REPORT TO THE WASHINGTON STATE PATROL

Relating to:

National Highway Traffic Safety Administration (NHTSA) Grant-Funded Study on Racial Profiling Phenomena in Washington State
OGRD # 107828

Results of the Monitoring of WSP Traffic Stops for Biased Policing: Analysis of WSP Stop, Citation, Search and Use of Force Data

and

Results of the Use of Observational Studies for Denominator Assessment

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Executive Summary

This portion of the final report prepared under the auspices of the *National Highway Traffic Safety Administration (NHTSA)* Grant-Funded Study on Racial Profiling Phenomena in Washington State [OGRD # 107828] sets forth findings derived from the independent monitoring of traffic stop data collected by the WSP. This report contains the results of an analysis of traffic stops, traffic citations, searches and use of force for evidence of biased policing. Our analysis of agency data is carried out both at the statewide and individual Autonomous Patrol Area (APA) levels. Our analysis indicates very few instances of noteworthy minority/non-minority disparities in the use of police discretion by the officers of the Washington State Patrol. Most importantly, there is no evidence of a systematic practice of racial profiling in either who is stopped, who is issued a citation, who is searched, and to whom force is applied by WSP officers. In addition to these substantive findings, this report also contains findings derived from a testing of the utility of racial coded traffic collision data as a "denominator" for racial profiling assessments by means of three observational studies conducted with digital photography. Those results indicate that collision data are likely to represent a reliable and cost-effective indicator of driver population demographics, making the monitoring of racial profiling an affordable practice in nearly all police jurisdictions.

Analysis of Traffic Stops for Evidence of Biased Policing: The Analysis of Self-Initiated Contacts

Table 1 presents data on all (self-initiated) traffic stops by the Washington State Patrol for the **November, 1, 2005 to September 30, 2006** period for each of the 34 autonomous patrol areas (APAs). Statewide, 83.1% of those contacted by the WSP were White; 3.7% were African-American, 0.6% Native-American, 3.6% Asian/Pacific Islanders, 0.9% East Indian, and 7.8% Hispanic. Comparisons of these data to 2005 U.S. Census Bureau data on the racial/ethnic composition of Washington State indicate that Whites are slightly under-represented in WSP traffic stops (Whites comprise 85% of Washington State's population); Blacks are slightly over-represented (3.5% of Washington State's population); Native-Americans are under-represented (1.7% of Washington State's population); Asian/Pacific Islanders are under-represented (6.9% of Washington State's population) and Hispanics are slightly under-represented (8.8% of Washington State's population) (the Census Bureau does not provide data on the percentage of East Indians).

[Table 1 on the following page]

Census data are not ideal benchmarks in the analyses of traffic stop data, as there are likely to be differences in driving patterns and the types/conditions of vehicles across racial groups that may have an impact on who is contacted (see Lorie A. Fridell, ***By the Numbers: A Guide for Analyzing Race Data from Vehicle Stops***, Washington, DC: Police Executive Research Forum, 2004). In addition, particularly with respect to the Hispanic population in Washington State, U.S. Census data may underestimate the total resident

Table 1: WSP Trooper Self-Initiated Contacts (%)

Data for Nov. 2005 - Sept. 2006

APA	White	Black	Native Amer.	Asian	E. Indian	Hispanic	N
2	74.3	11.7	0.4	6.4	0.6	6.0	15,404
3	82.1	7.4	0.2	4.0	0.4	5.5	13,895
4	85.3	4.5	0.6	4.1	0.6	4.4	16,060
5	68.3	10.9	0.2	10.2	2.2	7.5	14,656
6	66.1	12.7	0.3	9.0	1.7	9.3	19,549
7	74.6	5.5	0.1	8.6	2.5	8.1	21,918
8	90.3	1.7	1.0	2.6	0.4	3.6	3,504
11	60.1	1.9	5.8	1.4	0.4	30.2	11,564
12	49.5	1.2	1.8	1.0	0.3	45.8	5,423
13	73.7	2.2	0.2	1.5	0.2	21.9	18,401
14	84.5	1.0	0.5	0.8	0.3	12.9	10,891
15	97.0	0.4	1.5	0.3	0.1	0.6	8,079
16	88.1	2.4	0.5	2.5	0.7	5.7	10,928
19	93.9	2.2	0.9	1.1	0.1	1.6	23,481
20	93.6	1.8	0.3	2.5	0.3	1.3	8,010
21	86.2	3.4	0.2	3.2	0.8	5.7	20,553
22	88.9	0.8	1.1	0.9	0.3	7.8	7,028
23	87.8	3.1	0.1	3.1	0.8	4.6	11,123
24	85.4	2.7	0.2	3.9	1.2	6.5	11,425
25	80.5	0.5	0.2	1.1	0.4	17.2	18,192
26	85.6	2.7	0.5	3.0	0.7	7.2	17,514
27	82.0	0.4	4.1	0.5	0.2	12.8	7,977
28	77.5	2.1	0.3	2.0	0.6	17.2	15,753
30	81.0	2.3	1.6	7.2	3.3	4.1	11,405
31	83.7	2.1	0.4	4.4	1.4	7.8	10,693
32	88.1	4.7	0.3	3.0	0.2	3.7	8,472
33	78.6	4.3	0.4	7.0	2.2	7.2	31,618
34	90.0	1.8	0.1	2.6	0.5	4.9	16,837
35	92.6	1.3	1.8	2.1	0.4	1.8	17,576
36	86.2	5.2	0.4	4.0	0.2	3.7	26,421
37	88.4	2.1	0.8	2.6	0.3	5.3	14,200
38	89.5	1.6	1.5	1.6	0.1	5.5	4,616
39	94.1	0.8	0.2	1.6	0.2	3.0	8,758
40	94.6	0.5	0.3	0.9	0.2	3.3	6,139
Statewide	**83.1**	**3.7**	**0.6**	**3.6**	**0.9**	**7.8**	**569,862**

population due to the presence of migrant workers and undocumented immigrants. It is also important to note that certain areas of the state (particularly the Interstate -5 corridor running from the Canadian border to the Oregon border) patrolled by the WSP have a high proportion of *out-of-state* drivers, and it is probable that these drivers are more likely to be members of racial minority groups than resident in-state drivers. Finally, census data are particularly problematic to use as benchmarks when analyzing data from smaller geographic units, such as autonomous patrol areas. As such, our analyses utilize four alternative benchmarks which we have argued in prior reports represent a comprehensive source of "denominator estimates" (see Nicholas Lovrich, Michael Gaffney, Clay Mosher, Mitchell Pickerill, and Michael Smith, ***Washington State Patrol Traffic Stop Data Analysis Project Report, June, 2003***) contacts initiated as a result of "calls for service" and vehicle assists, contacts initiated as a result of radar patrols; WSP contacts initiated in responding to collisions; and daytime traffic stops.

In these analyses, we adopt the criterion used in several other studies of racial profiling that differences are not substantively significant as long as the percentage of those contacted in any particular racial group is not more than **five percentage points** greater than the percentage of the group in the benchmark comparison[1] (see Joyce McMahon, Joel Gardner, Ronald Davis, and Amanda Kraus, ***How to Collect and Analyze***

1 Alternative measures of disparity include the "ratio of disparity," "relative differences," and the "disparity index," (Fridell, 2004) or what Lamberth (see Lamberth et al., *Ann Arbor Police Department Traffic Stop Data Collection Methods and Analysis Study, Report submitted to the Ann Arbor Police Department* by Lamberth Consulting, 2004) refers to as "odds ratios." The latter measure is calculated by dividing the percentage of drivers in a particular racial group who are stopped by their percentage in the benchmark population. As Fridell (2004) notes, when the percentage in a particular minority group in both the contacted driver population and the benchmark population is low, the disparity index (and the two alternative measures of disparity) can be misleadingly high. Although there are certain APAs in which the proportion of minorities (particularly Hispanics) contacted is relatively high, at the statewide level no racial minority group represents more than 7.1% of those contacted by the WSP. Thus, in order to maintain consistency in the reporting of our results, and in order to avoid the presentation of

Racial Profiling Data: Your Reputation Depends On It! Final Project Report for Racial Profiling Data Collection and Analysis. Washington, DC: US Government Printing Office, 2002).

Calls for Service and Self-Initiated Vehicle Assists

The WSP data include a separate code for contacts initiated as a result of calls for service and vehicle assists. This particular benchmark can be considered a "blind" type of benchmark because it is highly unlikely that WSP Troopers would know the race of the individual being assisted in the vast majority of such citizen contacts. Table 2 displays findings on the percent of drivers contacted by WSP Troopers as a result of calls for service and vehicle assists by race and APA (due to reliability concerns, analyses were restricted to APAs where there were a minimum of 20 such WSP Trooper contacts over the November 1, 2005 to September 30, 2006 period). The cell entries in Table 3 represent the figure obtained after subtracting the percentage of individuals contacted as a result of calls for service and vehicle assists from the percentage of all self-initiated contacts in each APA.

(Tables 2 and 3 displayed on the following

two pages)

potentially misleading findings, our measure of disparity subtracts the percentage of those in each racial group contacted from their percentage in the various benchmarks.

Table 2: Calls for Service and Vehicle Assists

Data for Nov. 2005 - Sept. 2006

APA	White	Black	Native Amer.	Asian	E. Indian	Hispanic	N
2	77.3	11.1	—	6.0	0.7	4.8	415
3	80.1	7.9	0.8	4.9	—	6.3	493
4	88.2	3.5	—	3.5	0.6	4.1	170
5	72.6	10.0	—	9.1	1.4	6.6	351
6	65.3	14.7	1.0	7.8	2.0	8.1	409
7	78.4	2.7	0.5	7.8	1.6	8.6	370
8	76.7	3.3	3.3	3.3	10.0	10.0	30
11	45.5	5.0	11.9	3.0	1.0	33.7	101
12	44.8	3.4	6.9	—	—	44.8	29
13	68.0	4.0	—	—	—	28.0	50
14	55.2	6.9	6.9	—	—	31.0	29
15	—	—	—	—	—	—	4
16	78.6	2.9	—	3.9	—	14.6	103
19	91.5	3.0	1.3	0.4	0.4	2.1	235
20	92.5	1.9	—	3.8	—	1.9	53
21	82.7	4.6	—	3.6	0.7	8.5	307
22	—	—	—	—	—	—	14
23	89.7	4.4	1.5	—	1.5	2.9	68
24	75.0	8.9	0.8	3.2	1.6	10.5	124
25	72.4	0.6	0.6	0.6	2.9	23.0	174
26	78.8	3.0	2.0	2.0	—	14.1	99
27	—	—	—	—	—	—	18
28	60.0	14.3	5.7	2.9	—	17.1	35
30	89.6	2.1	—	2.1	—	6.3	48
31	79.6	2.2	—	1.1	6.5	10.8	93
32	—	—	—	—	—	—	10
33	79.3	3.8	0.4	7.1	1.7	7.3	1,133
34	92.6	0.4	—	1.2	0.8	4.5	242
35	84.6	2.6	7.7	2.6	—	2.6	39
36	86.2	5.1	0.7	3.4	0.3	4.2	731
37	79.5	2.3	2.3	2.3	—	13.6	44
38	89.5	2.6	5.3	—	—	2.6	76
39	—	—	—	—	—	—	16
40	—	—	—	—	—	—	6
Statewide	**79.3**	**5.6**	**0.9**	**4.8**	**1.1**	**8.0**	**6,119**

Table 3: Self-Initiated Contacts Minus Contacts Via Calls for Service and Vehicle Assists (%)

Data for Nov. 2005 - Sept. 2006

APA	White	Black	Native Amer.	Asian	E. Indian	Hispanic
2	-3.0	+0.6	+0.4	+0.4	-0.1	+1.2
3	+2.0	-0.5	-0.6	-0.9	+0.4	-0.8
4	-2.9	+1.0	+0.6	+0.6	0.0	+0.3
5	-4.3	+0.9	+0.2	+1.1	+1.6	+0.9
6	+0.8	-2.0	-0.7	+1.2	+0.3	+1.2
7	-3.8	+2.8	-0.4	+0.8	+0.9	-0.5
8	+13.6	-1.6	-2.3	-0.7	-9.6	-6.4
11	+14.6	-4.1	-6.1	-1.6	-0.7	-3.5
12	+4.7	-2.2	-5.1	+1.0	+0.3	+ 1.0
13	+5.7	-1.8	+0.2	+1.5	+0.2	-6.1
14	+29.3	-5.9	-6.4	+0.8	+0.1	-18.1
15	—	—	—	—	—	—
16	+9.5	-0.5	+0.5	-1.4	+0.1	-8.9
19	+2.4	-0.8	-0.4	+0.7	-0.3	-0.5
20	+1.1	+0.1	+0.3	-0.7	+0.3	-0.6
21	+3.5	-1.2	+0.2	-0.4	+0.1	-2.8
22	—	—	—	—	—	—
23	-1.9	-1.1	-1.4	+3.1	-0.7	+3.6
24	+10.4	-6.2	-0.6	+0.7	-0.4	-4.0
25	+8.1	-0.1	-0.4	+0.5	-2.5	-5.8
26	+6.8	-0.3	-1.5	+1.0	+0.7	-6.9
27	—	—	—	—	—	—
28	+17.5	-12.2	-5.4	-0.9	+0.6	+0.1
30	-8.6	+0.2	+1.6	**+5.1**	+3.3	-2.2
31	+4.1	+0.1	+0.4	+3.3	-5.1	-3.0
32	—	—	—	—	—	—
33	-0.7	+0.5	0.0	-0.1	-1.2	-3.4
34	-2.6	+1.4	+0.1	+1.4	-0.3	+0.4
35	+8.0	-1.3	-5.9	-0.5	+0.4	-0.8
36	0.0	+0.1	-0.3	+0.6	-0.1	-0.5
37	+8.9	-0.2	-1.5	+0.3	+0.3	-8.3
38	0.0	-1.0	-3.8	+1.6	+0.1	+3.1
39	—	—	—	—	—	—
40	—	—	—	—	—	—
Statewide	**+4.2**	**-1.9**	**-0.3**	**-1.2**	**-0.2**	**-0.2**

The findings set forth in Table 3 indicate that there are no APAs in which the percentage of Blacks, Native-Americans, or East Indians contacted as a result of self-initiated WSP activity is more than five percentage points greater than those contacted as a result of calls for service and vehicle assists. For Asians/Pacific Islanders, there is one APA (APA 30 - Bellingham) for which the difference is greater than five percent, and for Hispanics, there are no APAs for which the difference is greater than five percent.

