as "Valkyrie," the percentage of Black representation increases slightly to 14.0% and the Hispanic representation approximately quadruples to 13.3%. Comparing these percentages to the District 18 driving age population of 1.20% Black and 0.59% Hispanic, the binomial distribution shows that the discrepancy for African Americans is more than 14.3 standard deviations and the discrepancy for individuals of Hispanic origin is more than 20.3 standard deviations. These discrepancies obviously are again statistically significant and the associated probabilities are less than one-in-one-billion. (Considering only Valkyrie reports by officers who

had been assigned at any point in time to Valkyrie teams, and considering only the period 1990-1994, the representation of African Americans is 20.0% and the representation of individuals of Hispanic origin is 0%.)

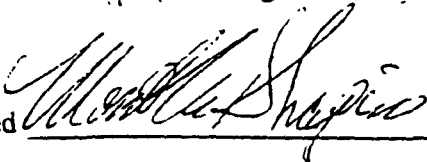
SUMMARY OF FIELD REPORT DATA.

69. The over-representation of African Americans and individuals of Hispanic origin in the Illinois State Police Field Reports is consistently and systematically too large to have occurred by chance. There are no existing or reasonably conceivable population representations for these two racial groups that would predict percentage representations even approaching the number of African Americans and individuals of Hispanic origin who occur in the Illinois State Police Field Reports.

70. The over-representation of African Americans and individuals of Hispanic origin tends to be further accentuated in the Field Reports designated as Valkyrie. The accentuation is particularly pronounced for individuals of Hispanic origin.

71. The over-representation of African Americans and individuals of Hispanic origin is statistically significant for the individual officers analyzed above as well as for State Police districts identified as having had Valkyrie teams and for the entire State.

Signed



Date

2/15/99

MARTIN M. SHAPIRO

**Department of Psychology
Emory University
Atlanta, Georgia 30322**

**Telephone (404) 727-7447
Facsimile (404) 727-0372**

BIOGRAPHICAL DATA

Born December 29, 1934, New York, New York

ACADEMIC HISTORY

1951-1955 Yale University, New Haven, Connecticut
A.B., 1955 (Psychology)

1955-1959 Indiana University, Bloomington, Indiana
Ph.D., 1959 (Psychology, Mathematics)

1978-1980 Emory University, Atlanta, Georgia
J.D., 1980 (School of Law)

ACADEMIC EXPERIENCE

June, 1959 - Aug., 1959	Special Lecturer, Department of Psychology, Indiana University
Sept., 1959 - Aug., 1960	U.S. Public Health Service Post-Doctoral Research Fellow, Department of Psychology, Indiana University
Sept., 1960 - Aug., 1963	Assistant Professor, Department of Psychology, University of Houston and Consultant.

Department of Physiology,
Baylor University College of Medicine

Sept., 1963 - Aug., 1964	Associate Professor, Department of Psychology, University of Houston and Visiting Associate Professor, Department of Physiology, Baylor University College of Medicine
Sept., 1964 - Aug., 1968	Associate Professor, Department of Psychology, Emory University
Sept., 1968 -	Professor, Department of Psychology, Emory University
Jan., 1971 - Aug., 1971	Honorary Research Fellow, Department of Psychology, University College, London

CURRENT AREAS OF INTEREST

Applications of quantitative and scientific concepts to legal processes;
Design, construction and evaluation of test and measurement operations;
Statistics and quantitative methods

COURSES TAUGHT

Advanced Statistics
Experimental Design
Psychology and Law
Psychological Tests and Measurements
Ethics and Law in the Practice of Psychology

ORGANIZATIONS

American Psychological Association
American Bar Association
Psychonomic Society
State Bar of Georgia (No. 637815)

PAPERS PRESENTED

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Shapiro, M.M. Selective attention. Paper delivered at Department of Psychology, Baylor University, April, 1970, Waco, Texas.

Shapiro, M.M. Learning strategies in children. Paper delivered at Department of Psychology, University of Sussex, May, 1971, Hove, England.

Shapiro, M.M., Downie, E.B., III, Markman, B.S. & Martin, M.S. Conditioned attention and inattention using a conditioned suppression procedure. Paper delivered at the Conference on Inhibition and Learning, University of Sussex, April, 1971, Hove, England.

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Bresnahan, J.L., Smith, M.A. & Shapiro, M.M. Blocking in children from different socioeconomic levels. Paper delivered at the Annual Convention of the Eastern Psychological Association, April 4, 1975, New York, New York.

Shapiro, M.M. Testing bias in jobs and schools: its effect on minority Americans. Paper delivered at the 15th Annual Issue Forum Workshop of the Congressional Black Caucus Foundation, Washington, D.C., September 26, 1985.

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State of Florida v. Marion Ponce, Cir. Ct. Sixth Jud. Cir., Pasco C'ty, Case No. 9400341CFAES.

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State of Alabama v. Kenneth Ray Hendrix, Cir. Ct., Jefferson C'ty, Case No. CC-93-1368.

State of South Carolina v. Terrance Wright, Ct. Gen. Sess., Charleston C'ty, Case No. 93-GS-10-6252.

State of Florida v. Connie R. Israel, Cir. Ct., 7th Jud. Cir., Putnam C'ty, Case No. 93-1684CF-53.

State of Texas v. Manuel R. Cuellar, Hildago C'ty

State of Georgia v. Michael Harold Chapel, Super. Ct., Gwinnet C'ty, No. 93-B-1818-6.

State of Mississippi v. James Ernest Watts, Cir. Ct., Marion C'ty, Cause No. 5920-1.

