Analysis of Traffic Stop Practices in Four Vermont Jurisdictions

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Introduction

This report is the result of a voluntary effort by four Vermont communities. It is part of a comprehensive approach to addressing community concerns over possible racial disparities in traffic enforcement practices by law enforcement officers. Leaders in the Burlington, South Burlington, Winooski and University of Vermont (UVM) police departments began collecting data on all traffic stops conducted by their officers with a view to determining if any racial or ethnic disparities existed. In addition to learning about their own traffic enforcement practices, these agencies believed that their effort could serve as a pilot or demonstration project for other Vermont agencies. Since then, the Vermont State Police have begun to create a data collection system based on the model developed in the four communities.

This decision to begin data collection, have this analysis done and establish a process of communication regarding any community concerns about racial profiling is the beginning of a comprehensive process of dealing with community concerns over any perceived biased policing practices. The Departments that have embarked on this process see it as a long-term commitment to addressing community concerns and plan to continue data collection and dialogue over this important issue.

This report is organized in two parts. First, it provides data on overall traffic enforcement practices by the four participating Vermont communities. Part two presents the data on traffic enforcement by motorist race. The authors of this report have presented the data both in text and graphically to provide the most accessible information to the reader.

Total traffic enforcement activity

It appears that traffic enforcement is a relatively common occurrence for the police agencies involved in this pilot study as it is for most police agencies across the nation. Data was collected by each agency for the calendar year 2009. During this initial year of data collection, 13,395 traffic stops were conducted by the four participating police agencies. As expected due to the relative size of the community, the Burlington Police Department conducted the greatest number of traffic stops (N=5,482) representing approximately 40% of all stops conducted by the four departments. Among the other departments, South Burlington, UVM, and Winooski conducted 28%, 8%, and 23% of the stops, respectively.

One approach for analyzing the overall traffic enforcement activity of a given agency involves comparing the rate of stops conducted to the total population of the jurisdiction. Since the 2010 census data has not yet been released at the community level we are utilizing the Census Bureau's population estimates for 2005-2009 (American Fact Finder 2010). This is not a perfect measure since many people who drive through a jurisdiction do not live in that jurisdiction. However, using these standardized numbers does provide a way compare traffic enforcement rates between communities. The stop rates for these agencies are relatively similar ranging from 14.3%-27.1%. It appears that, of the four departments participating in this study, the UVM police is the most likely to stop motorists. This is reflected by its stop rate of 27.1% of the total population. On the low end, the Burlington police are the least likely to stop motorists with a stop rate of 14.3% of its total population.

Table 1
Total stops by agency and population

	# of stops	total population	rate of stops / total population	population 18+ years old	rate of stops / 18+ population
Burlington PD	5,482	38,630	14.3%	33,017	16.6%
South Burlington PD	3,727	17,208	21.6%	13,948	26.7%
Winooski PD	1,060	6,278	16.9%	5,017	21.1%
UVM PD	3,078	11,382	27.1%	-	-

Stops by race

The vast majority of stops by all agencies were of White drivers. In Burlington, 90.0% of the stops were of White drivers; in South Burlington, 92.8% of the motorists who were stopped were White; 89.2% of the Winooski Police Department stops were of White drivers; and finally, at UVM, 93.1% of the motorists stopped were White.

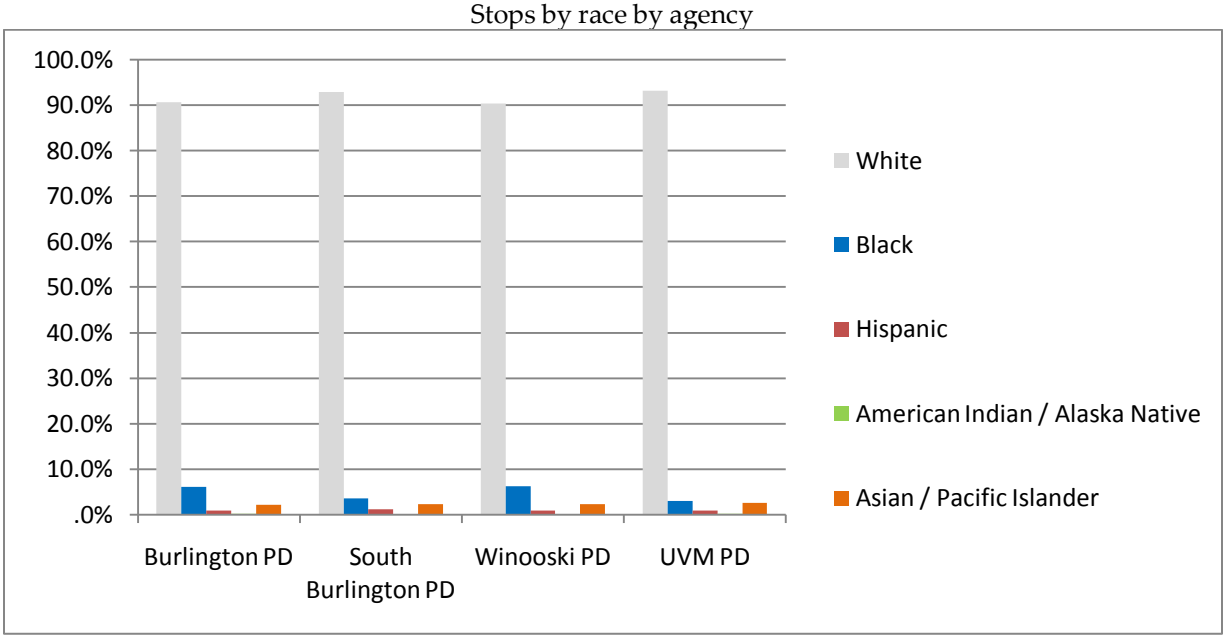
As can be seen in Table 2, the racial breakdown of stops by each of the participating police agencies is remarkably similar across agencies. For example, the number of stops of Asian drivers ranges from 2.2% of all stops in Burlington to 2.6% of all stops at UVM. Similarly, the number of stops of Hispanic drivers ranges from 0.9% in Winooski and Burlington to 1.2% of all stops in South Burlington. It is only when we look at stops of African American drivers that we see some variation with 3.0% of the motorists stopped by the UVM PD on the low end and as many as 6.1% of those stopped by the Burlington and Winooski police being African American.

It must be noted that variation in the rate of stops by racial and ethnic category should not be seen alone as an indication of racial profiling. Many other factors could explain this variation such as community demographics, enforcement priorities, and differential criminal involvement. Only an investigation of the causes of any particular disparity revealed by the analysis can determine which disparities are a result of racial profiling and which are the result of other factors. More will be discussed about racial disparities in stopping behavior later in this report.

Table 2
Race of motorist by agency

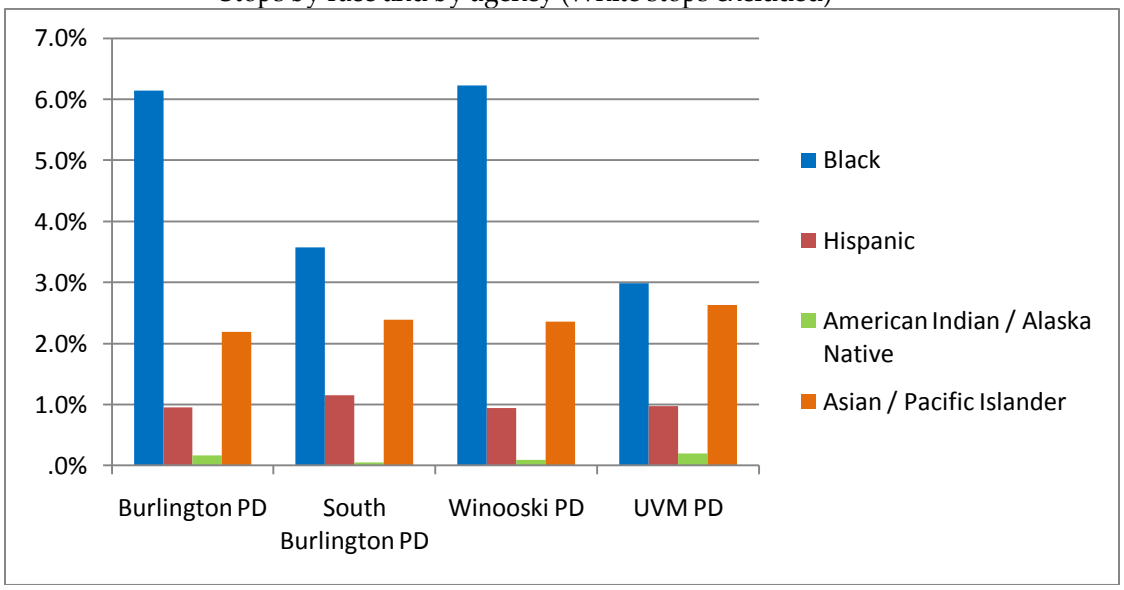
Stops per community	White		Black		Hispanic		American Indian / Alaskan Native		Asian / Pacific Islander		Unknown	
Burlington Police Dept.	4,964	90.0%	337	6.1%	52	0.9%	9	0.2%	120	2.2%	32	0.6%
So.Burlington Police Dept.	3,460	92.8%	133	3.6%	43	1.2%	2	0.1%	89	2.4%	0	0.0%
Winooski Police Dept.	958	89.2%	66	6.1%	10	0.9%	1	0.1%	25	2.3%	14	1.3%
UVM Police Dept.	2,869	93.1%	92	3.0%	30	1.0%	6	0.2%	81	2.6%	2	0.1%
TOTAL	12,251	91.5%	628	4.7%	135	1.0%	18	0.1%	315	2.4%	48	0.4%

Figure 1
Stops by race by agency



Stops by motorist race by agency

Figure 2
Stops by race and by agency (White stops excluded)



Non-white motorist stops by agency

Another way to look at the race of motorists stopped is to group the people of color into one category. When we pool motorists of color into one group, we find that the UVM police stopped the smallest percentage of people of color (6.8%) and the Winooski P.D. stopped 9.6% of people of color.

Table 3
Race of motorist by agency (people of color grouped)

Stops per community	White		People of color	
Burlington PD	4,964	90.6%	518	9.4%
South Burlington PD	3,460	92.8%	267	7.2%
Winooski PD	958	90.4%	102	9.6%
UVM PD	2,869	93.2%	209	6.8%
Total	12,251	91.8%	1,096	8.2%

Stops by Gender

Only 3 of the 4 agencies participating in this study collected information on the gender of drivers stopped. In these agencies, males were more likely to be stopped than females with 61.0% of stops made by the Burlington PD being of men, 59.6% of the stops conducted by the South Burlington PD being of male drivers, and 48.5% of the

Winooski police stops being of male drivers. It should be noted that the motorist's gender was not reported on a significant number of stops (14.2 percent) made by the Winooski police. The overall breakdown represents a slightly higher proportion of female drivers being stopped than in other statewide studies. For example, in a recent report of traffic stops in Arizona (Engel et al. 2009), the researchers found that 70% of the stops conducted in 2008 were of male drivers (pg. 38).

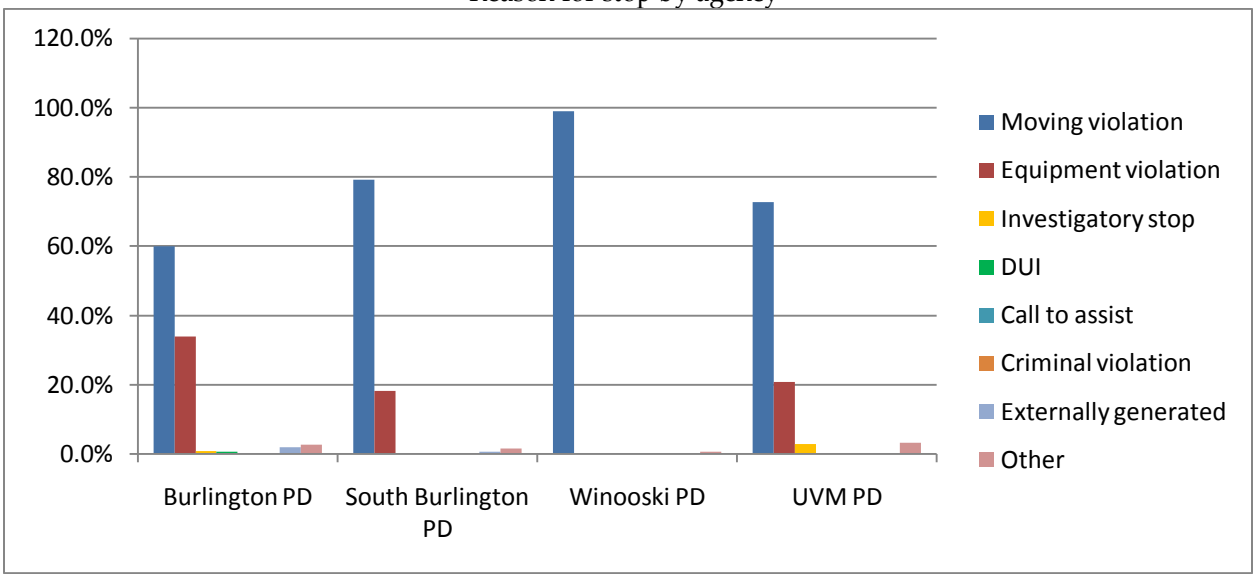
Table 4
Drivers sex by agency

Stops per community	Female		Male		Unknown	
Burlington PD	2131	38.9%	3342	61.0%	7	0.1%
South Burlington PD	1499	40.2%	2221	59.6%	7	0.2%
Winooski PD	395	37.3%	514	48.5%	151	14.2%
Total	4025	39.2%	6077	59.2%	165	1.6%

Reason for Stop

The most common reason for stopping drivers in these four jurisdictions is due to moving violations, particularly speeding. While this was true for all agencies in this study, there was a wide range in the extent to which agencies concentrate on moving violations. Representing fully 99% of its stops, Winooski had the highest proportion of stops for moving violations. South Burlington officers stopped drivers for moving violations 79.2% of the time while UVM made 72.8% of its stops for moving violations. Burlington police were least likely to stop drivers for moving violations which represented only 59.9% of all stops. On the other hand, the Burlington PD was much more likely to stop drivers for equipment violations with those stops representing 33.9% of the total whereas approximately 20% of stops conducted by the South Burlington and UVM police were for equipment violations.