Radar Patrols

A second benchmark available for analysis is the comparison of traffic stop data for drivers who have been contacted as a result of being identified as speeding **via radar** with all other stops. This particular benchmark statistic constitutes a measure of *both* driving quantity and driving quality, and has the important additional advantage of being a "blind" count – that is to say, WSP Troopers operating radar units seldom if ever can determine the race of motorists identified as speeders by this traffic safety enforcement technique.

The figures displayed in Table 4 present findings on the percent of drivers contacted by the WSP as a result of radar displayed by race and APA, and the figures presented in Table 5 subtract the percentage of contacted via radar (by race) from the percentage contacted by the WSP as a result of all other self-initiated contacts. Adhering to the above-mentioned standard of differences of greater than five percent being substantively significant, Table 5 reveals that there is not a single APA in which Blacks, Native-Americans, Asian/Pacific Islanders, or East Indians are over-represented in contacts initiated as a result of radar patrols compared with all other self-initiated contacts. Hispanics are over-represented in one APA (APA 12 - Sunnyside).

[Tables 4 and 5 on the following two pages]

Table 4: Contacts Via Radar Patrols (%)

Data for Nov. 2005 - Sept. 2006

APA	White	Black	Native Amer.	Asian	E. Indian	Hispanic	N
2	76.4	9.7	0.2	6.8	0.5	5.8	3,313
3	83.2	7.0	0.2	4.0	0.4	4.7	4,092
4	84.4	4.7	0.5	4.3	0.8	4.5	5,567
5	69.7	8.1	0.2	11.3	2.7	7.2	3,644
6	69.6	10.9	0.2	7.9	1.6	8.5	5,329
7	76.1	4.4	0.1	8.2	2.6	7.9	7,691
8	90.5	1.5	0.8	3.2	0.4	3.3	2,190
11	65.5	2.0	3.8	1.8	0.5	26.2	5,651
12	55.0	1.5	1.4	1.2	0.3	39.9	2,806
13	74.3	2.1	0.2	1.5	0.2	21.5	9,283
14	84.7	1.0	0.5	0.9	0.4	12.5	7,594
15	97.4	0.4	1.2	0.4	0.1	0.5	3,702
16	87.8	2.5	0.6	2.7	0.7	5.7	7,156
19	94.6	1.7	1.0	1.0	0.1	1.5	9,482
20	93.8	1.8	0.3	2.4	0.3	1.2	5,054
21	86.3	2.9	0.2	3.4	1.0	5.7	7,745
22	90.1	0.7	0.7	0.9	0.2	7.4	5,027
23	85.7	3.9	0.1	4.0	1.0	4.5	4,994
24	85.1	2.9	0.2	4.4	1.3	5.9	7,810
25	83.4	0.6	0.3	1.4	0.4	14.0	9,866
26	85.9	2.7	0.5	3.4	0.7	6.5	10,096
27	85.3	0.4	2.9	0.6	0.2	10.5	5,599
28	80.5	2.3	0.3	2.4	0.8	13.4	8,949
30	78.4	2.0	1.0	9.9	4.2	3.8	6,272
31	83.5	2.4	0.3	6.4	1.8	5.3	5,667
32	89.5	4.1	0.2	2.8	0.2	3.0	3,646
33	78.6	3.8	0.3	8.4	2.5	6.1	14,392
34	90.2	1.8	0.1	2.6	0.6	4.6	8,516
35	92.1	1.2	1.7	2.5	0.5	1.8	10,561
36	86.6	5.0	0.4	4.1	0.2	3.5	13,207
37	88.2	2.8	0.6	3.0	0.4	4.4	8,241
38	90.4	1.7	1.2	1.9	0.3	4.5	1,975
39	94.4	0.8	0.2	1.7	0.3	2.6	6,664
40	94.4	0.7	0.3	1.0	0.2	3.4	4,000
Statewide	**84.8**	**2.9**	**0.5**	**3.6**	**0.9**	**6.8**	**271,168**

Table 5: Self-Initiated Contacts Minus Contacts Via Radar Patrols
Data for Nov. 2005 - Sept. 2006

APA	White	Black	Native Amer.	Asian	E. Indian	Hispanic
2	-2.1	+2.0	+0.2	-0.4	+0.1	+0.2
3	-1.1	+0.4	0.0	0.0	0.0	+0.8
4	+0.9	-0.2	+0.1	-0.2	-0.2	-0.1
5	-1.4	+2.8	0.0	-1.1	-0.5	+0.3
6	-3.5	+1.8	+0.1	+1.1	+0.1	+0.8
7	-1.5	+1.1	0.0	+0.4	-0.1	+0.2
8	-0.2	+0.2	-0.2	-0.6	0.0	+0.3
11	-4.4	-0.1	+2.0	-0.4	-0.1	+4.0
12	-5.5	-0.3	+0.4	-0.2	0.0	**+5.9**
13	-0.6	+0.1	0.0	0.0	0.0	+0.4
15	-0.4	0.0	+0.3	-0.1	0.0	+0.1
16	+0.3	-0.1	-0.1	-0.2	0.0	0.0
19	-0.7	+0.5	-0.1	+0.1	0.0	+0.1
20	-0.2	0.0	0.0	+0.1	+0.2	+0.1
21	-0.1	-0.5	0.0	-0.2	-0.2	0.0
22	-0.2	+0.1	+0.4	0.0	+0.1	+0.4
23	+2.1	-0.8	0.0	-0.9	-0.2	+0.1
24	+0.3	-0.2	0.0	-0.5	-0.1	+0.7
25	-2.9	-0.1	-0.1	-0.3	0.0	+3.2
26	-0.3	0.0	0.0	-0.4	0.0	+0.7
27	-3.3	0.0	+2.2	-0.1	0.0	+2.3
28	-3.0	-0.2	0.0	-0.4	-0.2	+3.8
30	-2.6	+0.3	+0.6	-2.7	-0.9	+0.3
31	+0.2	-0.3	+0.1	-2.0	-0.4	+2.5
32	-1.4	+0.6	+0.1	+0.2	0.0	+0.7
33	0.0	+0.5	-0.1	-1.4	-0.3	+1.1
34	-0.2	0.0	0.0	0.0	-0.1	+0.3
35	-0.5	+0.1	+0.1	-0.4	-0.1	0.0
36	-0.4	+0.2	0.0	-0.1	0.0	+0.2
37	+0.2	-0.7	+0.2	-0.4	-0.1	+1.1
38	-0.9	-0.1	+0.3	-0.3	-0.3	+1.0
39	-0.3	0.0	0.0	-0.1	-0.1	-0.4
40	-0.2	-0.2	0.0	-0.1	0.0	-0.1
Statewide	**-1.7**	**+0.8**	**+0.1**	**0.0**	**0.0**	**+1.0**

Collisions

Arguably the *most effective* denominator benchmark is to compare traffic stop data with rates of involvement in roadway collisions. These collision data can be seen as measuring both the quantity and quality of driving in a particular area. Most importantly, traffic collision data constitute another "blind" measure since WSP Troopers do not know the race of those citizens they will contact in a traffic collision setting prior to arriving at the scene of the collision. At a later point in this report we present findings from an assessment of the accuracy of collision data coded for race compared with evidence collected in an observational study permitting the coding of digital facial images of drivers on two principal roadways in the Seattle and Spokane areas and a highway in the Yakima area. That assessment strongly suggests that racially coded traffic collisions likely constitute a very good estimator for the racial composition of the driving population.

[Tables 6 and 7 on the following two pages]

Table 6 displays findings on the percent of drivers contacted by the WSP as a result of their involvement in motor vehicle collisions by race and APA, and the figures presented in Table 7 subtract the percentage involved in collisions (by race) from the percentage contacted as a result of self-initiated activity by the WSP. The results in Table 7 reveal that there is not a single APA in which Blacks, Native-Americans, Asians/Pacific Islanders, East Indians, or Hispanics are over-represented in contacts as compared to collision data (in fact, there are three APAs in which Hispanics are under-represented).

Table 6: Contacts Via Collisions (%)
Data for Nov. 2005 - Sept. 2006

APA	White	Black	Native Amer.	Asian	E. Indian	Hispanic	N
2	76.9	8.4	0.2	6.9	0.6	6.5	2,462
3	83.7	6.2	0.3	3.9	0.1	5.4	1,880
4	88.0	2.9	0.4	3.8	0.5	3.8	1,371
5	70.9	7.2	0.1	11.9	2.6	6.7	3,449
6	65.9	9.2	0.3	10.1	2.3	11.3	3,019
7	74.4	3.9	0.2	10.2	3.0	7.4	2,285
8	85.0	0.0	2.9	2.9	0.0	7.9	140
11	61.7	1.2	4.8	0.7	0.5	30.7	579
12	42.5	0.4	1.4	1.4	0.4	53.6	280
13	72.2	1.4	0.3	1.8	0.3	23.7	722
14	86.2	0.5	0.5	1.8	0.9	9.6	218
15	96.9	0.0	2.2	0.0	0.0	0.9	226
16	85.4	3.5	0.5	1.5	1.0	7.5	199
19	94.0	1.2	1.0	0.9	0.3	2.4	1,396
20	91.5	3.0	0.0	2.0	0.5	3.0	199
21	87.6	2.4	0.0	3.3	0.8	5.6	1,236
22	85.0	1.5	1.5	2.3	0.0	9.8	133
23	87.4	1.6	0.2	2.8	0.9	6.3	429
24	88.2	2.3	0.0	2.3	2.0	5.1	391
25	75.8	1.0	0.0	2.1	1.3	19.6	520
26	76.1	3.0	0.4	4.1	1.0	15.1	677
27	78.2	0.9	2.4	0.5	0.5	17.5	211
28	72.9	1.7	0.2	1.9	0.9	22.4	468
30	83.6	1.6	1.7	2.8	2.8	6.9	708
31	84.9	1.8	0.9	3.5	1.1	7.6	543
32	90.7	2.7	0.0	2.2	0.4	4.0	226
33	81.3	3.1	0.4	5.8	2.1	6.7	2,530
34	86.6	1.2	0.0	3.1	0.7	8.5	885
35	92.0	1.1	3.9	1.5	0.0	1.5	464
36	90.3	2.8	0.7	2.5	0.1	3.2	1,134
37	85.8	1.4	1.9	1.9	0.0	8.2	366
38	89.5	0.3	1.3	1.8	0.0	6.8	380
39	94.0	0.5	0.0	0.9	0.0	4.6	216
40	95.3	0.0	1.1	0.0	0.0	3.7	190
Statewide	**79.3**	**4.2**	**0.6**	**5.6**	**1.3**	**8.6**	**30,132**

Table 7: Self-Initiated Contacts Minus Contacts Via Collisions (%)
Data for Nov. 2005 - Sept. 2006

APA	White	Black	Native Amer.	Asian	E. Indian	Hispanic
2	-2.6	+3.3	+0.2	-0.5	0.0	-0.5
3	-1.6	+1.2	-0.1	+0.1	+0.3	+0.1
4	-2.7	+1.6	+0.2	+0.3	+0.1	-0.6
5	-2.6	+3.7	+0.1	-1.7	-0.4	+0.8
6	+0.2	+3.5	0.0	-1.1	+0.6	-2.0
7	+0.2	+1.6	+0.1	-1.6	-0.5	+0.7
8	+5.3	+1.7	+1.9	-0.3	+0.4	-4.3
11	-1.6	+0.7	+1.4	+0.7	-0.1	-0.5
12	**+7.0**	+0.8	+0.4	-0.4	-0.1	**-7.8**
13	+1.5	+0.8	-0.1	-0.3	-0.1	-1.8
14	-1.7	+0.5	0.0	-1.0	-0.6	+3.0
15	+0.1	+0.4	-0.7	+0.3	+0.1	-0.3
16	+2.7	-1.1	0.0	+1.0	-0.3	-1.8
19	+0.1	+1.0	-0.1	+0.2	-0.2	-0.8
20	+2.1	-1.2	+0.3	+0.5	-0.2	-1.7
21	-1.4	+1.0	+0.2	-0.1	0.0	+1.0
22	+3.9	-0.7	-0.4	-1.4	+0.3	-2.0
23	+0.4	+1.5	-0.1	+0.3	-0.1	-1.7
24	-2.8	+0.4	+0.2	+1.6	-0.8	+1.4
25	+4.7	-0.5	+0.2	-1.0	-0.9	-2.4
26	**+9.5**	-0.3	+0.1	-1.1	-0.3	**-7.9**
27	+1.8	-0.5	+1.7	0.0	-0.3	-4.7
28	+4.6	+0.4	+0.1	+0.1	-0.3	**-5.2**
30	-2.6	+0.7	-0.1	+4.4	+0.5	-2.8
31	-1.2	+0.3	-0.5	+0.9	+0.3	+0.2
32	-2.6	+2.0	+0.3	+0.8	-0.2	-0.3
33	-2.7	+1.2	0.0	+1.2	+0.1	+0.5
34	+3.4	+0.6	+0.1	-0.5	-0.2	-3.6
35	+0.6	+0.2	-2.1	+0.6	+0.4	+0.3
36	-4.1	+2.4	-0.3	+1.5	+0.1	+0.5
37	+2.6	+0.7	-0.9	+0.7	+0.3	-2.9
38	0.0	+1.3	+0.2	-0.2	+0.1	-1.3
39	+0.1	+0.3	+0.2	+0.7	+0.2	-1.6
40	-0.7	+0.5	-0.2	+0.9	+0.2	-0.4
Statewide	**+3.8**	**-0.5**	**0.0**	**-2.0**	**-0.4**	**-0.9**

Daylight Stops

A logical argument would suggest that if racial profiling were in fact occurring, it would be more likely to manifest itself in daylight stops than night-time stops because WSP Troopers would be better able to form an impression of the race of individual drivers than at times of the day when their visibility is likely to be impaired.