State of Florida v. Avicene Beneche, Cir. Ct., Palm Beach C'ty, Case No. 94-07218-CF

State of Louisiana v. Toby James Parfait, 32nd Jud. Distr. Ct., Terrebone Parish, No. 251,650

State of Louisiana v. Eugene Holmes, 19th Jud. Distr. Ct., East Baton Rouge Parish, No. 7-94-1540

State of Alabama v. Freddie Larry Cooper, Cir. Ct., Baldwin C'ty, Case Nos. CC-94-557, CC-94-603 & CC-94-723.

State of Georgia v. Joseph Daniel Bristol, Sup. Ct., Cherokee C'ty, Case No. 96CR0468.

State of Mississippi v. Michael Ray Genry, Cir. Ct., Harrison C'ty, 1st Jud. Dist., Cause

No. 95-788.

State of Louisiana v. Donovan Davis, Parrish of East Baton Rouge, 19th Jud. Dist. Ct.,

State of Tennessee v. Darryl Kennedy, Crim. Ct., 13th Jud. Dist., Shelby C'ty, No. 93-053027.

State of Florida v. Glen Rogers, Cir. Ct., 13th Jud. Cir., Hillsborough C'ty, Case No. 95-15314.

State of Florida v. Reginald Arline, Cir. Ct., 12th Jud. Cir., Manatee C'ty, Case No., 95-2405F.

State of Florida v. Joseph Algernon Rolle, Jr., Cir. Ct., 5th Jud. Cir., Lake C'ty, Case No. 95-171-CF-DS.

State of Florida v. Pete Belin, Cir. Ct., 7th Jud. Cir., Volusia C'ty, Case No. 96-34350.

State of Mississippi v. Robert Hurst, Cir.Ct., Jackson C'ty, Case No. 95-10,565

Commonwealth of Kentucky v. Demond Williams, Cir. Ct. Fayette C'ty.

Commonwealth of Kentucky v. Gene Tapp Perry, Cir. Ct. Fayette C'ty, Case No. 97-CR-741.

Commonwealth of Kentucky v. Juan E. Mendez, Cir. Ct. Fayette C'ty.

Exhibit 2

Percent Hispanic Surnames

Years	Type	Valkyrie Officers	Non-Valkyrie Officers
84-85	Warnings	3.0992	1.9471
	Citations	4.0047	2.6473
86-87	Warnings	3.2543	2.9151
	Citations	3.7996	3.2702
88-89	Warnings	3.8666	2.8760
	Citations	4.2590	3.6083
90-91	Warnings	7.4046	3.7048
	Citations	6.4414	3.6172
92-93	Warnings	10.4150	3.5540
	Citations	6.7521	4.9272
94-95	Warnings	8.6786	3.7324
	Citations	6.3706	4.7206
96-97	Warnings	7.7526	3.1096
	Citations	5.3167	3.6685

Exhibit 3

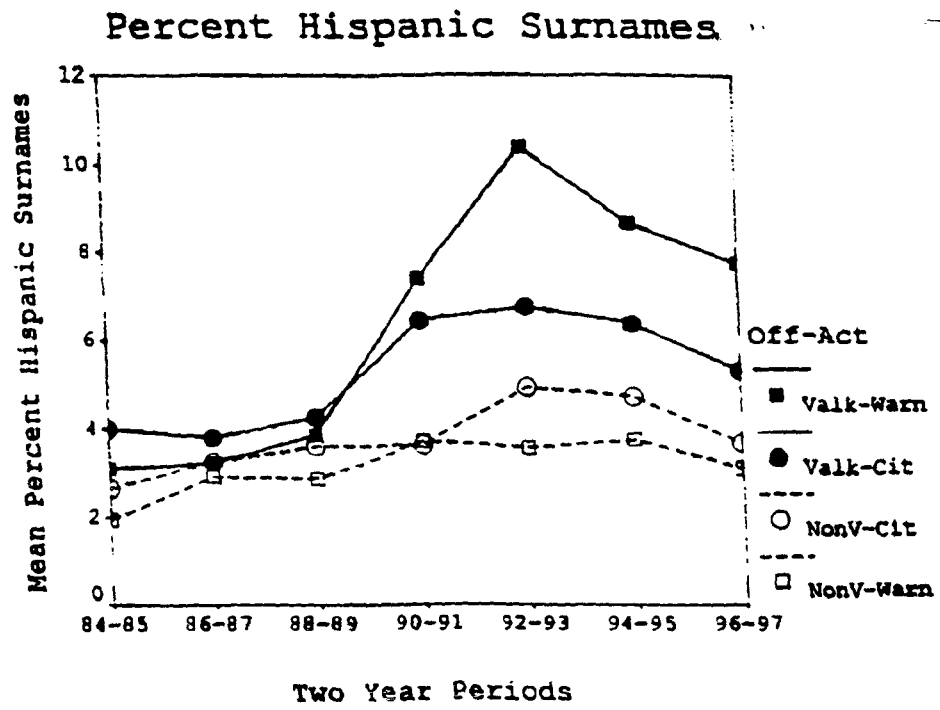


Exhibit 4

1990-1997

Percent Hispanic Surnames for Valkyrie Officers, Each Separately, and Non-Valkyrie Team Officers, in the Aggregate, within each District, for Warnings and Citations, Separately.