Figure 3
Reason for stop by agency



Reason for stop by agency

Table 5
Reason for stop by agency

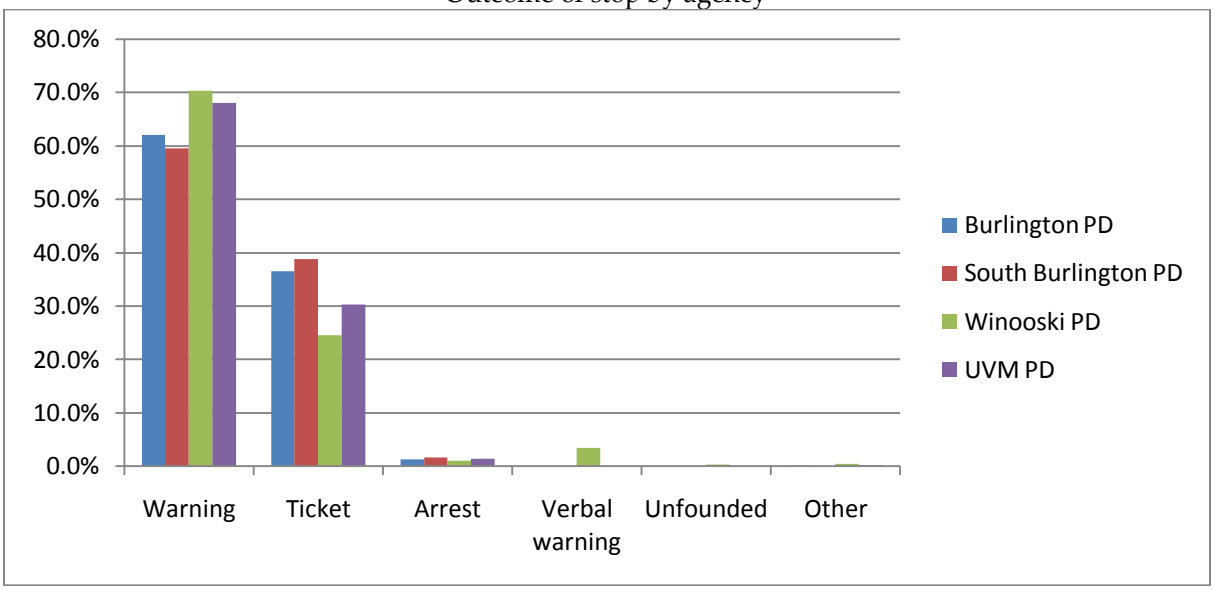
Reason for stop	Burlington PD		South Burlington PD		Winooski PD		UVM PD	
Moving violation	3,281	59.9%	2,953	79.2%	1,049	99.0%	2,241	72.8%
Equipment violation	1,858	33.9%	680	18.2%	0	0.0%	641	20.8%
Investigatory stop	47	0.9%	6	0.2%	1	0.1%	87	2.8%
DUI	40	0.7%	9	0.2%	0	0.0%	6	0.2%
Call to assist	0	0.0%	0	0.0%	2	0.2%	0	0.0%
Criminal violation	0	0.0%	0	0.0%	2	0.2%	0	0.0%
Externally generated	109	2.0%	21	0.6%	0	0.0%	6	0.2%
Other	147	2.7%	58	1.6%	6	0.6%	97	3.2%
Total	5,482	100.0%	3,727	100.0%	1,060	100.0%	3,078	100.0%

Outcome of stop

When stopped by any of the agencies in this study, a driver was most likely to receive a warning. The second most common outcome was being issued a citation. The Burlington, South Burlington, and UVM police departments issued citations in 36.5%, 38.8%, and 30.3% of their stops, respectively, whereas only 24.6% of the stops by Winooski officers resulted in citations.

Another interesting finding is that between 1% and 2% of the stops resulted in an arrest. Of the 13,347 stops in this analysis, only 188 drivers were arrested. While some have argued that conducting traffic stops provides an efficient way to get guns and drugs off the streets, the data from this sample of Vermont jurisdictions indicate that traffic stops rarely result in officers uncovering this kind of serious criminal behavior.

Figure 4
Outcome of stop by agency



Outcome of stop by agency

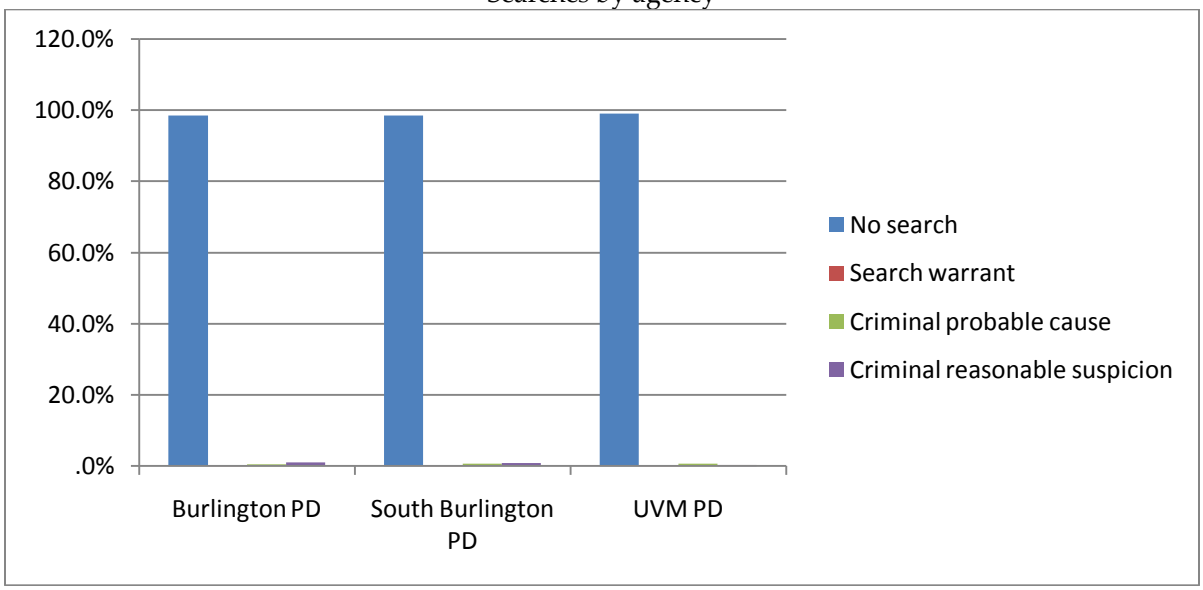
Table 6
Outcome of stop by agency

Outcome of stop	Burlington PD		So. Burlington PD		Winooski PD		UVM PD	
Warning	3,407	62.1%	2,217	59.5%	745	70.3%	2,097	68.1%
Ticket	1,999	36.5%	1,447	38.8%	261	24.6%	934	30.3%
Arrest	72	1.3%	63	1.7%	11	1.0%	42	1.4%
Verbal warning	-	-	-	-	36	3.4%	-	-
Unfounded	-	-	-	-	3	0.3%	-	-
Other	4	0.1%	-	-	4	0.4%	5	0.2%
Total	5,482	100.0%	3,727	100.0%	1,060	100.0%	3,078	100.0%

Searches

As elsewhere across the country, searches were rarely conducted in Vermont during the study period. Across all four agencies, only 1.4% of the stops involved a search. In Burlington, 1.5% of drivers stopped were searched, 1.7% of stops in South Burlington resulted in a search and only 1.1% of stops made by UVM police resulted in a search. In Winooski no searches were conducted by the police during 2009.

Figure 5
Searches by agency



Reason for search by agency

Table 7
Reason for search by agency*

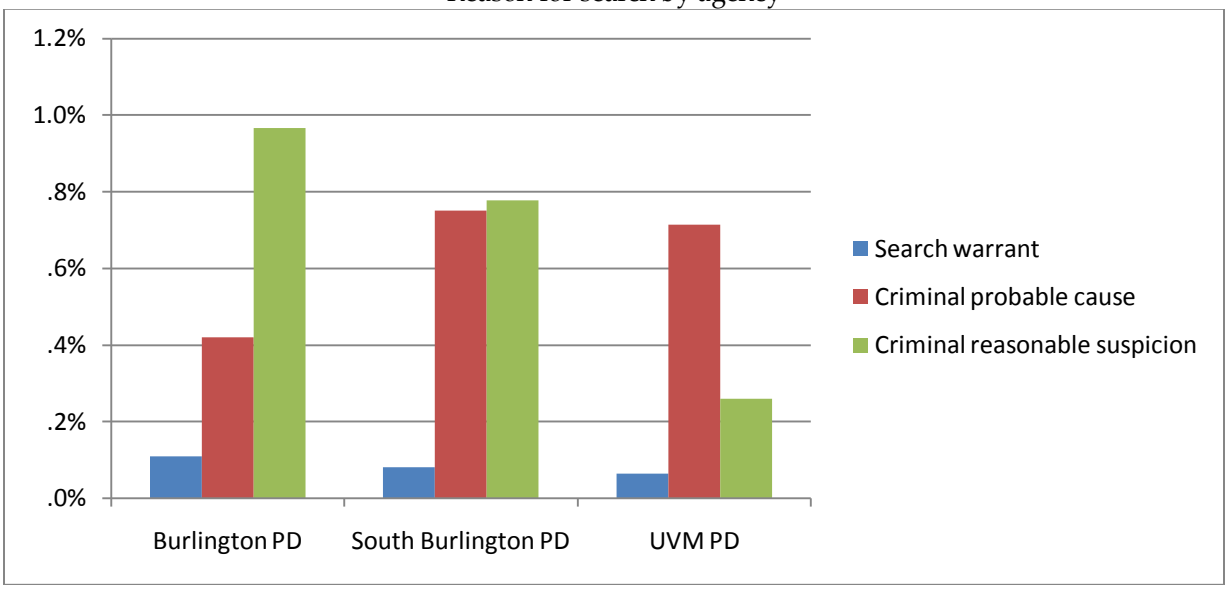
Reason for search	Burlington PD		South Burlington PD		UVM PD	
No search	5,400	98.5%	3,667	98.4%	3,046	99.0%
Search warrant	6	.1%	3	.1%	2	.1%
Criminal probable cause	23	.4%	28	.8%	22	.7%
Criminal reasonable suspicion	53	1.0%	29	.8%	8	.3%
Total	5,482	100.0%	3,727	100.0%	3,078	100.0%

*The Winooski Police did not conduct any searches in 2009

Examining only the stops during which searches were conducted, we see that very few searches were the result of an existing search warrant. Therefore, the vast majority of searches in these four Vermont communities were discretionary searches. It appears

that Burlington officers conducted most of their searches based on a legal standard of reasonable suspicion whereas South Burlington and UVM officers conducted the majority of their searches based upon probable cause. Representatives from these agencies may benefit from having a conversation about this distinction.

Figure 6
Reason for search by agency



Reason for search conducted by agency

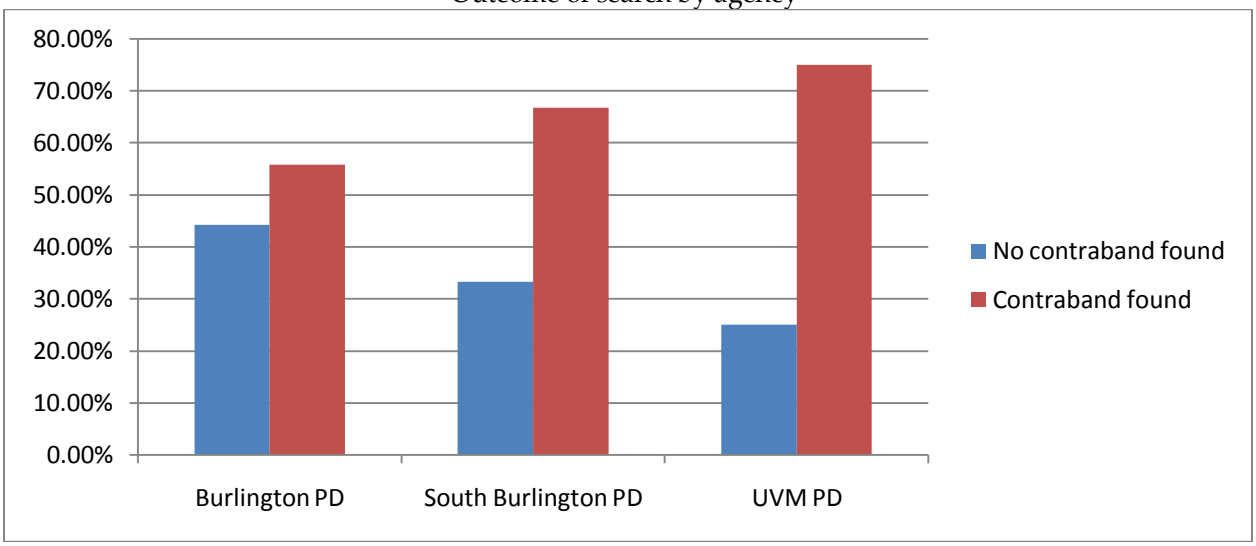
Outcome of Search

When searches were conducted in Vermont, officers were much more likely to find contraband than officers in other parts of the country. In Burlington, officers found contraband in more than one-half (55.8%) of their searches. In South Burlington, officers found contraband in 66.7% of their searches and although UVM officers conducted very few searches (N=36), they found contraband in 75% of these searches. In other words, in these three Vermont communities, officers who made the decision to conduct a search found contraband in more than half the cases. These figures are much higher than those identified in other studies and indicate a relatively high success rate.