[Table 8 on following page]

While it is true that there may be differences in driving times and habits according to race which traffic stop data analyzed in this manner cannot address, Table 8 presents findings on the percentage of stops made in daylight hours[2] by race for each APA. These analyses reveal that, while there is considerable variation in the overall proportion of daylight stops across autonomous patrol areas, (adhering to the five percentage point criterion) a higher proportion of Blacks than Whites are stopped in daylight hours in four APAs (APA 12 - Sunnyside; APA 23 - Kelso; APA 37 - Hoquiam; APA 39 - Raymond). A higher proportion of Native-Americans than Whites are stopped in daylight hours in five APAs (APA 4 - Thurston County; APA 5 - Seattle North; APA 13 - Kennewick; APA 15 - Colville; and APA 21 - Vancouver). A higher proportion of Asians/Pacific Islanders than Whites are stopped in daylight hours in three APAs (APA 27 - Okanogan; APA 30, Bellingham; and APA 39 - Raymond). A higher percentage of East Indians than Whites are stopped in four APAs (APA 11 - Yakima; APA 28 - Ephrata; APA 30 – Bellingham;

[2] These data were coded such that 7 p.m. to 7 a.m. constituted non-daylight stops. While we realize that there are substantial monthly/seasonal differences in the number of daylight hours in any given day, there were no substantial differences in the number of stops over the various months included in the data set. The coding of this variable thus assumes that monthly/seasonal differences in the number of daylight hours will essentially cancel each other out.

Table 8: Daylight Stops (%)

Data for Nov. 2005 - Sept. 2006

APA	White	Black	Native Amer.	Asian	E. Indian	Hispanic	Overall
2	59.3	51.7	52.5	51.6	56.1	52.1	57.4
3	59.1	48.6	40.0	48.6	53.6	51.1	57.4
4	56.3	42.7	**64.9**	49.3	53.8	48.7	55.2
5	56.4	47.0	**65.4**	51.2	44.5	47.6	53.9
6	57.9	48.3	59.3	50.0	47.3	47.1	54.8
7	61.5	49.7	44.4	52.8	49.5	52.3	59.0
8	78.6	63.3	63.9	77.2	86.7	68.3	77.8
11	67.7	56.3	57.2	61.4	**74.0**	54.5	62.8
12	77.3	**84.4**	62.9	77.4	80.0	67.7	72.8
13	64.2	52.7	**80.0**	49.3	56.8	51.0	60.8
14	72.9	60.7	70.0	67.1	74.3	58.0	70.8
15	64.4	51.5	**69.7**	51.9	33.3	61.7	64.4
16	81.2	83.0	78.0	75.3	84.7	75.3	80.8
19	55.7	37.1	53.8	43.4	44.1	44.2	54.9
20	71.4	57.8	72.0	53.8	65.2	66.3	70.6
21	58.1	47.4	**72.2**	47.0	43.7	46.7	56.7
22	80.1	74.5	68.4	86.2	70.0	75.9	79.6
23	57.3	**72.1**	60.0	56.7	61.5	49.5	57.4
24	52.9	40.6	32.0	40.9	43.5	40.1	51.1
25	68.9	70.8	64.4	72.4	68.7	49.8	65.7
26	71.5	67.8	62.0	71.9	70.8	65.3	70.9
27	77.0	79.4	67.0	**86.8**	58.8	67.1	75.3
28	75.2	70.4	77.4	78.9	**84.5**	62.8	73.1
30	53.9	43.3	43.0	**63.9**	**62.1**	52.9	54.4
31	59.4	53.2	43.5	57.7	51.4	34.0	57.0
32	52.2	29.2	27.3	32.0	47.6	41.0	50.0
33	61.5	46.4	53.2	57.4	57.2	47.9	59.4
34	51.3	42.4	41.7	45.7	53.8	38.0	50.3
35	70.8	62.7	75.5	66.3	75.4	63.0	70.6
36	55.4	38.6	42.6	45.6	55.4	49.7	53.8
37	67.0	**73.4**	54.9	62.1	61.0	52.7	66.1
38	46.7	41.1	50.7	40.8	33.3	41.8	46.3
39	74.1	**85.1**	70.6	**82.5**	**81.0**	55.1	73.7
40	81.6	84.4	77.8	89.7	75.0	72.5	81.4

APA 39 - Raymond). While these several marginal disparities should be noted, overall, this comparison of the proportion of minority compared to white drivers who are contacted by the WSP in daylight hours indicates that, for the most part, minority drivers tend to be *under-represented* in daylight stops.

Detailed Analysis of Traffic Stops - APA 6 (Seattle South)

In APA 6 (Seattle South in King County, in the vicinity of SEATAC and City of Tukwilla) 12.7% of motorists contacted by the WSP are African-American; African-American drivers constitute 14.7% of contacts as a result of calls for service and vehicle assists; 10.9% of contacts via radar patrols, and 9.2% of contacts as a result of involvement in traffic collisions in that area. Approximately 48% of the WSP contacts of African-American drivers there occur during daylight hours (compared to 57.9% of WSP contacts of Whites). Given that two of the four benchmarks for this APA (radar patrols and collisions) indicate minor over-representation of African-Americans in WSP self-initiated contacts, we conducted additional analyses that shed further light on these race-based disparities.

a. Location of Stops

First, we use the variable included in the WSP traffic stop data labeled "highway number" on which contacts occur in order to examine more closely whether there are noteworthy differences in the location of traffic stops of Blacks compared to Whites in APA 6.

Location of Stops in APA 6 (Percentages)

(Restricted to roadways with a minimum of 100 self-initiated contacts)

Highway/Road	Whites	Blacks
I-5	35.1	41.9
Highway 18	9.4	3.5
Highway 99	1.7	3.2
Highway 167	26.2	27.5
Highway 169	4.2	1.1
Highway 17	1.7	2.7
I-405	10.9	10.2
Highway 509	1.2	1.2
Highway 515	1.3	1.9
Highway 516	1.6	2.5
Highway 518	2.4	2.3
N	12,918	2,485

Compared to Whites, Blacks are more likely to be contacted by the WSP on Interstate 5 and Highway 99. Additional analyses (not included here) also examined the milepost on these roadways at which the stop occurred, but this analysis did not reveal any systematic patterns (i.e., there is no indication that WSP members are targeting African-Americans on specific stretches of I-5 or Highway 99).

b. "Reason for stop"

Some of the racial profiling literature has examined the possible bias associated with the fact that members of minority groups (compared to Whites) may be more likely to be stopped by law enforcement for the commission of relatively minor traffic violations. In the WSP data set there are eight fields for "violations" recorded for those contacted, and the first field is intended to be coded as the **reason** the contact was initiated. It is

important to note, however, that at least some members of the WSP may not be correctly coding the reason for the stop in the first field; because this is the case, the data below should be treated with some degree of caution.

"Reason for Stop" in APA 6 (Percentages)

Reason for Stop	Whites	Blacks
Speeding	10.6	10.7
Speeding (Radar)	28.7	23.4
Follow too close	1.1	1.4
Lane Travel	4.9	6.7
Shoulder	1.1	1.2
Signal	1.2	1.5
Traffic Light	0.7	1.1
Restrictive sign	1.0	1.2
Light violations	3.4	4.2
Headlights, none	0.8	0.6
Other defective equipment	3.9	2.8
Lane change	2.1	2.2
Vehicle License tabs	9.4	7.5
Safety belt	8.5	9.8
HOV violations	9.1	13.1

It is important to note that the "reason for stop" data presented above do not address whether citations were issued as a result of the stop. There are, however, some differences in the reasons for stop when comparing White and Black drivers. Black drivers are less likely to be contacted as a result of speeding via radar patrols, and are more likely to be stopped as a consequence of "lane travel" and HOV (high occupancy vehicle lane) violations.

c. Internal Benchmarking

As noted above, 12.7% of those contacted by the WSP in APA 6 over the Nov. 2005 – Sept. 2006 period were Black. In order to determine whether certain WSP officers were more likely to initiate contacts with Black drivers than their cohorts, we examined the race of those contacted for each WSP officer in this APA. Seven troopers working in APA 6 who initiated 100+ traffic stops over this period had more than 17.7% of their self-initiated contacts with Blacks (five percentage points higher than the average for APA 6).

Detailed Analysis of Traffic Stops (APA 11 - Yakima)

In APA 11 (Yakima) 30.2% of the motorists contacted by the WSP were identified as Hispanic; Hispanics constituted 33.7% of contacts as a result of calls for service and vehicle assists; 26.2% of contacts via radar patrols, and 30.7% of contacts as a result of involvement in collisions. Approximately 55% of Hispanic contacts in this APA occur in daylight hours (compared to 67.7% of contacts of Whites). While these data do not indicate that Hispanics are over-represented in contacts, our 2005 report identified some disparities in APA 11, so it is worthwhile to consider additional analyses.

a. Location of Stops

Location of Stops in APA 11 (Percentages)

(Restricted to roadways with a minimum of 100 self-initiated contacts)

Highway/Road	White	Hispanic
12	17.2	7.1
24	5.1	4.1
39	11.5	16.0
I-82	45.6	41.9
97	13.1	26.8
410	2.1	0.1
821	1.8	0.5
Total	6,950	3,498

Hispanics in APA 11 are more likely to be stopped by the WSP on highways 39 and 97, and less likely to be contacted on Highways 12 and Interstate 82.

b. "Reason for Stop"

"Reason for Stop" in APA 11 (Percentages)

Reason for Stop	Whites	Hispanics
Speeding	3.7	3.9
Speeding (Radar)	53.3	42.3
Follow too close	0.8	1.1
Lane Travel	4.8	10.5
Shoulder	1.0	1.7
Signal	1.5	1.4
Traffic Light	0.6	1.0
Restrictive sign	0.4	0.5
Light violations	6.8	6.8
Headlights, none	0.9	1.1
Other defective equipment	2.6	3.3
Lane change	0.7	2.1
Vehicle License tabs	5.8	5.6
Safety belt	5.7	6.7

Compared to Whites, Hispanics are less likely to be contacted for speeding via radar patrols, this appears to be largely due to the fact that Hispanic drivers are less concentrated on Highways 12 and Interstate 82, where radar patrols are more likely to be situated. Hispanics in APA 11 are more likely to be contacted for "lane travel."

c. Internal benchmarking

As noted above, 30.2% of those contacted by the WSP in APA 11 over the Nov. 2005 – Sept. 2006 period were Hispanic. In order to determine whether certain WSP officers were more likely than others to initiate contacts with Hispanics, we examined the

race of those contacted for each WSP trooper in this APA. Three troopers in this APA who initiated 100+ traffic stops over this period had more than 35.2% of their self-initiated contacts with Hispanics (five percentage points higher than the average for APA 11).

Detailed Analysis of Traffic Stops - APA 23 (Kelso)

In APA 23, 3.1% of those contacted by the WSP were identified as Black. Blacks comprised 4.4% of those contacted as a result of calls for service and vehicle assists; 3.9% of those contacted via radar patrols; and 1.6% of those contacted as a result of involvement in collisions. While 57.3% of whites contacted in APA 23 were stopped during daylight hours, 72.1% of Blacks contacted in this APA were stopped during daylight hours.

a. Location of Stops

Location of Stops in APA 23 (Percentages)

(Restricted to roadways with a minimum of 100 self-initiated contacts)

Highway/Road	White	Black
4	14.3	8.5
I-5	60.0	85.6
411	6.0	1.5
432	14.1	3.8
503	2.8	0.0
504	1.8	0.3
Total	9,765	341

In APA 23, Blacks are more likely than Whites to be stopped on Interstate 5.

b. "Reason for Stop"

"Reason for Stop" in APA 23 (Percentages)

Reason for Stop	White	Black
Speeding	3.5	3.8
Speeding, aircraft	1.8	3.2
Speeding (radar)	43.8	57.8
Lane Travel	5.4	4.7
Signal	2.2	1.2
Light Violations	8.3	2.9
Headlights, none	1.2	0.6

Compared to White drivers, Black motorists traveling in APA 23 are more likely to be contacted by the WSP for speeding violations. Combining the categories of speeding, speeding identified via aircraft patrols, and speeding identified via radar, 64.8% of WSP contacts with Black drivers compared to 49.1% of contacts with White drivers in this APA were the result of speeding.

c. Internal Benchmarking

As noted above in the cases of APA 6 and APA 11, 3.1% of those drivers contacted in APA 23 were Black motorists. There were no officers of the WSP working in this APA whose total contacts consisted of more than 8.1% Black drivers. However, it is worth noting that 5.3% of Black drivers (compared to 2.2% of White motorists) contacted in this western Washington APA were driving cars with State of California license plates, and 26.7% of Black drivers (compared to 17.1% of White motorists) were identified as having Oregon license plates.

Conclusions Regarding Stops Based on Multiple Denominators

Considered in their totality, these four distinct benchmark data comparisons indicate rather clearly that WSP Troopers are **not** engaged in systemic racial profiling at the level of which types (vis-à-vis race) of drivers they contact. This statement applies both with respect to statewide figures, and with respect to the situation in the 34 Autonomous Patrol Areas (APAs) distributed across the state.

Analysis of Citations for Evidence of Biased Policing

In addition to manifesting itself in the decisions of WSP troopers to stop motorists, biased policing can occur at the level of which drivers who are stopped by WSP troopers are issued traffic citations. In this section of the 2007 traffic stop data monitoring report we present both bivariate and multivariate statistical analyses of the many *citation decisions* made by WSP Troopers in the period November 2005 through September of 2006.