DISTRICT NUMBER	OFFICER NUMBER	WARNING PERCENT HISPANIC	CITATION PERCENT HISPANIC	NUMBER OF WARNINGS	NUMBER OF CITATIONS
	NON-VALK	8.2402	10.8631	205574	72959
4					
	1372	9.2092	8.5242	1021	314
4					
	2646	7.0862	6.9367	1243	937
4					
	2777	9.7203	9.5878	764	475
4					
	3254	14.0532	6.8255	1159	458
4					
	3262	5.9799	7.2806	2517	702
4					
	3285	13.8390	12.2550	2813	831
4					
	3729	10.7313	6.7309	1433	753
4					
	3838	11.1605	9.2554	3130	715
4					
	4174	8.0281	8.8872	2496	779
4					
	NON-VALK	4.7926	6.6597	149581	48215
5					
	1737	4.8032	4.9450	251	60
5					
	1818	10.7670	13.2973	1038	259
5					
	2841	5.3506	7.4386	3188	1212
5					
	3045	8.8457	7.9418	1591	665
5					
	3284	5.5585	6.2624	2595	926
5					
	3669	4.7145	6.0196	3245	1051
5					
	3771	5.1968	6.5881	2743	1725
5					
	3845	7.6676	7.5036	1949	1899
5					
	3874	9.6197	7.6376	4274	1568
5					
	4305	4.6042	4.1633	1713	958
5					
	4361	9.5894	8.7092	3336	1025
5					
	NON-VALK	3.9375	5.0025	81803	33327
6					
	3084	12.5171	6.1370	1665	1122
6					
	3158	5.9556	6.5189	1247	466
6					
	3512	10.0793	8.9893	2683	1680
6					
	3717	5.2931	6.6877	1467	1000
6					
	3824	1.6015	6.5572	520	428
6					
	3858	21.7420	11.8875	921	280
6					
	3927	20.8195	14.8068	3319	942
6					
	4225	10.6755	5.1613	1665	840
6					
	4444	2.9746	4.4662	1053	325
6					
	NON-VALK	3.0693	4.2288	193225	52105
7					
	1623	10.9829	8.3189	2004	1889
7					
	1808	7.6548	9.3234	615	304
7					
	3077	3.6436	2.1060	3225	896
7					
	3210	4.9942	5.1651	914	284
7					
	3370	6.7750	8.3361	1738	565
7					
	3724	3.4939	5.3319	3263	982
7					
	3799	11.8943	12.4262	3072	955
7					
	3864	8.3190	7.5203	2949	893
7					

7	3915	9.6334	7.9586	3876	1636
9	NON-VALK	2.7229	3.0175	128319	62821
9	1495	2.5434	4.1196	129	56
9	1803	4.7538	4.9017	275	60
9	3138	3.5230	2.2085	3303	1478
9	3151	7.1334	3.0990	1203	907
9	3934	7.9502	6.7151	953	450
9	3976	.	.3333	0	3
9	4021	13.4604	2.8061	606	374
9	4034	15.2757	6.8342	1914	1253
9	4051	7.6552	6.1527	3056	785
9	4242	2.5851	2.8647	2386	1032
9	4266	4.9574	2.3920	1054	452
9	4322	3.2171	3.4235	2232	1021
9	4337	14.8976	10.8987	2227	824
9	4340	5.5511	2.2261	3367	1140
9	4347	4.2877	3.6201	3219	1589
9	4444	2.7376	1.5768	1637	1200
10	NON-VALK	2.2294	2.6819	197898	63313
10	3120	1.0104	3.5379	695	153
10	3554	2.3695	3.3715	5150	1595
10	3590	8.6617	6.9954	3045	1054
10	3604	12.5608	6.4085	3231	1136
10	3664	4.1570	2.9785	5598	1253
10	3829	4.1313	2.8726	4993	1583
10	3965	2.1623	1.1729	758	288
10	4125	5.5432	3.0326	3047	1427
11	NON-VALK	2.0552	2.1286	222796	92223
11	2709	11.8457	6.6918	1180	449
11	3110	6.6966	3.2928	3061	1366
11	3550	3.6514	3.1713	2276	1392
11	4168	25.8032	10.1542	1952	874
11	4194	10.5246	2.7714	2482	1158
11	4375	25.6564	14.1665	1689	343
11	4398	17.1563	4.0348	405	313
12	NON-VALK	2.2546	2.7012	163164	57498
12	1590	2.3138	1.7974	195	78
12	1831	1.8714	3.9975	374	319
12	2545	1.9997	3.0818	986	209
12	3235	12.2577	8.9717	2134	738
12	3772	18.8759	12.4725	1456	546
12	3822	7.2137	4.8884	2330	880
12	3828	27.7033	12.8329	2160	756
12	3853	3.3737	6.2525	1608	438