Of the studies that have found racial disparities, most have identified differences in the rate at which motorists were searched. It has been noted that being searched when they are not carrying contraband can be a demeaning and alienating process for motorists and can reduce overall trust and confidence in the police. In these three Vermont

communities, it appears that police do a much better job of identifying and searching those drivers who do in fact have contraband on them, and thus minimize the negative impact of searches that have been documented in other agencies.

Figure 7
Outcome of search by agency



Outcome of search by agency

Table 8
Outcome of searches conducted by agency

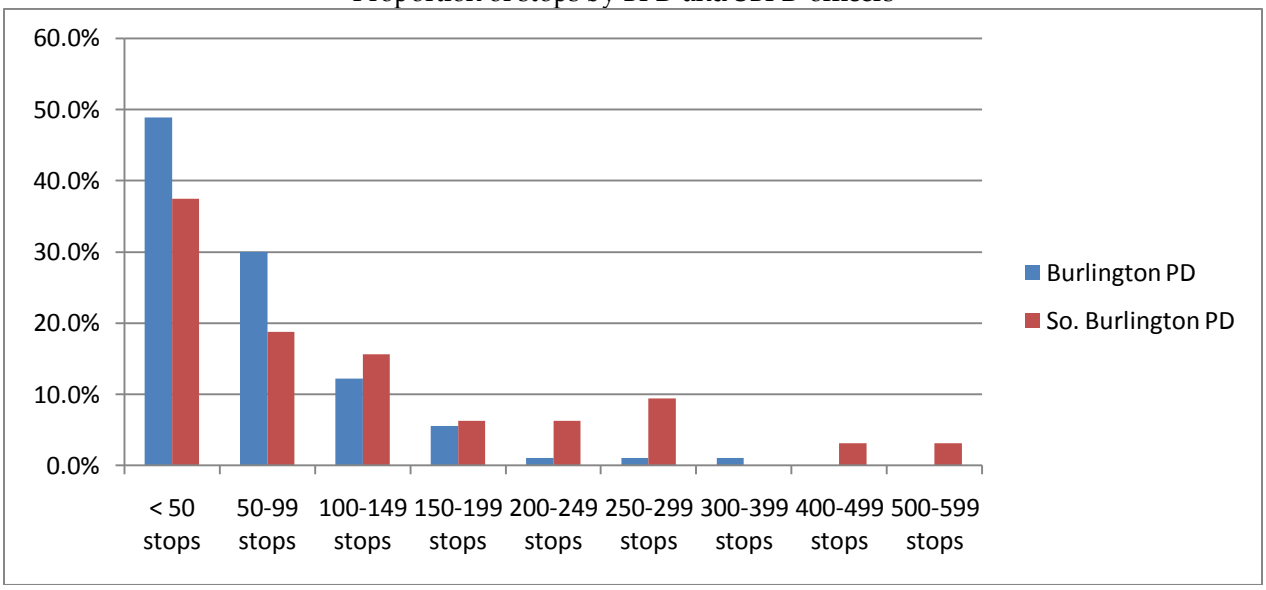
Outcome of search	Burlington PD		So. Burlington PD		UVM PD		Total	
No contraband found	38	44.2%	22	33.3%	9	25.0%	102	39.1%
Contraband found	48	55.8%	44	66.7%	27	75.0%	159	60.9%
Total	86	100.0%	66	100.0%	36	100.0%	261	100.0%

Officer number

In Burlington and South Burlington, the only agencies for which this information was available, there were 122 officers who made traffic stops. Of those, 66 or about one-half made 50 or more stops. Out of a total of 9,209 stops made by these two agencies, the "top" 8 officers made 2,635 stops representing 28.6% of all stops. In other words, 6.6% of the officers accounted for 28.6% of the stops in these two agencies.

The graph and table below show that more than 90% of Burlington police officers and 72% of South Burlington officers made fewer than 150 stops per year during the study period.

Figure 8
Proportion of stops by BPD and SBPD officers



Proportion of stops by BPD and SBPD officers

Table 9
Proportion of stops by officers

Stops per officer	Burlington PD		South Burlington PD	
< 50	44	48.9%	12	37.5%
50-99	27	30.0%	6	18.8%
100-149	11	12.2%	5	15.6%
150-199	5	5.6%	2	6.3%
200-249	1	1.1%	2	6.3%
250-299	1	1.1%	3	9.4%
300-399	1	1.1%	0	0.0%
400-499	0	0.0%	1	3.1%
500-599	0	0.0%	1	3.1%
Total	90	100.0%	32	100.0%

Table 10
"Top 8" officers – proportion of stops

Top 8 officers	# of stops	% of total
SBPD #1	581	6.3%
SBPD #2	451	4.9%
BPD #1	332	3.6%
BPD #2	290	3.1%
SBPD #3	267	2.9%
SBPD #4	255	2.8%
SBPD #5	250	2.7%
BPD #3	209	2.3%
Total	2,635	100.0%

Part II
Stops by Race by Community

Between 7.2%- 9.6% of the stops in each community were of non-White drivers. This information should be viewed in the context of the population figures for each community. Again, since the 2010 census is not yet available with community level demographics, we utilized the 2005-2009 census estimates as the best available measure of racial and ethnic demographics of the communities.

Table 11
Population demographics by community

Community	Burlington		South Burlington		Winooski	
Census 2000 Data	Population	%	Population	%	Population	%
White	35,787	92.6%	15,422	89.6%	5,652	90.0%
Black / African American	797	2.1%	324	1.9%	62	0.1%
Hispanic	693	1.8%	388	2.2%	178	2.8%
American Indian / Alaska Native	149	0.4%	27	0.0%	104	1.7%
Asian / Pacific Islander	987	2.6%	939	5.5%	294	4.7%
Total estimated Population	38,630		17,208		6,278	

In Burlington and Winooski, 9.4% and 9.6% of the stops were of non-White drivers. The proportion of non-White stops in South Burlington and UVM was slightly lower at 7.2% and 6.8% respectively.

These results indicate that in South Burlington and Winooski, White drivers were more likely to be stopped than their population figures might indicate and in Burlington, White drivers were slightly less likely to be stopped compared to the population figures. Non-White drivers are more likely to be stopped than their population figures might indicate in Burlington and in Winooski but not in South Burlington. That being said, the differences are small and could be accounted for by a number of factors.[1] Some of the factors that could explain the observed differences include racial and ethnic differences in the non-residential population of drivers in a community, differential patrol deployment practices where officers may be deployed in areas of a community where more non-White residents live, or differential traffic violation patterns.

[1] Testing the hypotheses that whites are stopped at the same rate as their population reveals statistically significant differences. However, testing for statistical significance may not be the appropriate analysis under the circumstances since we are analyzing the universe of stops and not a sample.

One way to understand the disparities between population estimates and traffic enforcement practices is to calculate a simple difference between these two numbers. In the table below, we see that in each of the three municipal agencies, White drivers were less likely to be stopped than indicated by the population figures and non-White drivers are more likely to be stopped. As explained above, the reader should not assume that these differences are an indication of racial profiling, nor should the reader assume that since the differences are small that no racial profiling is going on in these agencies.

Table 12
Difference between percentage of the population and percentage of stops

Agency	White Population	White Stops	**Difference**	Non-White Population	Non-White Stops	**Difference**
Burlington PD	92.6	90.6	**-2.0**	6.5	9.4	**2.9**
South Burlington PD	89.6	92.9	**3.3**	9.6	7.2	**-2.4**
Winooski PD	90.0	89.2	**0.8**	9.3	9.6	**0.3**
UVM PD	n/a	93.2	-	n/a	6.8	-

The table below presents data for individual racial and ethnic groups. The reader should be cautioned that the base number of stops is very low for each of these categories and that the observed differences may be unreliable and must be viewed with caution.

Table 13
Racial and ethnic differences between stops and population demographics

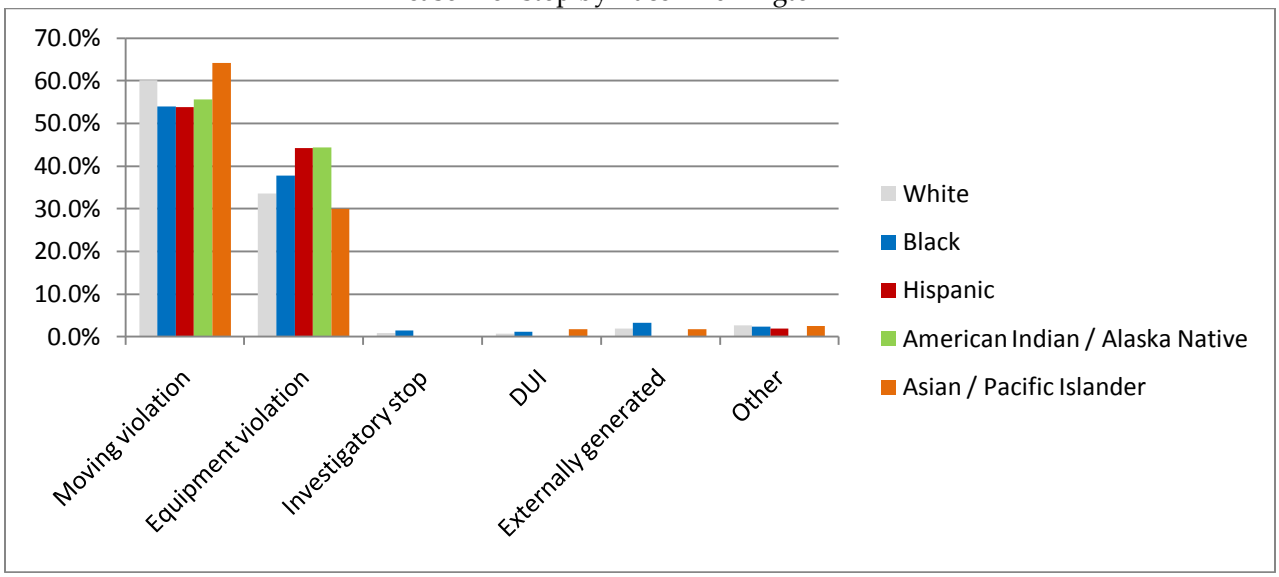
	White	**Black**	**Hispanic**	**American Indian / Alaska Native**	**Asian / Pacific Islander**
Burlington PD	-2.0%	4.0%	-0.9%	-0.2%	-0.4%
So. Burlington PD	3.3%	1.7%	-1.0%	0.1%	-3.1%
Winooski PD	0.3%	6.1%	-1.9%	-1.6%	--2.3%
UVM PD	-	-	-	-	-

Reason for Stop by Race by Community

Prior research has found that some police officers looking for reasons to stop non-White drivers are more likely to stop them for more discretionary reasons such as equipment violations than for less discretionary violations such as speeding. While there is no definitive pattern showing this practice in any of the four Vermont communities, Hispanics were more likely to be stopped for equipment violations in Burlington (44% of Hispanics vs. 34% of Whites). Similarly, Black drivers (29%) and Asian drivers (33%) were more likely to be stopped for equipment violations by UVM officers compared to White drivers (20%). It is interesting to note that in South Burlington, very few racial

and ethnic differences exist in this category. In Winooski, as mentioned above, the police only stop drivers for moving violations accounting for 99% of all of their stops.