Table 9 presents findings on the percentage of those motorists contacted in each APA who were issued traffic citations, broken down by the driver's race and ethnicity. The statistical findings set forth in this table indicate that Black drivers were somewhat more likely to be issued traffic citations as a result of a traffic stop than were White motorists in 23 of 34 APAs, Native-Americans were more likely to be issued citations than Whites in 29 APAs, Asians were likewise more likely than Whites to be issued citations in 20 APAs, East Indians were likely to suffer the same fate in 20 APAs, and finally Hispanics were more likely to receive citations in 29 APAs across the state.

[Table 9 on the following page]

Table 9: Percent Issued Citations by Race and APA
Data for Nov. 2005 - Sept. 2006

APA	White	Black	Native Amer.	Asian	E. Indian	Hisp.	Overall
2	52.9	52.2	65.6	51.5	43.9	59.7	53.2
3	43.7	43.6	56.7	44.1	53.6	54.7	44.5
4	49.2	49.0	72.3	48.2	49.0	60.3	49.9
5	47.4	49.9	57.7	44.9	42.0	50.8	47.6
6	46.0	49.5	66.7	45.7	43.5	59.3	47.7
7	51.1	54.7	55.6	50.2	47.3	53.6	51.3
8	40.8	58.3	55.6	53.3	53.3	46.8	42.0
11	39.6	42.3	36.8	41.8	42.0	48.5	42.3
12	38.5	43.8	28.9	34.0	20.0	52.9	45.0
13	51.5	52.2	70.0	41.1	38.6	57.2	52.6
14	38.4	43.8	50.0	38.8	57.1	54.5	40.7
15	40.1	42.4	45.1	55.6	33.3	59.6	40.4
16	61.0	65.3	71.2	72.7	70.8	68.6	62.0
19	41.1	38.8	54.3	39.8	32.4	47.8	41.3
20	42.5	40.1	48.0	46.7	60.9	50.0	42.7
21	48.7	51.4	36.1	44.8	41.4	55.0	49.0
22	32.5	41.8	48.7	44.6	20.0	42.3	33.7
23	47.7	60.4	60.0	58.2	57.1	54.8	49.0
24	50.9	56.2	60.0	61.6	54.3	60.9	52.2
25	30.3	39.3	40.0	33.7	32.8	32.7	30.8
26	42.8	49.2	50.0	50.3	55.4	47.9	43.7
27	23.3	38.2	35.5	31.6	52.8	39.9	26.1
28	50.6	58.4	47.2	62.1	60.8	48.3	50.7
30	44.3	42.6	59.1	62.4	60.5	54.8	46.9
31	54.2	53.2	67.4	73.0	69.2	56.4	55.5
32	41.1	29.0	54.5	28.5	42.9	38.5	40.1
33	55.9	53.4	57.4	61.1	58.7	61.7	56.6
34	48.4	37.8	50.0	43.2	47.3	48.3	48.0
35	51.4	56.8	57.3	64.7	66.2	58.9	52.1
36	41.7	41.1	59.6	36.8	28.6	46.0	41.6
37	51.2	61.8	51.3	56.1	58.5	48.1	51.4
38	47.7	47.9	58.2	46.1	50.0	55.1	48.2
39	62.8	74.6	64.7	75.9	85.7	61.0	63.1
40	41.9	56.3	33.3	48.3	33.3	56.9	42.5
Statewide	**46.7**	**50.1**	**49.5**	**53.2**	**47.3**	**50.0**	

While these data could be interpreted as an indication that WSP troopers are more likely to issue citations to members of minority groups than they are to non-minorities, there are a number of important differences across the racial groups with respect to both the number of violations observed as a result of a traffic stop and the seriousness of those violations which influence the decision of WSP Troopers to issue citations.

Table 10 presents findings on the average number of violations of those contacted by the WSP by race and ethnicity for the state's 34 APAs. At the statewide level Whites have an average of 1.54 violations per contact; Blacks 1.74; Native-Americans 1.87; Asians 1.48; East Indians 1.39, and Hispanics 1.76. African Americans have a higher average number of violations than Non-Hispanic Whites in 32 of 34 APAs, Native-Americans have a higher average number of violations than Non-Hispanic Whites in 31 APAs, Asians and East Indians have a higher average number of violations than Non-Hispanic Whites in only five APAs, while Hispanics have a higher average number of violations than Non-Hispanic Whites in all 34 APAs.

[Table 10 and Table 11 on the following two pages]

Table 11 presents findings on the average violation seriousness score[1] by race for each of the 34 APAs. Statewide, those drivers identified as East Indian by WSP Troopers have the lowest average seriousness scores at .08, followed by Asians at .11, Non-Hispanic Whites at .15, African Americans at .24, and Hispanic drivers at .25.

[1] This variable is coded "one" for serious offenses and coded "zero" for other offenses, and then summed across the eight violation fields (with possible scores ranging from zero to eight). Serious violations included the following offenses: felony drugs; misdemeanor drugs; DUI drugs with test; DUI drugs, no test; DUI underage, with test; DUI underage, no test; DUI with test; DUI without test; felony flight, elude; felony warrant; hit and run; insurance - none; license suspension/revocation; misdemeanor warrant; negligent driving, 1st degree; negligent driving, 2nd degree; reckless driving; vehicular homicide; and vehicular assault.

Table 10: Average Number of Violations by Race and APA

Data for Nov. 2005 - Sept. 2006

APA	White	Black	Native Amer	Asian	E. Indian	Hispanic
2	1.63	1.87	2.10	1.57	1.51	1.87
3	1.78	1.97	2.47	1.79	1.77	1.98
4	1.80	1.83	2.30	1.70	1.49	2.05
5	1.65	1.90	1.81	1.59	1.51	1.90
6	1.62	1.83	2.07	1.57	1.46	1.88
7	1.63	1.87	1.96	1.61	1.55	1.87
8	1.74	1.85	2.19	1.61	1.93	1.82
11	1.39	1.48	1.76	1.32	1.42	1.66
12	1.60	1.75	1.92	1.40	1.80	1.96
13	1.39	1.45	1.33	1.50	1.32	1.64
14	1.54	1.68	1.64	1.36	1.31	1.76
15	1.66	1.97	1.91	1.59	1.78	1.94
16	1.35	1.43	1.41	1.23	1.17	1.52
19	1.53	1.72	1.81	1.58	1.44	1.68
20	1.28	1.36	1.56	1.35	1.17	1.40
21	1.56	1.82	1.36	1.50	1.26	1.63
22	1.36	1.42	1.74	1.34	1.20	1.37
23	1.62	1.66	2.80	1.46	1.32	1.81
24	1.37	1.36	2.00	1.25	1.14	1.55
25	1.76	1.94	1.87	1.75	1.51	2.03
26	1.58	1.60	1.99	1.58	1.58	1.75
27	1.39	1.44	1.90	1.39	1.29	1.72
28	1.45	1.56	1.70	1.34	1.26	1.74
30	1.59	1.78	2.10	1.26	1.31	1.76
31	1.54	1.49	2.15	1.26	1.16	1.82
32	1.46	1.52	1.55	1.38	1.48	1.56
33	1.54	1.64	1.92	1.38	1.30	1.73
34	1.39	1.44	1.42	1.29	1.20	1.51
35	1.50	1.70	1.96	1.41	1.35	1.72
36	1.60	1.70	2.04	1.47	1.59	1.69
37	1.29	1.32	1.55	1.30	1.12	1.36
38	1.48	1.51	2.09	1.37	1.00	1.59
39	1.38	1.39	1.47	1.26	1.24	1.63
40	1.43	1.44	1.22	1.34	1.00	1.53
Statewide	**1.54**	**1.74**	**1.87**	**1.48**	**1.39**	**1.76**

Table 11: Average Seriousness of Violations by Race and APA
Data for Nov. 2005 - Sept. 2006

APA	White	Black	Native Amer	Asian	E. Indian	Hispanic
2	.23	.32	.57	.18	.13	.35
3	.26	.34	.67	.20	.39	.39
4	.22	.21	.55	.14	.08	.32
5	.20	.30	.23	.15	.13	.34
6	.19	.29	.63	.15	.15	.36
7	.13	.23	.33	.10	.07	.25
8	.17	.32	.44	.22	.27	.25
11	.10	.14	.31	.04	.06	.25
12	.09	.13	.22	.09	.13	.25
13	.11	.14	.10	.09	.05	.24
14	.14	.22	.30	.11	.20	.30
15	.13	.09	.30	.19	.11	.23
16	.09	.13	.14	.06	.04	.15
19	.15	.23	.34	.12	.12	.23
20	.07	.12	.24	.06	.04	.13
21	.16	.26	.14	.11	.05	.19
22	.09	.11	.29	.05	.10	.14
23	.19	.19	.70	.12	.05	.25
24	.12	.14	.24	.05	.07	.21
25	.16	.28	.36	.09	.04	.25
26	.11	.16	.20	.08	.08	.21
27	.09	.18	.35	.13	.00	.26
28	.09	.13	.17	.03	.07	.22
30	.16	.21	.52	.04	.04	.27
31	.19	.15	.52	.05	.04	.37
32	.16	.17	.50	.09	.19	.21
33	.16	.20	.34	.08	.06	.28
34	.12	.12	.33	.07	.04	.16
35	.13	.25	.26	.08	.08	.17
36	.15	.18	.43	.11	.16	.21
37	.09	.10	.21	.08	.00	.12
38	.21	.22	.45	.16	.00	.22
39	.13	.06	.12	.07	.00	.32
40	.13	.28	.11	.05	.08	.21
Statewide	**.15**	**.24**	**.34**	**.11**	**.08**	**.25**

Native-American drivers contacted by the WSP had the highest average seriousness scores, registering at .34. At the individual APA level, Blacks and Native-Americans had average seriousness scores that were lower than those of Whites in only **four** of thirty-four APAs; Asians had average seriousness scores that were higher than Non-Hispanic Whites in only **three** APAs, while East Indians had average seriousness scores that were higher than Non-Hispanic Whites in **seven** APAs. Hispanic drivers had higher average seriousness scores than Non-Hispanic Whites ***in all 34 APAs***. These cross-race differences in the number of violations observed during a traffic stop, and in the seriousness of violations noted are taken into account in the multivariate analyses of citation decisions of WSP Troopers presented below.

Multivariate Analysis of Citations

Our multivariate analyses of citations focus on two dependent variables: (1) whether an individual contacted by the WSP was issued a citation as a result of the traffic stop, and (2) in situations of multiple violations, the number of citations issued. Taking into account the points made above regarding differences in the average number and seriousness of violations across racial groups, we conducted separate analyses for each of the 34 autonomous patrol areas with the predictor/independent variables in the first model consisting of the driver's gender (males coded 1, females coded 0); age (in years); and race (dummy variables for African American, Native-American, Asian, East Indian, and Hispanic, with Non-Hispanic Whites treated as the reference category). We also included measures of the number of violations of the individual contacted and the combined seriousness of those violations; a variable indicating whether the stop occurred during daylight hours; and a variable indicating whether the stop occurred on an interstate

highway (interstate highway coded 1; all other locations coded 0). We also included separate "dummy variables" (binary variables indicating the presence or absence of a trait or characteristic) for individuals contacted who had "out-of-state" license plates (most typically from British Columbia, California, and Oregon).

The second set of multivariate statistical models developed for the analysis include all the variables identified above, as well as ***interaction terms*** for race multiplied by the number and combined seriousness of the violations in order to control for the possible effects on being issued a citation of differences in rates of noncompliance with traffic laws across racial groups.

While our focus in this report is on the impact of race on being issued a citation, the full logistic regression models run on the WSP traffic stop data for the period November 2005 through September 2006 indicated with respect to gender that males were significantly more likely to be issued a citation in 21 of 34 APAs (see Table 12); age had a statistically significant impact on receiving a citation in 32 of the 34 APAs (with younger drivers being more likely to be issued a citation); stops occurring on interstate highways were more likely to result in citations being issued in 15 APAs; and daylight stops were more likely to result in citations being issued in 30 APAs. The findings set forth in Table 13 indicate that the number of violations had a statistically significant impact on receiving a citation in 15 APAs (those with a greater number of violations were more likely to be issued citations), and the combined seriousness score had a statistically significant effect on receiving a citation in 33 APAs (those with higher seriousness scores were more likely to receive citations). Drivers with BC plates were more likely to be issued citations in 6

APAs; those with California plates were more likely to be issued citations in 12 APAs, while those with Oregon plates were more likely to be issued citations in 9 APAs.