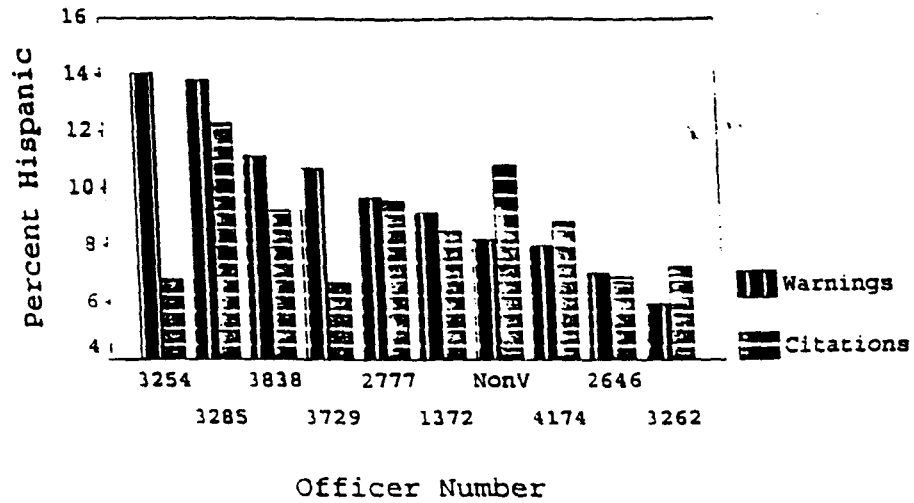
12	3976	16.9918	7.1843	692	267
12	4003	2.6303	2.8522	2370	892
12	4127	20.8541	8.5883	3666	1056
12	4371	12.4212	.6900	103	50
13	NON-VALK	2.2534	1.9724	116999	53145
13	1890	1.7703	1.7701	474	334
13	1924	24.9464	22.5332	379	190
13	3714	10.2457	2.8725	1781	886
13	3789	35.4262	22.0409	130	208
13	3860	13.5869	4.7116	2869	1075
13	3872	35.0216	24.0542	194	262
13	3936	15.1635	7.5270	2939	716
13	4026	24.1602	7.8580	2282	740
13	4184	10.6717	6.7166	2697	621
13	4214	5.8514	4.9217	2585	658
13	4294	31.6755	4.0580	1328	407
13	4371	4.3054	1.8961	523	77
13	4474	4.0799	1.6027	1787	556
17	NON-VALK	4.4750	5.5518	91373	36456
17	1945	10.6164	11.2428	2860	1073
17	2429	4.3552	3.9179	391	140
17	3589	15.1238	11.1161	4125	859
17	3755	4.9749	6.2203	825	296
17	3830	6.6210	6.4413	2842	1290
17	3987	22.3589	14.8066	2489	911
18	NON-VALK	2.0964	2.2298	81131	31760
18	3191	2.2402	4.8377	595	247
18	3376	3.8714	3.6670	4119	1721
18	3958	1.2938	1.6745	3154	1034
18	4353	1.5154	2.2652	3748	1140