Figure 9
Reason for stop by Race – Burlington PD



Reason for stop by race - Burlington PD

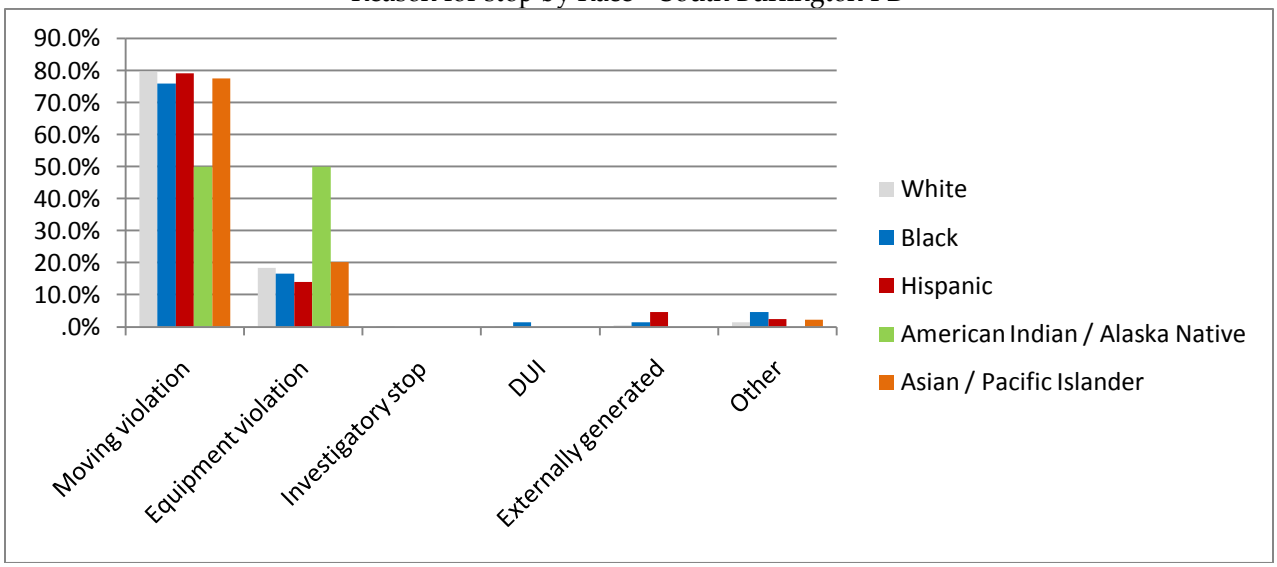
Table 14
Type of stop by individual racial and ethnic categories – Burlington PD

Reason for stop	White		Black		Hispanic		American Indian / Alaska Native		Asian / Pacific Islander		Total	
Moving violation	2,989	60.2%	182	54.0%	28	53.8%	5	55.6%	77	64.2%	3,281	59.9%
Equipment violation	1,668	33.6%	127	37.7%	23	44.2%	4	44.4%	36	30.0%	1,858	33.9%
Investigatory stop	42	0.8%	5	1.5%	0	0.0%	0	0.0%	0	0.0%	47	0.9%
DUI	34	0.7%	4	1.2%	0	0.0%	0	0.0%	2	1.7%	40	0.7%
Externally generated	96	1.9%	11	3.3%	0	0.0%	0	0.0%	2	1.7%	109	2.0%
Other	135	2.7%	8	2.4%	1	1.9%	0	0.0%	3	2.5%	147	2.7%
Total	4,964	100.0%	337	100.0%	52	100.0%	9	100.0%	120	100.0%	5,482	100.0%

Table 15
Type of stop with people of color grouped – Burlington PD

Reason for stop	White	People of color
Moving violation	60.2%	56.4%
Equipment violation	33.6%	36.7%
Investigatory stop	0.8%	1.0%
DUI	0.7%	1.2%
Externally generated	1.9%	2.5%
Other	2.7%	2.3%

Figure 10
Reason for stop by Race – South Burlington PD



Reason for stop by race - South Burlington PD

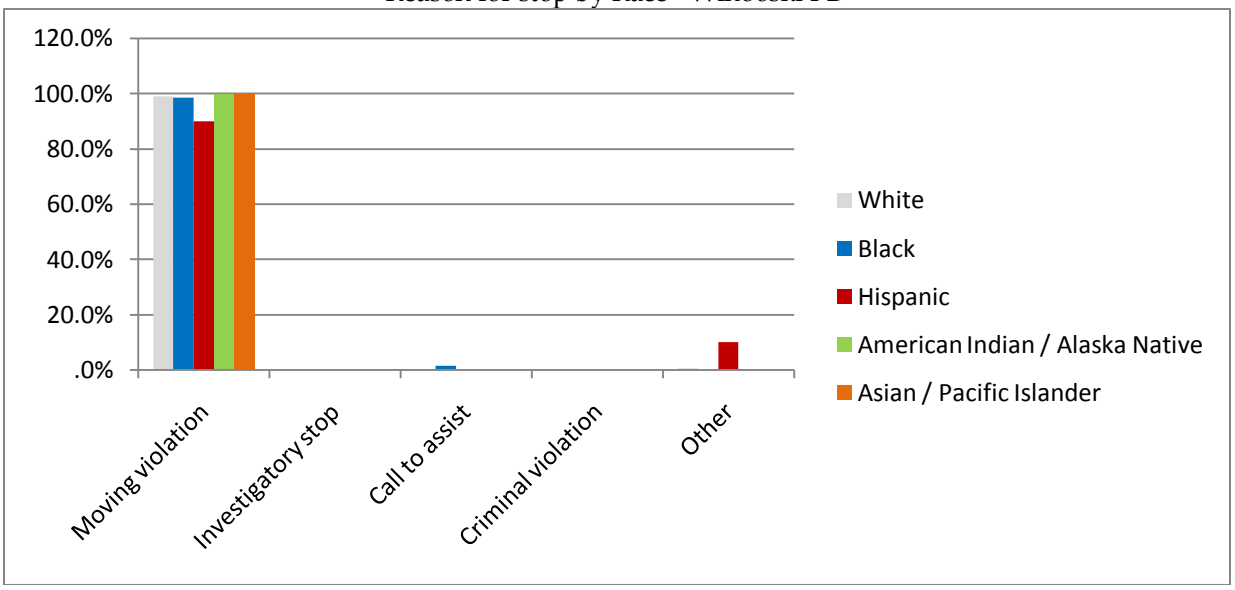
Table 16
Type of stop by individual racial and ethnic categories - South Burlington PD

Reason for stop	White		Black		Hispanic		American Indian / Alaska Native		Asian / Pacific Islander		Total	
Moving violation	2,748	79.4%	101	75.9%	34	79.1%	1	50.0%	69	77.5%	2,953	79.2%
Equipment violation	633	18.3%	22	16.5%	6	14.0%	1	50.0%	18	20.2%	680	18.2%
Investigatory stop	6	.2%	0	.0%	0	.0%	0	.0%	0	.0%	6	.2%
DUI	7	.2%	2	1.5%	0	.0%	0	.0%	0	.0%	9	.2%
Externally generated	17	.5%	2	1.5%	2	4.7%	0	.0%	0	.0%	21	.6%
Other	49	1.4%	6	4.5%	1	2.3%	0	.0%	2	2.2%	58	1.6%
Total	3,460	92.8%	133	3.6%	43	1.2%	2	.1%	89	2.4%	3,727	100.0%

Table 17
Type of stop with people of color grouped – South Burlington PD

Reason for stop	White	People of color
Moving violation	79.4%	76.8%
Equipment violation	18.3%	17.6%
Investigatory stop	.2%	0.0%
DUI	.2%	0.7%
Externally generated	.5%	1.5%
Other	1.4%	3.4%

Figure 11
Reason for stop by Race - Winooski PD



Reason for stop by race - Winooski PD

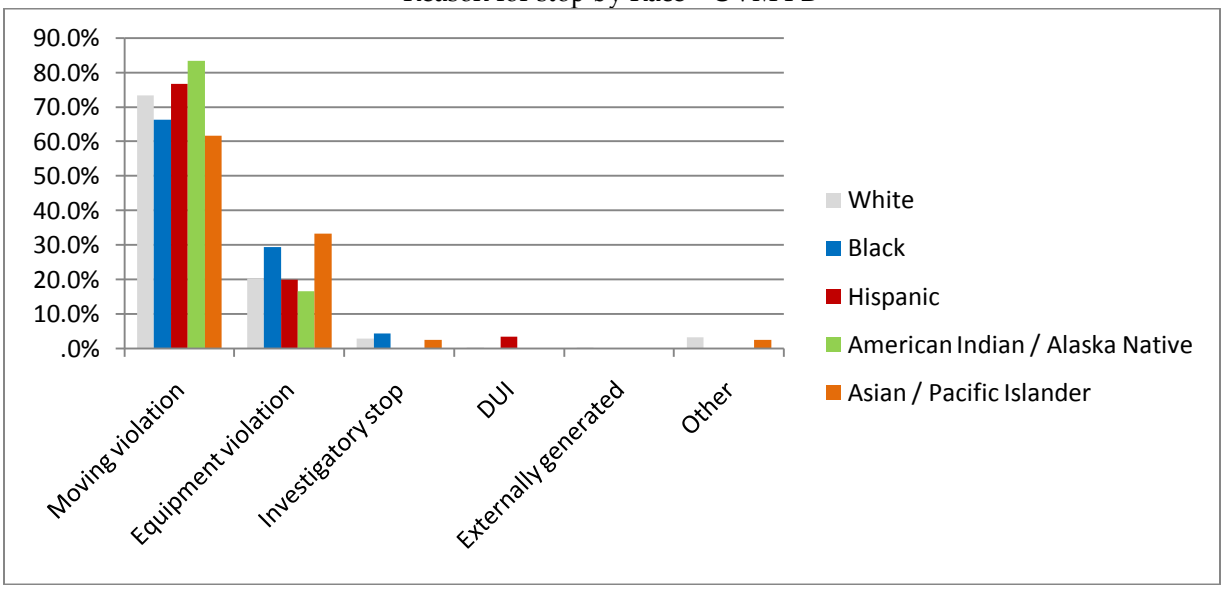
Table 18
Type of stop by individual racial and ethnic categories – Winooski PD

Reason for stop	White		Black		Hispanic		American Indian / Alaska Native		Asian / Pacific Islander		Total	
Moving violation	949	99.1%	65	98.5%	9	90.0%	1	100.0%	25	100.0%	1049	99.0%
Investigatory stop	1	.1%	0	.0%	0	.0%	0	.0%	0	.0%	1	.1%
Call to assist	1	.1%	1	1.5%	0	.0%	0	.0%	0	.0%	2	.2%
Criminal violation	2	.2%	0	.0%	0	.0%	0	.0%	0	.0%	2	.2%
Other	5	.5%	0	.0%	1	10.0%	0	.0%	0	.0%	6	.6%
Total	958	100.0%	66	100.0%	10	100.0%	1	100.0%	25	100.0%	1060	100.0%

Table 19
Type of stop with people of color grouped – Winooski PD

Reason for stop	White	People of color
Moving violation	99.1%	98.0%
Investigatory stop	0.1%	0.0%
Call to assist	0.1%	1.0%
Criminal violation	0.2%	1.0%
Other	0.5%	2.5%

Figure 12
Reason for stop by Race – UVM PD



Reason for stop by race - UVM PD

Table 20
Type of stop by individual racial and ethnic categories – UVM PD

Reason for stop	White		Black		Hispanic		American Indian / Alaska Native		Asian / Pacific Islander		Total	
Moving violation	2,102	73.3%	61	66.3%	23	76.7%	5	83.3%	50	61.7%	2,241	72.8%
Equipment violation	580	20.2%	27	29.3%	6	20.0%	1	16.7%	27	33.3%	641	20.8%
Investigatory stop	81	2.8%	4	4.3%	0	.0%	0	.0%	2	2.5%	87	2.8%
DUI	5	.2%	0	.0%	1	3.3%	0	.0%	0	.0%	6	.2%
Externally generated	6	.2%	0	.0%	0	.0%	0	.0%	0	.0%	6	.2%
Other	95	3.3%	0	.0%	0	.0%	0	.0%	2	2.5%	97	3.2%
Total	2,869	100.0%	92	100.0%	30	100.0%	6	100.0%	81	100.0%	3,078	100.0%

Table 21
Type of stop with people of color grouped – UVM PD

Reason for stop	White	People of color
Moving violation	73.3%	66.5%
Equipment violation	20.2%	29.2%
Investigatory stop	2.8%	2.9%
DUI	0.2%	0.5%
Externally generated	0.2%	0.0%
Other	3.3%	1.0%

Outcome of Stop by Race

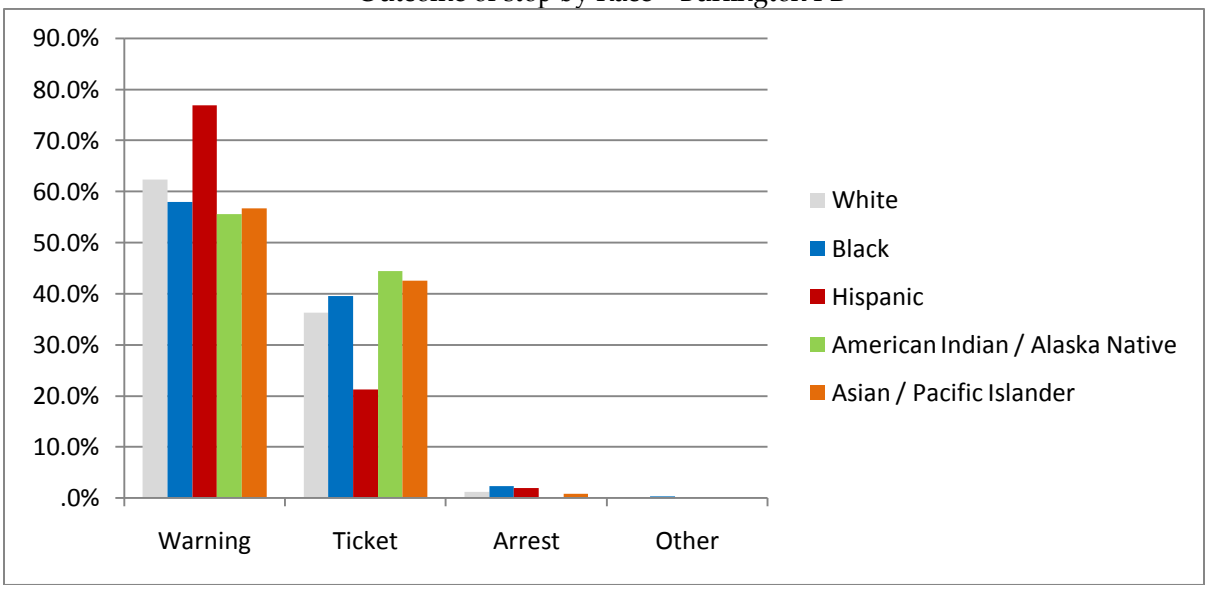
Many have argued that it is difficult to determine the race of a driver prior to a stop. Elements such as rain and darkness can make it very difficult, if not impossible, for an officer to know the race of the driver before the actual stop. For this reason, a number of researchers have argued that post-stop decisions, such as the decision to issue a ticket or to conduct a search, are better indicators of actual racial and ethnic disparities.