Table 12: Odds Ratios - Citation Dependent Variable (with Interaction Terms)
Data for Nov. 2005 - Sept. 2006

APA	Male	Age	Interstate	Daylight Stop
2	1.11**	.99**	.95	1.37**
3	1.18**	.99**	.92	1.56**
4	1.12**	.99**	1.44**	2.12**
5	1.33**	.98**	1.08	1.92**
6	1.33**	.98**	1.14**	1.46**
7	1.12**	.98**	1.05	1.91**
8	1.69**	.97**	4.13**	1.33*
11	1.26**	.98**	1.11	2.22**
12	.98	.98**	1.11	1.71
13	.98	.99**	1.26**	2.47**
14	1.08	.99**	1.53	1.97**
15	1.16*	.99**	N.A.	2.40**
16	.86**	.98**	1.84**	1.58**
19	1.19**	.99**	1.62**	2.39**
20	1.05	.99**	N.A.	3.15**
21	1.15**	.99**	1.28**	2.08**
22	1.16	.98**	1.84	2.07**
23	1.01	.98**	1.38**	2.75**
24	.91	.98**	1.45**	1.38**
25	1.25**	.98**	1.89**	1.97**
26	.90*	.98**	1.89**	1.97**
27	1.37**	.98**	N.A.	1.22*
28	1.08	.98**	1.88**	2.29**
30	1.43**	.98**	1.83**	2.80**
31	1.17**	.99**	1.66**	2.77**
32	1.11	1.00	.38	4.64**
33	1.10**	.98**	2.00**	2.41**
34	1.14**	.99**	1.00	5.40**
35	1.07	.99**	N.A.	1.81**
36	1.11**	.99**	.23**	2.76**
37	1.03	.98**	N.A.	3.46**
38	1.05	.99**	4.03**	1.48**
39	1.09	1.00	N.A.	4.01**
40	1.21*	.98**	.92	1.50**

* $p < .01$
** $p < .001$

Table 13: Odds Ratios - Citation Dependent Variable (with Interaction Terms)
Data for Nov. 2005 - Sept. 2006

APA	# Violations	Seriousness	BC plate	CA plate	OR plate
2	1.01	4.03**	.86	1.04	1.15
3	1.16**	4.37**	.42	1.04	.87
4	1.14**	4.05**	2.14**	1.79**	1.65**
5	.95	4.81**	1.58*	.91	1.15
6	1.16**	3.12**	1.63	.95	1.07
7	.98	4.01**	1.09	1.16	.90
8	1.14	2.06**	.19	1.00	.69
11	1.16**	4.16**	.95	1.66**	1.25
12	.91	5.59**	.49	1.10	.67
13	.94	5.11**	1.38	1.54**	1.26**
14	1.22**	1.72**	1.27	1.23	1.10
15	1.26**	3.62**	2.81**	2.75**	1.41
16	.91	4.32**	1.47	1.05	1.19
19	.96	5.70**	1.40	1.57*	.97
20	.75	3.26**	1.05	2.32**	1.58*
21	1.03	4.33**	.88	1.28	1.21**
22	1.18**	2.07**	.98	1.70**	1.34**
23	1.01	3.75**	1.60*	2.25**	1.31**
24	1.23**	1.57**	1.61*	1.39**	1.36**
25	1.19**	2.22**	1.31	1.83**	1.32
26	.73	3.75**	1.49*	1.30	.76
27	1.14	3.92**	1.06	2.39**	1.18
28	.76	4.60**	1.10	1.56*	1.07
30	.94	5.11**	1.60**	.64	1.32
31	1.03	4.66**	1.96**	1.82*	.87
32	1.07	5.78**	1.59	1.60*	2.14**
33	2.41**	.94	3.79**	2.01**	1.32*
34	1.16**	6.57**	1.23	.69	1.10
35	3.88**	3.22**	1.25	1.46**	1.65**
36	1.15**	3.46**	.59	.92	.86
37	1.00	5.58**	1.75	1.27	1.25
38	1.48**	2.69**	1.51	1.23	1.76
39	1.07**	2.35**	2.61**	1.60*	.91
40	1.14	1.58**	1.99	2.01	1.59**

* $p < .01$
** $p < .001$

Table 14 presents summary odds ratios for the effects of race on issuance of citation (these models included interaction terms and all other independent variables). This table reveals that African Americans were not more likely to be issued citations in a single APA, and were significantly **less** likely ($p < .001$) to be issued a citation in four APAs (Tacoma Freeway, Seattle North, Everett Central, and Everett East). Native-Americans were not more likely to be cited in a single APA, and were significantly **less** likely to receive a citation in Yakima. Hispanics were not more likely to be issued a citation in a single APA, and were significantly less likely to be issued citations in the Seattle North, Seattle East, Wenatchee, and Hoqiuam APAs. While the results for East Indians should be treated with caution due to the large number of APAs in which there were too low a number of contacts with members of this group to allow for reliable statistical analyses, there was only one APA (Bellingham) in which East Indians were more likely to be issued citations than the comparison group of Non-Hispanic Whites. However, these analyses did indicate that Asian drivers were significantly more likely to be issued citations in five of the state's APAs, those being patrol districts in Kelso, Ellensburg, Bellingham, Mount Vernon, and Everett (Central).

The disproportionate citation rate for Asian drivers in these five APAs appears to be related to higher rates of citation for members of this group as a result of contacts for **speeding violations**. In APA 23 (Kelso), 78.2% of Asian drivers who were contacted as a result of speeding (via radar patrols) were issued citations as compared with 67.4% of non-Asian drivers. In APA 26 (Ellensburg), 61.1% of Asian drivers contacted as a result of speeding (radar) were issued citations, compared to 51.7% of non-Asian drivers. In APA

Table 14: Odds Ratios - Citation Dependent Variable (with Interaction Terms)
Data for Nov. 2005 - Sept. 2006

APA	Black	Native	Asian	Hispanic	East Indian
2	**.70****	.60	1.24	.57	.87
3	.79	.41	.98	.91	1.09
4	1.01	1.72	1.34	1.27	.43
5	**.64****	.77	.95	**.58****	.86
6	.85	1.81	1.19	1.08	1.03
7	.80	1.96	1.1	**.64****	1.18
8	.62	.15	1.90	.54	.29
11	1.08	**.38****	1.83	.88	1.15
12	.59	**.17***	.88	1.01	.65
13	.83	3.50	.74	.85	.30
14	1.76	1.51	.79	1.02	1.37
15	1.47	.86	3.04	2.86	1.52
16	.79	2.63	**2.22***	1.41	.43
19	**.55***	.62	.90	.76	1.25
20	.55	.19	1.25	.65	4.58
21	.69	.12	1.17	.87	.50
22	.72	.85	1.02	.83	1.20
23	.90	.17	**2.53****	.87	1.05
24	1.06	.30	1.22	1.04	.44
25	1.44	.62	1.76	**.62****	1.86
26	1.05	1.02	**1.69****	.98	1.72
27	2.05	1.05	1.46	1.29	3.27
28	.94	**.10***	1.69	.55	.89
30	.56	1.46	**3.11****	.96	**2.15****
31	1.03	.51	**4.00****	.70	1.85
32	.67	1.75	1.06	.85	.71
33	**.64****	.75	**1.71****	.87	.87
34	**.40****	N.A.	1.49	.71	.80
35	.82	1.11	1.99*	1.50	2.04
36	.77	1.26	1.06	.89	.56
37	1.78	.41	1.51	**.50****	3.44
38	1.19	.37	.15	**.35***	1.84
39	1.39	1.28	1.09	.77	N.A.
40	1.00	1.63	1.34	.74	1.00

* $p < .01$
** $p < .001$

30 (Bellingham), 72.9% of Asians contacted as a result of speeding (radar) were issued citations, compared with 53.3% of non-Asian drivers. In APA 31 (Mount Vernon), 86.7% of Asian drivers contacted as a result of speeding (radar) were issued citations, compared to 60.4% of non-Asian drivers. In APA 33 (Everett Central), 84.5% of Asian drivers contacted as a result of speeding (radar) were issued citations as compared to 76.8% of non-Asian drivers.

Critics of our multivariate analytical approach might contend that our finding of attenuated racial/ethnic bias in the issuing of citations when the number and seriousness of violations across racial/ethnic groups is considered is an artifact which itself is the result of racial bias on the part of Washington State Patrol officers. If officers record a greater number and severity of violations for members of minority groups, this could be the *product of bias* rather than the actual driving behavior of those contacted. In order to address this potential criticism, we conducted an additional set of statistical analyses on the probability of receiving a citation for each of the 34 APAs for drivers whose contact record indicates that they had **only one recorded violation**. These analyses included all variables (with the obvious exception of the number of violations and the interaction terms) included in previous models.

[Table 15 on the following page]

Table 15: Odds Ratios - Citation Dependent Variable (Single Violation Recorded)
Data for Nov. 2005 - Sept. 2006

APA	Black	Native	Asian	Hispanic	East Indian
2	**.79****	.89	1.13	1.0	5.78
3	.82	.35	1.06	1.12	1.06
4	.94	2.36	1.09	1.41*	.65
5	.82	.78	.97	**.74***	.87
6	.95	2.45	1.10	1.26*	.96
7	.97	2.18	1.06	.84	.98
8	.87	.70	1.78	.79	.70
11	1.10	**.45****	1.29	1.06	1.44
12	.50	.32	.71	**1.41****	.24
13	1.09	3.04	.69	1.02	.84
14	1.61	1.58	1.00	**1.37****	3.08
15	1.26	.74	2.57	3.15*	.88
16	1.06	2.01	1.69	1.38	2.25
19	**.63****	.98	.94	.98	1.00
20	.74	.49	1.45	1.09	2.90
21	.89	**.29***	.97	1.07	.88
22	1.38	1.22	1.38	1.10	.69
23	.98	.55	1.53*	.88	1.30
24	1.17	.55	1.30	1.22	1.04
25	1.59	1.03	1.33	.83	1.21
26	1.15	1.15	1.34*	1.06	1.99
27	1.91	1.06	1.74	**1.40****	3.41
28	1.23	**.33***	**1.59****	**.78****	1.09
30	.66	1.25	**1.84****	1.12	**1.65****
31	.91	1.09	**2.20****	.91	1.53
32	.71	1.50	.93	.91	.79
33	**.81***	.96	**1.26****	1.11	1.01
34	.63*	N.A.	1.09	.93	1.21
35	.93	1.15	**1.88****	1.64	1.56
36	.93	1.64	.99	.93	.63
37	1.48	.80	1.33	**.72****	1.99
38	1.08	.68	.78	.82	1.94
39	1.44	1.60	1.57	.97	N.A.
40	1.23	1.07	1.31	1.08	.70

* $p < .01$
** $p < .001$

Table 15 reveals that African American drivers who had only one recorded violation were not significantly more likely to be issued a citation in a single APA, and were significantly less likely to be issued a citation in the Tacoma Freeway and Spokane APAs. Native-Americans with a single recorded violation were not significantly more likely to be issued a citation in any APA, and were significantly less likely to be issued a citation in the Yakima APA. Hispanics with a single violation were significantly more likely to be cited in the Sunnyside, Walla Walla, and Okanogan APAs, and were significantly less likely to be cited in Bellingham and Hoqiuam. East Indian drivers with a single recorded violation were significantly more likely to be cited in the Bellingham APA, while Asian drivers with a single violation were significantly more likely to be cited in the Ephrata, Bellingham, Mount Vernon, Oak Harbor and Port Angeles APAs. While these multivariate statistical analyses reveal somewhat more evidence of potential bias in additional APAs, they do not indicate the existence of systematic bias in citing minorities who have a single violation recorded by the Washington State Patrol.

In order to examine an additional potential manifestation of bias (namely, the *"piling on" phenomenon* whereby police officers are engaged in issuing a greater number of citations to members of minority groups than they do to Non-Hispanic Whites for the same type of offenses) a final set of analyses of citations issued in the Nov. 2005 to September 2006 period was done. The research team selected those cases in which more than a single violation was recorded, and treated the number of citations issued as the dependent variable, using ordinary least squares regression and statistically controlling for the other independent variables. Table 16 presents beta coefficients (a measure of standardized effects under conditions of controlling for all other predictor variables) for the

race variables. This analysis indicates that there were no APAs where African American drivers were issued a greater number of citations, and two (Bellingham and Everett East) in which they were issued significantly fewer citations. There was not a single APA in which Native-Americans were issued a greater number of citations, and one (Wenatchee) in which they were issued significantly fewer citations. Hispanics were issued a greater number of citations in Goldendale, and significantly fewer citations in Seattle East, Walla Walla, Wenatchee, and Ellensburg. East Indians were not issued more citations in a single APA, while Asians with more than one recorded violation were issued a greater number of citations in seven APAs (Thurston County, Seattle South, Kelso, Chehalis, Mount Vernon, and Everett Central).

Considering the multiple statistical analyses of traffic citations conducted overall, while there should be some concern regarding the higher rate of traffic citation for Asian drivers in certain APAs, it is important to note that when racial differences in compliance with traffic and safety laws are statistically controlled for, *there is no evidence of systematic racial bias on the part of the Washington State Patrol at the level of which drivers are issued citations*. The following section features additional multivariate analyses which control for the contextual setting within which traffic situations are issued to minority and non-minority citizens.

[Table 16 on the following page]

Table 16: Beta Coefficients, with Number of Citations as Dependent Variable (Interaction Terms Included)

Data for Nov. 2005 - Sept. 30, 2006

APA	Black	Native	Asian	Hispanic	East Indian	N
2	- .05	.03	.03	- .01	- .04	6,489
3	.00	- .01	- .01	- .01	.08	7,493
4	.03	.04	.10**	- .02	.04	8,022
5	- .03	.02	.01	- .02	- .01	6,579
6	.00	.00	.09**	-.03	- .01	8,712
7	- .01	.01	.05	- .10**	.04	9,364
8	- .11*	- .10	- .05	- .17*	- .07	1,853
11	.06	- .03	.10	- .01	- .08	3,970
12	.05	- .03	.05	.05	- .11*	2,891
13	.01	- .07*	.07	.02	- .06	5,896
14	.03	.04	.02	- .18**	- .04	4,709
15	.02	.03	.03	- .01	.04	3,721
16	- .03	.00	.07	.05	.04	3,018
19	- .03	- .01	.01	.00	.01	8,562
20	.07	- .10	- .05	- .07	- .04	1,667
21	- .03	.01	.06	.05	.06	7,919
22	- .05	.06	.13	.21**	.02	1,934
23	.08	.00	.10**	.02	.07	4,499
24	.04	- .12	.19**	- .04	.02	3,140
25	- .01	- .07**	.05	- .14**	.07	9,601
26	.02	- .02	.10**	- .09**	.01	6,353
27	.00	.00	.03	- .07	.01	2,490
28	- .02	- .02	- .02	- .06	.07	5,378
30	- .10**	.04	.11*	- .03	- .03	4,069
31	- .03	- .05	.17**	- .02	- .01	3,707
32	.01	.06	.03	- .02	- .03	2,757
33	- .01	- .01	.11**	.02	.11	11,605
34	- .10**	.04	- .03	.01	.01	4,933
35	.02	- .03	.03	- .02	.03	6,092
36	- .01	.01	.01	.00	- .01	10,603
37	.01	.02	.05	.07	- .01	3,193
38	.08	- .03	.12	.06	N.A.	1,457
39	.05	- .04	.10	- .06	N.A.	2,399
40	- .01	.03	.05	- .03	- .03	1,849

* $p < .01$
** $p < .001$

Comprehensive Multivariate Analysis of Citations Issued:

Drilling Down to the Contextual Detail of Citation Issuance

We conducted multivariate logistic regression analyses of the decision to issue a citation. In addition to the independent variables of race/ethnicity (Black, Native-American, Asian/Pacific Islander, Hispanic, and East Indian, treating Whites as the reference category) we included controls for gender (males=1; females =0); age (a continuous variable), whether the traffic stop occurred on an Interstate highway (Interstate=1; other=0); whether the stop occurred during daylight hours (daylight=1; night=0); the number of violations identified as a result of the traffic stop (a continuous variable); the seriousness of the violation(s); four dummy variables indicating whether the individual contacted had an out-of-state license plate (British Columbia, California, Oregon, and Idaho) and multiplicative interaction terms for each of the five minority groups controlling for differences in the number and seriousness of violations across the groups.