Exhibit 5

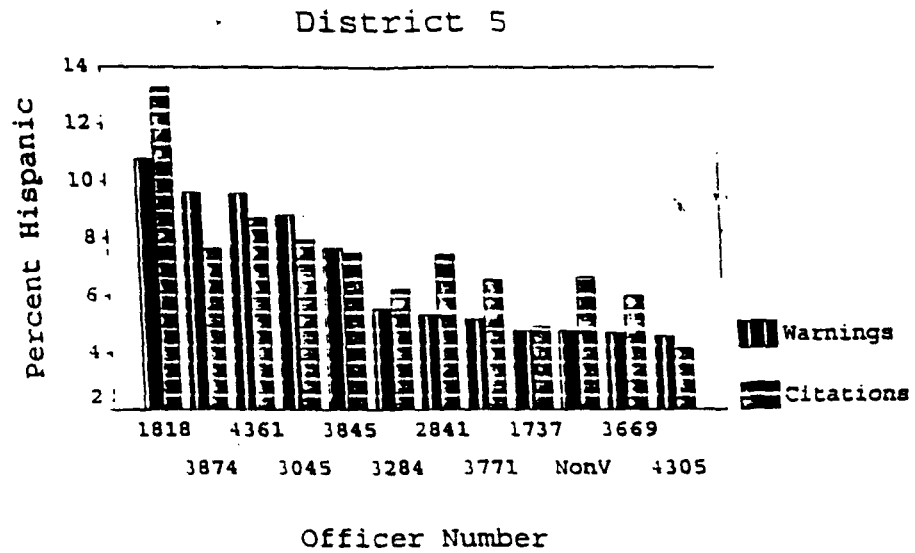
Histogram representations of Exhibit 4

Percent Hispanic Surnames Warnings and Citations 1990-1997

District 4

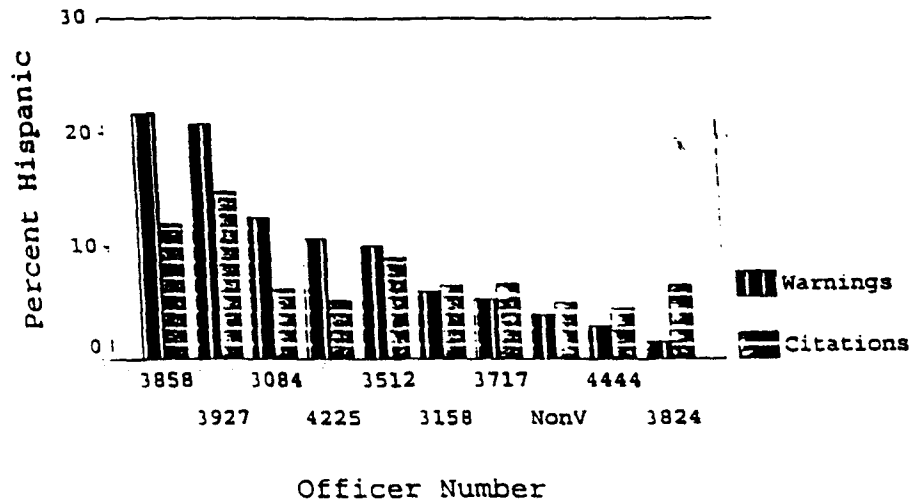


Percent Hispanic Surnames
Warnings and Citations 1990-1997



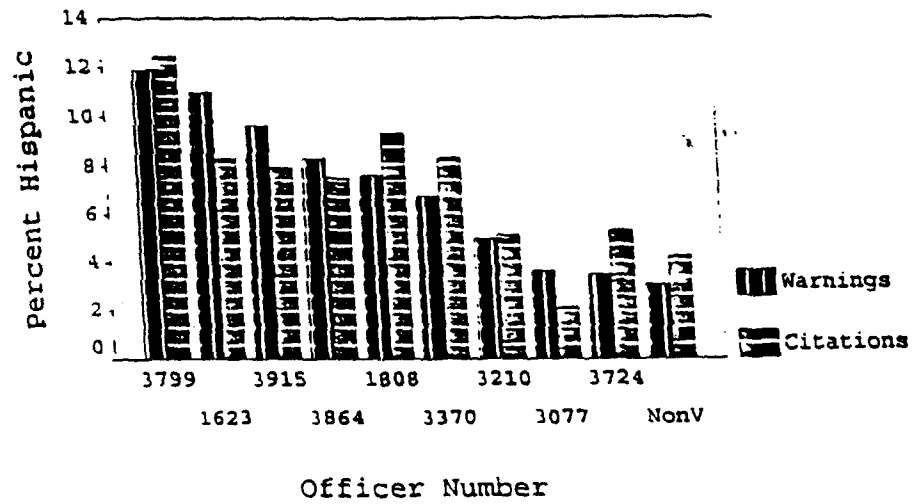
Percent Hispanic Surnames Warnings and Citations 1990-1997