The four agencies participating in this study were unique in that the primary outcome of all traffic stops in each jurisdiction was a warning. The question is whether there were any differences in the outcome of stops by race or ethnicity.

In reviewing the data from the four Vermont communities, we see very slight differences in the outcome of stops by race or ethnicity. In only three instances were Black, Hispanic or Asian drivers slightly more likely to receive a citation than White drivers. In Burlington, Black and Asian drivers were more likely to be issued a citation than White drivers (40% vs. 36%) and (43% vs. 36%) whereas Hispanic drivers were less likely to be issued a citation than White drivers (21% vs. 36%). In South Burlington, while the total number of cases were low, Hispanic drivers were slightly more likely to receive a citation than White drivers were (44% vs. 39%).

In all other instances, Black, Hispanic and Asian drivers were less likely to be issued a citation than White drivers were. This means that non-White drivers were less likely to receive citations than White drivers in most instances. In other words, considering there were 4 jurisdictions and 3 possible outcomes per jurisdiction (warning, ticket, arrest), non-White drivers fared better than White drivers in 9 of the 12 instances.

Figure 13
Outcome of stop by Race – Burlington PD



Outcome of stop by race - Burlington PD

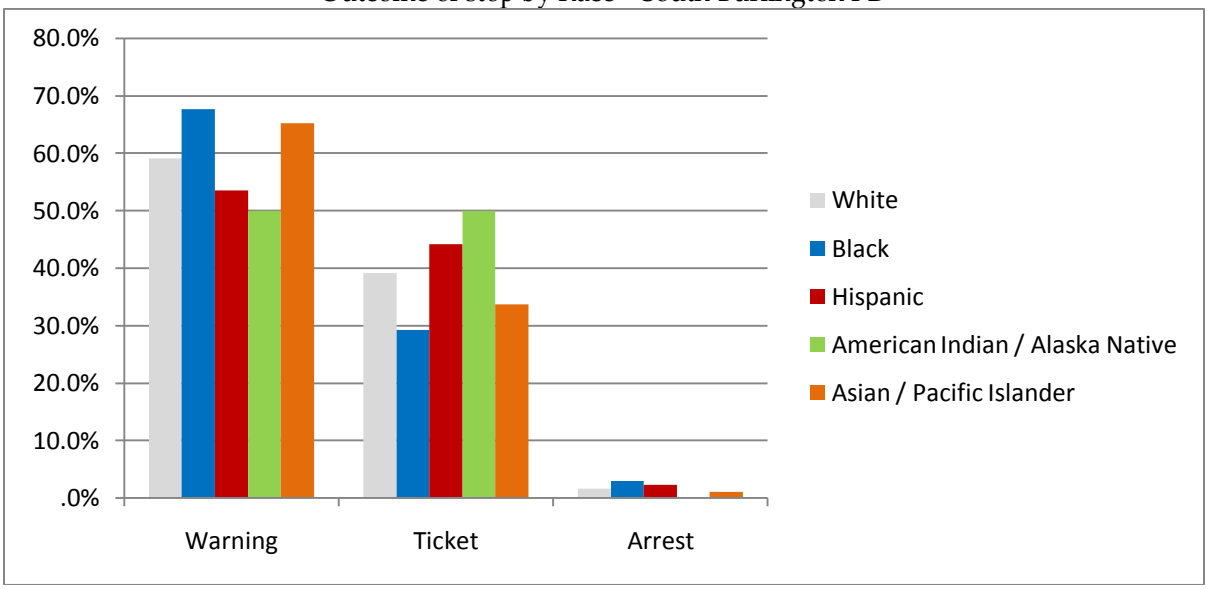
Table 22
Outcome of stop by individual racial and ethnic categories – Burlington PD

Burlington PD	White	Black	Hispanic	American Indian / Alaska Native	Asian / Pacific Islander	Total
Warning	62.4%	57.9%	76.9%	55.6%	56.7%	62.1%
Ticket	36.3%	39.5%	21.2%	44.4%	42.5%	36.5%
Arrest	1.2%	2.4%	1.9%	0.0%	0.8%	1.3%
Other	.1%	0.3%	0.0%	0.0%	0.0%	0.1%
Total N	**4,964**	**337**	**52**	**9**	**120**	**5,482**

Table 23
Outcome of stop with people of color grouped – Burlington PD

Burlington PD	White	People of color
Warning	62.4%	59.5%
Ticket	36.3%	38.4%
Arrest	1.2%	1.9%
Other	.1%	0.2%
Total N	**4,964**	**518**

Figure 14
Outcome of stop by Race – South Burlington PD



Outcome of stop by race - South Burlington PD

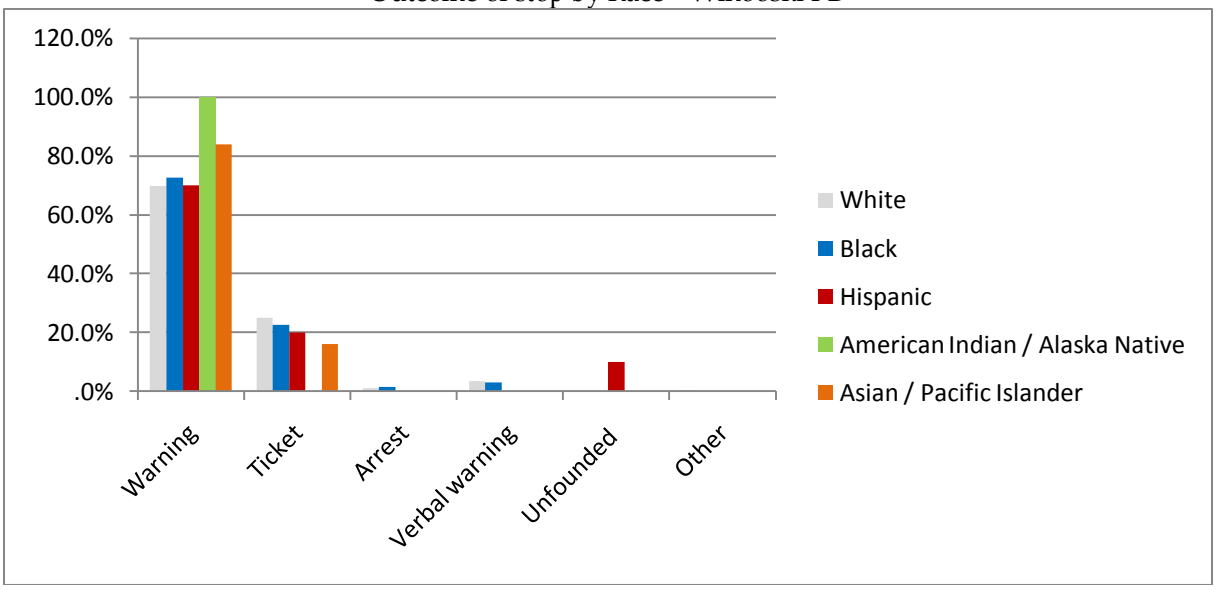
Table 24
Outcome of stop by individual racial and ethnic categories – South Burlington PD

South Burlington PD	White	Black	Hispanic	American Indian / Alaska Native	Asian / Pacific Islander	Total
Warning	59.1%	67.7%	53.5%	50.0%	65.2%	59.5%
Ticket	39.2%	29.3%	44.2%	50.0%	33.7%	38.8%
Arrest	1.6%	3.0%	2.3%	0.0%	1.1%	1.7%
Total N	3,460	133	43	2	89	3,727

Table 25
Outcome of stop with people of color grouped – South Burlington PD

South Burlington PD	White	People of color
Warning	59.1%	64.4%
Ticket	39.2%	33.3%
Arrest	1.6%	2.2%
Total N	3,460	267

Figure 15
Outcome of stop by Race – Winooski PD



Outcome of stop by race - Winooski PD

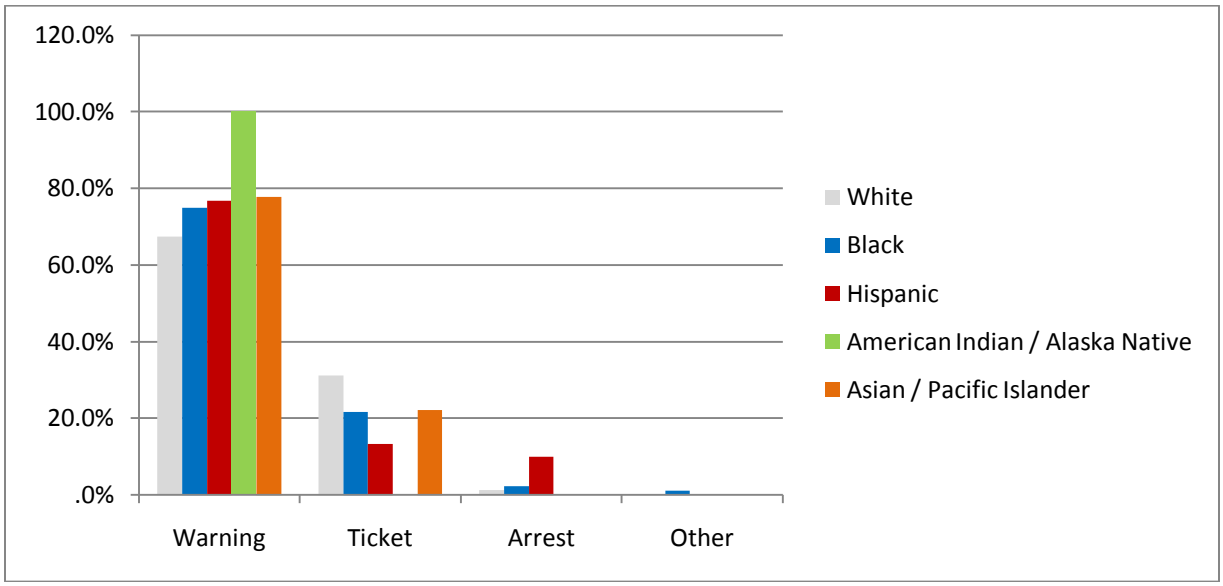
Table 26
Outcome of stop by individual racial and ethnic categories – Winooski PD

Winooski PD	White	Black	Hispanic	American Indian / Alaska Native	Asian / Pacific Islander	Total
Warning	69.7%	72.7%	70.0%	100.0%	84.0%	70.3%
Ticket	25.0%	22.7%	20.0%	0.0%	16.0%	24.6%
Arrest	1.0%	1.5%	0.0%	0.0%	0.0%	1.0%
Verbal warning	3.5%	3.0%	0.0%	0.0%	0.0%	3.4%
Unfounded	0.2%	0.0%	10.0%	0.0%	0.0%	0.3%
Other	0.4%	0.0%	0.0%	0.0%	0.0%	0.4%
Total N	958	66	10	1	25	1,060

Table 27
Outcome of stop with people of color grouped – Winooski PD

Winooski PD	White	People of color
Warning	69.7%	75.5%
Ticket	25.0%	20.6%
Arrest	1.0%	1.0%
Verbal warning	3.5%	2.0%
Unfounded	0.2%	1.0%
Other	0.4%	0.0%
Total N	958	102

Figure 16
Outcome of stop by Race – UVM PD



Outcome of stop by race - UVM PD

Table 28
Outcome of stop by individual racial and ethnic categories – UVM PD

UVM PD	White	Black	Hispanic	American Indian / Alaska Native	Asian / Pacific Islander	Total
Warning	67.5%	75.0%	76.7%	100.0%	77.8%	68.1%
Ticket	31.1%	21.7%	13.3%	0.0%	22.2%	30.3%
Arrest	1.3%	2.2%	10.0%	0.0%	0.0%	1.4%
Other	0.1%	1.1%	0.0%	0.0%	0.0%	0.2%
Total N	2,869	92	30	6	81	3,078