Table 17 features *odds ratios* for the citation decision for each of the five minority groups for the full logistic regression models. Using a .001 probability criterion, this table reveals that African Americans were **not** significantly more likely to be issued citations *in any autonomous patrol areas*, to the contrary, as a group they were significantly less likely to be issued citations than Non-Hispanic Whites in three APAs. Similarly, Native-American drivers were **not** significantly more likely than Non-Hispanic Whites to be issued citations in any of the state's 34 APAs, and as a group they were significantly less likely to be issued citations in one APA. Asian drivers in the state were significantly more likely to be issued citations in 5 of the state's 34 APAs. Hispanics were **not** significantly

Table 17: Odds Ratios -Citation Dependent Variable

(Interaction Terms Included)

Data for Nov. 2005 - Sept. 2006

APA	Black	Native	Asian	Hispanic	East Indian
2	**.70****	.60	1.24	.57	.87
3	.79	.41	.98	.91	1.09
4	1.01	1.72	1.34	1.27	.43
5	**.64****	.77	.95	**.58****	.86
6	.85	1.81	1.19	1.08	1.03
7	.80	1.96	1.10	**.64****	1.18
8	.62	.15	1.90	.54	.29
11	1.08	**.38****	1.83	.88	1.15
12	.59	.17	.88	1.01	.65
13	.83	3.50	.74	.85	.30
14	1.76	1.51	.79	1.02	1.37
15	1.47	.86	3.04	2.86	1.52
16	.79	2.63	2.22	1.41	.43
19	.55	.62	.90	.76	1.25
20	.55	.19	1.25	.65	4.58
21	.69	.12	1.17	.87	.50
22	.72	.85	1.02	.83	1.20
23	.90	.17	**2.53****	.87	1.05
24	1.06	.30	1.22	1.04	.44
25	1.44	**.62**	1.76	.62**	1.86
26	1.05	1.02	**1.69****	.98	1.72
27	2.05	1.05	1.46	1.29	3.27
28	.94	.10	1.69	.55	.89
30	.56	1.46	**3.11****	.96	**2.15****
31	1.03	.51	4.00**	.70	1.85
32	.67	1.75	1.06	.85	.71
33	**.64****	.75	**1.71****	.87	.87
34	**.40****	N.A.	1.49	.71	.80
35	.82	1.11	1.99	1.50	2.04
36	.77	1.26	1.06	.89	.56
37	1.78	.41	1.51	**.50****	3.44
38	1.19	.37	.15	.35	1.84
39	1.39	1.28	1.09	.77	N.A.
40	1.00	1.63	1.34	.74	1.00

* $p < .01$
** $p < .001$

more likely than Non-Hispanic Whites to be issued citations in any APA, and were significantly less likely to be issued citations in four APAs. East Indians were significantly more likely to be issued citations in only one of the APAs.

Considered collectively, these numerous analyses conducted from a variety of analytical perspectives indicate rather convincingly that as an agency the WSP and its Troopers are not engaged in biased policing at the level either of traffic stops or at the level of the issuance of citations.

Analysis of Searches for Evidence of Biased Policing

In this section, we replicate our earlier statistical analyses on the relationship between search and seizure and race using Washington State Patrol self reported data from November 2005 through September 2006. As we have done in past reports, we consolidate the various search categories into three distinct categories for the purposes of analysis: *No Search*, *Low Discretion* searches and *High Discretion* searches. Low Discretion searches include searches incident to arrest, impound or inventory searches, and warrant searches. Each of these searches is triggered by a preceding event, and thus the decision to search involves relatively less discretion than High Discretion searches. High Discretion searches include consent searches, "Terry" or pat-down searches, and K-9 searches. Search incident to arrest is the most common type of search conducted, with well over half of all searches fitting into this category. Terry or pat-down searches are the most common high discretion search.

Table 18 shows the frequencies associated with each of these three search incident categories. As we have found in previous reports to the Washington State Patrol, searches

resulting from traffic stops continue to be highly infrequent events. Only 3.3 percent of motorists contacted by WSP Troopers were searched during the 11-month time period analyzed here, with 2.9 percent being subjected to a low discretion search (typically a required procedure given the circumstances of the contact), and only .4 tenths of a percent being subjected to a high discretion search.

Table 19 shows the results of a cross-tabulation of the search categories by race and ethnicity. The results reported here are quite similar to our earlier analysis of the 2002 and the 2003-2004 WSP traffic stop data. *As a proportion within racial groups, Native Americans continued to be searched at higher rates than other races.* Over 12 percent of Native Americans contacted by the WSP were subjected to a low discretion search, and 1.4 percent of Native Americans pulled over for a traffic stop were subjected to a high discretion search. Hispanics were subjected to low discretion searches 5.4 percent of the time, and were subjected to high discretion searches .9 of a percent of the time. African Americans were subjected to low discretion searches 5.3 percent of the time, and to high discretion searches .7 tenths of a percent of the time. Non-Hispanic Whites were subjected to low discretion searches 2.6 percent of the time, and to high discretion searches .3 tenths of a percent of the time. Asians/Pacific Islanders were subjected to low discretion searches 2.3 percent of the time, and they were subjected to high discretion searches .3 tenths of a percent of the time. And lastly, East Indians were subjected to low discretion searches .7 tenths of a percent of the time, and to high discretion searches .1 tenth of a percent of the time.

Table 18: Frequencies of Low and High Discretion Searches

From all observations, Nov. 2005-Sept. 2006

	Frequency	Percent	Cumulative Percent
No Search	834,778	96.7	96.7
Low Discretion Search	25,131	2.9	99.6
High Discretion Search	3,407	.4	100.0
Total	863,316	100.0	100.0

Table 19: Categories of Search by Race

From all observations, Nov. 2005-Sept. 2006*

	No Search	Low Discretion Search	High Discretion Search	Total
White	691,534 (97.1%)	18,346 (2.6%)	2,429 (0.3%)	712,309 (100%)
Black	30,653 (94.0%)	1,719 (5.3%)	227 (0.7%)	32,599 (100%)
Native Am.	4,004 (85.9%)	590 (12.7%)	66 (1.4%)	4,660 (100%)
Asian/Pac	28,047 (97.4%)	665 (2.3%)	77 (0.3%)	28,789 (100%)
Hispanic	60,848 (93.7%)	3,506 (5.4%)	577 (0.9%)	64,931 (100%)
East Indian	15,212 (99.2%)	101 (0.7%)	20 (0.1%)	15,333 (100%)
Other	3,647 (97.1%)	98 (2.6%)	9 (0.2%)	4,225 (100%)
Total	833,945 (96.7%)	25,025 (2.9%)	3,405 (0.4%)	862,375 (100%)**

* The total number of observations is less that the total reported in Table 1 due to a relatively small number of missing variables.

** percentages may not actually add up to 100 percent due to rounding errors.

Table 20 shows the **hit rates** for each racial/ethnic group, for both low and high discretion searches. Hit rates represent the rate at which law enforcement find contraband as a result of a search. They are by common convention calculated as a proportion of the total "hits" of contraband within each search category and within each racial/ethnic group category. For low discretion searches, the hit rate was .26 for Non-Hispanic Whites, African Americans and Native Americans, .20 for Hispanics, .17 for Asians/Pacific Islanders, and .10 for East Indians. For high discretion searches, the hit rate was .18 for Non-Hispanic Whites, .17 for Native Americans, .15 for African Americans and Hispanics alike, .11 for East Indians and .10 for Asians/Pacific Islanders.

Table 21 presents the results of the multivariate analysis we conducted using a multinomial logit model. The dependent variable for the model is the three category search variable (0=No Search, 1=Low Discretion Search, 2=High Discretion Search). The specification of the model and the independent variables used are the same as those in our previous report that analyzed the 2003-2004 data, excluding the APA or District level variables. When controlling for these covariates, this analysis indicates that for both categories of searches, males are more likely to be searched than females, younger drivers are more likely to be searched than older drivers, Native Americans, Hispanics and blacks are more likely to be searched than whites, while Asians/Pacific Islanders and East Indians are the least likely to be searched. The nature of contact variables indicate that the more the number of violations the more likely a search will occur, if the stop involved a serious violation a search is more likely, searches are more likely on interstates than non-interstates, and searches are less likely in the daylight hours than night time. The officer

Table 20: Hit Rates by Race, Across Categories of Search

From all observations, Nov. 2005-Sept. 2006

	Low Discretion Searches			High Discretion Searches		
	No Contraband	**Contraband**	**Hit Rate**	**No Contraband**	**Contraband**	**Hit Rate**
White	13,618	4,730	.26	1995	432	.18
Black	1,278	441	.26	194	33	.15
Nat. Am.	435	155	.26	55	11	.17
Asian/Pac	550	115	.17	70	7	.10
Hispanic	2,922	584	.20	493	84	.15
E. Indian	91	10	.10	18	2	.11
Other	77	21	.21	8	1	.13
Total	18,971	6,056	.27	2,833	570	.17

Table 21: Multinomial Logit Results

From all observations, Nov. 2005-Sept. 2006

	Low Discretion Search		High Discretion Search	
Variable	***Coefficient (S.E.)***	***Significance level***	***Coefficient (S.E.)***	***Significance level***
Driver Characteristics:				
Female	-0.205 (.018)	.00	-0.747 (.048)	.00
Age	-0.27 (.001)	.00	-0.045 (.002)	.00
Black	0.414 (.030)	.00	0.510 (.070)	.00
Hispanic	0.343 (.022)	.00	0.588 (.048)	.00
Native American	1.417 (.055)	.00	1.449 (.128)	.00
Asian/ Pacific Islander	-0.253 (.044)	.00	-0.416 (.117)	.00
East Indian	-1.735 (.112)	.00	-1.107 (.225)	.00
Other Race	-0.403 (.120)	.00	-0.526 (.335)	.12
Nature of Contact:				
Number of Violations	0.687(.004)	.00	0.355 (.012)	.00
Serious Violation(s)	3.416 (.021)	.00	2.031 (.062)	.00
Interstate	0.038 (.015)	.01	0.223 (.036)	
Daylight	-1.080 (.015)	.00	-0.508 (.035)	.00
Officer Characteristics:				
Female Officer	-0.226 (.031)	.00	-0.438 (.086)	.49
White Officer	0.309 (.026)	.00	0.451 (.067)	.00
Constant	-3.984 (.036)	.00	-4.793 (.091)	.00

characteristics variables indicate that male officers are more likely to conduct searches than female officers and white officers are more likely to conduct searches than non-white or minority officers.

Because the magnitude of the coefficients produced by the multinomial logit analysis are difficult to interpret, it is useful to employ the coefficient values to produce predicted probabilities of searches based on these data and this model. Table 23 presents predicated probabilities of searches for male and female drivers of different races and age categories. The probabilities were calculated for stops involving a Non-Hispanic White male police officer, in the daytime, on an interstate, with one (non-serious) violation. For example, among 18-year old male drivers, Non-Hispanic Whites have a probability of .008 of being subjected to a low discretion search and a .004 probability of being subjected to a high discretion search; African Americans have a probability of .012 of being subjected to a low discretion search, and a .006 probability of being subjected to a high discretion search; Hispanics have a probability of .011 of being subjected to a low discretion search, and a .007 probability of being subjected to a high discretion search; Native Americans have a probability of .031 of being subjected to a low discretion search, and they have a .016 probability of being subjected to a high discretion search; Asians/pacific islanders have a probability of .006 of being subjected to a low discretion search, and a .0025 probability of being subjected to a high discretion search; and East Indians have a probability of .001 of being subjected to a low discretion search and a .001 probability of being subjected to a high discretion search. Within each racial group, the probabilities of females being searched are lower than that of males, and 50-year olds are less likely to be searched than 18-year olds.

Table 22: Predicted Probabilities of Searches*

From all observations, Nov. 2005-Sept. 2006

	No Search		Low Discretionary Search		High Discretionary Search	
Age:	**18**	**50**	**18**	**50**	**18**	**50**
Male						
White	.988	.996	.008	.003	.004	.001
Black	.982	.993	.012	.005	.006	.0015
Hispanic	.982	.994	.011	.005	.007	.0016
Native American	.953	.982	.031	.014	.016	.004
Asian	.991	.997	.006	.003	.0025	.001
East Indian	.997	.999	.001	.001	.001	.0003
Female						
White	.992	.997	.006	.003	.002	.0004
Black	.987	.995	.010	.004	.003	.0007
Hispanic	.988	.995	.009	.004	.003	.0007
Native American	.966	.987	.026	.011	.008	.002
Asian	.994	.998	.005	.002	.001	.0003
East Indian	.998	.999	.001	.0004	.0006	.0001

* Predicted probabilities were calculated for stops involving a white male police officer, in the daytime, on an interstate, with one (non-serious) violation.