District 6

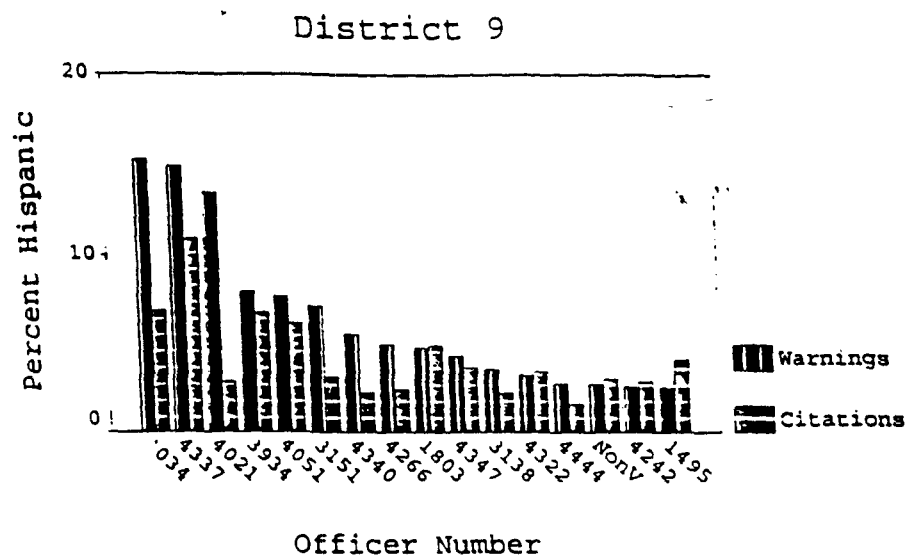


Percent Hispanic Surnames
Warnings and Citations 1990-1997

District 7

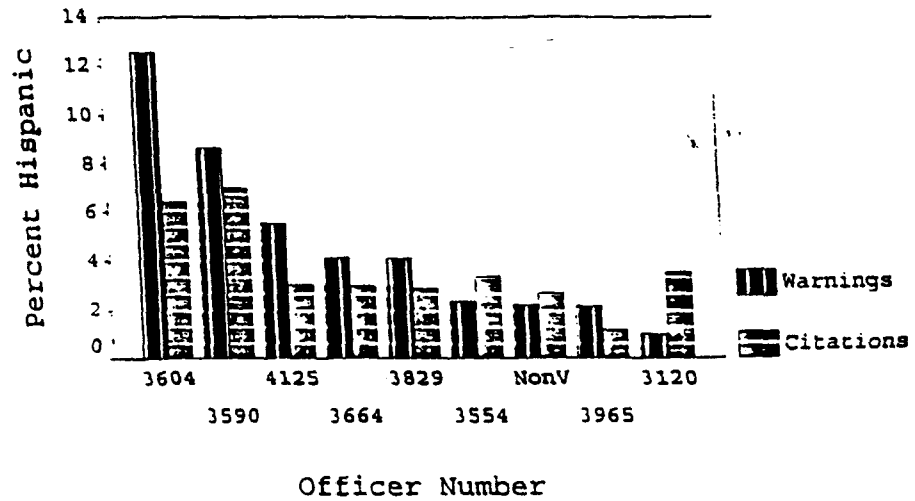


Percent Hispanic Surnames Warnings and Citations 1990-1997

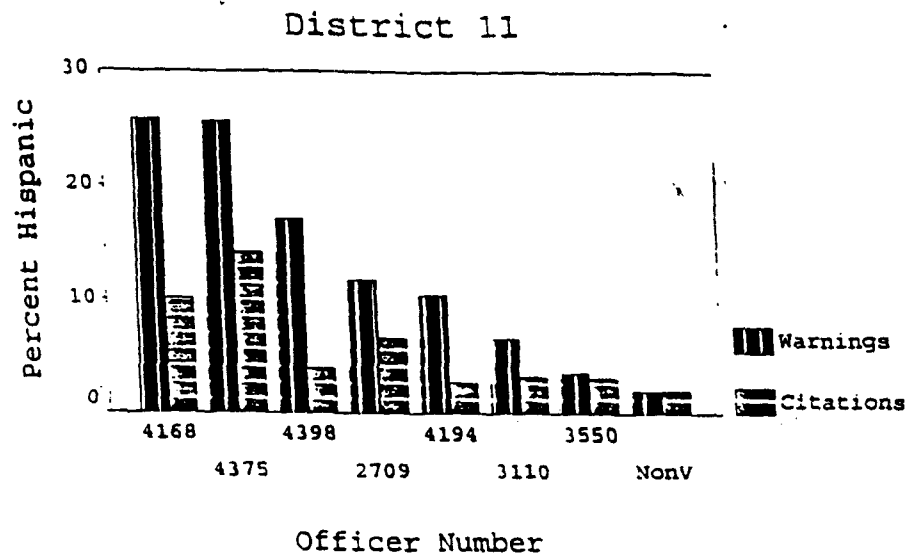


Percent Hispanic Surnames
Warnings and Citations 1990-1997

District 10

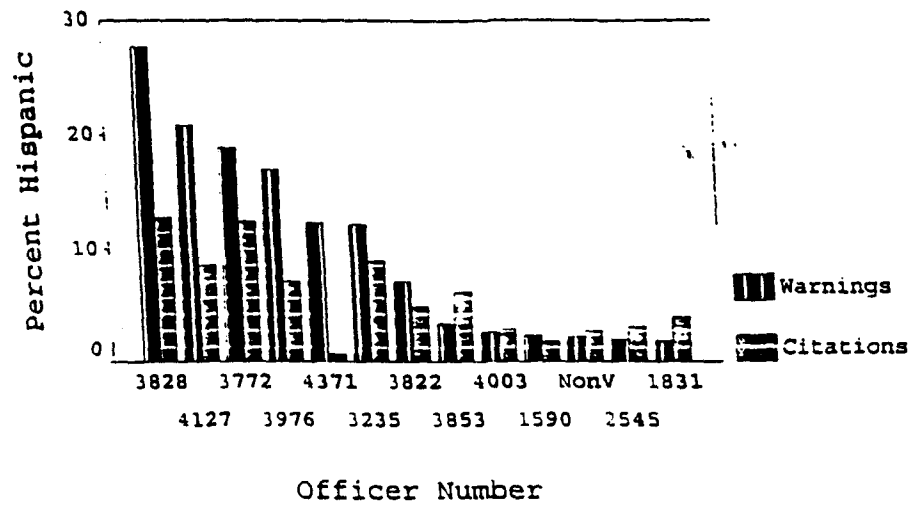


Percent Hispanic Surnames
Warnings and Citations 1990-1997



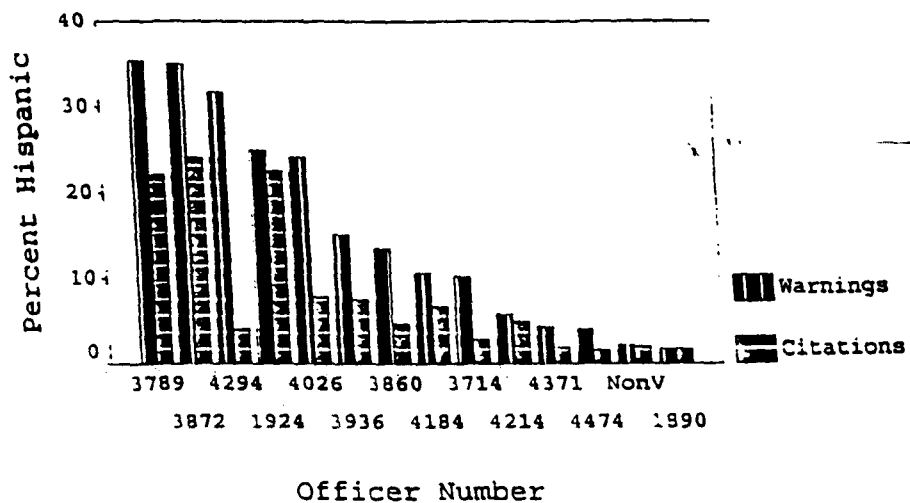
Percent Hispanic Surnames Warnings and Citations 1990-1997