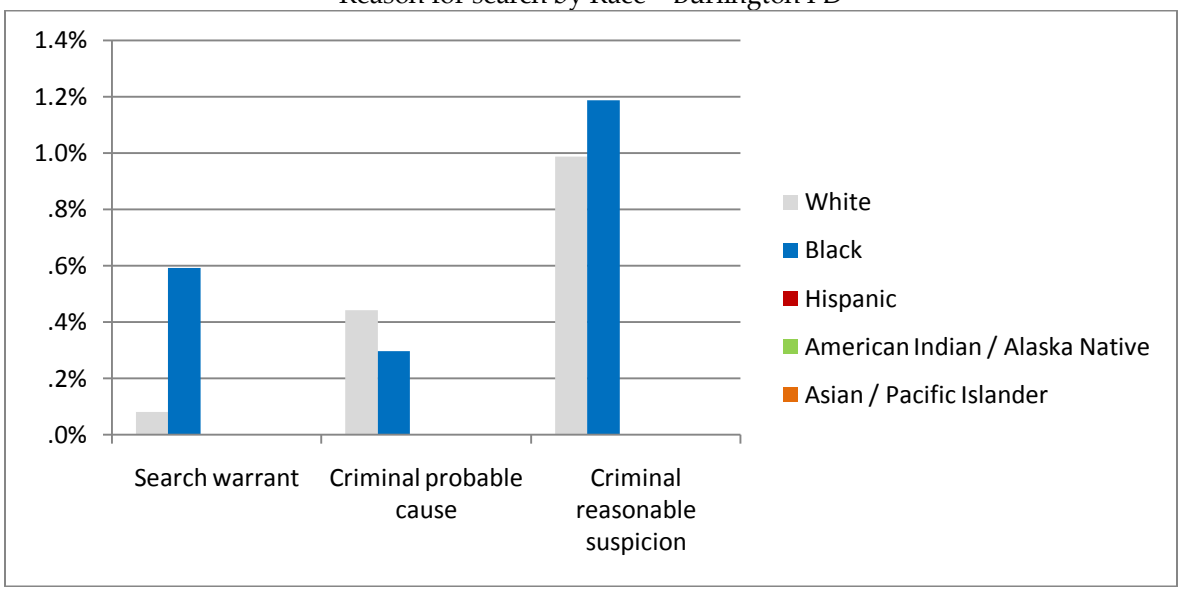
Table 29
Outcome of stop with people of color grouped – UVM PD

UVM PD	White	People of color
Warning	67.5%	77.0%
Ticket	31.1%	20.1%
Arrest	1.3%	2.4%
Other	0.1%	0.5%
Total N	2,869	209

Searches

Another area where much of the prior national research has found disparities is in the decision to search drivers. While non-White drivers often are searched at hgher rates than White drivers, the differences are small in the Vermont communities that were analyzed. In Burlington, where 75 searches of White drivers and 7 searches of Black drivers were conducted, the White search rate was 1.5% and the Black search rate was 2.1%. No searches of Hispanic or Asian drivers were conducted in Burlington during the period under study. Although South Burlington police officers were more likely to search African American drivers than Whites, they conducted only 13 searches in total, this small number making the estimate unreliable. At the University of Vermont, the African American search rate was higher than the White search rate but again, the African American rate was based on only two searches and is an unreliable statistic. The Winooski police did not conduct any searches during 2009.

Figure 17
Reason for search by Race – Burlington PD



Reason for search - Burlington PD

Table 30
Reason for search by individual racial and ethnic categories – Burlington PD

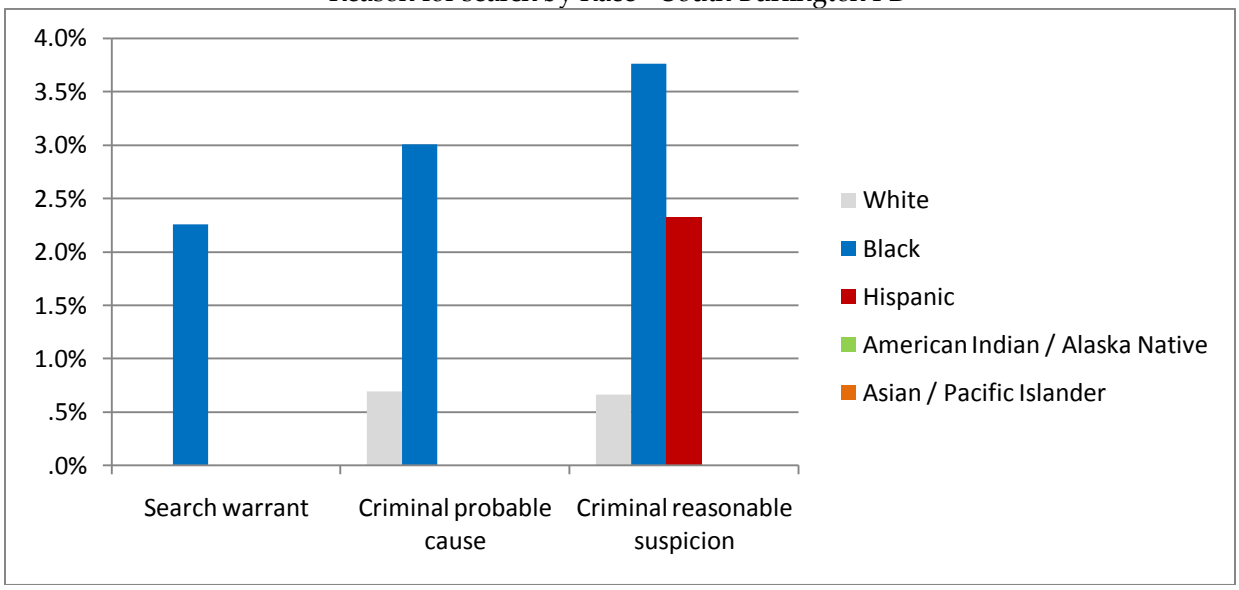
Burlington PD	White	Black	Hispanic	American Indian / Alaska Native	Asian / Pacific Islander	Total
No search	98.5%	97.9%	100.0%	100.0%	100.0%	98.5%
Search warrant	.1%	.6%	.0%	.0%	.0%	.1%
Criminal probable cause	.4%	.3%	.0%	.0%	.0%	.4%
Criminal reasonable suspicion	1.0%	1.2%	.0%	.0%	.0%	1.0%
Total N	4,964	337	52	9	120	5,482

Table 31
Reason for search with people of color grouped – Burlington PD

Burlington PD	White	People of color
No search	98.5%	98.6%
Search warrant	.1%	.4%
Criminal probable cause	.4%	.2%
Criminal reasonable suspicion	1.0%	.8%
Total	4,964	518

In South Burlington, 47 searches of White drivers represented a search rate of 1.4% in comparison with a Black search rate of 9.0%. (N=12 searches). Only one Hispanic driver and no Asian or American Indian driver was searched. The difference between 1.4% and 9% bears monitoring; as more data become available, the South Burlington Police Department should review all searches to be sure that that this difference is reduced or should explain to the community why this disparity may be legitimate.

Figure 18
Reason for search by Race – South Burlington PD



Reason for search - South Burlington PD

Table 32
Reason for search by individual racial and ethnic categories – South Burlington PD

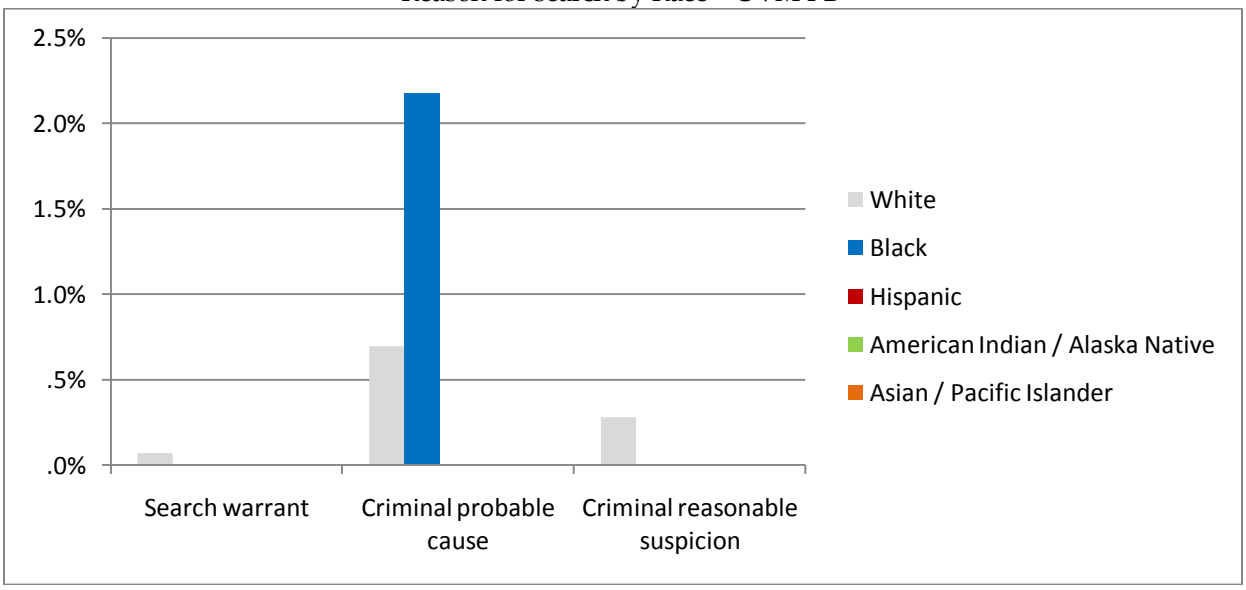
South Burlington PD	White	Black	Hispanic	American Indian / Alaska Native	Asian / Pacific Islander	Total
No search	98.6%	91.0%	97.7%	100.0%	100.0%	98.4%
Search warrant	.0%	2.3%	.0%	.0%	.0%	.1%
Criminal probable cause	.7%	3.0%	.0%	.0%	.0%	.8%
Criminal reasonable suspicion	.7%	3.8%	2.3%	.0%	.0%	.8%
Total	3,460	133	43	2	89	3,727

Table 33
Reason for search with people of color grouped – South Burlington PD

South Burlington PD	White	People of color
No search	98.6%	95.1%
Search warrant	.0%	1.1%
Criminal probable cause	.7%	1.5%
Criminal reasonable suspicion	.7%	2.2%
Total	3,460	267

At UVM, the White search rate was 1.0% and the Black search rate was 2.2% but it should be noted again that, because only 2 searches were conducted, these statistics are unreliable in terms of revealing racial profiling. The UVM PD did not search any Hispanic or Asian drivers during the study period.

Figure 19
Reason for search by Race – UVM PD



Reason for search - UVM PD

Table 34
Reason for search by individual racial and ethnic categories – UVM PD

UVM PD	White	Black	Hispanic	American Indian / Alaska Native	Asian / Pacific Islander	Total
No search	99.0%	97.8%	100.0%	100.0%	100.0%	99.0%
Search warrant	.1%	.0%	.0%	.0%	.0%	.1%
Criminal probable cause	.7%	2.2%	.0%	.0%	.0%	.7%
Criminal reasonable suspicion	.3%	.0%	.0%	.0%	.0%	.3%
Total	2,869	92	30	6	81	3,078

Table 35
Reason for search with people of color grouped – UVM PD

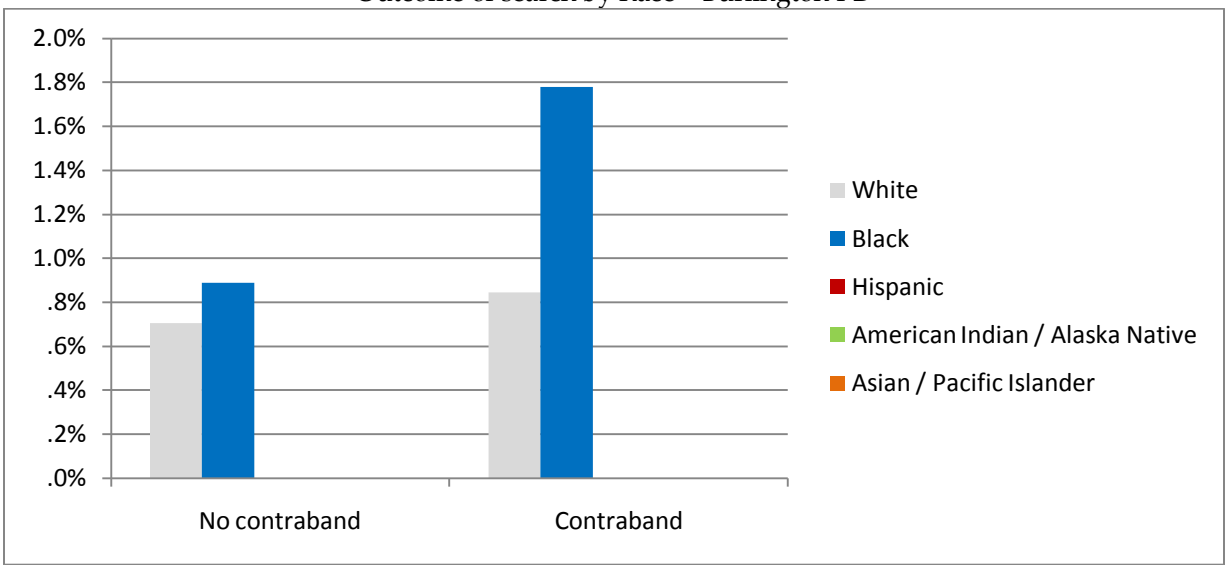
UVM PD	White	People of color
No search	99.0%	99.0%
Search warrant	0.1%	0.0%
Criminal probable cause	0.7%	1.0%
Criminal reasonable suspicion	0.3%	0.0%
Total	2,869	209

Outcome of search

As indicated above, the three participating communities where searches were conducted in 2009 were unusually productive in their searching practices. Most officers conducted very few searches but, when they did, they were likely to find contraband. These results are much better than those in many other agencies across the country where officers find contraband in 10-20% of all searches.