To summarize the findings reported here, they are remarkably consistent with the results of our analysis of searches using the 2003-2004 data in our previous report to the Washington State Patrol. Among other things, this consistency in findings indicates that there has not been any noteworthy "de-policing" as a result of the WSU research team's ongoing monitoring of WSP traffic stop data and earlier findings of disparities among the search rates of different races. The behavior of the WSP in conducting searches appears to have been essentially the same in the November, 2005-September, 2006 period as it was in the 2003-2004 period analyzed in previous reports to the WSP. There remains a correlation between the race of the driver and the likelihood of a search; in particular, Native Americans remain the most likely racial group to be subjected to either a low or a high discretion search, and African Americans and Hispanics are slightly more likely to be searched than are Non-Hispanic Whites. Asians/pacific islanders and East Indians are less likely to be searched than Non-Hispanic White, African American, Native American or Hispanic drivers.

As we concluded in earlier reports, however, we find no evidence that these disparities at the bivariate level are the result of intentional or purposeful discrimination, and thus we find no evidence of intentional "racial profiling" (evidence of purposeful or intentional discrimination is generally the first step required by the federal courts when attempting to prove racial discrimination under the Equal Protection clause of the Fourteenth Amendment of the U.S. Constitution). We come to this conclusion by comparing the likelihoods of high discretion searches to low discretion searches, which suggest that officers do not act differently based on race when they have higher levels of discretion. Moreover, the multivariate analysis results indicate that while race is correlated

with the both low and high discretion searches, there are multiple factors at play in what is most certainly a complex event. The predicted probabilities reported in Table 23 indicate that of the driver characteristics, age and sex may have as important an impact on the likelihood of being searched.

For instance, a Non-Hispanic White, 18-year old male has a probability of .004 of being subjected to a high discretion search while an 18-year old Hispanic female has a probability of .003, and a 50-year old African American or Hispanic female has a probability .0007 of being subjected to a high discretion search. Moreover, the hit rate analyses reported indicate that at least for Non-Hispanic Whites, African Americans, Hispanics and Native Americans, the WSP achieves fairly efficient policing. In fact, the **hit rates** for Non-Hispanic Whites, African Americans and Native Americans are **exactly the same for low discretion searches**. The low hit rates for Asians/pacific islanders and East Indians suggest that perhaps members of those groups are being searched at too high of rates to achieve what is commonly regarded in law enforcement management as "efficient policing." These results are consistent with our earlier analysis, and are also consistent with findings based on both quantitative and qualitative data.

We also continue to have some concerns regarding the coding of the search variable. For instance, in stops that result in troopers determining that the driver of a vehicle is under the influence of alcohol or drugs, with some rare exceptions (such as when another individual in the vehicle is capable of driving) an inventory search (at least) should be recorded. However, we found that of the 6,739 DUI cases involving white drivers, searches were not recorded in 18.3% of the cases (for DUI cases involving Blacks, searches were not recorded in 15.1% of DUI cases, for Native-Americans searches were

not recorded in 9% of DUI cases, for Asian/Pacific Islanders, searches were not recorded in 22.3% of DUI cases, for East Indians, searches were not recorded in 17.6% of DUI cases, and for Hispanics, searches were not recorded in 14.6% of DUI cases). It is important to note that the higher percentage of DUI cases involving Whites, Asians/Pacific Islanders, and East Indians for which searches are not recorded serves to deflate the number of searches of members of these three groups, relative to searches of Blacks, Hispanics, and (particularly) Native-Americans.

Although we find no evidence of intentional discrimination or bad purpose, there remains a statistical disparity at the bivariate level of analysis in the proportion of Native Americans, blacks and Hispanics who are searched compared to whites (and of course a disparity that favors Asians/pacific islanders and East Indians). We have been unable to determine what might explain these disparities given the lack of any official WSP policy to target minority drivers or other evidence of intentional discrimination or bad purpose.

We continue to believe that at least some of the disparity must be related to circumstances or events that occur before the search and that are not, and perhaps cannot be, captured by these quantitative data. Because a majority of searches conducted are search incident to arrest, the events that lead to the arrest might hold the key for at least part of the explanation. In any event, the WSP may want to consider the matter further in order to determine what may be the underlying cause of these disparities short of intentional discrimination.

Analysis of Use of Force for Evidence of Biased Policing

Introduction

For the first time over the five-year course of research being conducted in the *Division of Governmental Studies and Services* at Washington State University racially-coded data on use of force were available for analysis with respect to possible biased policing outcomes. Such data were made available for analysis for part of 2005, and very importantly enhanced data for 2006-2007 – digital records which contain far more information and more richly detailed accounts of uses of force associated with the threat of use of tasers – permits a more detailed analysis of patterns of the use of force. During the Spring of 2007 one of the members of the WSU DGSS research team was permitted to inspect five case folders (selected at random among those with both minority and non-minority subjects) from which the data being analyzed are extracted. This review of the original document file for each of the five cases indicated that all of the informational elements found in the digital data given to the WSU researchers were accurate representations of the original document files in question.

As with the other sections of this project final report, a major effort was extended by the Washington State University research team to collect and organize *as much data as possible* in the quite limited timeframe of the NHTSA grant, and then submit preliminary findings in an end-of-project report – with additional analyses being submitted as Addenda at some later date. More detailed analysis of the use of force data – particularly with respect to the effects associated with the adoption of tasers as a form of non-lethal intermediate element of force – is presented in the form of an addendum to this portion of the report.

The 2005 Use of Force Data

The 2005 use of force data provide a useful, but rather limited range of potential for analysis. These data feature information on *only the highest level of force employed*, and as a consequence of this limited amount of information on the use of force incident the range of analyses possible is very limited. Insofar as some analysis can be done with the 2005 data (number of cases =270, for the period 01/05-12/05) it is apparent that there was no relationship between likelihood of experiencing more severity of force application and the race/ethnicity of the suspect when only the most severe tool or method of controlling behavior by the officer is recorded for our analysis.

Using the WSP use of force data provided for 2005, across the 270 incidents of use of force for which digital records are available for analysis after appropriate coding for the race/ethnicity of the subjects and officers involved there was *no relationship between race/ethnicity and frequency of use of different levels of force employed by WSP officers*. The following results can be presented in this regard for this report:

Severity of Force	Non-Minority	Minority
Low Level of Force	0	1
(Verbal command)	(0.00%)	(1.52%)
Moderate Level of Force	91	34
(OC/Chemical, Personal Weapon, Flashlight, PR-24, Escorts, Counterpoint, Taser, Asp)	(55.15%)	(51.52%)
Intermediate Level of Force	71	29
(Hair hold, Total Limb Control, Take Down)	(43.03%)	(43.94%)
High Level of Force (Lethal)	3	2
(Shotgun/rifle, Vehicle, Handgun)	(1.82%)	(3.03%)

While these results are likely rather reassuring to the WSP administrative team and WSP troopers alike, it needs to be pointed out that the limited nature of the 2005 data collected for monitoring and subsequent analysis greatly restricts the depth of analysis that can be accomplished.

The 2006-7 Use of Force Data

The data collected on use of force since the beginning of 2006, after the deployment of the taser as a major non-lethal tool of intermediate force, is much richer in detail and more fully presents the context within which the officers' use of force decisions can be analyzed. Because of this richness and level of contextual detail on officer actions and suspect behaviors, it is possible to come close to a replication of research done on use of force by several highly respected Criminal Justice researchers who have studied this phenomenon carefully. These researchers commonly use a *proportionality* test to indicate the presence or absence of correspondence between a suspect's behaviors and an officer's use of force response.

Such a test permits an evaluator to determine the proportion of cases of use of force when there is appropriate proportionality between the suspect's behavior (e.g., passive resistance, active resistance, treat of use of weapon, actual use of weapon, etc.) and officer reaction (e.g., verbal command, OC spray, take down, display of weapon, etc.), and the proportion of cases wherein there is EITHER **less than** or **more than** a proportionate use of force response. In such an analysis, if the percentage of minorities and non-minorities present in either case of "disproportionality" is large, it may be the case that biased policing outcomes are in evidence. For example, if cases of less than proportionate force being used feature higher percentages of non-minorities than minorities, biased policing

may be present. Similarly, if cases of more than proportionate force being used feature higher percentages of minorities than non-minorities, biased policing may be present.

The categories of use of force by the officer taken from the official use of force records are arranged in ascending order of potential harm thusly, in accord with the research literature in this area:

- **Verbal command or threat**: Verbal Command, Handcuff only
- **Taser Display or deploy as threat of use**
- **Restraint and control**: Hair Hold, OC/Chemical
- **Pain compliance/takedown**: Escorts, Counterpoint, Total Limb Control, Take Down
- **Intermediate Weapons**: Personal Weapon, Flashlight, PR-24, Taser apply
- **Deadly force**: Shotgun/Rifle, Vehicle, Handgun

The categories of arrestee conduct recorded in the WSP use of force records are arranged in ascending order of resistance/non-compliance as follows: Complaining but compliant, passive resistance, active resistance, assaulting behavior, life-threatening behavior, possession of knife, possession/use of a firearm. The following distribution of cases indicates a high degree of proportionality [shaded cases] (78.1%).

	Most Harmful force						
Subject Highest Level of Action	Verbal command or threat	Taser Display or deploy	Restraint and control	Pain compliance/ takedown	Intermediate Weapons	Deadly force	Total
Complain	8	1	1	2	0	0	12
Passive Resistance	6	49	4	18	0	0	77
Active Resistance	13	89	17	113	4	5	241
Assaulting Behavior	6	27	9	67	4	0	113
Life Threatening	0	2	0	2	0	0	4
Had a Knife	0	2	0	2	0	0	4
Used or had a Gun	0	2	2	1	3	6	14
Total	33	172	33	205	11	11	465

It is reassuring that the percentage of cases falling in the appropriate use of force given the conduct of the arrestee, the important question to be addressed vis-à-vis racial profiling or biased policing concerns is the ethnic/racial breakdown within the "less force," "commensurate force," and "more force" categories. The following table sets forth findings from the 2006-2007 WSP use of force dataset.

Force Factor Score	Non-minority		Minority		Total		X^2
Less force	41	14.00%	27	15.60%	68	14.60%	$.522_{(2)}$
Commensurate force	231	79.10%	132	76.30%	363	78.10%	
More force	20	6.80%	14	8.10%	34	7.30%	
Total	292	100%	173	100%	465	100%	

Chi Square = .522 (2 degrees of freedom). Impact of minority/non-minority distinction is NOT statistically significant

In the area of use of force, there is no evidence of systematic bias in the application force vis-à-vis racial/ethnic minorities. Our initial analyses of the WSP use of force data revealed that the introduction of the taser into service use has occasioned some noteworthy shifts in the frequency of use of some tools of control (e.g., OC spray). In our follow-up analyses submitted as an addendum to this report we perform some more detailed analysis of these effects.

The final section of this report moves back to a fundamental question we addressed at the very outset of the report – namely, the question of the most appropriate "denominator" for assessing the presence of racial profiling. For the analysis of traffic stops, traffic citations and vehicle searches and searches of persons we have used four

distinct estimators of the denominator in an attempt to present as clear a picture as possible of the possible presence of biased policing. The final section of this report sets forth a test of the proposition that one of these four estimators is likely a very close surrogate measure of the composition of the driving public on a particular municipal roadway or Interstate highway as validated in a systematic observational study.

Results of the Use of Observational Studies for Denominator Assessment

Introduction: The Search for a Reliable Denominator

A major issue for the assessment of the presence or absence of biased policing relates to the question of the proper "denominator" to be used against which to compare rates of traffic stops, traffic citations, and vehicle and person searches incident to a traffic stop in any geographic area. Oftentimes the most readily accessible demographic data derived from the U.S. Census or from state-level estimated demographics such as the OFM in Washington have little if any relevance for determining the proportion of population of varying racial and ethnic backgrounds that might be present on roadways of particular interest. The highways and/or roads in question in many cases serve as convenient pass-through lanes of travel for motorists who do not resemble the resident population of the area of concern.

Consequently, a great deal of effort has been expended in recent years by a number of scholars working in this area of research to make the argument that only through *direct field observation* by two or more coders recording the racial and ethnic composition of drivers on a particular roadway is it possible to establish an accurate denominator estimate [Lamberth, John (1996), ***Revised Statistical Analysis of the Incidence of Police Stops and Arrests of Black Drivers/Travelers on the New Jersey Turnpike between Interchanges 1 and 3 from the Years 1988 through 1991***. Report of defendant's expert in State v. Pedro Soto, 734 A2d 350 [N.J. Super. Ct. Law. Div. 1996]}. Given the great expense associated with this difficult process of field observation, some scholars have suggested that

COLLISIONS coded for race and ethnicity are an acceptable accurate substitute for field observation-based studies {Smith, Michael R. and Geoffrey P. Alpert (2003), "Searching for Direction: Courts, Social Science, and the Adjudication of Racial Profiling Claims," ***Justice Quarterly*** 19: 673-703 and Smith, Michael R. (2000), ***The Traffic Stop Practices of the Richmond, Virginia Police Department: Final Report***}. In this regard, it is argued that accidents are principally a random event, and hence should affect all drivers relatively equally. It is the question of the reliability of racially-coded traffic collision data that is the subject of study in this aspect of the NHTSA-funded research carried out by the research team from the WSU Division of Governmental Studies and Services.

Observation Studies Conducted with the Aid of Digital Photography

In previous research involving the systematic field observation of driver characteristics a substantial number of observers working in teams and working multiple shifts labored to collect observations and code those observations as they occurred. The only formal record of that work, unfortunately, is the paper record prepared by each coder, with a subsequent comparison of coder paper records being used to establish a level of inter-coder reliability for the observations in question. Given the extremely high personnel costs associated with this type of work, the norm is for only two coders to be used on an observation (see: Steven K. Smith, Carol J. DeFrances and Carolyn C. Williams, ***Assessing Measurement Techniques for Identifying Race, Ethnicity, and Gender: Observation-Based Data Collection in Airports and at Immigration Checkpoints***. Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics, Jan. 2003).