District 12

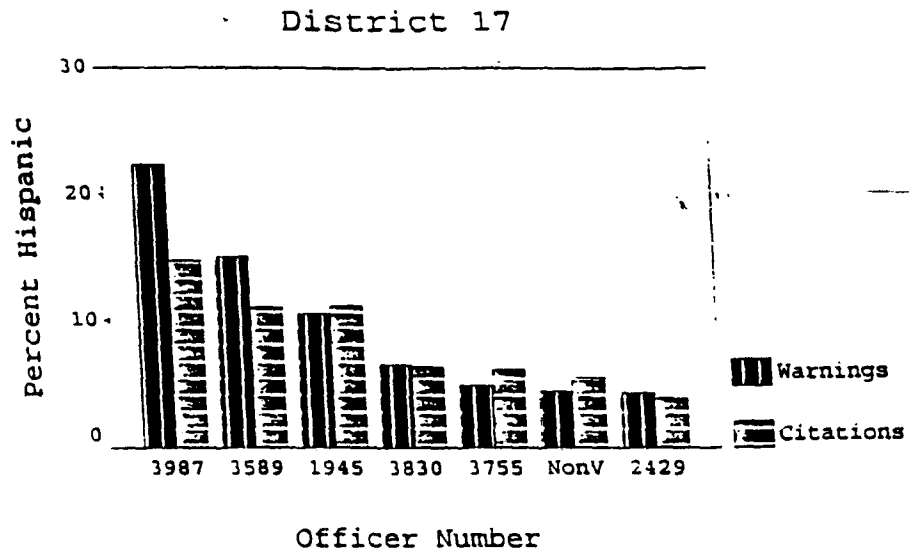


Percent Hispanic Surnames Warnings and Citations 1990-1997

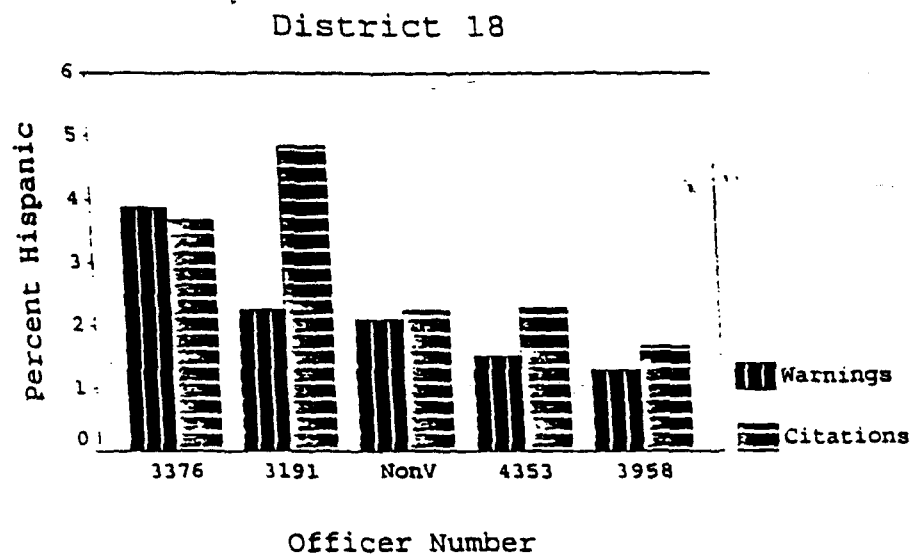
District 13



Percent Hispanic Surnames
Warnings and Citations 1990-1997



Percent Hispanic Surnames
Warnings and Citations 1990-1997



SUMMARY OF SHAPIRO EXHIBIT 6

**SPEEDING OFFENSES BY MOTORISTS WITH HISPANIC SURNAMES
AS A PERCENTAGE OF SPEEDING OFFENSES BY ALL MOTORISTS**

POSTED SPEED	CLOCKED SPEED	DISTRICT 4	DISTRICT 5	DISTRICT 6	DISTRICT 7	DISTRICT 9	DISTRICT 10	DISTRICT 11	DISTRICT 12	DISTRICT 13	DISTRICT 17	DISTRICT 18
55	56-60	8.40%	4.70%	10.35%	5.25%	8.69%	2.20%	13.31%	12.29%	5.30%	6.27%	3.78%
	61-65	11.22%	4.62%	11.28%	4.23%	7.48%	2.70%	27.74%	4.14%	3.97%	9.87%	1.18%
	All Speeds	8.80%	4.62%	8.86%	4.55%	6.27%	2.17%	13.14%	4.75%	3.84%	7.99%	1.30%
65	66-70	2.76%	5.90%	9.54%	7.49%	8.60%	6.12%	12.88%	17.72%	28.77%	10.38%	7.02%
	71-75	10.30%	5.16%	6.13%	6.80%	4.69%	8.83%	12.63%	8.72%	17.98%	12.33%	4.01%
	All Speeds	5.46%	5.71%	7.05%	6.54%	4.47%	5.05%	9.30%	9.05%	14.94%	9.19%	4.37%

NOTE: This data addresses citations and warnings issued from 1990 to 1997 by officers who have served on a Valkyrie team.

SUMMARY OF SHAPIRO EXHIBIT 7

DISCRETIONARY OFFENSES BY MOTORISTS WITH HISPANIC SURNAMES AS A PERCENTAGE OF DISCRETIONARY OFFENSES BY ALL MOTORISTS, WITH A COMPARISON OF VALKYRIE AND NON-VALKYRIE OFFICERS

		DISTRICT 4		DISTRICT 5		DISTRICT 6		DISTRICT 7		DISTRICT 9		DISTRICT 10	
		V	n-V	V	n-V	V	n-V	V	n-V	V	n-V	V	n-V
SPEED	C	7.02%	7.95%	5.14%	4.86%	4.87%	3.82%	5.17%	3.53%	2.70%	2.54%	2.66%	2.37%
	W	9.32%	6.57%	4.98%	4.87%	9.83%	3.54%	6.18%	2.77%	7.63%	2.17%	3.79%	1.86%
	B	8.37%	7.05%	5.05%	4.76%	7.51%	3.69%	5.80%	3.09%	5.73%	2.35%	3.40%	2.08%
LANE	C	9.86%	10.43%	5.65%	6.58%	6.39%	4.53%	6.61%	3.74%	2.44%	2.95%	0.99%	3.22%
	W	9.39%	7.97%	10.54%	7.33%	17.91%	8.29%	12.45%	5.12%	12.02%	4.71%	11.94%	3.24%
	B	9.52%	8.62%	9.28%	7.04%	16.84%	7.32%	11.76%	4.84%	10.09%	4.18%	9.19%	3.23%
PLATE	C	9.92%	12.23%	9.98%	5.43%	4.25%	7.21%	*	4.72%	13.88%	4.29%	5.75%	3.97%
	W	9.73%	9.08%	8.50%	6.38%	14.18%	6.59%	8.87%	4.20%	9.40%	4.37%	10.92%	2.99%
	B	9.73%	9.19%	8.53%	6.35%	14.01%	6.61%	8.84%	4.21%	9.43%	4.37%	10.87%	3.00%
LAMP	C	*	12.73%	11.39%	5.12%	*	13.27%	*	8.89%	*	2.28%	*	0.54%
	W	11.10%	11.26%	6.20%	5.53%	4.04%	4.88%	4.82%	4.12%	2.99%	2.69%	2.53%	2.23%
	B	11.30%	11.32%	6.32%	5.53%	3.99%	4.94%	4.82%	4.14%	2.98%	2.69%	2.53%	2.22%