When we look at the outcome of searches by race in each agency, we see that this pattern holds. In Burlington, a slight majority of Whites searched were found to have contraband, while about twice as many of the Blacks who were searched were found to have contraband. In South Burlington, twice as many Whites searched were found to have contraband and slightly more Black drivers who were searched had contraband. At the University of Vermont, the number of searches was two small for this analysis.

Figure 20
Outcome of search by Race – Burlington PD



Outcome of search - Burlington PD

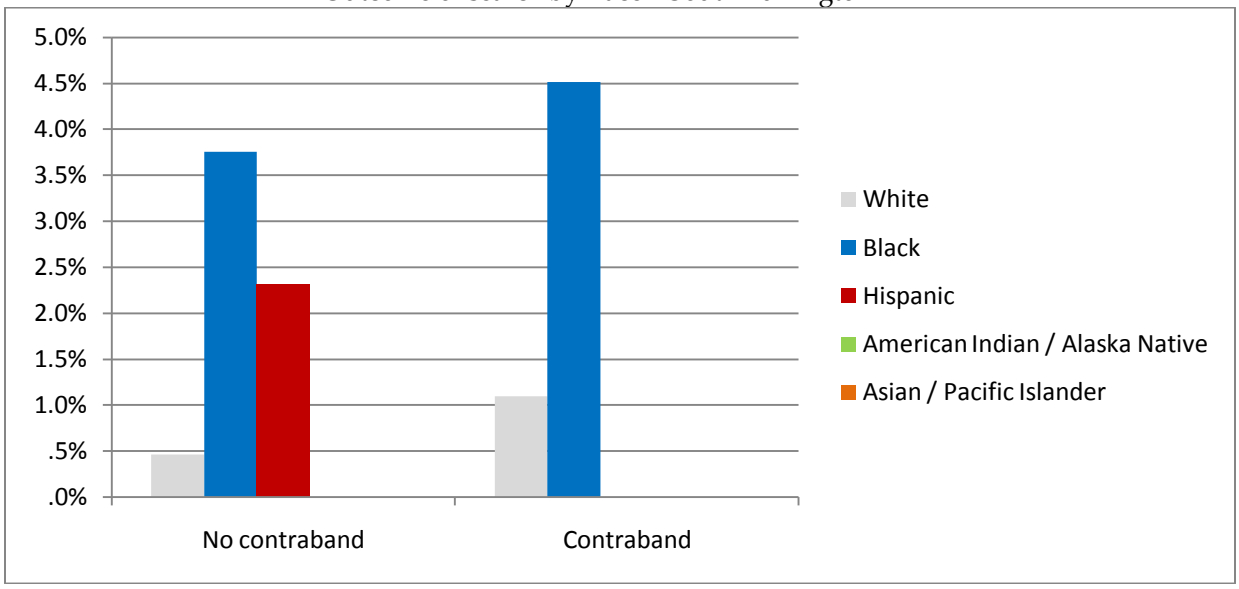
Table 36
Outcome of search by individual racial and ethnic categories – Burlington PD

Burlington PD	White	Black	Hispanic	American Indian / Alaska Native	Asian / Pacific Islander	Total
No search	98.4%	97.3%	100.0%	100.0%	100.0%	98.4%
No contraband	.7%	.9%	.0%	.0%	.0%	.7%
Contraband	.8%	1.8%	.0%	.0%	.0%	.9%
Total	4,964	337	52	9	120	5,482

Table 37
Outcome of search with people of color grouped – Burlington PD

Burlington PD	White	People of color
No search	98.4%	98.3%
No contraband	0.7%	0.6%
Contraband	0.8%	1.2%
Total	4,964	518

Figure 21
Outcome of search by Race – South Burlington PD



Outcome of search - South Burlington PD

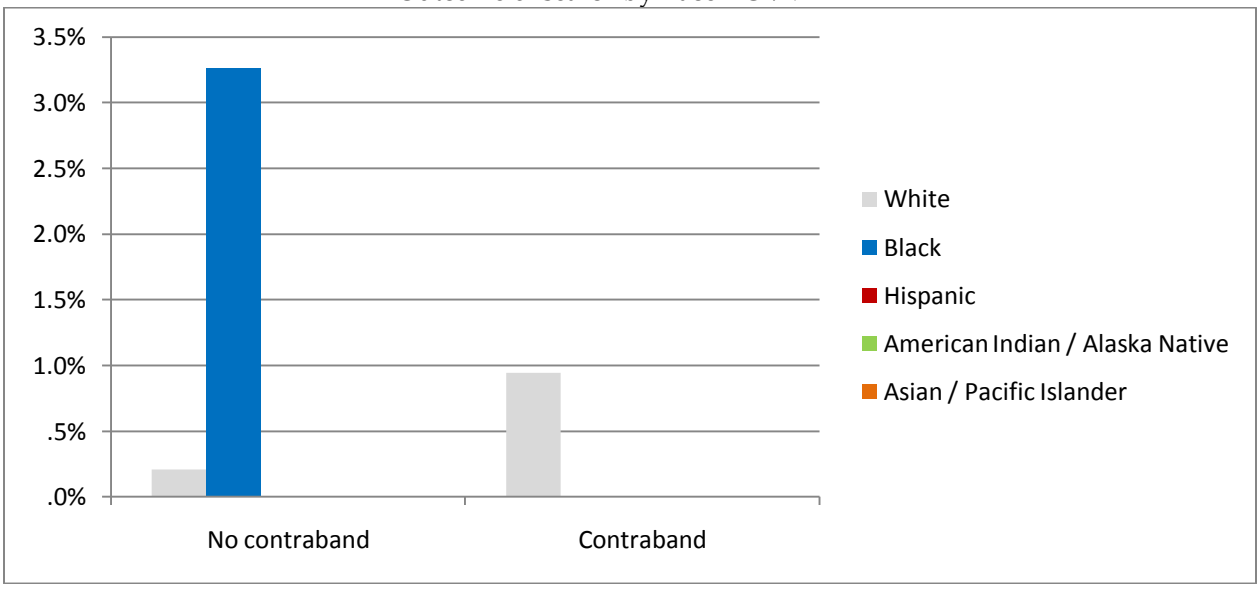
Table 38
Outcome of search by individual racial and ethnic categories – South Burlington PD

South Burlington PD	White	Black	Hispanic	American Indian / Alaska Native	Asian / Pacific Islander	Total
No search	98.4%	91.7%	97.7%	100.0%	100.0%	98.2%
No contraband	0.5%	3.8%	2.3%	0.0%	0.0%	0.6%
Contraband	1.1%	4.5%	0.0%	0.0%	0.0%	1.2%
Total	3,460	133	43	2	89	3,727

Table 39
Outcome of search with people of color grouped – South Burlington PD

South Burlington PD	White	People of color
No search	98.4%	95.5%
No contraband	0.5%	2.2%
Contraband	0.0%	2.2%
Total	3,460	267

Figure 22
Outcome of search by Race – UVM PD



Outcome of search - UVM PD

Table 40
Outcome of search by individual racial and ethnic categories – UVM PD

UVM PD	White	Black	Hispanic	American Indian / Alaska Native	Asian / Pacific Islander	Total
No search	98.8%	96.7%	100.0%	100.0%	100.0%	98.8%
No contraband	0.2%	3.3%	0.0%	0.0%	0.0%	0.3%
Contraband	0.9%	0.0%	0.0%	0.0%	0.0%	0.9%
Total	2,869	92	30	6	81	3,078

Table 41
Outcome of search with people of color grouped – UVM PD

UVM PD	White	People of color
No search	98.8%	98.6%
No contraband	0.2%	1.4%
Contraband	0.9%	0.0%
Total	2,869	209

Predicting searches and search outcomes

One methodology for summarizing and attempting to explain the search disparity results described above is multiple regression analysis. This statistical technique measures the effect of any particular variable while controlling for the effect of other potentially explanatory variables.

In the regression model that attempted to explain police search patterns, results indicated the most significant predictors of whether a search was conducted were the jurisdiction conducting the stop (i.e., Burlington or South Burlington police), whether the motorist was stopped for a moving violation or an investigatory stop, and the motorist's age. These five variables were all significant (each having a p-value < 0.01). The variables for the individual racial and ethnic categories were not significant, indicating that motorist race did not increase the odds of being searched. The results showing significant findings for Burlington PD and South Burlington PD indicate that the odds of motorists being searched by BPD and SBPD officers are .183 and .122 times greater, respectively, than the odds of being searched by the Winooski and UVM police. The results also show that the odds of motorists being searched were greater when they were stopped for moving violations and for investigatory stops. They were 2.14 times

and 0.19 times more likely to be searched than motorists who were stopped for other reasons. The significant finding for motorist age indicates that the odds of young motorists being searched are 0.46 times greater than older motorists.

Table 42
Logistic regression predicting search (with individual racial and ethnic categories)

Independent variables[2]	B	significance	Odds ratio
Burlington PD	5.21	p<0.01	183.34
South Burlington PD	4.80	p<0.01	121.71
Reason for stop = Moving violation	0.76	p<0.01	2.14
Reason for stop = Investigatory stop	-1.66	p<0.01	0.19
Motorist age	-0.79	p<0.01	0.46
Constant	10.912		54857.25

Again due to the small number of motorists searched, we grouped people of color and the regression model provided slightly different results. In addition to the significant predictors in the prior equation, motorists who were stopped as a result of externally generated information were more likely to be searched in this model.[3] The results indicate that the odds of a motorist being searched after a stop based on externally generated information are 0.45 times greater than the odds of a search being conducted when the motorist is stopped for other reasons. Also, motorist race became significant as a predictor of a search being conducted.[4] The results show that the odds of a motorist of color being searched are 0.6 times greater than the odds of a white motorist being searched.

Table 43
Logistic regression predicting search (with people of color grouped)

Independent variables	B	significance	Odds ratio
Burlington PD	5.21	p<0.01	182.53
South Burlington PD	4.83	p<0.01	125.31
Reason for stop = Moving violation	0.76	p<0.01	2.15
Reason for stop = Investigatory stop	-1.71	p<0.01	0.18
Reason for stop = Externally generated	-0.80	p=0.053	0.45
Motorist age	-0.79	p<0.01	0.45
Motorist race	-0.47	p<0.05	0.63
Constant	-22.11		0.00

[2] All variables were coded as dummy variables.
[3] Reason for stop = Externally generated is barely significant at the 0.05 level.
[4] Motorist race is only significant at the 0.05 level.

The regression model that tested search outcomes provided results that showed the most significant predictors of whether a search was productive were being a motorist stopped by Burlington or South Burlington police, stopped for a moving violation, an investigatory stop, or externally generated information, and motorist age. These six variables were all significant (each having a *p*-value < 0.01). The variables for race were neither significant when analyzing individual racial and ethnic categories separately nor when grouping people of color together into one category.

Table 44
Logistic regression predicting search outcome (with individual racial and ethnic categories)

Independent variables	B	significance	Odds ratio
Burlington PD	8.24	p < 0.01	3791.72
South Burlington PD	7.56	p < 0.01	1916.27
Reason for stop = Moving violation	0.59	p < 0.01	1.80
Reason for stop =Investigatory stop	-2.20	p < 0.01	0.11
Reason for stop = Externally generated	-1.43	p < 0.01	0.24
Motorist age	-1.16	p < 0.01	0.31
Constant	-5.6		0.00

Table 45
Logistic regression predicting search outcome (with people of color grouped)

Independent variables	B	significance	Odds ratio
Burlington PD	8.22	p < 0.01	3705.81
South Burlington PD	7.57	p < 0.01	1944.94
Moving violation	0.59	p < 0.01	1.80
Investigatory stop	-2.25	p < 0.01	0.11
Externally generated	-1.42	p < 0.01	0.24
Motorist age	-1.16	p < 0.01	0.31
Constant	-22.08	p < 0.01	0.00

Conclusion and Recommendations

- These law enforcement agencies should be commended for collecting information on more than 13,000 traffic stops in an effort to determine if racial disparities existed in the traffic enforcement practices of their agencies. Due to the small numbers of Black, Hispanic, American Indian and Asian drivers stopped, any conclusions are tenuous. This analysis of stop data revealed no clear pattern of racial or ethnic disparities by members of the four participating Vermont agencies. However, because of the small sample size and the difficulties in measuring racial profiling, these results cannot rule out the possibility that racial profiling is not occurring within one or more of the participating agencies. Additional data collection and analysis should allow clearer patterns to emerge.
- There do appear to be some areas where disparities exist but due to the small sample size noted above and/or the fact that many of these disparities are so small, no conclusion can be drawn. In these areas, it would be prudent to continue monitoring the disparities to determine if they persist or increase over time. Toward this end, the departments should add data from 2010 to these 2009 data to increase the sample size and to further explore the disparities noted in this report. These areas include:

    - Overall traffic stops in all agencies – Non-White drivers were slightly more likely to be stopped than indicated by population figures in Burlington. While these differences are small, these patterns should continue to be monitored including a closer monitoring of individual statistics for individual officers.
    - Outcome of stops – there may be some indication that some racial and ethnic groups were more likely to receive citations than White drivers. As more data become available, it would be important to determine if these patterns persist.
    - Searches – again, some disparities were noted but there so few searches, continued monitoring by each department is recommended.