The WSU Division of Governmental Studies and Services team attempted to raise the standard for field observation research of this type by securing digital photography

equipment and associated computer hardware and software that would permit the accomplishment of these very important enhancements over previous work in this area:

- Collecting **large numbers** of facial images of drivers
- Using **random selection of images** to ensure unbiased choice of observations
- Collecting data that constitute a **record of observation** which is permanent and subject to re-analysis and replication by any interested party
- Using **multiple coders** of diverse racial and ethnic backgrounds for the coding of facial images
- Collecting data in **multiple locations** (South King Co., City of Spokane, and Yakima Valley) varying markedly in racial and ethnic composition

The availability of moderately-priced high speed cameras and high resolution lenses which can be connected to computers to store large quantities of roadway digital images made it possible to test a new method of conducting field observations for this study. In three diverse locations across the state the local WSP district office provided on-site assistance in identifying safe and strategically positioned observational sites from which a DGSS field observation team could collect facial images of vehicle operators in each location. The WSP provided agency vans that could be adapted for the purpose of providing an appropriate platform for the camera, computer equipment, and equipment operators (two persons) needed for the collection of large numbers of on-site photographically documented observations.

With the technical assistance of subcontractor Norman McDonald, an Information Systems Technology and Photographic Technology (digital video) specialist, we were able to secure the use of the necessary camera and computer hardware and software and receive training for DGSS researchers to collect driver facial images in our principal area of interest where our previous research lead us to “drill down” into traffic stop phenomena in

this area of the state – namely, the South King County area (APA 6) featuring a heavily traveled route [Highway 99] just north of the Seattle/Tacoma International Airport (SEATAC) where a highly diverse local population resides and much of the traffic on the roadway is composed of racially and ethnically diverse "visible minority" persons. Having an accurate denominator for assessing traffic stop data in this APA was essential to our "drill down" work. As it turned out, the photographic equipment and computer software needed for extracting and enlarging facial images from full intersection time-lapse images worked even better than originally expected (i.e., yielded a high proportion of useable facial images for coding), and it was possible to increase the number of observation sites from the single site in western Washington to **two additional observation sites** in both eastern and central Washington to test out the reliability of this method of research in both urban and rural settings.

Comparison of Observational Results with Collision Records on US 99 (APA 6)

The original purpose of conducting the observational study in APA 6 was to determine as best as possible what the actual racial and ethnic make-up of the driving public is on that highly traveled roadway. Since the incidence of traffic accidents on that heavily traveled road provides a substantial record against which the observational data could be compared, this location was our original choice for conducting an observational study. It became apparent once in the field that the "bugs" in the new equipment and the learning curve associated with using a new method of observation we anticipated with a first-time use of an untried approach to data collection did not arise as feared. Given this good fortune, it became possible to both code a large number of images on computer screens on campus in Pullman using multiple coders AND replicate the use of the same

method of digital data collection in two additional research settings. Those two additional replications of the use of the method, and the results obtained from those efforts, are described below in the next subsection of this report. At this point it suffices to note that these two additional tests of the digital photography field observation method add further evidence serving to bolster our confidence in this approach to denominator estimation research.

The following summary statistics were derived from WSP traffic stop data for the period November 1, 2005 through September 30, 2006, and reflect a total of 4,052 traffic collisions to which the WSP responded in APA 6 in that period. Of those collisions, a total of 3,019 featured racial/ethnic coding information.

	Number	Percentage
Non-Minority Drivers	1,991	**65.9%**
Minority Drivers	1,028	**34.1%**

The comparable figures, derived from field observation digital photographs collected on US Highway 99 in the Spring of 2007 (April 11-13) and coded by five racially and ethnically diverse coders – one Native American, two blacks, two Anglos (three males and two females) – represent a preliminary test of the utility of the foregoing collision-based estimates of a denominator for APA 6. The figures reported here represent those cases in which **4 out of 5 coders agree** on the minority/non-minority coding of a digital facial image [456 images of 692 coded (67%)] selected at random from the 6,198 intersection images recorded on US Highway 99 at the municipal boundary for Tukwilla.

	Number	Percentage
Non-Minority Drivers	305	**66.9%**
Minority Drivers	151	**33.1%**

As can be seen from the comparison of the two sets of figures, the estimation of rates of minority and non-minority drivers from accidents would seen to be quite warranted. The findings from the collision records and the results of the observational study are **very nearly identical**. It is highly unlikely that such a close match in the results of the two independent measures of the "denominator" would coincide so closely by chance. Furthermore, a review of the preliminary analysis of findings from a replication of the digital photography-based observational study process in the Spokane area would seem to add further to the conclusion that collision data are likely to be a reliable surrogate measure for the racial/ethnic composition of the driver population on a high volume roadway.

Results for Spokane

In the Spokane area the Spokane Police Department has been collecting traffic collision data coded for race and ethnicity since January of 2005. The agency collects those data and transmits them to DGSS on a monthly basis for the compilation of a database to be used to compare against traffic stop data being collected in mobile data terminals being installed in the agency's patrol vehicles. As of 01/01/05, a total of 1,594 traffic collisions have been coded with racial/ethnicity information, with 183 of those collisions occurring on Division Street (a major North-South thoroughfare in Spokane), all involving two drivers (n=366) and each driver being coded for race, gender and ethnicity. The comparable figures for the Spokane replication of the Seattle-area study are as follows:

Spokane PD Records for Division Street

	Number	Percentage
Non-Minority Drivers	351	**95.9%**
Minority Drivers	15	**4.1%**

Spokane Digital Photography Observational Study

	Number	Percentage
Non-Minority Drivers	443	**97.1%**
Minority Drivers	13	**2.9%**

This analysis of data collected in Spokane (4,658 intersection images from time-lapse setting; 541 facial images "harvested" at random from those images collected May 29-31, 2007) was conducted with **four coders** of diverse ethnic and racial background. In all cases wherein *three out of the four coders agree* on minority/non-minority category assignment with a high rating of image clarity and high level of confidence in judgment (n=456), it is evident that racially and ethnically coded accident data are very likely **an excellent source of information for the estimation of denominators** for assessing racial profiling phenomena.

Yakima Valley Replication

Both the "Westside" (high-concentration minority population area) and "Eastside" (low rate of minority population) locations involved URBAN settings with large, multi-lane intersections featuring high volumes of traffic being available for setting up strategic observation sites. Our interest in racial profiling phenomena is not restricted to urban areas, however, and it is very important to know whether the digital photograph

observation methodology can be employed in rural settings as well where **moving vehicles** are the appropriate subjects of study.

In accord with this need to "test the limits" of the digital photography observation methodology with moving vehicles, we solicited and received support from the Union Gap office of the WSP to collect moving vehicle observation data on US Highway 82. This is a heavily traveled roadway where WSP records indicate a high proportion of Latino drivers being involved in traffic stops, citations, and collisions. It is clear from our experience that the technology we secured for this type of field observation work DOES WORK with moving traffic in rural areas where manual activation of the shutter release is required. A total of 723 useable facial images were extracted from 2,914 images collected in two days (July 14 and 15, 2007) of field observation of moving vehicles.

As in the case of Spokane, figures for visible minorities present on the US Highway 82 roadway were derived from field observation digital photographic images which were coded by five racially and ethnically diverse coders – one Native American, two blacks, two Anglos (three males and two females). In the case of this area of the state the predominant minority is "Latino," and while Latinos and Latinas are indeed minorities by culture and treatment under the law, not all Latinos are "visible" minorities. In this case of comparison between collision records and field observations, we would expect that observation records would likely indicate a lower proportion of minority population than would collision records. In the case of the former, many Latinos and Latinas may be of light complexion and not be seen as a minority person. In the case of the collision circumstance, the Spanish surname of the individual would likely trigger a "Hispanic" designation of race/ethnicity on the part of the trooper on the scene filling a TARS record.

WSP Collision Record for APA 11 (Yakima)

	Number	Percentage
Non-Minority Drivers	357	**61.7%**
Minority Drivers	217	**38.3%**

Yakima Digital Photography Observational Study

	Number	Percentage
Non-Minority Drivers	402	**74.4%**
Minority Drivers	138	**25.6%**

Just as expected, the observational study produces an estimate of minority presence on the US Highway 82 roadway which is lower than that suggested by WSP collision records. In the case of estimating the proportion of Latinos among the driving public, it is likely that the collision records are in fact **more accurate** than are observational studies!

Conclusion

It has been argued by many law enforcement agencies that the collection of racially coded data on traffic stops is not advisable because the presence or absence of racial profiling can only be established if an accurate "denominator" is available. It is argued further that since the determination of such an accurate denominator requires very expensive observational studies, the desire to collect racial profiling-relevant traffic stop data is severely tempered by the high costs associated with observational studies. Our research, reported at yet a formative stage of analysis, suggests very strongly that three facts need to be taken into consideration on the question of the advisability of collecting racially coded traffic stop data:

1. The cost of observational studies can be greatly reduced and methodologically enhanced by using digital photography;
2. The use of racially-coded collision data as a surrogate denominator is likely an acceptable alternative to the collection of observational where the latter is cost-prohibitive for a police jurisdiction; and
3. In areas where Latinos constitute a substantial proportion of the population, it is likely that racially-coded collision data are a BETTER indicator of minority population than observational studies.

Given the short period of time available for the 2007 study – involving a very large (n=11,000+) multi-wave statewide mail survey, the analysis of 500,000+ traffic stops, and the analysis of use of force data – it was decided by the Washington State University research team that the major effort would be devoted to the collection of as much pertinent data as possible, followed by the preparation of a set of principal findings for the end-of-project report. The findings reported here are, therefore, best considered somewhat provisional and formative in some areas where more research is indicated. Nonetheless, some findings are indeed beyond question – in particular, there is no evidence of systematic racial profiling occurring in Washington State Patrol traffic stops, either in connection with what citizens are stopped, what citizens are issued citations, what citizens are searched, and what citizens become subject to the use of force. In the citizen survey the high regard in which the Washington State Patrol has been and continues to be held by the citizens of the state is well documented. It is unlikely indeed that this high degree of trust in the agency and its officers could be documented year-in and year-out if the agency and its officers were engaged in systematic racial profiling.

Addendum: Analysis of the Impact of Taser Adoption

Like many other law enforcement agencies across the United States, the WSP has added the taser to its list of tools of compliance available to officers in the field since late 2005. Because this is a relatively new development in law enforcement generally, there is as yet no universal standard for how tasers are to be used across the country. Tasers have been treated as a very high impact weapon to be used exceedingly sparingly in some agencies, while other law enforcement agencies have treated the taser as a tool of moderate non-lethal compliance residing well below lethal force on the use of force continuum. Placing tasers at different levels on the use of force continuum likely produces changes in the rates of use of other moderate and intermediate means of forceful compliance employed by officers. Moreover, one of the principal reasons for introducing tasers into police use in the first place is to reduce the need to make use of lethal weapons in situations where the taser provides an appropriate alternate for controlling a situation where the use of deadly force may be justified. It follows that it is important to examine changes in the level of use of the various levels of force – lower, moderate, intermediate and lethal – associated with the adoption of the taser. Since the WSP has decided to list the taser among the "moderate" uses of force available to its officers and permitting relatively frequent use, it is wise to track the effects of this decision as closely as possible over the next few years. Such a preliminary tracking is provided here.

A chi-square statistical test is used to examine the changes which have occurred in the incidence of use of moderate and lethal forces across a 3-year period. This analysis is insightful to some degree, but it should be cautioned that the data available for analysis for both 2005 and 2007 are only for limited periods in each year. From the chi square analysis

results displayed in the following table, however, it would appear that the pattern of use of tools of moderate force has shifted significantly since the introduction of the taser into general use ($X^2_{(12)} = 280.84$, $P < .001$). It seems clear that OC/Chemical and Personal Weapon tools have been displaced by tasers in 2006 and 2007.

Moderate Force Uses by Year

	Year				
	2005	2006	2007	Total	X^2
OC/Chemical	33	33	0	66	280.840***
	14.67%	8.62%	0.00%	9.64%	
Personal Weapon	74	4	1	79	
	32.89%	1.04%	1.30%	11.53%	
Flashlight	2	3	0	5	
	0.89%	0.78%	0.00%	0.73%	
Escorts	6	12	0	18	
	2.67%	3.13%	0.00%	2.63%	
Counterjoint	8	26	7	41	
	3.56%	6.79%	9.09%	5.99%	
Taser	1	189	38	228	
	0.44%	49.35%	49.35%	33.28%	
ASP	1	0	0	1	
	0.44%	0.00%	0.00%	0.15%	
	225	383	77	685	

* $P < .05$; ** $P < .01$; *** $P < .001$

The degree of change away from the use of lethal weapons is tested in the following table using the same type of cross-tabular statistical comparison. Because the incidents involving the use of lethal force are *mercifully rare* and only pertain to a 3-year period, the observations made on the basis of the following analysis provide only a limited insight. The table on the following page shows that the use of lethal force was not reduced in 2006 as might be hoped with the first full year of taser deployment.

Use of Force Continuum by Year

	Year			
	2005	2006	2007	Total
Low	1	6	0	7
	0.37%	1.41%	0.00%	0.89%
Moderate	125	267	46	438
	46.47%	62.53%	50.55%	55.65%
Intermediate	100	116	31	247
	37.17%	27.17%	34.07%	31.39%
Lethal	5	8	0	13
	1.86%	1.87%	0.00%	1.65%
Other	38	30	14	82
	14.13%	7.03%	15.38%	10.42%
Total	269	427	91	787

In the coming years it is very important to pay close attention to yet another possible effect of the introduction of the taser into the list of moderate force tools. It is possible that officers could make use of the taser in situations which could be handled without the use of force. Were this to be the case, there could be an increase in the total number of use of force situations over the course of a reporting period (e.g., quarter or year). Of course, at this time the limited data available for analysis do not provide a sufficient basis for examining this phenomenon. After another year or two it is important to evaluate this potential effect of the introduction of the taser into WSP field application.