		DISTRICT 11		DISTRICT 12		DISTRICT 13		DISTRICT 17		DISTRICT 18	
		V	n-V	V	n-V	V	n-V	V	n-V	V	n-V
SPEED	C	3.40%	1.98%	3.96%	2.76%	3.09%	1.92%	4.74%	4.08%	2.36%	2.23%
	W	15.36%	1.99%	8.17%	1.86%	10.63%	2.24%	10.10%	4.18%	1.79%	1.61%
	B	11.43%	1.99%	6.91%	2.23%	8.03%	2.09%	8.46%	4.13%	1.97%	1.85%
LANE	C	3.30%	2.75%	4.79%	2.52%	2.87%	1.61%	10.98%	5.47%	2.35%	2.30%
	W	21.08%	2.46%	28.44%	3.45%	28.84%	3.98%	26.67%	8.74%	3.33%	4.07%
	B	17.58%	2.55%	26.70%	3.17%	27.22%	3.40%	24.85%	8.04%	3.11%	3.73%
PLATE	C	*	2.79%	12.30%	3.22%	8.78%	2.07%	23.95%	5.04%	*	6.30%
	W	13.75%	2.21%	20.45%	2.65%	18.34%	2.44%	12.32%	6.03%	5.99%	2.24%
	B	13.60%	2.22%	20.28%	2.66%	18.27%	2.43%	12.42%	6.02%	5.97%	2.28%
LAMP	C	*	1.63%	*	1.05%	*	0.61%	*	*	*	*
	W	3.15%	2.22%	2.80%	1.57%	2.60%	1.49%	5.32%	4.82%	2.06%	1.77%
	B	3.15%	2.21%	2.78%	1.56%	2.59%	1.48%	5.30%	4.81%	2.05%	1.76%

NOTE: Data on "lamp" violations are provided to illustrate a nondiscretionary offense

KEY: "V" = Officers who have served on a Valkyrie team
"n-V" = Officers who have never served on a Valkyrie team

"Speed" = Speeding over statutory limit (066)
"Lane" = Improper lane usage (082)
"Plate" = Improper display of license plate (010)
"Lamp" = Driving with only one headlamp (141)

"C" = Citations
"W" = Warnings
"B" = Both citations and warnings

"*" = Too few data entries for proper statistical analysis

2/11/99

SEARCH AND SEIZURE DATA, BY RACE:

From a sample of Valkyrie Field Reports,
written by dedicated Valkyrie officers in 1992

MOTORIST RACE	BLACK	HISPANIC	WHITE	TOTAL
NUMBER OF REPORTS	93	114	99	306
SEARCHES*				
Number	72	106	91	269
As a % of all reports	77%	93%	92%	88%
CONSENT SEARCHES				
Number	51	99	68	218
As a % of all searches	71%	93%	75%	81%
CONSENT SEARCH SEIZURES				
Number	18	21	22	61
As a % of all consent searches	35%	21%	32%	28%
PROBABLE CAUSE SEARCHES				
Number	21	7	23	51
As a % of all searches	29%	7%	25%	19%
PROBABLE CAUSE SEARCH SEIZURES				
Number	19	4	20	43
As a % of all probable cause searches	90%	57%	87%	83%

[law/adam/chavez/chavez-1992-sample-RESULTS]

* As to those Valkyrie Field Reports that do not specifically mention a search, the overwhelming majority involved motorists either wanted on an outstanding warrant or driving on a suspended license. In most of these cases, the Reports state that the officers arrested the motorist and/or towed the motorist's car. It is likely that some of these cases involved searches, despite the fact that these Reports do not mention searches. Nonetheless, in the analysis above, these Reports are not counted as searches.

SUMMARY OF SHAPIRO REPORT, PARAGRAPHS 32 - 68

**FIELD REPORTS INVOLVING BLACK OR HISPANIC MOTORISTS
AS A PERCENTAGE OF ALL FIELD REPORTS**

RACE	CATEGORY	Dist. 4	Dist. 5	Dist. 6	Dist. 7	Dist. 9	Dist. 10	Dist. 11	Dist. 12	Dist. 13	Dist. 17	Dist. 18
Black	Local driving-age population	23.85%	8.39%	4.15%	5.33%	1.20%	6.59%	13.57%	1.19%	4.53%	0.85%	0.96%
	All Field Reports	51.94%	28.70%	29.30%	13.45%	23.60%	22.70%	48.10%	13.90%	15.90%	11.50%	8.20%
	Valkyrie Field Reports	61.40%	27.50%	23.60%	14.10%	24.70%	30.90%	23.30%	12.50%	18.90%	11.40%	14.00%
	Valkyrie Field Reports by Valkyrie Officers	63.20%	26.50%	24.00%	13.40%	25.90%	30.80%	16.80%	12.90%	17.60%	11.20%	20.00%
Hispanic	Local driving-age population	11.78%	4.72%	4.18%	3.60%	0.59%	1.15%	1.09%	0.39%	0.78%	2.43%	0.42%
	All Field Reports	9.31%	7.90%	13.15%	5.28%	5.40%	2.20%	2.80%	4.60%	3.30%	11.50%	2.80%
	Valkyrie Field Reports	8.00%	17.40%	33.90%	11.30%	22.60%	15.30%	28.40%	34.10%	23.80%	39.10%	13.30%
	Valkyrie Field Reports by Valkyrie Officers	7.60%	18.30%	32.70%	12.90%	26.60%	18.10%	40.50%	36.90%	31.40%	41.30%	0.00%