- Since quantitative data on traffic stops alone can only detect trends in racial disparities, not the definitive existence of racial profiling, the departments may

want to consider collecting some data from additional sources. Data from local community surveys and focus groups with members of minority groups in the area may shed additional light on the level of concern about biased policing in the broader community.

- The leadership of each agency should share the results of this analysis with members of their organizations, particularly patrol officers and their supervisors. Officers have been collecting this information for some time now and it would be fitting to share both the positive findings about the productivity of their searches and the potential areas for future monitoring such as overall traffic stops.

- The four agencies involved with this analysis should take the data from this report and share it with their community members and other interested stake-holders. This effort to provide transparency will pay dividends as community members will learn about the lengths to which these four agencies have gone to determine if racial and ethnic disparities exist in the traffic enforcement practices of their officers. In addition, the results of this data analysis show the extent to which any disparities have been found. Sharing this information should result in improved trust and confidence in the police by members of their communities.

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Appendix A

Table A-1
Proportion of stops by Burlington PD to residential population by individual racial and ethnic categories

Burlington PD stops compared to resident population	Burlington residents		South Burlington residents		Winooski residents	
	# of stops	Pop.	# of stops	Pop.	# of stops	Pop.
White	2,372	35,787	301	15,422	197	5,652
Black / African American	205	797	30	324	36	62
Hispanic	27	693	3	388	2	178
American Indian / Alaska Native	6	149	0	27	0	104
Asian / Pacific Islander	79	987	9	939	8	294
Total	2,689	38,630	343	17,208	243	6,278

Table A-2
Proportion of stops by Burlington PD to residential population with people of color grouped

Burlington PD stops compared to resident population	Burlington residents		South Burlington residents		Winooski residents	
	# of stops	Pop.	# of stops	Pop.	# of stops	Pop.
White	2,372	35,787	301	15,422	197	5,652
People of color	317	2,626	42	1678	46	638

Appendix B

The South Burlington Police Department collected data on traffic accidents that occurred in their jurisdiction. This measure, traffic accidents, has been used as an alternative benchmark in some jurisdictions. In South Burlington, using accident data does not significantly change the racial categories for their community. As can be seen in Table B-1, using accident data slight increases the proportion of White, Black, Hispanic and American Indian drivers while reducing the proportion of Asian drivers. It would need to be decided by each agency going forward if the additional cost of collecting accident data was worth the benefit of obtaining alternative measures of the driving population

Figure B-1
South Burlington PD benchmark crash data compared to population
by individual racial and ethnic categories

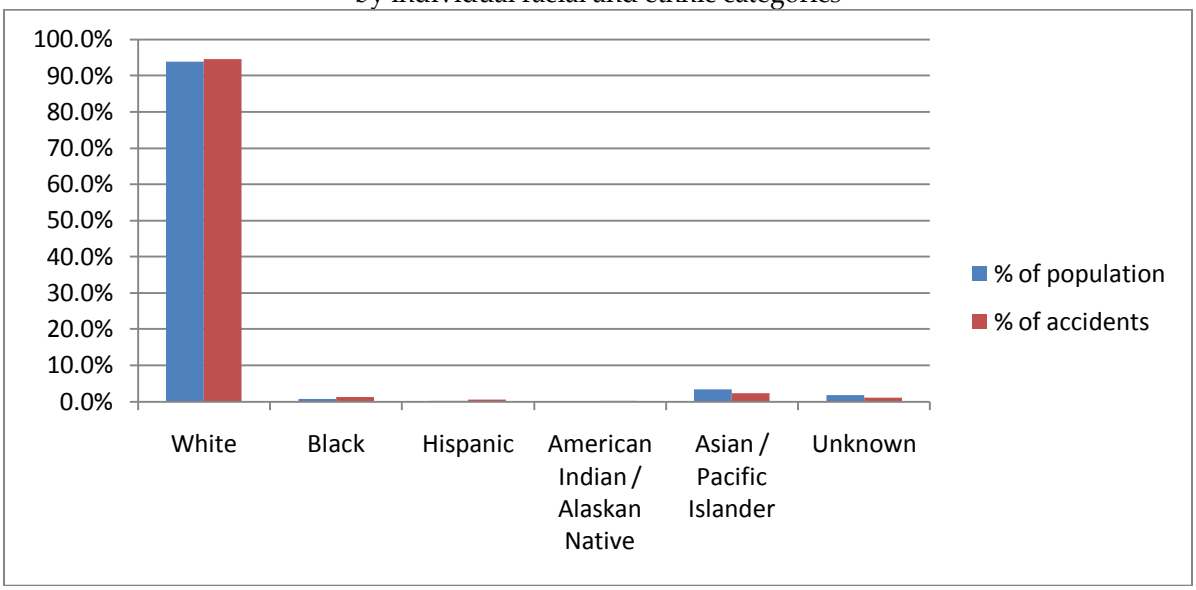

Table B-1
South Burlington PD benchmark crash data compared to population
by individual racial and ethnic categories

South Burlington PD	% of population	% of accidents
White	89.6%	94.6%
Black	1.9%	1.3%
Hispanic	2.2%	0.5%
American Indian / Alaskan Native	0.0%	0.2%
Asian / Pacific Islander	5.5%	2.3%
Total		100.0%

Figure B-2
South Burlington PD benchmark crash data compared to motorist stops
by individual racial and ethnic categories

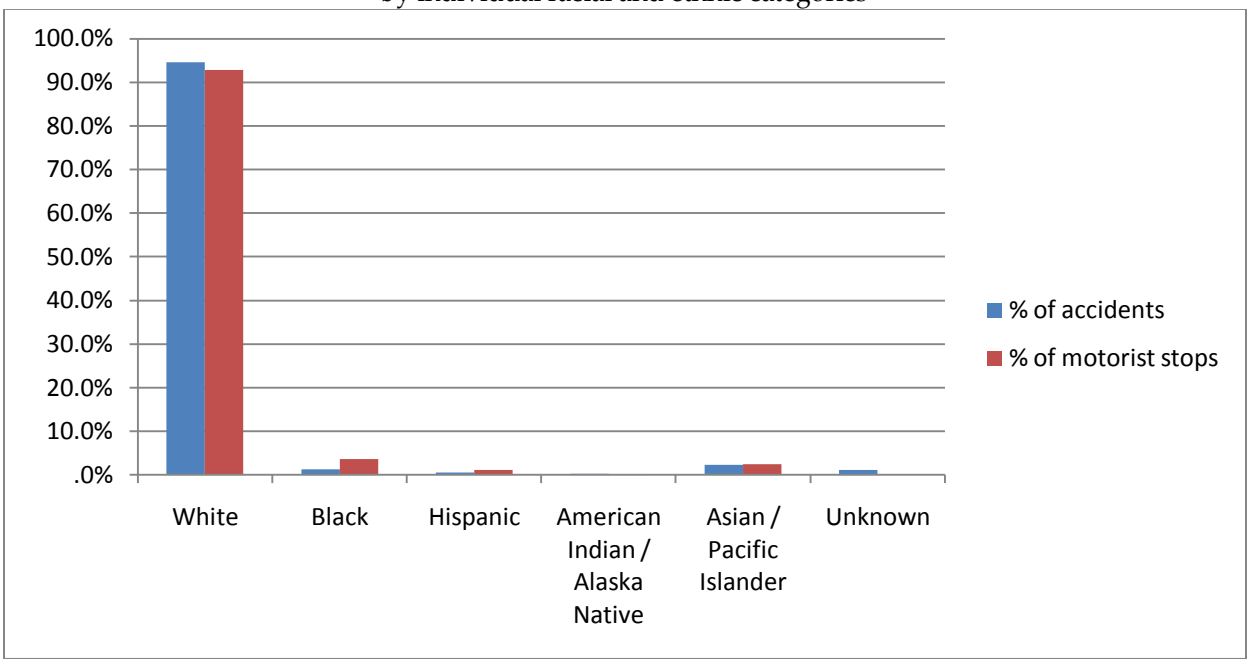

Table B-2
South Burlington PD benchmark crash data compared to motorist stops
by individual racial and ethnic categories

South Burlington PD	# of accidents	% of accidents	# of motorist stops	% of motorist stops
White	1,473	94.6%	3,460	92.8%
Black	20	1.3%	133	3.6%
Hispanic	8	0.5%	43	1.2%
American Indian / Alaskan Native	3	0.2%	2	0.1%
Asian / Pacific Islander	36	2.3%	89	2.4%
Unknown	17	1.1%	-	-
Total	1,557	100.0%	3,727	100.0%

Figure B-3
South Burlington PD benchmark crash data compared to motorist stops (White stops excluded)

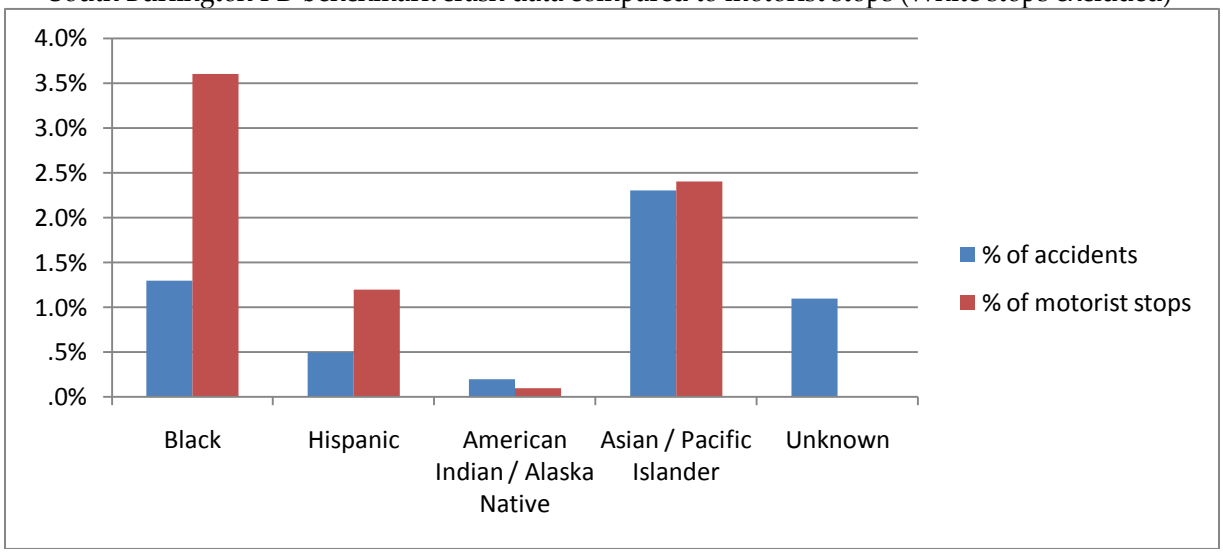

Figure B-4
South Burlington PD benchmark crash data compared to motorist stops with people of color grouped

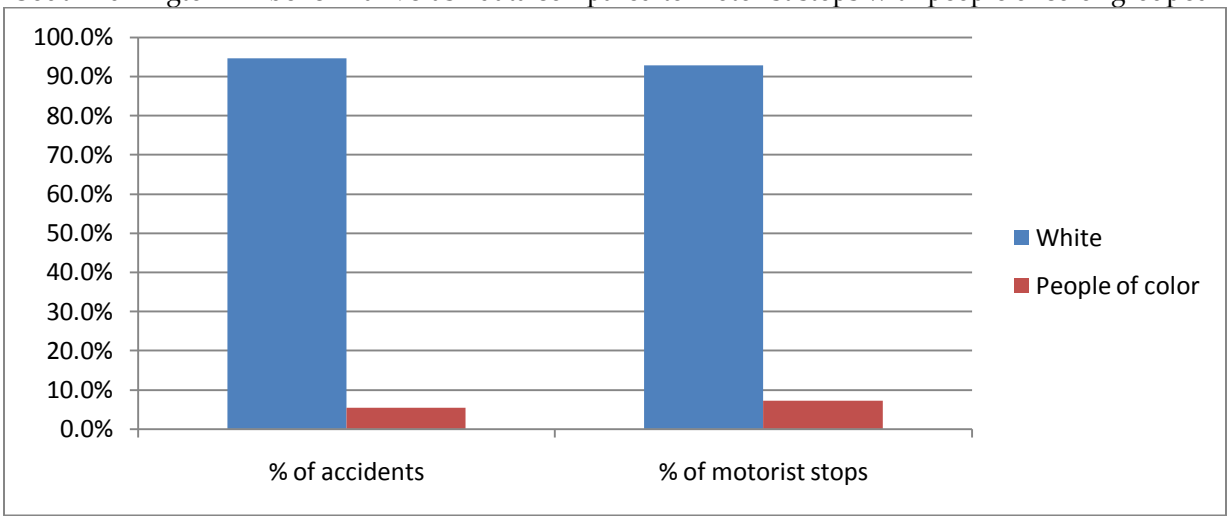

Table B-3
South Burlington PD benchmark crash data compared to motorist stops
with people of color grouped

South Burlington PD	# of accidents	% of accidents	# of motorist stops	% of motorist stops
White	1,473	94.6%	3,460	92.8%
People of color	84	5.4%	267	7.2%
Unknown	17	1.1%	-	-
Total	1,574	100.0%	3,727	100.0%